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FINAL SITE SCREENING REPORT FOR STUDY AREA 18 WITH TRANSMITTAL LETTER
NTC ORLANDO FL
2/7/2003
TETRA TECH



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0203-E045

February 7, 2003

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Naval Facilities Engineering Command
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Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Nos. 0024

Subject: Final Site Screening Report for Study Area 18
Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed is the final Site Screening Report for Study Area 18 in hardcopy and CD formats. A second copy of the transmittal has been mailed to Southern Division's Orlando office.

If you have any questions, please contact me at (865) 220-4730.

Sincerely,

A handwritten signature in black ink that reads "Steven B. McCoy".

Steven B. McCoy, P.E.
Task Order Manager

SBM:tko

Enclosure

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SITE SCREENING REPORT

for

STUDY AREA 18

**Naval Training Center
Orlando, Florida**



Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0024

FEBRUARY 2003

**SITE SCREENING REPORT
FOR
STUDY AREA 18**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

Submitted to:

**Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
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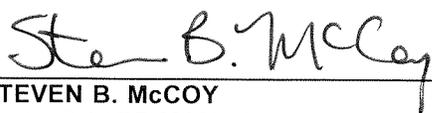
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FEBRUARY 2003

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P.G. CERTIFICATION

I hereby certify that this document, *Site Screening Report for Study Area 18*, was prepared under my direct supervision in accordance with acceptable standards of geological practice.

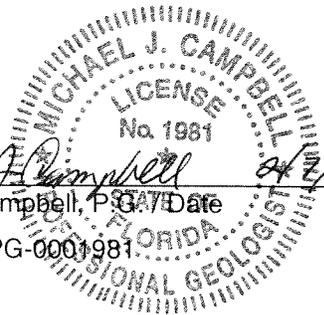

Michael J. Campbell *02/03*
Michael J. Campbell, P.G.
Date
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ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
bgs	below ground surface
BGSV	background screening value
CCI	CH2M Hill Constructors, Inc.
CLP	Contract Laboratory Program
DCE	dichloroethene
DET	Environmental Detachment Charleston
DQO	data quality objective
F.A.C.	<i>Florida Administrative Code</i>
FID	flame ionization detector
GCTL	Groundwater Cleanup Target Level
HLA	Harding Lawson Associates, Inc.
MCL	maximum contaminant level
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
µg/L	micrograms per liter
NTC	Naval Training Center
OPT	Orlando Partnering Team
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
ppm	parts per million
RBC	risk-based concentration
SA	Study Area
SCG	Soil Cleanup Goal
SCTL	Soil Cleanup Target Level
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
TCE	trichloroethene
TRPH	total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

A site screening investigation was performed at Study Area (SA) 18, located at the McCoy Annex of the former Naval Training Center (NTC), Orlando. The objective of the investigation was to determine the nature and extent of chemical contaminants that may have been released due to past activities at the Study Area. Harding Lawson Associates, Inc. [then ABB Environmental Services, Inc. (ABB-ES)] performed the initial site screening between April 1995 and August 1998. Subsequently, Tetra Tech NUS, Inc. (TtNUS) performed additional investigation activities between May 1999 and August 2001. An underground storage tank (UST) was removed and two excavations of contaminated soil were performed during the investigation. This report presents the results of the site screening investigations and remedial activities, and the conclusions and recommendations based upon those results.

Study Area Description

SA 18 is located in the central portion of the McCoy Annex. The Study Area includes Buildings 7177, 7179, and 7182 and the paved storage areas in their vicinity. Building 7177 is a 3,312-square foot building constructed in 1965 that was always used for storage. At the time of the 1994 Environmental Baseline Study, high voltage coils were stored in the building (ABB-ES, 1994). Building 7179 is a 144-square foot structure that was used for battery storage/charging and paint storage, and open-air drum and gas cylinder storage areas were located nearby. Numerous appliances and equipment such as refrigerators, hot water heaters, and transformers were also stored at the site. Building 7182, built in 1952, is a 14,450-square foot, one-story cinder block structure that contained the administrative area for the McCoy Annex housing office. Paints, solvents, roofing materials, and lawn supplies were stored in the building, and a 1,000-gallon steel UST installed in 1952 provided heating oil for the boiler. The paved lot surrounding Building 7182 included a large fenced enclosure for trailer and recreational vehicle storage and an open air paint storage area.

Initial Site Screening Investigation

In April and May 1995, surface and subsurface soil sampling, monitoring well installation, and groundwater sampling were performed. Polynuclear aromatic hydrocarbon (PAH) concentrations in four of the seven surface soil samples exceeded the residential Soil Cleanup Goals (SCGs) applicable at the time. Two of the surface soil samples exceeded the residential SCG for the pesticide dieldrin. One sample exceeded the SCG for beryllium and the risk-based concentration (RBC) for the polychlorinated biphenyl (PCB) Aroclor-1260. A fourth sample exceeded the RBC for 4,4-DDT. No exceedances were found in any of the five subsurface soil samples. All four groundwater samples contained iron and aluminum at concentrations exceeding the Florida secondary standard Maximum Contaminant Levels (MCLs) that were applicable at the time and NTC background screening values (BGSVs). These

concentrations were also higher than the current Florida Groundwater Cleanup Target Levels (GCTLs) (also based on secondary standards). Lead, manganese, thallium, and vanadium were detected above Florida MCLs or Guidance Concentrations applicable at the time (all four are the same as current GCTLs) and NTC BGSVs in the sample from monitoring well OLD-18-01, but these results were probably related to high levels of suspended solids in the sample.

Based on these results, an additional 18 soil samples (9 surface soil and 9 subsurface soil) were collected in November 1997. PAHs were detected in 14 of the 18 samples, with two samples containing concentrations exceeding the residential Florida SCGs that were applicable at that time. These concentrations also exceed current residential Florida Soil Cleanup Target Levels (SCTLs).

Tank Removal

In January 1997, the 1,000-gallon UST that had contained heating oil at Building 7182 was removed by the Navy Public Works Center, Pensacola. Following removal of the UST and excavation of approximately 3 cubic yards of petroleum-impacted soil from the excavation, a temporary well was installed and sampled. Laboratory analysis measured a trichloroethene (TCE) concentration of 5 micrograms per liter ($\mu\text{g/L}$), compared with the Florida MCL of 3 $\mu\text{g/L}$. This resulted in a recommendation in the tank Closure Assessment Report (Navy Public Works Center, 1997) for additional delineation. Three shallow monitoring wells were installed in July 1998 to assess the lateral extent of contaminants in groundwater. The wells were sampled in August 1998, and methylene chloride and tetrachloroethene (PCE) were detected at concentrations exceeding Florida GCTLs. However, no petroleum hydrocarbon contaminants were detected that exceeded Florida cleanup target levels as defined in Chapter 62.770, *Florida Administrative Code* (F.A.C.).

Additional Site Screening Investigations

Because of the presence of the chlorinated solvents, the Orlando Partnering Team (OPT) determined that further evaluation of contaminants in groundwater was necessary. The OPT includes representatives from the Florida Department of Environmental Protection, the U.S. Environmental Protection Agency, and the Navy and its contractors. Accordingly, TtNUS sampled the monitoring wells at SA 18 in May 1999. Four of the wells were sampled again in October 2000 (inorganics only). The May 1999 groundwater samples from two of the three monitoring wells associated with the former UST contained detectable levels of chlorinated solvents, but at concentrations well below the State GCTLs. The concentrations of iron in groundwater in all four wells exceeded the GCTL and the BGSV for NTC. The aluminum concentrations in two wells exceeded the GCTL and BGSV. Iron concentrations exceeded the GCTL and BGSV in three of the four wells sampled in October 2000. Two of the samples also contained levels of aluminum that exceeded the GCTL and the BGSV.

To determine if the iron and aluminum exceedances in groundwater were naturally occurring or the result of site activities, two background wells were installed in April 2001 and sampled in June 2001. The iron concentrations in both of the new wells and the aluminum concentration in one of the wells exceeded the BGSVs, and the OPT determined that the iron and aluminum exceedances at SA 18 were due to naturally occurring conditions.

In August 2001, TtNUS collected 30 additional surface soil samples to determine the extent of PAH, barium, and dieldrin concentrations exceeding the residential SCTLs. The extent of contamination was delineated.

Soil Removals

In addition to the soil removed with the UST, two other soil removals were performed at SA 18. In May 1999, the Environmental Detachment Charleston excavated approximately 30 cubic yards of soil contaminated with PAHs and dieldrin from a 20- x 20-foot area along the eastern side of the site. In March 2002, CH2M Hill Constructors, Inc., excavated approximately 502 cubic yards of soil from four other locations with PAH, dieldrin, or barium exceedances.

Conclusions and Recommendations

Aluminum and iron in groundwater were detected at concentrations exceeding Florida GCTLs (based on secondary standards) and BGSVs for the NTC (ABB-ES, 1995). Because the concentrations of aluminum in groundwater fell within the range of background values detected at NTC, aluminum was removed as a chemical of potential concern. Samples collected from upgradient SA 18 background wells in June 2001 indicated that iron concentrations were higher or in the same range as concentrations observed in wells being used to assess the site. As a result of conducting the background assessment of iron in groundwater, the OPT concluded that the elevated concentrations detected in groundwater were naturally occurring and not due to past site activities.

A 1,000-gallon heating oil UST and approximately 3 cubic yards of petroleum-contaminated soil associated with the UST were removed and the tank site was closed.

The extent of contamination in soil exceeding the residential SCTLs for PAHs, dieldrin, and barium was delineated at SA 18. As a result of soil removals conducted at SA 18, risks have been reduced at the site so as to be protective of human health and the environment for future unrestricted use of the property.

Based upon the findings in this report, the OPT concluded that SA 18 is suitable for future residential use without restrictions. Because the groundwater under SA 18 contains aluminum and iron at concentrations exceeding the State of Florida's secondary drinking water standards, it is recommended that future property owners be advised that the shallow aquifer may not be suitable as a potable drinking water source. The Base Realignment and Closure Color Code for SA 18 should be changed to "dark green" to signify "an area where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

1.0 INTRODUCTION

Environmental site screening activities have been conducted at Study Area (SA) 18. Harding Lawson Associates, Inc. (HLA) [then ABB Environmental Services, Inc. (ABB-ES)] submitted the results of initial site screening activities in a Site Screening Report (ABB-ES, 1995b). A 1,000-gallon underground storage tank (UST) was removed (Navy Public Works Center, 1997) and a Site Assessment was performed by HLA (HLA, 1998). HLA conducted supplemental screening activities and reported the results in a revised Site Screening Report (HLA, 1999). Tetra Tech NUS, Inc. (TiNUS) conducted additional studies in 2000 and 2001. Soil removal actions were performed by the Environmental Detachment Charleston (DET) in May 1999 (DET, 1999) and CH2M Hill Constructors, Inc. (CCI) in March 2002 (CCI, 2002). This report presents the results of the site screening investigation and interim remedial activities at SA 18, and conclusions and recommendations based upon these results.

1.1 SITE DESCRIPTION

SA 18 is located in the central portion of the McCoy Annex, Naval Training Center (NTC), Orlando. Figure 1-1 shows the location of the McCoy Annex, immediately west of the Orlando International Airport and south of Orlando, Florida. Figure 1-2 shows the location of SA 18 near the center of the McCoy Annex. Figure 1-3 is a map that shows the main features of the site, including the locations of groundwater monitoring wells.

SA 18 is bounded by railroad tracks to the southwest, 5th Street to the southeast, and Binnacle Way to the north. The Study Area includes Buildings 7177, 7179, and 7182 and the paved storage areas in their vicinity. Building 7182, built in 1952, is a 14,450-square foot, one-story cinder block structure that contained the administrative area for the McCoy Annex housing office. Paints, solvents, roofing materials, and lawn supplies were stored in the building, and a 1,000-gallon steel UST installed in 1952 provided fuel for the boiler. The paved lot surrounding Building 7182 included a large fenced enclosure for trailer and recreational vehicle storage and an open air paint storage area. Building 7177 is a 3,312-square foot building constructed in 1965 that was always used for storage. At the time of the 1994 Environmental Baseline Study, high voltage coils were stored in the building (ABB-ES, 1994). Building 7179 is a 144-square foot structure that was used for battery storage/charging and paint storage, and open-air drum and gas cylinder storage areas were located nearby. Numerous appliances and equipment such as refrigerators, hot water heaters, and transformers were also stored at the site.

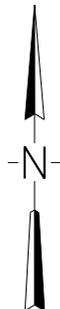
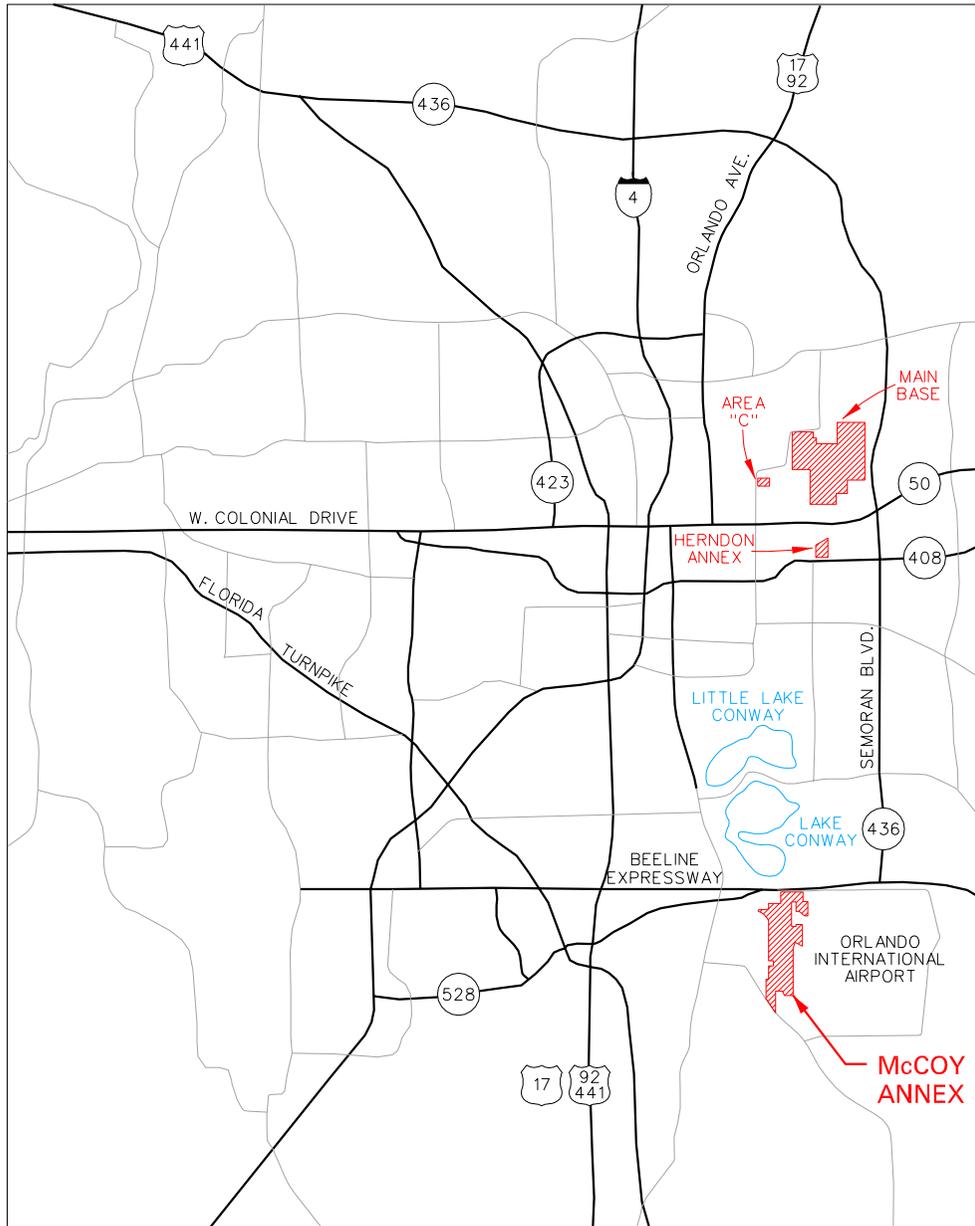


FIGURE 1-1
LOCATION OF McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

STUDY AREA 18

BOUNDARY
INSTALLATION

McCOY ANNEX

G.O.A.A.

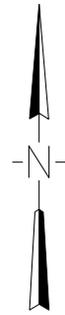


FIGURE 1-2
SITE VICINITY MAP
STUDY AREA 18 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

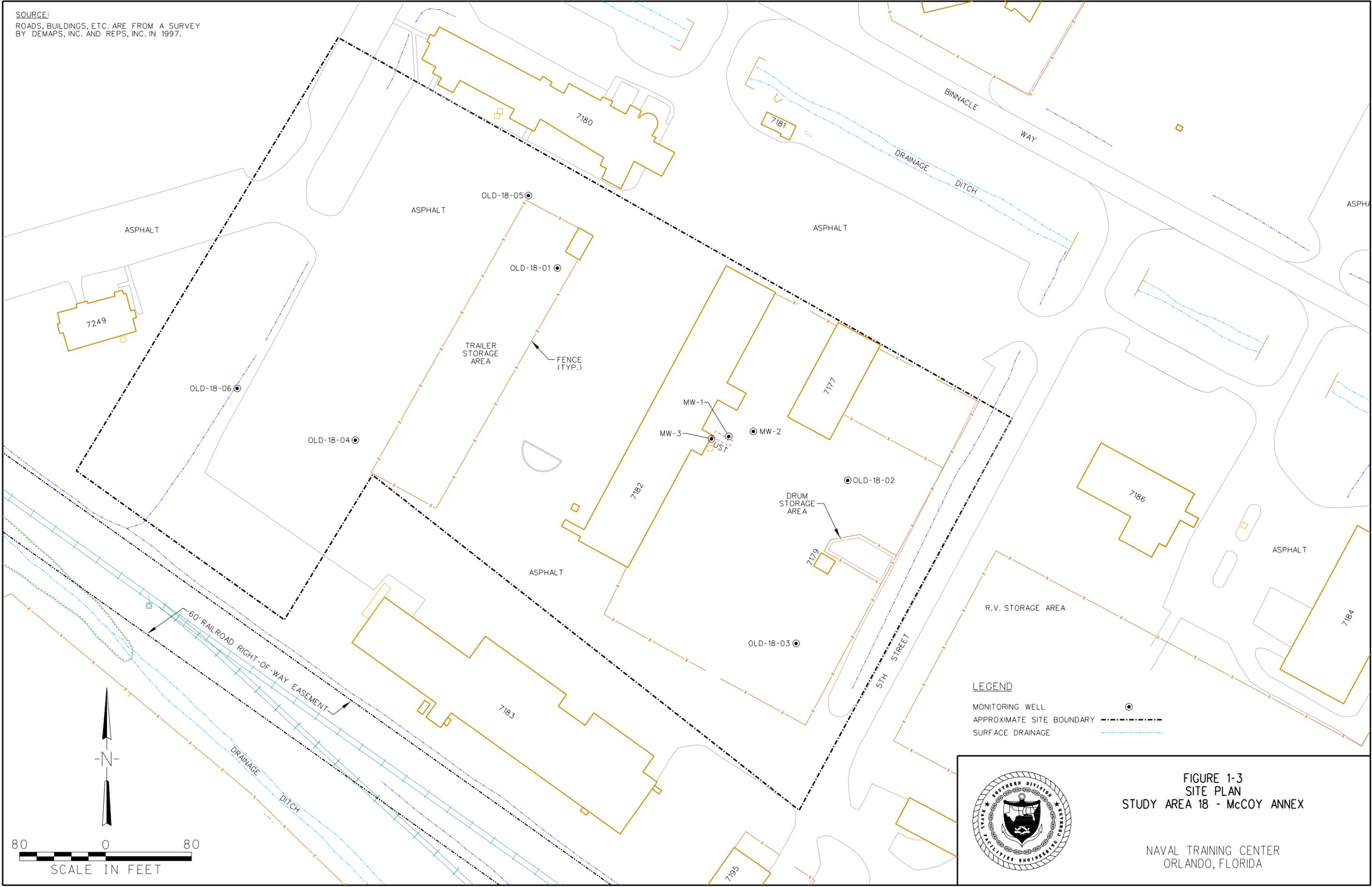


FIGURE 1-3
SITE PLAN
STUDY AREA 18 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

1.2 ENVIRONMENTAL SETTING

The U.S. Department of Agriculture (USDA) Soil Survey of Orange County, Florida, shows that SA 18 lies in the Urban land-Smyrna-Pomello complex. The survey describes the soils as follows:

"Nearly level to gently sloping, poorly drained and moderately well drained soils that are sandy throughout; some have an organic-stained subsoil at a depth of less than 30 inches; some have an organic-stained subsoil at a depth of 30 to 50 inches; most areas have been modified for urban use." (USDA, 1989)

The HLA boring logs for monitoring wells OLD-18-01, OLD-18-02, OLD-18-03, and OLD-18-04 describe the soil in the upper 15 feet as quartz sand, usually dark brown in color near the surface and varying from light brown to white in some strata. The sand was described as fine, with good sorting below 5 feet below ground surface (bgs). Some silt and trace organics were detected in the upper 5 feet. Similar soil was encountered when installing monitoring wells OLD-18-05 and OLD-18-06. The soil was described as gray or brown at the surface, becoming darker with increased depth and soil moisture. Groundwater encountered in monitoring well OLD-18-06 had a sulfurous, organic odor.

The shallow surficial aquifer at SA 18 is an unconfined sand aquifer. Groundwater flow is generally toward the southeast and south-southeast. Groundwater elevation measurements made between 1995 and 2001 indicate that the gradient is nearly flat (< 0.002 ft/ft).

1.3 ENVIRONMENTAL ACTIONS

Table 1-1 presents a summary of screening and remedial activities conducted at SA 18, including a UST removal and soil excavation/disposal actions.

1.4 REGULATORY CRITERIA

The investigation at SA 18 was conducted over a number of years, and the applicable regulatory criteria were replaced or revised several times during this period. The criteria in effect during this investigation are listed below:

Criterion	Issue Date	Comments
Groundwater Guidance Concentrations (FDEP, 1994)	June 1994	
Soil Cleanup Goals for the Military Sites (FDEP, 1995a)	April 5, 1995	
Soil Cleanup Goals for Florida (FDEP, 1995b)	September 29, 1995	Replaced FDEP, 1995a
Technical Report: Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-785, F.A.C. (FDEP, 1998)	April 30, 1998	Replaced FDEP 1994 and 1995b
Technical Report: Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C. (FDEP, 1999)	May 26, 1999	Replaced FDEP, 1998

TABLE 1-1
CHRONOLOGICAL SUMMARY OF ENVIRONMENTAL ACTIVITIES
STUDY AREA 18
NAVAL TRAINING CENTER ORLANDO
ORLANDO, FLORIDA

FIELD PROGRAM – INITIAL SITE SCREENING	
April 1995	ABB-ES detected PAH, barium, and dieldrin concentrations in surface soil samples that exceeded the Florida residential SCGs.
May 1995	ABB-ES installed monitoring wells OLD-18-01 through OLD-18-04. Concentrations of aluminum and iron in each well exceeded Florida MCLs (based on secondary standards). Lead, manganese, thallium, and vanadium exceeded MCLs or Guidance Concentrations in well OLD-18-01.
January 1997	The Navy Public Works Center Pensacola completed the removal of a 1,000-gallon UST and 3 cubic yards of contaminated soil at Building 7182. Trichloroethene was detected above the MCL in a temporary well.
May 1997	The Navy Public Works Center submitted a Closure Assessment Report for the 1,000-gallon UST and recommended additional investigation at Building 7182.
November 1997	PAH concentrations in two of 18 additional soil samples exceeded Florida residential SCTLs.
April 1995 to August 1998	HLA conducted a UST Site Assessment to evaluate soil and groundwater at Building 7182.
July to August 1998	HLA installed and sampled monitoring wells MW-1, MW-2, and MW-3 near the former UST.
FIELD PROGRAM – ADDITIONAL SITE SCREENING	
May 1999	TtNUS sampled monitoring wells OLD-18-01 through OLD-18-04 and MW-1, MW-2, and MW-3. No organic detections exceeded GCTLs. Aluminum and iron concentrations exceeded GCTLs and BGSVs.
May 1999	Environmental Detachment Charleston removed and disposed of approximately 30 cubic yards of near-surface soil from an area on the southeast side of the site.
October 2000	TtNUS resampled monitoring wells OLD-18-01 through OLD-18-04 for inorganics. Iron exceeded its GCTL and BGSV in three wells, aluminum exceeded its GCTL and BGSV in two wells, and manganese exceeded the GCTL in one well.
April 2001	TtNUS installed upgradient background wells OLD-18-05 and OLD-18-06.
June 2001	TtNUS sampled background wells OLD-18-05 and OLD-18-06. Dissolved concentrations of aluminum and iron exceeded GCTLs in the upgradient wells, indicating that the concentrations are naturally occurring.
August 2001	TtNUS collected 30 additional surface soil samples to determine the extent of PAH, barium, and dieldrin concentrations exceeding residential SCTLs.
March 2002	CCI excavated approximately 502 cubic yards of surface soil from four locations where concentrations of PAHs, dieldrin, or barium exceeded Florida residential SCTLs.

Florida Soil Cleanup Goals (SCGs) for military sites published in April 1995 (FDEP, 1995a) were used to evaluate the initial site screening soil samples collected in April and May 1995. Florida Maximum Contaminant Levels (MCLs), published in June 1994 (FDEP, 1994) were used to evaluate the results of groundwater sampling performed in May 1995.

Florida Soil Cleanup Target Levels (SCTLs) published in April 1998 (FDEP, 1998) were used to evaluate the results of the additional soil sampling performed in November 1997.

Prior to initiating additional investigation activities in 1999, all results were compared to revised Florida SCTLs and Groundwater Cleanup Target Levels (GCTLs) published in May 1999 (FDEP, 1999). These screening criteria were also used to evaluate previous soil sampling results prior to the final soil removal performed in March 2002.

2.0 FIELD INVESTIGATION

The text in this section and Section 3.0, Site Screening Results, refers to the activities of ABB-ES (subsequently HLA) as “initial site screening.” Later work conducted by TtNUS is referred to as “additional site screening.” All activities performed during the investigation were conducted in a manner consistent with ABB-ES’s Project Operations Plan (ABB-ES, 1997a), developed specifically for work at NTC Orlando.

2.1 INITIAL SITE SCREENING INVESTIGATION (ABB-ES)

ABB-ES/HLA conducted initial site screening activities between April 1995 and August 1998. The first phase of site screening activities (April 1995 to May 1995) included the collection of seven surface soil samples, five subsurface soil samples, and four groundwater samples to determine if previous site activities had adversely affected soil or groundwater. Figure 2-1 shows the sampling locations. Some soil sampling locations were selected to evaluate potential impacts of general site activities. Other sample locations were selected to evaluate potential impacts from specific areas of environmental concern. Except where noted below, all samples collected during the initial site screening were submitted for full suite Contract Laboratory Program (CLP) Target Compound List (TCL), volatile organic compound (VOC), semivolatile organic compound (SVOC), pesticide and polychlorinated biphenyl (PCB), and Target Analyte List (TAL) analyses in accordance with U.S. Environmental Protection Agency (USEPA) Level IV data quality objectives (DQOs). In addition, all groundwater samples were analyzed for herbicides and total suspended solids. Soil samples collected near the bermed hazardous materials storage area at Building 7179 (18S00800, 18S00900, and 18S01000) were submitted for herbicides analysis in addition to the analyses listed above.

2.1.1 SA 18 General Area

Sample locations associated with specific numbered facilities or areas that are of environmental concern within SA 18 are discussed in Section 2.1.2.

ABB-ES collected three surface soil samples (18S00700, 18S00800, and 18S01100) at locations selected to evaluate the general effects of storm water runoff. No flame ionization detector (FID) deflections were noted during sample collection. Two soil borings (18B001 and 18B004) in the western part of SA 18 were completed as monitoring wells OLD-18-01 and OLD-18-04, respectively, to address concerns associated with storage activities that may have occurred in this part of the site. One subsurface soil sample and one groundwater sample were collected at each of these locations. Subsurface soil sample 18B00101 was collected at a depth of 5 to 7 feet bgs and subsurface soil sample

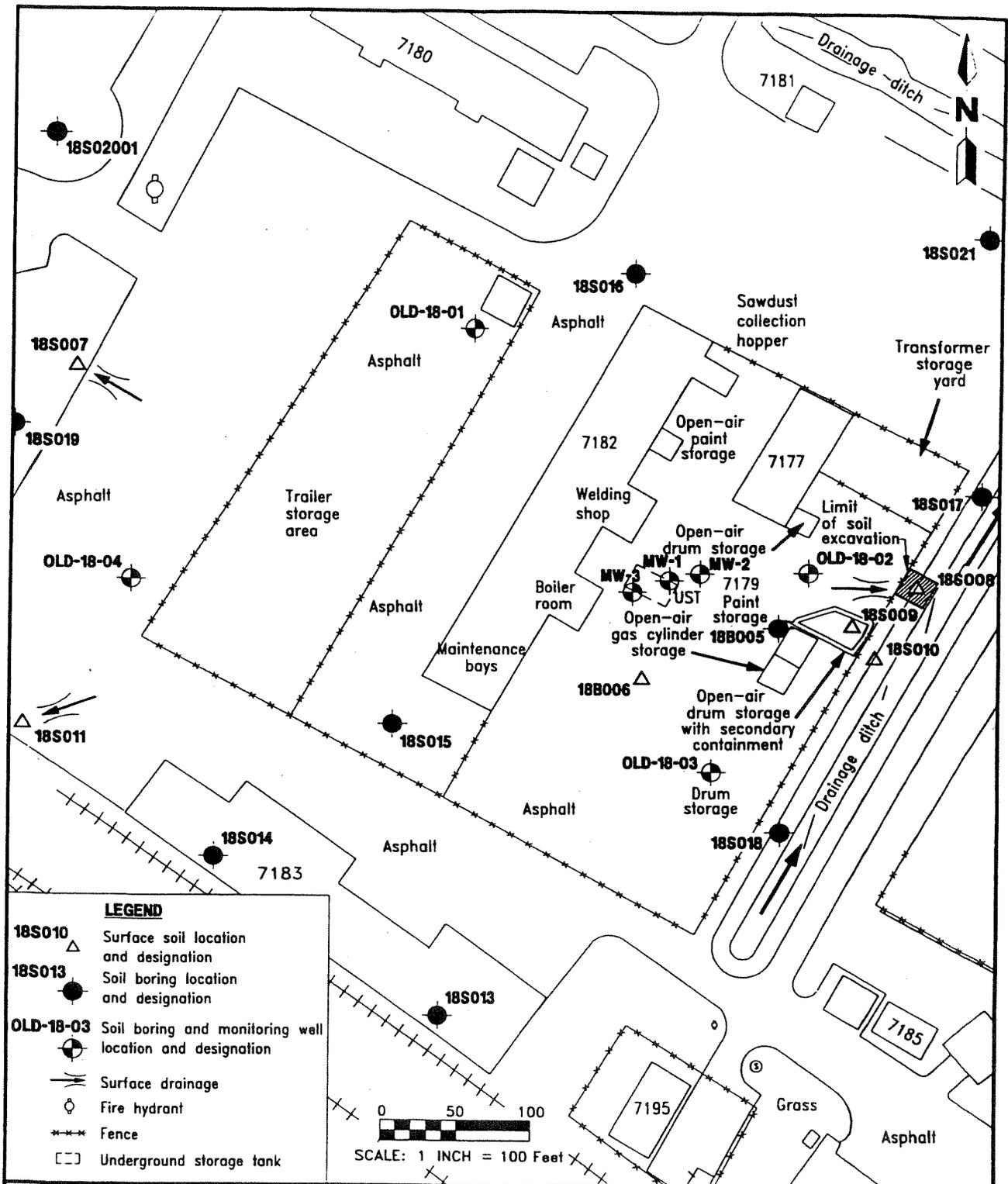


FIGURE 2-1
SURFACE AND SUBSURFACE SOIL, SOIL BORING
AND MONITORING WELL LOCATIONS
STUDY AREA 18
 (Source: HLA, 1999)



BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING
REPORT, STUDY AREA 18
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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18B00401 was collected at a depth of 6 to 8 feet bgs. FID deflections of 20 to 900 parts per million (ppm) were noted in soil boring 18B001 in the depth range of 4 to 14 feet bgs, while FID deflections of 30 to 250 ppm were noted in soil boring 18B004 in the depth range of 4 to 14 feet bgs. Groundwater samples 18G00101 and 18G00401 were collected from wells OLD-18-01 and OLD-18-04, respectively.

2.1.2 Specific Areas

Building 7177

ABB-ES installed groundwater monitoring well OLD-18-02 south of the drum storage area associated with Building 7177. One subsurface soil sample (18B00201) was collected in the interval from 6 to 8 feet bgs during the soil boring operations, and a groundwater sample (18G00201) was collected following completion and development of the well. No FID deflections were noted during sample collection.

Building 7179

ABB-ES collected surface soil sample 18S00900 within the secondary containment area of the open-air drum storage area at Building 7179 and surface soil sample 18S01000 adjacent to a breach in the containment structure. Two soil samples were collected from the hand-augered boring 18B005 adjacent to an open drain pipe protruding from the wall near the north side of Building 7179. The shallow soil sample (18B00501, 0 to 1 foot bgs) at this location was collected directly below the base of the pavement. The deeper sample (18B00502) was collected at the water table at a depth of 3 to 4 feet bgs. No FID deflections were noted during sample collection.

Monitoring well OLD-18-03 was installed near drum ring impressions in the asphalt pavement southwest of Building 7179. One subsurface soil sample (18B00301) was collected at a depth of 6 to 8 feet bgs during the soil boring operations, and a groundwater sample (18G00301) was collected following completion and development of the well. No FID deflections were noted during sample collection.

Building 7182

One surface soil sample (18B00601) was collected directly below the base of the pavement in the area east of the boiler room and maintenance bays. No FID deflections were noted during sample collection. The UST formerly located on the east side of Building 7182 is discussed below.

2.1.3 Supplemental Soil Sampling for Polynuclear Aromatic Hydrocarbons (PAHs)

The results of the sampling described above led to the collection of additional soil samples from nine soil borings (18S013/18B013 through 18S021/18B021) in November 1997 (Figure 2-1). The supplemental sampling was intended to provide additional information concerning the maximum concentration of PAHs present in soils at SA 18 and provide a statistically representative characterization of the distribution of PAH compounds. Because the initial screening investigation involved the collection of soil samples at locations where contaminants were considered most likely, the sampling data sets could be considered “biased” and not representative of “average” site conditions. The supplemental sampling was intended to augment the existing database to include approximately five well-distributed samples per acre, including previous sample locations.

The supplemental field investigation included the following steps:

- Establish a preliminary sampling grid of appropriate size and node spacing at each area, taking into consideration existing sample locations.
- Collect a surface soil (0 to 1 foot bgs), and a subsurface soil (either 1 to 2 or 2 to 3 feet bgs) sample from each grid node. If a subsurface sample contained PAHs at concentrations exceeding guidance, deeper samples would be considered.
- Submit samples for laboratory analysis via USEPA Method Modified 8270 gas chromatograph mass spectrometer/selective ion monitoring (PAHs only). This method yields detection limits for most PAHs in the low parts per billion or tens of parts per billion (USEPA, 1980).

Details describing the sampling plan for the supplemental sampling were documented in a letter to the Navy (ABB-ES, 1997b) and presented to the Orlando Partnering Team (OPT). The sample locations for the additional samples are shown on Figure 2-1.

2.2 REMOVAL OF UST NEAR BUILDING 7182

The 1,000-gallon UST that stored heating fuel at Building 7182 was removed by the Navy Public Works Center, Pensacola in January 1997. Following removal of the UST and excavation of approximately 3 cubic yards of petroleum-impacted soil from the excavation, HLA installed a temporary well and collected a groundwater sample from the well. The sample was analyzed for VOCs and SVOCs. Trichloroethene (TCE) was detected above the Florida MCL, which resulted in a recommendation in the tank Closure Assessment Report (Navy Public Works Center, 1997) for additional assessment at Building 7182 to provide delineation.

During the site assessment, HLA advanced 6 soil borings and collected 18 soil samples (0 to 2, 2 to 4, and 4 to 6 feet bgs from each boring) for organic vapor analysis (HLA, 1998). Two samples were shipped for VOC, total recoverable petroleum hydrocarbons (TRPH), and PAH analyses at a fixed-base laboratory. HLA installed three shallow monitoring wells (MW-1, MW-2, and MW-3) near the tank pit in July 1998 and sampled them in August 1998 to assess the lateral extent of contaminants in groundwater (HLA, 1998). Samples were analyzed for VOCs, lead, PAHs, TRPH, and ethylene dibromide.

2.3 ADDITIONAL SITE SCREENING INVESTIGATION (TtNUS)

2.3.1 Additional Monitoring Well Sampling

The discovery of chlorinated hydrocarbons in groundwater samples near the UST and the need to further evaluate the potential for metals concentrations exceeding Florida GCTLs (FDEP, 1998) at SA 18 led to resampling of all existing monitoring wells. Both filtered and unfiltered samples from wells OLD-18-01, OLD-18-02, OLD-18-03, and OLD-18-04, installed during the first site screening investigations, were submitted for CLP TAL analyses. Samples from wells MW-1, MW-2, and MW-3, related to the UST removal, were submitted for CLP VOC TCL analyses. TtNUS completed the sampling on May 26, 1999, and documented the results in a letter report issued in September 1999 (TtNUS, 1999).

TtNUS resampled wells OLD-18-01, OLD-18-02, OLD-18-03, and OLD-18-04 in October 2000 and submitted the samples for CLP TAL inorganic analyses. The resampling was conducted in response to concerns about elevated concentrations of aluminum and iron observed in previous sampling events. These concerns also led to the installation of the background wells discussed below.

2.3.2 Background Monitoring Well Installation

The investigations to date found no evidence that former site activities caused the high concentrations of aluminum and iron detected in monitoring wells OLD-18-01, OLD-18-02, OLD-18-03, and OLD-18-04. TtNUS installed wells OLD-18-05 and OLD-18-06 in April 2001 to determine if similar elevated concentrations were present upgradient of the existing wells. A surface soil and a subsurface soil sample were collected at each location to confirm that the locations had not been impacted by site activities.

Initial attempts to sample these monitoring wells failed because of excessive turbidity observed during purging. TtNUS redeveloped the wells in early June 2001 and sampled them on June 8, 2001. Both filtered and unfiltered samples were analyzed for TAL inorganics. Analytical results indicated that elevated levels of iron and aluminum are due to naturally occurring conditions, not past activities at the site. Table A-1 in Appendix A provides construction details for all monitoring wells at the site.

2.3.3 Additional Soil Sampling

The results of previous surface soil sampling performed from 1995 through 1997 were compared to the May 1999 SCTLs (FDEP, 1999) prior to initiating additional surface soil sampling activities. Although the barium results from the 1995 soil sampling events were all below the SCG of 5,000 mg/kg, the levels detected at surface soil location 18-S-010 exceeded the SCTL of 105 mg/kg. PAH concentrations detected in surface soil in 1995 or 1997 exceeded the SCTLs at locations 18-S-007, 18-S-010, 18-S-011, and 18-S-017. Dieldrin was also detected at concentrations exceeding the SCTL in surface soil samples from 18-S-007 and 18-S-008 collected in 1995. However, the area including and surrounding 18-S-008 was excavated and removed in 1999 (DET, 1999).

TtNUS collected 30 additional surface soil (0-1 foot bgs) samples in August 2001 to determine the extent of PAH, barium, and dieldrin contamination at four locations where HLA detected concentrations exceeding Florida residential SCTLs (FDEP, 1999). The samples were distributed as follows:

- Six samples were collected around former sampling location 18-S-011 in the southwest corner of the site, where HLA detected high PAH concentrations.
- Six samples were collected around former sampling location 18-S-007 in the northwest corner of the site, where HLA detected high PAH and dieldrin concentrations.
- Eight samples were collected around former sampling location 18-S-010 in the southeast corner of the site, where HLA detected high barium and PAH concentrations.
- Ten samples were collected around former sampling location 18-S-017 in the northeast corner of the site, where HLA detected high PAH concentrations.

The laboratory used Method 6010B for barium analysis, Method 8081A for dieldrin analysis, and Method 8310 for PAH analyses. Section 3.0 contains a discussion of the results and a map of the sampling locations.

3.0 SITE SCREENING RESULTS

This section presents the results of site screening investigations at SA 18. Subsection 3.1 presents a discussion of the initial site screening results obtained by ABB-ES and HLA. Subsection 3.2 describes the removal of a UST near Building 7182. Subsection 3.3 presents the results of the additional screening activities obtained by TtNUS.

3.1 INITIAL SITE SCREENING INVESTIGATION (ABB-ES/HLA)

Initial site screening analytical results from the surface soil, subsurface soil, and groundwater collected from SA 18 are presented in Appendix B, Tables B-1 to B-3. Exceedances of screening criteria [SCTLs and GCTLs (FDEP, 1999)] and BGSVs (ABB-ES, 1995a) that were observed during the initial screening are displayed in chem-boxes on Figure 3-1 and shaded on the Summary of Positive Detections tables in Appendix B. Other regulatory guidance concentrations [risk-based concentrations (RBCs) and MCLs] are provided on the tables for comparison purposes.

3.1.1 Surface Soil

Contaminants detected in the surface soils (0 to 1 foot bgs) at SA 18 included VOCs, SVOCs, pesticides, and inorganics. PAHs were detected at surface soil sample locations 18S007, 18S008, 18S010, and 18S011. PAH concentrations were highest at surface soil location 18S008 and exceeded both the Florida residential SCGs (FDEP, 1995) and RBCs (USEPA, 1996) for benzo(a)anthracene [2,300 micrograms per kilogram ($\mu\text{g}/\text{kg}$)], benzo(a)pyrene (1,900 $\mu\text{g}/\text{kg}$), benzo(b)fluoranthene (2,100 $\mu\text{g}/\text{kg}$), and dibenzo(a,h)anthracene [320 J (estimated) $\mu\text{g}/\text{kg}$]. The concentration of indeno(1,2,3-cd)pyrene in this sample (1,200 $\mu\text{g}/\text{kg}$) exceeded the RBC. Concentrations of benzo(a)pyrene also exceeded residential SCGs and RBCs at locations 18S007, 18S010 (field duplicate only), and 18S011. The 4,4-DDT concentration at location 18S010 exceeded its residential RBC.

Several inorganics, including aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium, and zinc were detected in surface soil. Arsenic exceeded the SCG of 0.7 mg/kg at location 18-S-010 [1.1 B (estimated) mg/kg] but did not exceed the background screening value (BGSV) of 1.9 mg/kg (ABB-ES, 1995a). The concentrations of beryllium exceeded the SCG of 0.1 mg/kg at four locations and the residential RBC of 0.15 mg/kg at three of these locations. However, the BGSV (0.46 mg/kg) was exceeded only at location 18-S-011 (Appendix B).

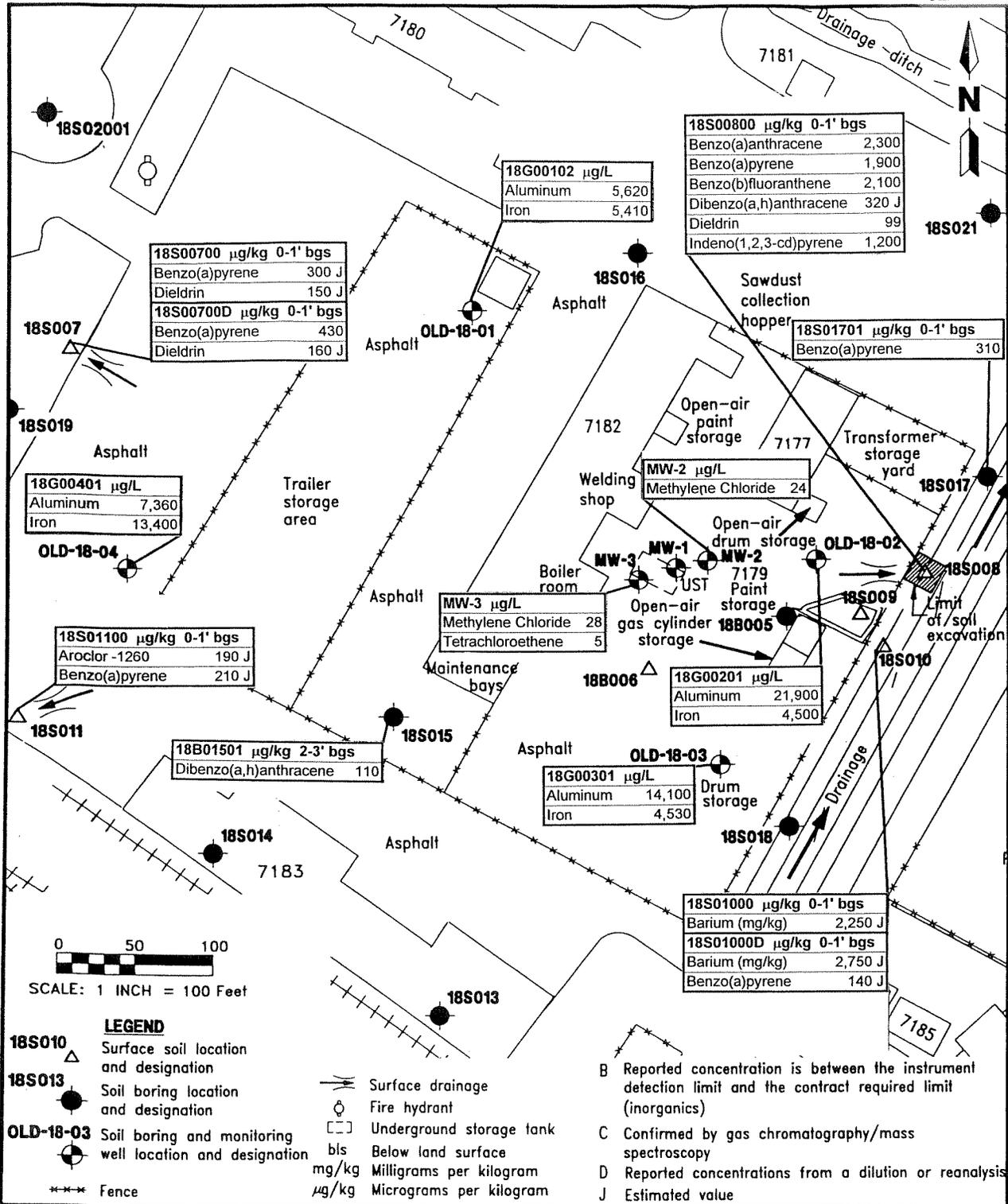


FIGURE 3-1
EXCEEDANCES OF SCREENING CRITERIA
IN SOIL AND GROUNDWATER
STUDY AREA 18
(Source: HLA, 1999)



BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING
REPORT, STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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3.1.2 Subsurface Soil

Chemicals detected in subsurface soil samples include VOCs and inorganics. The detections of 2-butanone, acetone, and methylene chloride observed in May 1995 are interpreted to be artifacts of the sampling and/or laboratory analytical process. Inorganic detections include aluminum, arsenic, barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, vanadium, and zinc. All inorganic detections in subsurface soil were below their respective residential SCGs (or corresponding BGSVs) and RBCs.

3.1.3 Groundwater

Organics detected in groundwater in May 1995 and June 1996 included xylene, acenaphthene, bis(2-ethylhexyl)phthalate, and naphthalene. No organic compounds were detected at concentrations exceeding their MCLs.

All groundwater samples contained concentrations of aluminum and iron that exceeded the Florida MCLs and BGSVs (ABB-ES, 1995a). The concentrations of lead, manganese, thallium, and vanadium also exceeded the Florida MCLs or Guidance Concentrations (FDEP, 1994) in well OLD-18-01, but these results appear to be related to the high suspended solids (106 µg/L) present in the sample. Because of these exceedances, well OLD-18-01 was resampled in June 1996. The results indicated that the lead and thallium concentrations were below detection limits. The vanadium concentration decreased from 211 to 19.8 µg/L, versus the Florida Guidance Concentration of 49 µg/L for vanadium. Aluminum and iron concentrations also decreased to less than 25 percent of their initial values, although they still exceeded their respective BGSVs.

Water table elevations were collected periodically between September 1995 and June 2001 (Table 3-1). The measurements indicate a relatively flat water table. Figure 3-2 shows the April 2001 potentiometric contour map.

3.1.4 Supplemental Soil Sampling for PAHs

As stated in Section 2.0, ABB-ES collected samples from nine additional locations (designated 18S013/18B013 through 18S021/18B021) in November 1997 to provide more information on the distribution of PAHs detected in the initial screening samples. The additional samples were collected from locations intended to augment the existing database to include approximately five well-distributed samples per acre, including previous sample locations.

TABLE 3-1
GROUNDWATER ELEVATIONS
STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

PAGE 1 OF 2

Date			5/30/95		6/17/96		7/13/98		8/5/98	
	Screened Interval (BGS)	TOC Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-18-01	2.5 - 12.5	89.90	6.01	83.89	4.64	85.26	NM	-	NM	-
OLD-18-02	2.5 - 12.5	89.68	NM	-	NM	-	NM	-	NM	-
OLD-18-03	2.5 - 12.5	90.31	NM	-	NM	-	NM	-	NM	-
OLD-18-04	2.5 - 12.5	89.22	4.11	85.11	NM	-	NM	-	NM	-
OLD-18-05	3 - 13	90.23	not installed		not installed		not installed		not installed	
OLD-18-06	5.5 - 20.5	88.94	not installed		not installed		not installed		not installed	
MW-1	2 - 12	95.02*	not installed		not installed		4.43	90.59*	4.36	90.66*
MW-2	2 - 12	94.81*	not installed		not installed		4.26	90.55*	4.20	90.61*
MW-3	2 - 12	95.38*	not installed		not installed		4.77	90.61*	4.70	90.68*

TABLE 3-1
GROUNDWATER ELEVATIONS
STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

PAGE 2 OF 2

Date			05/25/99		10/25/00		4/27/2001		6/8/2001	
	Well	Screened Interval (BGS)	TOC Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)
OLD-18-01	2.5 - 12.5	89.90	5.24	85.55	4.85	85.05	5.10	84.80	NM	-
OLD-18-02	2.5 - 12.5	89.68	5.15	85.44	4.50	85.18	5.08	84.60	NM	-
OLD-18-03	2.5 - 12.5	90.31	6.22	85.02	5.44	84.87	6.03	84.28	NM	-
OLD-18-04	2.5 - 12.5	89.22	4.50	85.61	3.81	85.41	4.01	85.21	NM	-
OLD-18-05	3 - 13	90.23	not installed		not installed		5.15	85.08	4.18	86.05
OLD-18-06	5.5 - 20.5	88.94	not installed		not installed		3.71	85.23	2.65	86.29
MW-1	2 - 12	95.02*	5.65	89.37*	NM	-	NM	-	NM	-
MW-2	2 - 12	94.81*	5.30	89.51*	NM	-	NM	-	NM	-
MW-3	2 - 12	95.38*	5.09	90.29*	NM	-	NM	-	NM	-

Notes:

All measurements are in units of feet.

AMSL - Above mean sea level

BGS - Below ground surface

BTOC - Below top of casing

NM - Not measured

TOC - Top of casing

All wells are Type II wells, 2 inches in diameter.

*Top of Casing relative to an arbitrary datum. Not comparable to the elevations for the other monitoring wells.

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

LEGEND

MONITORING WELL 

GROUNDWATER ELEVATION¹  84.8

POTENTIOMETRIC SURFACE ISOCON¹
(DASHED WHERE APPROX.) 

GROUNDWATER FLOW
DIRECTION (APPROX.) 

1- ELEVATION IN FEET ABOVE MEAN SEA LEVEL

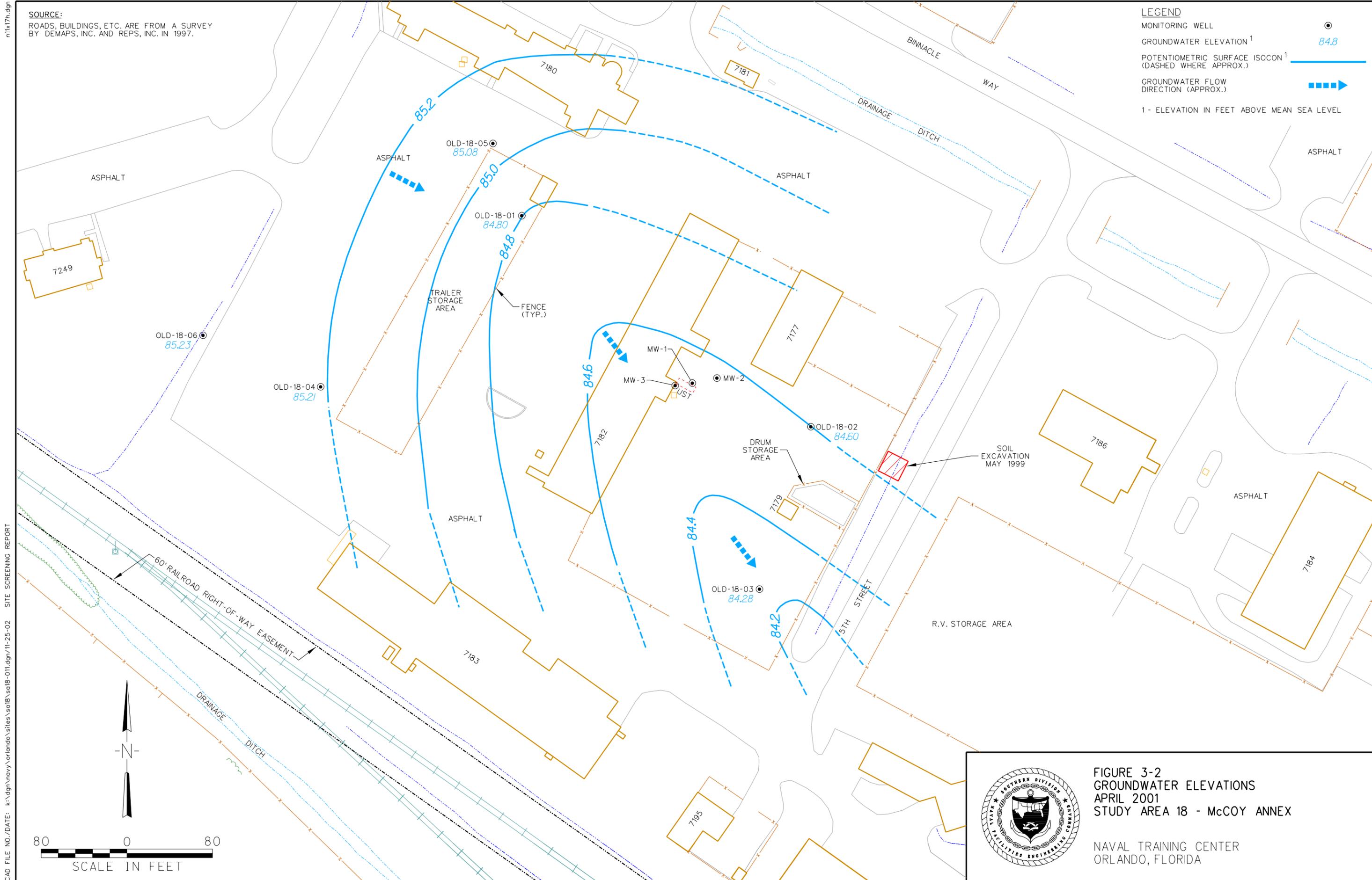


FIGURE 3-2
GROUNDWATER ELEVATIONS
APRIL 2001
STUDY AREA 18 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

At least one PAH was detected in either the surface or subsurface soil sample at eight of the nine locations (no PAHs were detected at location 18S021/18B021). No PAHs were detected in the surface soil sample at 18S015 or the subsurface soil sample at 18B020. Only two samples contained compounds at concentrations exceeding Florida residential SCTLs (FDEP, 1998). Dibenzo(*a,h*)anthracene was detected in sample 18B1501 at a concentration of 110 µg/kg, slightly exceeding the residential SCTL of 100 µg/kg. Benzo(*a*)pyrene was detected in sample 18S01701 at a concentration of 310 µg/kg, exceeding the residential SCTL of 100 µg/kg.

Exceedances of SCTLs and GCTLs (FDEP, 1999) and BGSVs (ABB-ES, 1995a) are shaded in the tables of analytical results in Appendix B and are displayed in chem-boxes near their respective sampling locations in Figure 3-1.

3.2 REMOVAL OF UST NEAR BUILDING 7182

A temporary well was installed and sampled after the Navy Public Works Center removed the 1,000-gallon UST from the vicinity of Building 7182. Laboratory analytical results indicated the presence of TCE at a concentration of 5 micrograms per liter (µg/L) compared with the Florida MCL of 3 µg/L. No petroleum hydrocarbon contaminants were detected at levels that exceeded Florida cleanup target levels as defined in Chapter 62.770, F.A.C. The Closure Assessment Report (Navy Public Works Center, 1997) recommended an additional investigation to evaluate the finding. HLA subsequently installed three shallow monitoring wells (MW-1, MW-2, and MW-3; see Figure 3-2) in July 1998 to assess the lateral extent of contaminants in groundwater. The wells were sampled in August 1998, and methylene chloride and tetrachloroethene (PCE) were detected at concentrations exceeding Florida GCTLs. HLA presented a summary of the analytical data in the Site Assessment Report (Appendix C). The Site Assessment Report includes a copy of the Closure Assessment Report that the Navy Public Works Center prepared following the UST removal.

3.3 RESAMPLING OF MONITORING WELLS, MAY 1999

Chlorinated Hydrocarbons

Trace levels of chlorinated hydrocarbons were detected in two of the three monitoring wells installed in the vicinity of the former UST (MW-2 and MW-3). The sample from well MW-2 contained cis-1,2-dichloroethene (DCE), PCE, and TCE. The sample from MW-3 contained TCE. All detections were below Florida GCTLs. Analytical results are presented in Appendix B, Table B-8.

TAL Metals

The results of resampling the four monitoring wells installed during the initial site screening (OLD-18-01 through OLD-18-04) confirmed that the lead, manganese, thallium, and vanadium detected in well OLD-18-01 in May 1995 were either below detection limits (thallium) or below the GCTLs (lead, manganese, and vanadium). Iron was detected at concentrations exceeding the GCTL and BGSV in all four wells. Aluminum exceeded its GCTL and BGSV in two of the wells.

3.4 ADDITIONAL SITE SCREENING INVESTIGATION (TtNUS)

3.4.1 Groundwater Sampling, October 2000

Table B-9 in Appendix B presents the analytical data from wells OLD-18-01, OLD-18-02, OLD-18-03, and OLD-18-04. The results confirmed previous analyses that revealed concentrations of aluminum and iron exceeding Florida secondary standards and BGSVs. The OPT decided to install two background wells to determine if background levels are elevated at this site.

3.4.2 Installation of Background Wells

TtNUS installed background wells OLD-18-05 and OLD-18-06 in late April 2001. Appendix A includes a copy of the surveyor's report. The TtNUS geologist collected soil samples from depths of 0.5 foot and 5.0 feet in each boring and submitted the samples for VOC and TAL inorganics analyses to confirm that the proposed background locations had not been impacted by site activities. Table B-10 presents the analytical data. Acetone was detected in three of the four samples (maximum concentration 18 J µg/kg), 2-butanone was detected in one sample (5 J µg/kg), and methylene chloride was detected in one well boring (4 J µg/kg). No detections exceeded Florida SCTLs.

3.4.3 Sampling Background Wells

TtNUS collected groundwater samples from the background wells on June 8, 2001, and submitted the samples for TAL inorganics analyses. The samplers collected filtered and unfiltered samples because of high turbidity observed in a previous sampling attempt. Table B-11 presents the analytical results. In the unfiltered sample from well OLD-18-05, the concentrations of aluminum, iron, lead, and vanadium exceeded GCTLs, but only the concentration of iron in the filtered sample exceeded its GCTL. Iron and manganese concentrations in both the filtered and unfiltered samples from well OLD-18-06 exceeded GCTLs. The variability seen in the unfiltered and filtered data sets suggests that sample turbidity may contribute to elevated concentrations for some inorganic analytes. The site-wide observation of elevated

concentrations, including those observed in background wells, suggests that the concentrations are naturally occurring.

The highest concentrations were observed in well OLD-18-05, where the unfiltered aluminum concentration was 23,400 µg/L and the unfiltered iron concentration was 8,380 µg/L. The lead concentration in that sample was 21.5 µg/L compared to the GCTL of 15 µg/L. No lead was detected in the filtered sample. Figure 3-3 shows all groundwater exceedances observed during screening activities.

3.4.4 Additional Soil Sampling

Analysis of the 30 surface soil samples that TtNUS collected in August 2001 defined a pattern of contamination around each of the four locations of interest. Table B-12 presents the analytical results and SCTL exceedances. Figure 3-4 shows the pattern of detections at each location and Figure 3-5 shows the distribution of concentrations exceeding SCTLs. Concentrations of contaminants exceeding SCTLs generally lie near sampling points from the initial screening activities or downgradient from those points along storm water drainage paths. Samples with concentrations below residential SCTLs bound each area; therefore, the limits of contamination have been determined.

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

LEGEND

MONITORING WELL

ASTERISK INDICATES WELL SAMPLED

WELL ID

SCREEN INTERVAL

ANALYTE

ANALYTE 1,2 CONCENTRATION

SAMPLE COLLECTION DATE

DUPLICATE SAMPLE

WELL ID	OLD-18-04			
SCREEN INTERVAL	(2.5 TO 12.5')	5/18/95	5/26/99	10/25/00
ANALYTE	Aluminum	7360	4840/5270	4360
	Iron	13400	10500/6320	10000

INDICATES CONCENTRATION IS BETWEEN INSTRUMENT DETECTION LIMIT AND THE CONTRACT-REQUIRED DETECTION LIMIT **B**

ESTIMATED VALUE **J**

1-GROUNDWATER CONCENTRATIONS IN MICROGRAMS PER LITER ($\mu\text{g/L}$)

2-BOLD CONCENTRATION INDICATES EXCEEDANCE

NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT EXCEEDANCES.

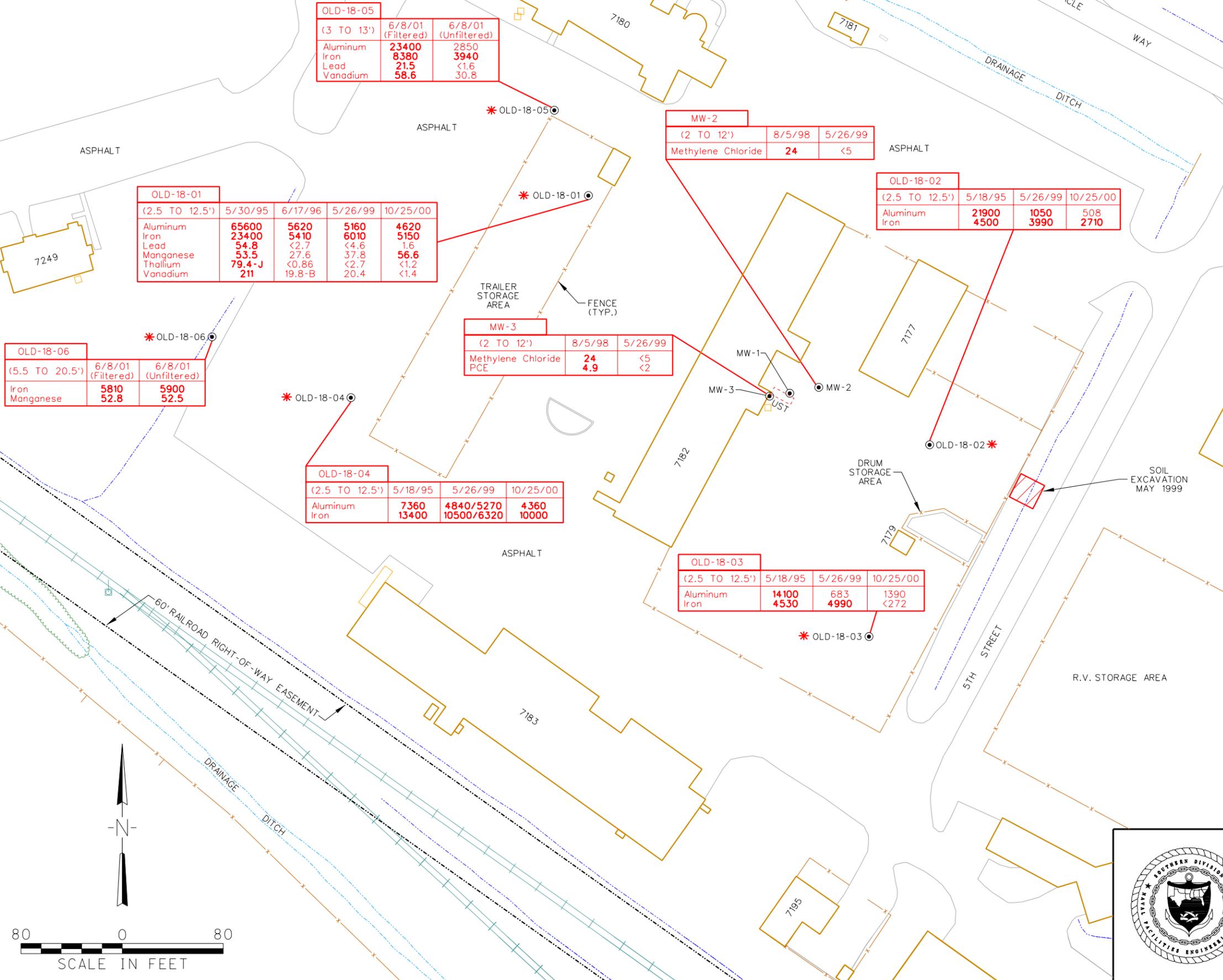
SCREENING CRITERIA

ANALYTE	GCTL ¹	BGSV ¹
Aluminum	200	4067
Iron	300	1227
Lead	15	4
Manganese	50	17
Methylene Chloride	5	-
Thallium	2	3.8
Vanadium	49	20.6
PCE	3	-

GCTL=FLORIDA GROUNDWATER CLEANUP TARGET LEVEL (FDEP,1999)

BGSV=BACKGROUND SCREENING VALUE

PCE=TETRACHLOROETHENE



OLD-18-05				
(3 TO 13')	6/8/01 (Filtered)	6/8/01 (Unfiltered)		
Aluminum	23400	2850		
Iron	8380	3940		
Lead	21.5	<1.6		
Vanadium	58.6	30.8		

MW-2			
(2 TO 12')	8/5/98	5/26/99	
Methylene Chloride	24	<5	

OLD-18-02			
(2.5 TO 12.5')	5/18/95	5/26/99	10/25/00
Aluminum	21900	1050	508
Iron	4500	3990	2710

OLD-18-01				
(2.5 TO 12.5')	5/30/95	6/17/96	5/26/99	10/25/00
Aluminum	65600	5620	5160	4620
Iron	23400	5410	6010	5150
Lead	54.8	<2.7	<4.6	1.6
Manganese	53.5	27.6	37.8	56.6
Thallium	79.4-J	<0.86	<2.7	<1.2
Vanadium	211	19.8-B	20.4	<1.4

MW-3			
(2 TO 12')	8/5/98	5/26/99	
Methylene Chloride	24	<5	
PCE	4.9	<2	

OLD-18-06		
(5.5 TO 20.5')	6/8/01 (Filtered)	6/8/01 (Unfiltered)
Iron	5810	5900
Manganese	52.8	52.5

OLD-18-04			
(2.5 TO 12.5')	5/18/95	5/26/99	10/25/00
Aluminum	7360	4840/5270	4360
Iron	13400	10500/6320	10000

OLD-18-03			
(2.5 TO 12.5')	5/18/95	5/26/99	10/25/00
Aluminum	14100	683	1390
Iron	4530	4990	<272

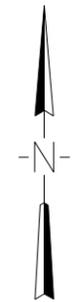


FIGURE 3-3
GROUNDWATER EXCEEDANCES
OCTOBER 2000
STUDY AREA 18 - MCCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

LEGEND

- MONITORING WELL 
- SURFACE SOIL SAMPLE
NO PARAMETERS
> RESIDENTIAL SCTL 
- SURFACE SOIL SAMPLE
AT LEAST 1 PARAMETER
> RESIDENTIAL SCTL 

NOTES:

- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) EXCAVATION DEPTH APPROXIMATELY 2 FEET; REPLACE WITH CLEAN SOIL.

LOCATION COORDINATES		
LOCATION	EASTING	NORTHING
A	546089	1491349
B	546117	1491405
C	546133	1491394
D	546108	1491340
E	546154	1491566
F	546193	1491633
G	546168	1491558
H	546713	1491291
I	546750	1491362
J	546767	1491353
K	546731	1491281
L	546796	1491453
M	546863	1491579
N	546880	1491570
O	546814	1491444

ROUNDED TO NEAREST FOOT

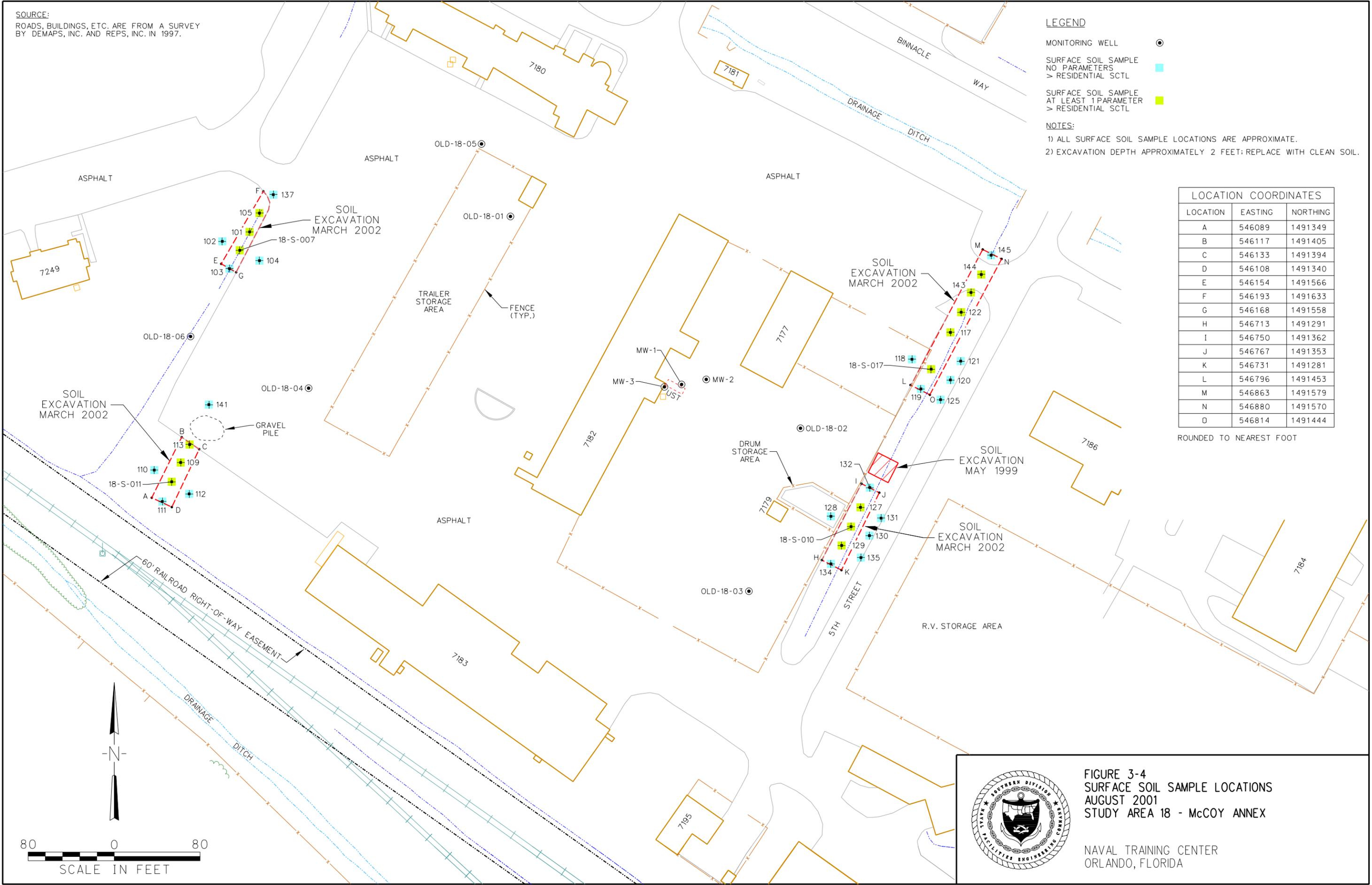


FIGURE 3-4
SURFACE SOIL SAMPLE LOCATIONS
AUGUST 2001
STUDY AREA 18 - MCCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

LEGEND

MONITORING WELL 
SURFACE SOIL SAMPLE 

SAMPLE ID  SAMPLE COLLECTION DATE 

ANALYTE  DUPLICATE SAMPLE ANALYTE CONCENTRATION 
ANALYTE CONCENTRATION 

ESTIMATED CONCENTRATION 

a-PAH CONCENTRATIONS IN MICROGRAMS PER KILOGRAM ($\mu\text{g}/\text{kg}$)
b-BARIUM CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)
c-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	SCTL ^{a,b}
BARIUM	110
BENZO(A)ANTHRACENE	1400
BENZO(A)PYRENE	100
BENZO(B)FLUORANTHENE	1400
DIBENZO(A,H)ANTHRACENE	100
INDENO(1,2,3-CD)PYRENE	1500

SCTL-FLORIDA SOIL CLEANUP TARGET LEVEL (FDEP, 1999)

NOTES:

1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

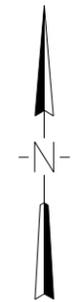
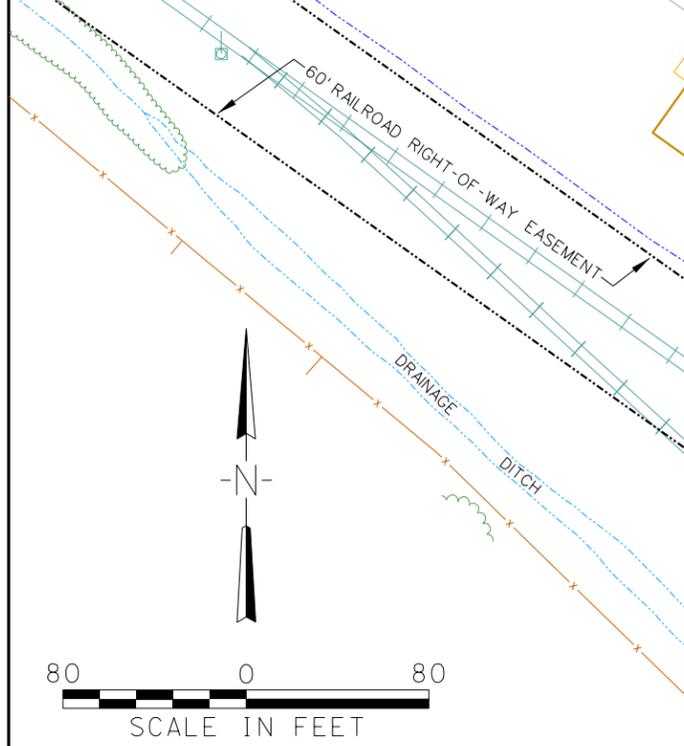
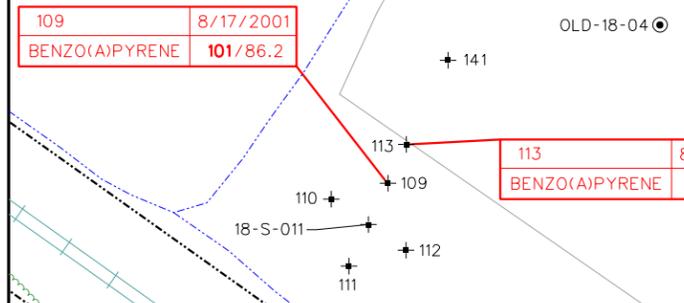
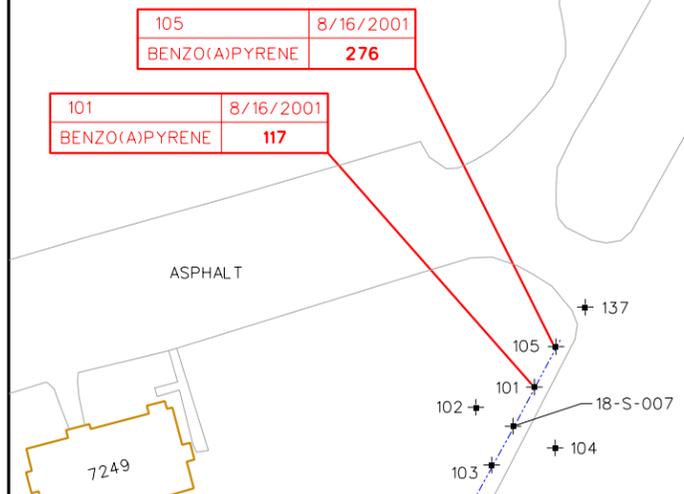


FIGURE 3-5
SURFACE SOIL EXCEEDANCES
AUGUST 2001
STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

4.0 INTERIM REMEDIAL ACTIONS

4.1 UNDERGROUND STORAGE TANK REMOVAL

In January 1997, the 1,000-gallon UST that stored heating fuel at Building 7182 was removed by the Navy Public Works Center, Pensacola. Approximately 3 cubic yards of petroleum-impacted soil were also excavated during the tank removal.

4.2 SOIL REMOVALS

4.2.1 Surface Soil

Two surface soil removals were performed at SA 18. In May 1999, the DET excavated approximately 30 cubic yards of soil contaminated with PAHs and dieldrin from a 20- x 20-foot area along the eastern side of the site (DET, 1999). The DET report is provided in Appendix D. In March 2002, CCI excavated approximately 502 cubic yards of soil from four other locations with PAH, dieldrin, or barium exceedances (CCI, 2002) (see Figure 3-4). The CCI Soil Removal Report is provided in Appendix E. As a result of the removals, all surface soil contamination in excess of residential criteria was remediated.

4.2.2 Subsurface Soil

Only one subsurface soil sample contained a contaminant exceeding its residential SCTL (FDEP, 1998 and FDEP, 1999). Dibenzo(*a,h*)anthracene was detected in sample 18B501 at a concentration of 110 µg/kg, slightly exceeding the SCTL of 100 µg/kg. This sample was collected in the southwest part of the site at a depth of 2 to 3 feet bgs under the asphalt lot surrounding the buildings.

Although only nine subsurface samples were collected during this part of the investigation, the results were analyzed using the 95% upper confidence limit (UCL) approach. ProUCL was used to evaluate the data. The analysis indicated that the data were neither normally nor log-normally distributed. Therefore, the non-parametric analysis was used. The Chebyshev method indicated an average concentration of 66.9 µg/kg, which is below the SCTL of 100 µg/kg. This analysis shows that the subsurface soil is protective of human health and the environment for unrestricted use of the property. Therefore, no subsurface soil removal was performed. A printout of the analysis is included in Appendix F.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

5.1.1 Soil Contamination

The extent of contamination in surface soil that exceeded residential screening criteria in the Study Area was delineated during the Site Screening Investigation. Organic contaminants with residential SCTL exceedances consisted of the pesticide dieldrin and various PAHs. Barium was also detected at one sample location above the established BGSV and the residential SCTL.

As a result of soil removals conducted at SA 18, risks have reduced at the site so as to be protective of human health and the environment for future unrestricted use of the property.

5.1.2 Groundwater Contamination

Chlorinated Solvents: Following removal of the UST, the chlorinated solvents TCE, methylene chloride, and PCE were detected at concentrations exceeding Florida GCTLs. No petroleum contaminants exceeding Florida GCTLs were detected.

Because of the presence of the chlorinated solvents, TtNUS resampled monitoring wells at SA 18 in May 1999. Two of the three monitoring wells sampled had trace-level detections of chlorinated hydrocarbons, at concentrations well below the State GCTLs.

Secondary Standards: Aluminum and iron in groundwater were detected at concentrations exceeding Florida GCTLs (based on secondary standards) and BGSVs for the NTC (ABB-ES, 1995). Because the concentrations of aluminum in groundwater fell within the range of background values detected at NTC, aluminum was removed as a chemical of potential concern. Samples collected from upgradient SA 18 background wells in June 2001 indicated that iron concentrations were higher or in the same range as concentrations observed in wells being used to assess the site. As a result of conducting the background assessment of iron in groundwater, the OPT concluded that the elevated concentrations detected in groundwater were naturally occurring and not due to past site activities.

5.2 RECOMMENDATIONS

Based upon the findings in this report, the OPT concluded that SA 18 is suitable for future residential use without restrictions. Because the groundwater under SA 18 contains aluminum and iron at concentrations

exceeding the State of Florida's GCTLs (based on secondary standards), it is recommended that future property owners be advised that the shallow aquifer may not be suitable as a potable drinking water source. The Base Realignment and Closure Color Code for SA 18 should be changed to "dark green" to signify "an area where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

5.3 OPT CONCURRENCE

The undersigned members of the Orlando Partnering Team concur with the findings and recommendations presented in this investigation report.

STUDY AREA 18	
_____ U.S. Environmental Protection Agency, Region 4	_____ Date
_____ Florida Department of Environmental Protection	_____ Date
_____ U.S. Department of the Navy	_____ Date

REFERENCES

- ABB-ES (ABB Environmental Services, Inc.), 1994. *Base Realignment and Closure Environmental Baseline Survey Report*, Unit Identification Code: N65928, Contract No. N62467-89-D-0317, December.
- ABB-ES, 1995a. *Background Sampling Report*, Naval Training Center, Orlando, Florida. Unit Identification Code: N65928, Contract No. N62467-89-D-0317/107, August.
- ABB-ES, 1995b. *Site Screening Report (Draft), Group III, Naval Training Center, Orlando, Florida*. Unit Identification Code: N65928, Contract No. N62467-89-D-0317/107, December.
- ABB-ES, 1997a. *Project Operations Plan for Site Investigations and Remedial Investigations, Volumes I and II, Naval Training Center, Orlando, Florida*. Unit Identification Code: N65928, Contract No. N62467-89-D-0317/107, August.
- ABB-ES, 1997b. Letter from John P. Kaiser, ABB-ES, to Wayne Hansel, Southern Division. Subject: "Approach for Evaluation of Study Areas with PAH Contamination Greater than Screening Criteria, Study Areas 16, 17, 18, 21, 23, 26 (Background Surface Soil Samples), 27, 39, and 40," March 13.
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FDEP, 1999. *Technical Report: Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C. CEHT/TR-99-01*, May 26.

HLA (Harding Lawson Associates, Inc.), 1998. *Site Assessment Report, Building 7182, McCoy Annex, Naval Training Center, Orlando, Florida*. Unit Identification Code: N65928, Contract No. N62467-89-D-0317/137, October.

HLA, 1999. *Base Realignment and Closure Environmental Site Screening Report, Study Area 18, Naval Training Center, Orlando, Florida (Final Draft)*. Unit Identification Code: N65928, Contract No. N62467-89-D-0317/107, August.

Navy Public Works Center, 1997. *Closure Assessment, Underground Storage Tank Building 7182*, May.

TtNUS (Tetra Tech NUS, Inc.), 1999. *Groundwater Monitoring Report for Study Area 18*, September 22.

USDA (U.S. Department of Agriculture), 1989. *Soil Survey of Orange County, Florida*, August.

USEPA (U.S. Environmental Protection Agency), 1980, with updates. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, Publication SW-846.

USEPA, 1996. *Risk Based Concentration Table*, USEPA Region III, May.

APPENDIX A

SOIL BORING LOGS
MONITORING WELL CONSTRUCTION DIAGRAMS
OTHER FIELD FORMS
SURVEYOR'S REPORT

TITLE: NTC, ORLANDO BUILDING 7182		LOG of WELL: MW-1	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGC0M		PROJECT NO: 2547-15	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-298	COMPLTD: 7-2-98
METHOD: 4.25 INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2-12 FEET	PROTECTION LEVEL: 0
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO 345 FEET.
LOGGED BY: S. OONELICK	WELL DEVELOPMENT DATE: 7-2-98	SITE: BUILDING 7182	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			<1	0-4' (POSTHOLE) SAND, fine grained, brown to black, moist, no odor.		SP		
5			<1	4'-12' (cuttings) SAND, fine grained tan to brown, no odor, wet at approximately 4.5' BLS.		SP		
10								
15								
20								

WELL COMPLETION LOG

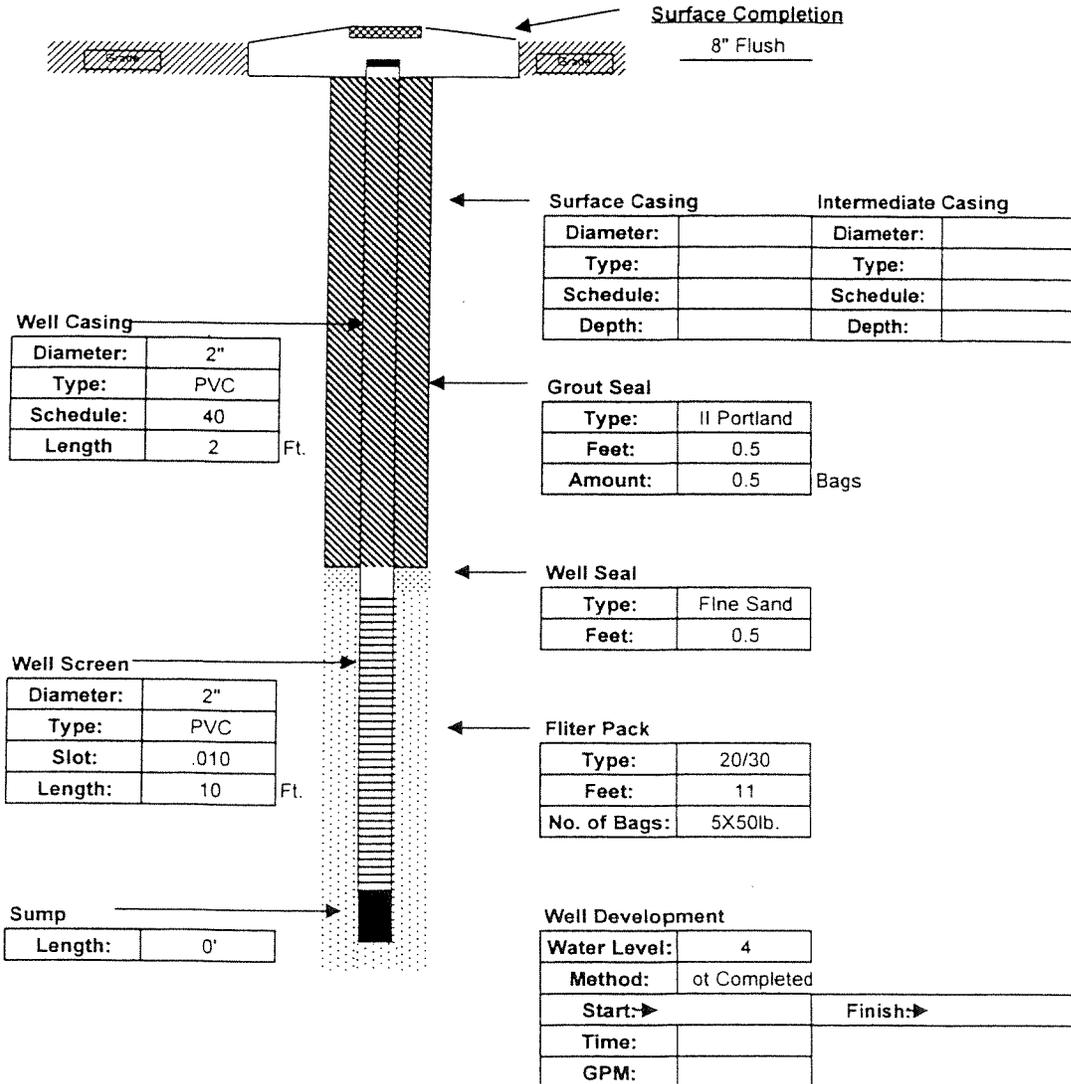
Water Mgmt. Dist.: St. Johns
 Permit Number: _____

Site Information:
 Name: NTC
 Address: McCoy Annex
 C.S.Z: Orlando, Florida
 S/T/R: _____

Work Order: 6424
 Type of Well: Monitoring
 Well Number: 7182 MW-1
 Method Used: 4.25" HSA
 Borehole Dia: 6"

Client / Consultant Information
 Consultant: Harding Lawson Associates
 Field Rep: Scott Donelick

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	0.5	5X50lb.	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		0.5	← Feet →	11	0.5



Contractor Information

Contractor #	6424
Completion:	07/02/98
Driller:	Jeff Ziegler
Lead Hand:	Otis Johnson
3rd Man:	Robbie
Drill Rig:	B-59

Company:	Groundwater Protection, Inc.
Address:	4315 S.W. 34th Street
C,S,Z:	Orlando, Florida 32811
Phone/FAX:	(407) 426-7885 / (407) 426-7586

TITLE: NTC, ORLANDO BUILDING 7182		LOG of WELL: MW-1	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENCOM			PROJECT NO: 2547-15
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-298	COMPLTD: 7-2-98
METHOD: 4.25 INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2-12 FEET	PROTECTION LEVEL: 0
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO 3/45 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-2-98		SITE: BUILDING 7182

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			<1	0-4' (POSTHOLE) SAND, fine grained, brown to black, moist, no odor.		SP		
5			<1	4'-12' (cuttings) SAND, fine grained tan to brown, no odor, wet at approximately 4.5' BLS.		SP		
10								
15								
20								

WELL COMPLETION LOG

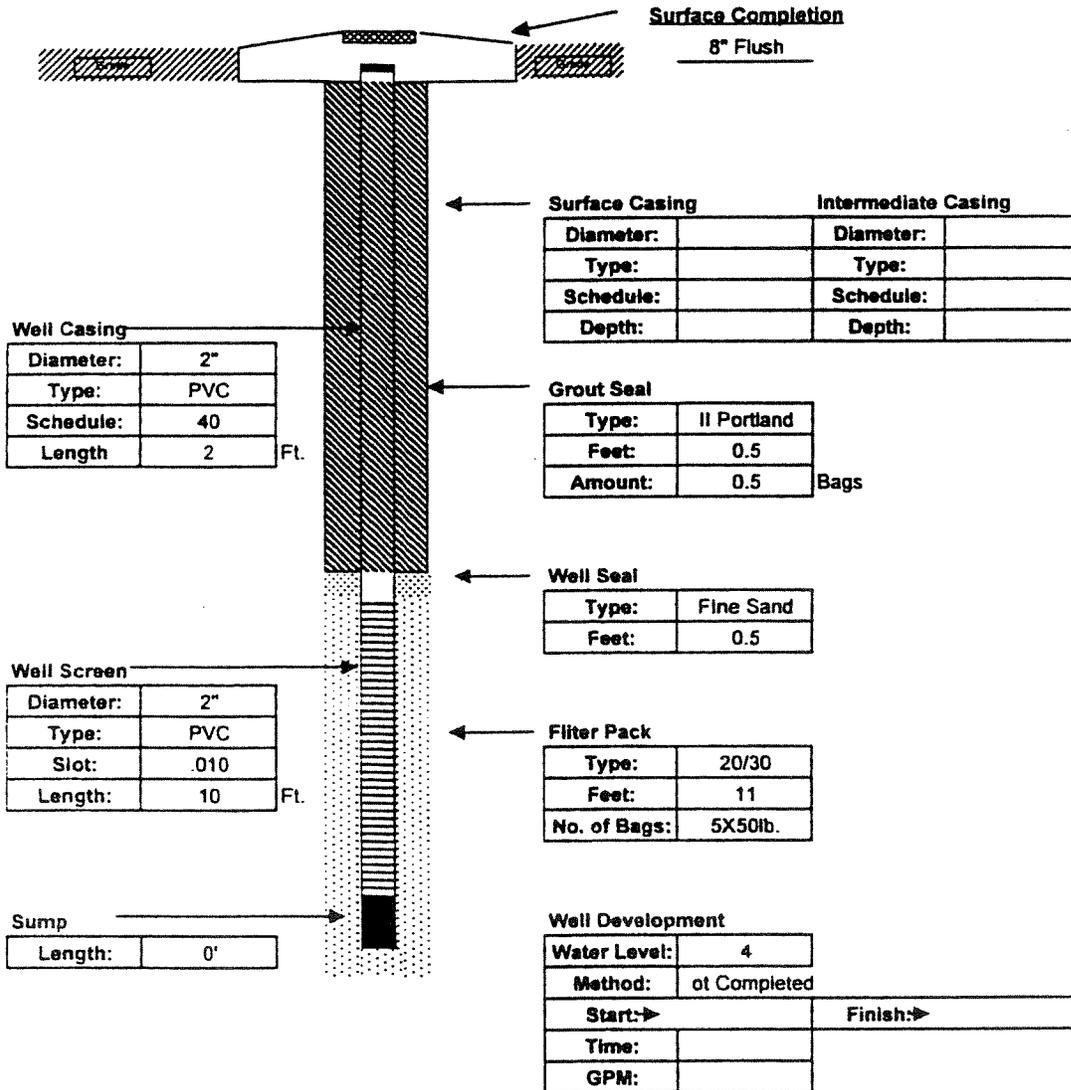
Water Mgmt. Dist.: St. Johns
 Permit Number: _____

Work Order: 6424
 Type of Well: Monitoring
 Well Number: 7182 MW-1
 Method Used: 4.25" HSA
 Borehole Dia. 6"

Site Information:
 Name: NTC
 Address: McCoy Annex
 C.S.Z.: Orlando, Florida
 S/T/R: _____

Client / Consultant Information
 Consultant: Harding Lawson Associates
 Field Rep: Scott Donelick

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	0.5	5X50lb.	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		0.5	← Feet →	11	0.5



Contractor Information

Contractor #	6424
Completion:	07/02/98
Driller:	Jeff Ziegler
Lead Hand:	Otis Johnson
3rd Man:	Robbie
Drill Rig:	B-59

Company:	Groundwater Protection, Inc.
Address:	4315 S.W. 34th Street
C.S.Z.:	Orlando, Florida 32811
Phone/FAX:	(407) 426-7885 / (407) 426-7586

TITLE: NTC, ORLANDO BUILDING 7182		LOG of WELL: MW-3	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 2547-15	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-2-98	COMPLTD: 7-2-98
THOD: 4.25 INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2-1/2 FEET	PROTECTION LEVEL: 0
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT OPTH.: 12 FEET.	DPH TO 1/4 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-2-98		SITE: BUILDING 7182

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			<1	0-4' (POSTHOLE) SAND, fine grained, medium to dark brown, no odor, moist.		SP		
5			<1	4'-12' (CUTTINGS) SAND, fine grained, tan to brown, no odor, wet at 4.5' BLS.		SP		
10								
15								
20								

WELL COMPLETION LOG

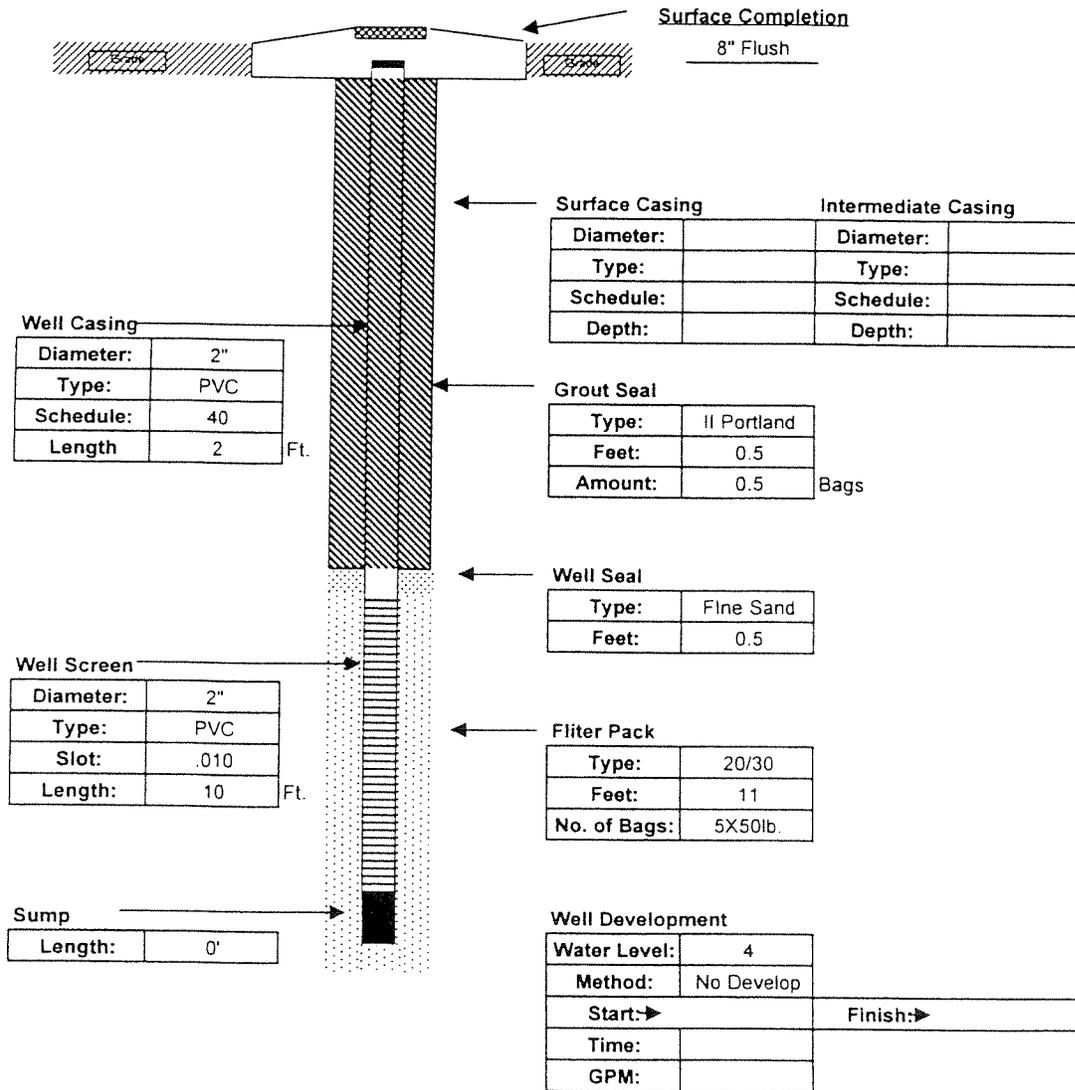
Water Mgmt. Dist.: St. Johns
 Permit Number: _____

Site Information:
 Name: NTC
 Address: McCoy Annex
 C.S.Z: Orlando, Florida
 S/T/R: _____

Work Order: 6424
 Type of Well: Monitoring
 Well Number: 7182 MW-3
 Method Used: 4.25" HSA
 Borehole Dia. 6"

Client / Consultant Information
 Consultant: Harding Lawson Associates
 Field Rep: Scott Donelick

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	0.5	5X50lb.	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		0.5	← Feet →	11	0.5



Contractor Information

Contractor #	6424
Completion:	07/02/98
Driller:	Jeff Ziegler
Lead Hand:	Otis Johnson
3rd Man:	Robbie
Drill Rig:	B-59

Company:	Groundwater Protection, Inc.
Address:	4315 S.W. 34th Street
C,S,Z:	Orlando, Florida 32811
Phone/FAX:	(407) 426-7885 / (407) 426-7586

Project: BRAC NTC, Group III Site Screening		Well ID: S.A. 18		Boring ID: OLD-18-01	
Client: SOUTHDIVNAVFACENCOM		Contractor: GEOTEK		Job No.: CTO-107	
Northing:		Easting:		Date started: 05/12/95	
Method: Hollow stem auger		Casing dia.: 6.25"		Screened int.: 10 ft.	
TOC elev.: Fl.		Type of OVM: Porta FID		Protection level: 0	
ABB Rep.: M. Hawes		Well development date: PVC		Dpth to √ 7 Ft.	
				Site:	

Depth Ft.	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				Asphalt				
				QUARTZ SAND: Dark brown, silty, fine, trace organics		SM		
5	18B00101 (5-7')	80%	900				5,5	
				QUARTZ SAND: Light brown, silty, fine, good sorting			9,20	
		75%	20				18,25	
		80%	30				30,30	
10		80%	50				7,9	
							10,11	
		80%	50				5,12	
							15,14	
		90%	140				10,8	
							6,5	
15								

OLD-18-01

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING Point of Interest: S.A. 18
 Project Number: CTO 107 Date: 5/30/95
 Sample Location ID: 18600101
 Time: Start: 13:05 End: 15:19 Signature of Sampler: HAWES

Water Level/Well Data

Well Depth 12.90 Ft. Measured Historical
 Top of Well Top of Protective Casing
 Well Riser Stick-up 0. Ft. (from ground) Protective 0. Ft. Casing/Well Difference
 Protective 0 Ft. Casing
 Depth to Water 6.0 Ft. Well Material: PVC SS
 Well Locked?: Yes No
 Well Dia. 2 inch 4 inch 6 inch
 Water Level Equip. Used: Elect. Cond. Probe Float Activated Press. Transducer
 Height of Water Column x 6.39 Ft. 18 Gal/Ft. (2 in) 25 Gal/Ft. (4 in) 1.5 Gal/Ft. (6 in) .55 Gal/Ft. (1 in)
3.5 Gal/Vol
5.0 Total Gal Purged
 Well Integrity: Yes No
 Prot. Casing Secure
 Concrete Collar Intact
 Other
FLOW RATE = 3.5 L/MIN

Equipment Documentation

During Sampling Equipment Used:

(/ if Used For)	Equipment ID
Purging <input checked="" type="checkbox"/> Sampling <input checked="" type="checkbox"/>	<u>889638</u>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input checked="" type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

Decontamination Fluids Used:

- Methanol (100%)
- 25% Methanol/75% ASTM Type II water
- Deionized Water
- Liqueox Solution
- Hexane
- HNO₃/D.I. Water Solution
- Potable Water
- None
- ALCONOX
- ISOPROPYL

Field Analysis Data

Ambient Air VOC 0. ppm Well Mouth > Supp. ppm Field Data Collected In-line In Container

Sample Observations: Turb Clear Cloudy Colored Odor

Purge Data	1 Gal	2 Gal	3 Gal	4 Gal	5 Gal
Temperature, Deg. C	<u>34</u>	<u>34</u>	<u>33</u>	<u>33</u>	<u>33</u>
pH, unns	<u>9.89</u>	<u>8.33</u>	<u>9.39</u>	<u>9.92</u>	<u>9.90</u>
Specific Conductivity (umhos/cm, @ 25 Deg. C)	<u>465.</u>	<u>462.</u>	<u>468.</u>	<u>465.</u>	<u>465</u>
Oxidation-Reduction, mv					
Dissolved Oxygen, ppm					
TURBIDITY	<u>177.2</u>	<u>179.2</u>	<u>179.2</u>	<u>176.9</u>	<u>175.28</u>
TRAP	<u>1320</u>	<u>1336</u>	<u>1353</u>	<u>1465</u>	<u>1472</u>

Sample Collection Requirements
(/ if Required at this Location)

Analytical Parameter	/ if Field Filtered	Preservation Method	Volume Purged	/ if Sample Collected	Sample Bottle IDs
VOA		HCL			/ / / / /
SVOA		ACC			/ / / / /
PosVPCB		40C			/ / / / /
Inorganics		40C			/ / / / /
Explosives		HNO ₃			/ / / / /
TPH		4°C			/ / / / /
TOC		H ₂ SO ₄			/ / / / /
Nitrate		H ₂ SO ₄			/ / / / /
Notes:					
<u>LOW-FLOW PURGE @ 3.5 L/MIN.</u>					
<u>FINAL NTU = 175.8</u>					

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
 Project Number: _____
 Sample Location ID: OLD-18-01
 Time: Start: 1400 End: 1522

Point of Interest: SA18
 Date: 6-17-96
 Signature of Sampler: William D. Oles

Water Level/Well Data

Well Depth: 13.0 ft. Measured Top of Well Top of Protective Casing
 Measured Top of Protective Casing

Well Floor Sit-up: PM ft. (from ground) Protective Casing/Well Difference: NA ft.
 Protective Casing: NA ft.

Depth to Water: 4.64 ft. Well Material: PVC SS Well Lossed?: Yes No
 Well Dia.: 2 in 4 in 6 in Water Level Equip. Used: Sect. Cond. Probe Flux Activated Press. Transducer

Height of Water Column: 8.36 ft. 1.16 Gal./ft. (2 in.) 1.5 Gal./ft. (4 in.) 1.5 Gal./ft. (6 in.) Gal./ft. (in.)
 [1.34 gal/ft. 3.5 Total Gal. Purged] Well Integrity: Yes No
 Pres. Casing Secure Corrosive Casing Inside Other _____

Equipment Documentation

Purging/Sampling Equipment Used:

Decontamination Fluids Used:

<input checked="" type="checkbox"/> Purging	<input checked="" type="checkbox"/> Sampling		Equipment ID
<input type="checkbox"/>	<input type="checkbox"/>	Pneumatic Pump	_____
<input type="checkbox"/>	<input type="checkbox"/>	Submersible Pump	_____
<input type="checkbox"/>	<input type="checkbox"/>	Baker	_____
<input type="checkbox"/>	<input type="checkbox"/>	PVC/Silicon Tubing	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Teflon/Silicon Tubing	_____
<input type="checkbox"/>	<input type="checkbox"/>	Airline	_____
<input type="checkbox"/>	<input type="checkbox"/>	Hand Pump	_____
<input type="checkbox"/>	<input type="checkbox"/>	In-line Filter	_____
<input type="checkbox"/>	<input type="checkbox"/>	Press/Vac Filter	_____

(All That Apply at Location)

- Methanol (100%)
- 25% Methanol/75% ASTM Type II water
- Oxidized Water
- Liquinox Solution
- Mezzos
- HNO₃/DI Water Solution
- Potable Water
- None

Field Analysis Data

Ambient Air VOC: _____ ppm Well Mouth: _____ ppm Field Data Collected: In-line In Container
 Sample Observations: Turbid Clear Oily
 Colored Ooz

Purge Data	Gal.	Gal.	Gal.	Gal.	Gal.
Temperature, Deg. C	<u>30.5</u>	<u>30.5</u>	<u>30.5</u>	<u>31.0</u>	<u>31.5</u>
pH, units	<u>5.18</u>	<u>5.18</u>	<u>5.36</u>	<u>5.40</u>	<u>5.49</u>
Specific Conductivity (unheated @ 25 Deg. C)	<u>425</u>	<u>420</u>	<u>420</u>	<u>418</u>	<u>420</u>
Oxygen - Residual, %	_____	_____	_____	_____	_____
Dissolved Oxygen, ppm NTU	<u>64.8</u>	<u>56.9</u>	<u>53.0</u>	<u>51.7</u>	<u>52.6</u>

Sample Collection Requirements

Analytical Parameter	<input type="checkbox"/> Field Filtered	Preservation Method	Volume Required	<input type="checkbox"/> Samples Collected	Sample Bottle IDs
VOC	<input type="checkbox"/>	HCl	_____	<input type="checkbox"/>	_____
SVOC	<input type="checkbox"/>	AC	_____	<input type="checkbox"/>	_____
PAH/PCB	<input type="checkbox"/>	AC	_____	<input type="checkbox"/>	_____
Inorganics	<input type="checkbox"/>	HNO ₃	_____	<input type="checkbox"/>	_____
Explosives	<input type="checkbox"/>	AC	_____	<input type="checkbox"/>	_____
TPH	<input type="checkbox"/>	H ₂ SO ₄	_____	<input type="checkbox"/>	_____
TOC	<input type="checkbox"/>	H ₂ SO ₄	_____	<input type="checkbox"/>	_____
Metals	<input type="checkbox"/>	H ₂ SO ₄	_____	<input type="checkbox"/>	_____

Notes: _____
 _____ 08G-00102 1x 12 poly w/HNO₃ = TAL 1
 _____ 1x 500 ml poly = TSS
 _____ 08H00102 1x 12 poly w/HNO₃ = TAL me

WELL DEVELOPMENT RECORD

Project: <i>SITE SCREENING S.A. IV HTC ORLANDO</i>		Well Installation Date:		Project No. <i>CT0107</i>	
Client: <i>SOUTH DIUNAU RHC ENG, CORP</i>		Well Development Date: <i>5/23/95</i>		Logged by: <i>CHRISTOPHER HARRIS</i>	
Well/Site I.D.: <i>OLD-13-01</i>		Weather: <i>SCATTERED CLOUDS, LIGHT BREEZE, X 50"</i>		Checked by: <i>GT36</i>	
Volume of Drilling Fluid Lost (gal.)		Volume of Water in Well and Filter Pack (gal.) <i>2.2</i>		Start Date: <i>5/23/95</i>	
Installed Depth From Top of Well Casing to Bottom of Well: <i>13.00</i>		Start Time: <i>10:36</i>		Finish Date: <i>5/23/95</i>	
Initial Depth to Water (ft.) <i>8.94</i>		Initial Depth to Well Bottom: <i>NOT RECORDED</i>			
Water Level during Initial Pumping/Purging (ft): <i>NOT RECORDED</i>					
Water Level at Termination of Pumping/Purging (ft): <i>10.76</i>		Depth to well Bottom at termination of Pumping/Purging (ft.): <i>NOT RECORDED</i>			

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
<i>11:48</i>	<i>26.5</i>	<i>5.58</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>
<i>11:52</i>	<i>26.5</i>	<i>5.46</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>
<i>11:56</i>	<i>26.5</i>	<i>5.40</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>
<i>12:00</i>	<i>26.5</i>	<i>5.46</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>
<i>12:04</i>	<i>26.5</i>	<i>5.36</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>
<i>12:08</i>	<i>26.6</i>	<i>5.32</i>	<i>440.</i>	<i>>200.</i>		<i>.3</i>

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

USED PERISTALTIC PUMP, PUMPED ~ 20g.

Well Developer's Signature

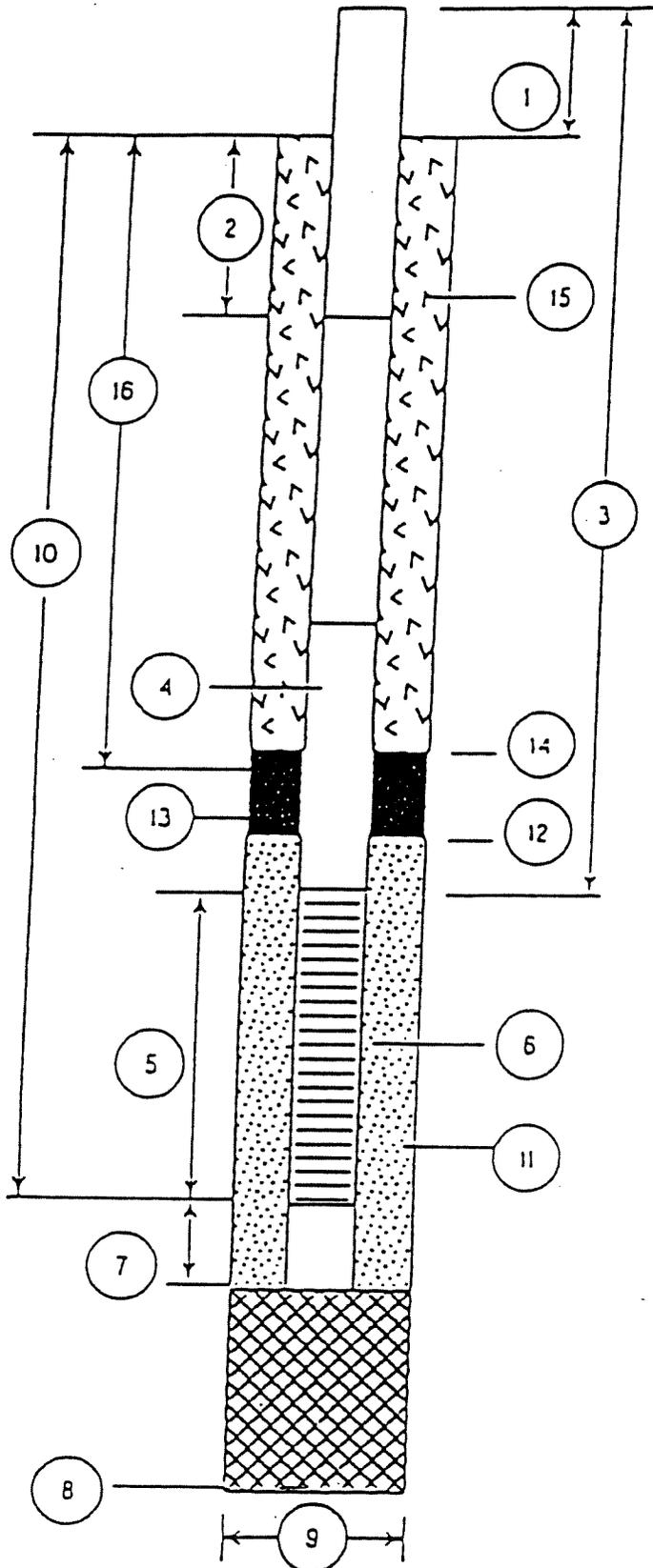
Alan C. Grier

DEPARTMENT OF THE NAVY
 SOUTHERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-18-01

DATE OF INSTALLATION: 5/2/95



1. Height of Casing above ground: 0
2. Depth to first Coupling: 3'
Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" ϕ Schedule 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" ϕ Schedule 40 PVC .010 in Slot
7. Length of Sump: 6"
8. Total Depth of Boring: 14'
9. Diameter of Boring: 6.25"
10. Depth to Bottom of Screen: 12.5"
11. Type of Screen Filter: 20/30 Silica Sand
Quantity Used: 575 lb Size:
12. Depth to Top of Filter: 2'
13. Type of Seat: 3/8" ϕ Baroid Bentonite Pellets
Quantity Used: 20 lb
14. Depth to Top of Seat: 1.5'
15. Type of Grout: Portland Cement
Grout Mixture:
Method of Placement:
16. Tot. Depth of 6 in. Steel Casing: N/A

Project: BRAC NTC, Group III Site Screening		Well ID: S.A. 18	Boring ID: OLD-18-02
Client: SOUTHDIVNAVFACENCOM		Contractor: GEOTEK	Job No.: CTO-107
Northing:	Eastng:	Date started: 05/12/95	Complt'd: 05/12/95
Method: Hollow stem auger	Casing dia.: 6.25"	Screened int.: 10 ft.	Protection level: D
TOC elev.: Ft.	Type of OVM: Porta FID	Total dpth: 14Ft.	Dpth to ∇ 7 Ft.
ABB Rep.: M. Hawes	Well development date: PVC		Site:

Depth Ft.	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				Asphalt				
			0	QUARTZ SAND: Dark brown, silty, fine, trace organics		SM		
			0	QUARTZ SAND: White, fine		SP		
			0	QUARTZ SAND: Brown, silty, fine, good to moderate rounding, trace organics		SM	6,6	
5		90%	0	QUARTZ SAND: Light brown to tan, silty, fine, trace organics			6,7	
	18B00201 (6-8')						10,6	
		85%	0				8,11	
							5,7	
		90%	0				7,8	
10							8,9	
		90%	0				7,8	
				QUARTZ SAND: Dark brown, silty, fine			5,7	
		90%	0				7,9	
15								

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING Point of Interest: S.A. 18
 Project Number: CTO 107 Date: 5/18/95
 Sample Location ID: 18600201
 Time: Start: 07:00 End: _____ Signature of Sampler: GRINTENS/WASH

Water Level/Well Data

Well Depth 12.5 Ft. Measured Historical Top of Well Top of Protective Casing
 Well Riser Stick-up 0 Ft. (from ground) Protective Casing/Well Difference 0 Ft.
 Protective Casing 0 Ft.
 Depth to Water N.R. Ft. Well Material: PVC SS Well Locked?: Yes No Well Dia. 2 inch 4 inch 6 inch
 Water Level Equip. Used: Elect. Cond. Probe Float Activated Press. Transducer
 Height of Water Column X N.R. Ft. 16 Gal/P. (2 in) 25 Gal/P. (4 in) 1.5 Gal/P. (8 in) Gal/P. (in) Gal/P. Total Gal Purged 49
 Well Integrity: Pres. Casing Secure Concrete Collar Intact Curer

FLOW RATE? 1 LIT/MIN

Equipment Documentation

Purging/Sampling Equipment Used: Purging Sampling
 Penstatic Pump _____ Equipment ID _____
 Submersible Pump _____
 Eater _____
 PVC/Silicon Tubing _____
 Teflon/Silicon Tubing _____
 Aurn _____
 Hand Pump _____
 In-line Filter _____
 Press/Vac Filter _____
 Decontamination Fluids Used: Methanol (100%)
 25% Methanol/75% ASTM Type II water
 Deionized Water
 Liquor Solution
 Hexane
 HNO₃/D.I. Water Solution
 Potable Water
 None
 ALCONOX
 ISO PROHIL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected In-line In Container Sample Observations: Turbid Clear Cloudy Colored Odor

Purge Data	41.75 Gal	43.0 Gal	49.25 Gal	45.5 Gal	46 3/4 Gal
Temperature, Deg. C	89.2	85.1	89.8	89.6	89.8
pH, unas	7.97	7.36	7.51	7.75	7.72
Specific Conductivity (umhos/cm @ 25 Deg. C)	120.	120.	120.	120.	120.
Oxidation - Reduction, mv					
Dissolved Oxygen, ppm	7.200	7.200	7.200	7.200	7.200
<u>TURB</u>	<u>1045</u>	<u>1050</u>	<u>1055</u>	<u>1100</u>	<u>1105</u>

89.7
2.90
120.

Sample Collection Requirements
(/ if Required at this Location)

Analytical Parameter	/ if Field Filtered	Preservation Method	Volume Required	/ if Sample Collected	Sample Bottle IDs
VOA		HCL			/ / / / /
SVOA		ACC			/ / / / /
Pest/PCB		ACC			/ / / / /
Inorganics		HNO ₃			/ / / / /
Explosives		4°C			/ / / / /
TPH		H ₂ SO ₄			/ / / / /
TOC		H ₂ SO ₄			/ / / / /
Nitrates		H ₂ SO ₄			/ / / / /

Notes: LOW FLOW PURGE
FINAL NPL > 200.

WELL DEVELOPMENT RECORD

Project: <i>SITE SCREENING S.A. 18 HTC ORLANDO</i>		Well Installation Date:		Project No. <i>CTO107</i>	
Client: <i>SOUTHDIUNAVKENG.COM</i>		Well Development Date:		Logged by: <i>EMILY DOT WALSH</i>	Checked by: <i>EPG</i>
Well/Site I.D.: <i>OLD - 18 - 02</i>		Weather: <i>NOT RECORDED</i>		Start Date: <i>5/17/95</i>	Finish Date <i>5/17/95</i>
Volume of Drilling Fluid Lost (gal.)		Volume of Water in Well and Filter Pack (gal.) <i>4.5</i>		Start Time: <i>13:50</i>	Finish Time: <i>15:00</i>
Installed Depth From Top of Well Casing to Bottom of Well: <i>13.00</i>					
Initial Depth to Water (ft.) <i>4.86</i>			Initial Depth to Well Bottom: <i>NOT RECORDED</i>		
Water Level during Initial Pumping/Purging (ft): <i>NOT RECORDED</i>					
Water Level at Termination of Pumping/Purging (ft): <i>NOT RECORDED</i>			Depth to well Bottom at termination of Pumping/Purging (ft.) <i>NOT RECORDED</i>		

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
<i>14:15</i>	<i>86.6</i>	<i>5.30</i>	<i>130.</i>	<i>>200.</i>		<i>.25</i>
<i>14:23</i>	<i>86.2</i>	<i>5.20</i>	<i>130.</i>	<i>>200.</i>		<i>.25</i>
<i>14:30</i>	<i>86.3</i>	<i>5.28</i>	<i>130.</i>	<i>>200.</i>		<i>.25</i>
<i>14:38</i>	<i>84.2</i>	<i>4.82</i>	<i>120.</i>	<i>187.3</i>		<i>.25</i>
<i>14:47</i>	<i>84.0</i>	<i>4.83</i>	<i>120.</i>	<i>>200.</i>		<i>.5</i>
<i>15:00</i>	<i>84.8</i>	<i>4.96</i>	<i>115.</i>	<i>>200.</i>		<i>.5</i>

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

PUMPED TOTAL OF 110 gallons.

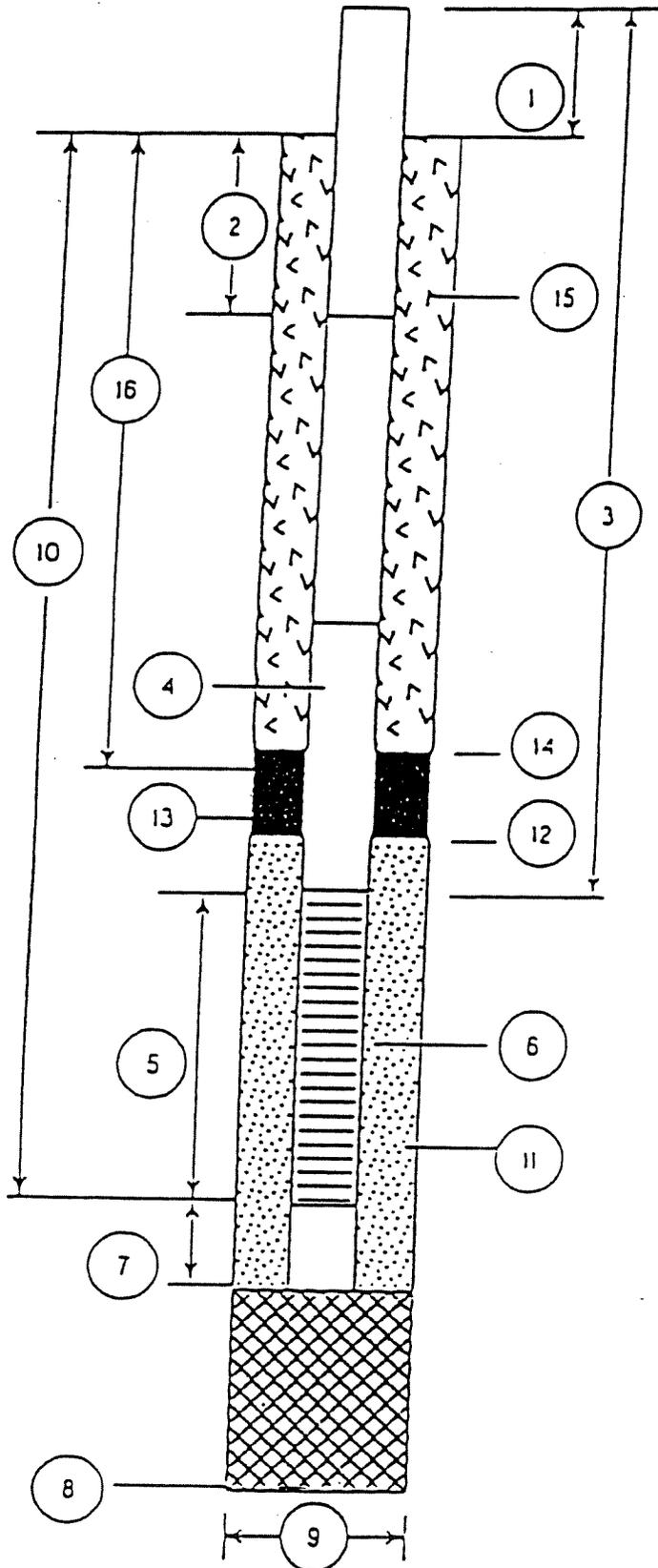
Well Developer's Signature _____

DEPARTMENT OF THE NAVY
 SOUTHERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-18-02

DATE OF INSTALLATION: 5/12/95



1. Height of Casing above ground: 0
2. Depth to first Coupling: 3'
Coupling Interval Depths: 0'
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" Schedule 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" Schedule 40 PVC .010 in.
7. Length of Sump: 6"
8. Total Depth of Boring: 14'
9. Diameter of Boring: 6.25"
10. Depth to Bottom of Screen: 12.5'
11. Type of Screen Filter: 20/30 Silica Sand
Quantity Used: 600 lb Size:
12. Depth to Top of Filler: 2'
13. Type of Seat: 3/8" Baroid Bentonite Pellets
Quantity Used: 20 lb
14. Depth to Top of Seat: 1.5'
15. Type of Grout: Portland Cement
Grout Mixture:
Method of Placement:
18. Tol. Depth of 6 in. Steel Casing: N/A

Project: BRAC NTC, Group III Site Screening		Well ID: S.A. 18	Boring ID: OLD-18-03
Client: SOUTHDIVNAVFACENCOM	Contractor: GEOTEK		Job No.: CTO-107
Northing:	Easting:	Date started: 05/12/95	Complt'd: 05/13/95
Method: Hollow stem auger	Casing dia.: 6.25"	Screened int.: 10 ft.	Protection level: D
TOC elev.: Ft.	Type of OVM: Porta FID	Total dpth: 14Ft.	Dpth to ∇ 7.5 Ft.
ABB Rep.: M. Hawes	Well development data: PVC		Site:

Depth Ft.	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				Asphalt				
				QUARTZ SAND: Dark brown, silty, fine		SM		
				QUARTZ SAND: White, fine		SP		
				QUARTZ SAND: Brown, silty, fine, good to moderate rounding, trace organics		SM		
5		90%	0				4,4	
	18B00301 (6-8')						5,5	
		95%	0				5,5	
							7,14	
		90%	0				4,5	
10							8,8	
		90%	0				5,5	
							7,7	
		80%	0				2,3	
							6,8	
15								

OLD-18-03

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING Point of Interest: S.A. 18
 Project Number: CTO 107 Date: 5/18/95
 Sample Location ID: 18600301
 Time: Start: 07:00 End: 10:30 Signature of Sampler: GRISTERS/NASH

Water Level/Well Data

Well Depth 12.5 Ft. Measured Historical Top of Well Top of Protective Casing
 Well Riser Suck-up 0 Ft. (from ground) Protective Casing/Well Difference 0 Ft. Protective Casing 0 Ft.
 Depth to Water N.R. Ft. Well Material PVC SS Well Locked?: Yes No Well Dia. 3 inch 4 inch 6 inch
 Water Level Equip. Used: Elect. Cond. Probe Float Activated Press. Transducer
 Height of Water Column X N.I.C. Ft. 18 Gal/P. (2 ft) 85 Gal/P. (4 ft) 1.5 Gal/P. (8 ft) Gal/P. (in)
 Well Integrity: Prot. Casing Secure Concrete Collar Intact Other
 Total Gal Purged 12 Low Flow
 FLOW RATE = 67 LIT/MIN

Equipment Documentation

Purging Sampling Equipment Used: Purging Sampling
 Peristaltic Pump Submersible Pump Bailer PVC/Silicon Tubing Teflon/Silicon Tubing Airtight Hand Pump In-line Filter Press/Vac Filter
 Equipment ID _____
 Decontamination Fluids Used: Methanol (100%) 25% Methanol/75% ASTM Type II water Ozonized Water Liquinox Solution Hexane HNO₃/D.I. Water Solution Potable Water None
 ALCONOX ISOPROPYL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected In-line In Container Turbid Clear Cloudy Colored Odor

Purge Data	8 Gal	9 Gal	10 Gal	11 Gal	12 Gal
Temperature, Deg. C	82.6	82.6	85.0	82.4	82.4
pH, unns	4.61	4.67	4.64	4.63	4.65
Specific Conductivity (umhos/cm, @ 25 Deg. C)	100.	100.	100.	100.	100.
Oxidation-Reduction, mv					
Dissolved Oxygen, ppm	7.86	7.86	7.86	7.86	7.86
TURBIDITY	0.945	0.951	0.956	1.001	1.006

Sample Collection Requirements
 Required at this Location

Analytical Parameter	/ # Fields Filtered	Preservation Method	Volume Required	/ # Sample Collected	Sample Bottle IDs
VOA		HCL			/ / / / /
SVOA		ASC			/ / / / /
Pest/PCB		ASC			/ / / / /
Inorganics		HNO ₃			/ / / / /
Explosives		4°C			/ / / / /
TPH		H ₂ SO ₄			/ / / / /
TOC		H ₂ SO ₄			/ / / / /
Nitrates		H ₂ SO ₄			/ / / / /

Notes: LOW-FLOW METHOD
2/5 L./MIN
FINAL FLOW > 200

WELL DEVELOPMENT RECORD

Project: <i>SITE SCREENING S.H. 18</i> <i>HTC ORLANDO</i>		Well Installation Date:		Project No. <i>CTO 107</i>	
Client: <i>SOUTH DUNN RAKENIA.COM</i>		Well Development Date: <i>5/17/95</i>		Logged by: <i>G. GROSS</i> <i>NACH</i>	
Well/Site I.D.: <i>AD-18-03</i>		Weather: <i>NOT RECORDED</i>		Checked by: <i>4/36</i>	
Volume of Drilling Fluid Lost (gal.) <i>N/A</i>		Volume of Water in Well and Filter Pack (gal.) <i>3.9</i>		Start Date: <i>5/17/95</i>	
Installed Depth From Top of Well Casing to Bottom of Well:		Start Time: <i>13:15</i>		Finish Date: <i>5/17/95</i>	
Initial Depth to Water (ft.) <i>5.88</i>		Initial Depth to Well Bottom: <i>12.91</i>		Finish Time: <i>14:00</i>	
Water Level during Initial Pumping/Purging (ft.): <i>8.16</i>					
Water Level at Termination of Pumping/Purging (ft.): <i>6.55</i>		Depth to well Bottom at termination of Pumping/Purging (ft.) <i>12.92</i>			

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min)
<i>13:25</i>	<i>83.8</i>	<i>4.81</i>	<i>105.</i>	<i>176.5</i>		<i>1.</i>
<i>13:30</i>	<i>89.0</i>	<i>4.71</i>	<i>105.</i>	<i>190.5</i>		<i>1.</i>
<i>13:40</i>	<i>89.5</i>	<i>4.70</i>	<i>100.</i>	<i>175.6</i>		<i>1.</i>
<i>13:47</i>	<i>89.3</i>	<i>4.70</i>	<i>100.</i>	<i>>200</i>		<i>1.</i>
<i>13:55</i>	<i>89.3</i>	<i>4.70</i>	<i>100.</i>	<i>>200</i>		<i>1.</i>
<i>14:00</i>	<i>89.2</i>	<i>4.65</i>	<i>105.</i>	<i>180.9</i>		<i>1.</i>

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

PUMPED TOTAL (PRE-DEV. + DEV.) = 110 gal.

Well Developer's Signature _____

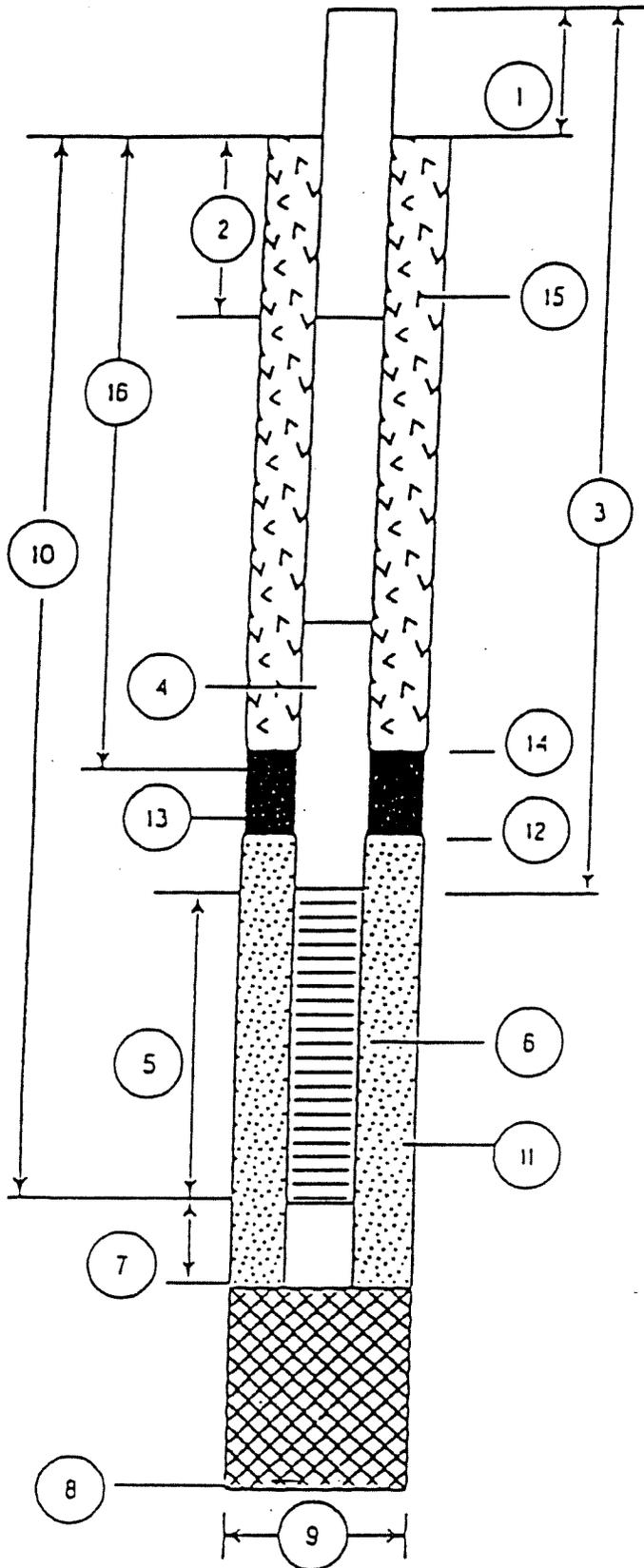
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-18-03

DATE OF INSTALLATION: 5/13/95



1. Height of Casing above ground: 0

2. Depth to first Coupling: 3'

Coupling Interval Depths: 10'

3. Total Length of Riser Pipe: 3'

4. Type of Riser Pipe: 2" ϕ Schedule 40 PVC

5. Length of Screen: 10'

6. Type of Screen: 2" ϕ Schedule 40 PVC .010 in. Slts

7. Length of Sump: 6"

8. Total Depth of Boring: 14'

9. Diameter of Boring: 6.25"

10. Depth to Bottom of Screen: 12.5"

11. Type of Screen Filter: 20/30 Silica Sand

Quantity Used: 500 lb

Size:

12. Depth to Top of Filter: 2'

13. Type of Seal: Bentonite

Quantity Used: 20 lb

14. Depth to Top of Seal: 1.5'

15. Type of Grout: Portland Cement

Grout Mixture:

Method of Placement:

16. Tot. Depth of 6 in. Steel Casing: N/A

Project: BRAC NTC, Group III Site Screening		Well ID: S.A. 18	Boring ID: OLD-18-04
Client: SOUTH DIV NAV FAC ENG COM		Contractor: GEOTEK	Job No.: CTO-107
Northing:	Easting:	Date started: 05/11/95	Compltd: 05/11/95
Method: Hollow stem auger	Casing dia.: 6.25"	Screened Int.: 10 ft.	Protection level: D
TOC elev.: Ft.	Type of OVM: Porta FID	Total dpth: 14 Ft.	Dpth to ∇: 8 Ft.
ABB Rep.: M. Hawes	Well development data: PVC		Site:

Depth Ft.	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				Asphalt				
				QUARTZ SAND: Dark brown, silty, fine, trace organics		SM	4,5	
5		80%		QUARTZ SAND: Light brown, silty, fine, good sorting			13,18	
	18B00401 18B00401D (6-8')		250				13,17	
		90%					21,14	
			40				12,10	
		90%					8,6	
10			50	QUARTZ SAND: Dark brown, silty, fine, good sorting, trace organics			6,6	
		90%					7,8	
			30				4,5	
		90%					6,7	
15								

OLD-18-04

GROUNDWATER SAMPLE FIELD DATA

Project: SITE SCREENING Point of Interest: S.A. 1B
 Project Number: CTO 107 Date: 5/18/95
 Sample Location ID: 18400401
 Time: Start: 11:15 End: 13:22 Signature of Sampler: GBB/JDN

Water Level/Well Data

Well Depth 13.00 Ft. Measured Historical
 Top of Well Top of Protective Casing
 Well Riser Stick-up 0 Ft. (from ground) Protective 0 Ft. Casing/Well Difference
 Protective 0 Ft. Casing
 Depth to Water 9.11 Ft. Well Material: PVC SS
 Well Locked?: Yes No
 Well Dia. 2 inch 4 inch 6 inch
 Water Level Equip. Used: Elect. Cond. Probe Float Activated Press. Transducer
 Height of Water Column X 18 GWP. (2 in) 4.9 Gal/Vol
8.89 Ft. 65 GWP. (4 in) = 6.0 Total Gal Purged
1.5 GWP. (8 in)
152 GWP. (in)
 Well Integrity: Yes No
 Prot. Casing Secure
 Concrete Collar Intact
 Cover

FLOW RATE 1 GPM

Equipment Documentation

Purging/Sampling Equipment Used:

(# Used For)	Purging	Sampling	Equipment ID
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Peristaltic Pump
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Submersible Pump
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Esler
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PVC/Silicon Tubing
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Teflon/Silicon Tubing
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Aurich
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hand Pump
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	In-line Filter
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Press/Vac Filter

Decontamination Fluids Used:

(# All That Apply at Location)

- Methanol (100%)
- 25% Methanol/75% ASTM Type II water
- Deionized Water
- Liquinox Solution
- Hexane
- HNO₃/DI Water Solution
- Potable Water
- None
- ALCONOX
- ISOPROPYL

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected In-line In Container

Sample Observations: Turbid Clear Cloudy
 Colored Odor

Purge Data	Gal	Gal	Gal	Gal	Gal
Temperature, Deg. C	<u>78</u>	<u>2.25</u>	<u>3.5</u>	<u>4.75</u>	<u>6.0</u>
pH, unns	<u>86.9</u>	<u>86.9</u>	<u>88.0</u>	<u>88.7</u>	<u>88.0</u>
Specific Conductivity (umhos/cm @ 25 Deg. C)	<u>4.43</u>	<u>4.84</u>	<u>4.85</u>	<u>4.86</u>	<u>4.86</u>
Oxidation-Reduction, mv	<u>338</u>	<u>315</u>	<u>320</u>	<u>325</u>	<u>325</u>
Dissolved Oxygen, ppm	<u>129.2</u>	<u>125.1</u>	<u>110.5</u>	<u>104.2</u>	<u>97.6</u>
TURB	<u>1541</u>	<u>1556</u>	<u>1611</u>	<u>1626</u>	<u>1641</u>

Sample Collection Requirements (Required at this Location)

Analytical Parameter	# Field Filtered	Preservation Method	Volume Purged	# Sample Collected	Sample Bottle IDs
VOA		MCL			
SVOA		ACC			
PresVPCB		ADC			
Inorganics		MNO, 4°C			
Explosives		H ₂ O			
TPH		H ₂ O			
TOC		H ₂ O			
Nitrates		H ₂ O			

Notes:
FINAL TURBIDITY 297.6 NTU
YELLOW COLOR TO WATER.
LOW FLOW - 0.2L - 0.5L/min.

WELL DEVELOPMENT RECORD

Project: <u>SITE SCREENING S.A. 18</u> <u>HTC ORLANDO</u>		Well Installation Date:		Project No. <u>CTO 107</u>	
Client: <u>SOUTHDIUNAVALENK.COM</u>		Well Development Date: <u>5/17/95</u>		Logged by: <u>GIBOR DOT NASH</u>	Checked by: <u>ETSG</u>
Well/Site I.D.: <u>OLD-18-04</u>		Weather: <u>NOT RECORDED</u>		Start Date: <u>5/17/95</u>	Finish Date: <u>5/17/95</u>
Volume of Drilling Fluid Lost (gal.)		Volume of Water in Well and Filter Pack (gal.) <u>5.0</u>		Start Time: <u>15:30</u>	Finish Time: <u>17:05</u>
Installed Depth From Top of Well Casing to Bottom of Well: <u>13.0</u>					
Initial Depth to Water (ft.) <u>3.91</u>			Initial Depth to Well Bottom: <u>NOT RECORDED</u>		
Water Level during Initial Pumping/Purging (ft.): <u>NOT RECORDED</u>					
Water Level at Termination of Pumping/Purging (ft.): <u>NOT RECORDED</u>			Depth to well Bottom at termination of Pumping/Purging (ft.): <u>NOT RECORDED</u>		

BEGINNING OF WELL DEVELOPMENT

Time	Temp.	pH	Conductivity	Turbidity	Other	Approximate Pumping Rate (gal/min) <u>1/4 LITERS/min</u>
<u>16:10</u>	<u>88.2</u>	<u>4.80</u>	<u>350.</u>	<u>90.0</u>		<u>1/4 LITERS/min</u>
<u>16:17</u>	<u>87.1</u>	<u>4.80</u>	<u>275.</u>	<u>120.0</u>		<u>1/4 LITERS/min</u>
<u>16:27</u>	<u>87.1</u>	<u>4.81</u>	<u>340.</u>	<u>97.1</u>		<u>"</u>
<u>16:35</u>	<u>87.2</u>	<u>4.93</u>	<u>340.</u>	<u>84.8</u>		<u>"</u>
<u>16:44</u>	<u>86.7</u>	<u>4.91</u>	<u>340.</u>	<u>73.0</u>		<u>"</u>
<u>16:55</u>	<u>86.6</u>	<u>4.83</u>	<u>330.</u>	<u>66.7</u>		<u>"</u>
<u>17:05</u>	<u>85.5</u>	<u>4.94</u>	<u>330.</u>	<u>70.3</u>		<u>"</u>

END OF WELL DEVELOPMENT

NOTES: (Include physical character of removed water, type and size of pump, volume of water removed.)

TOTAL PUMPED, 70 gallons.

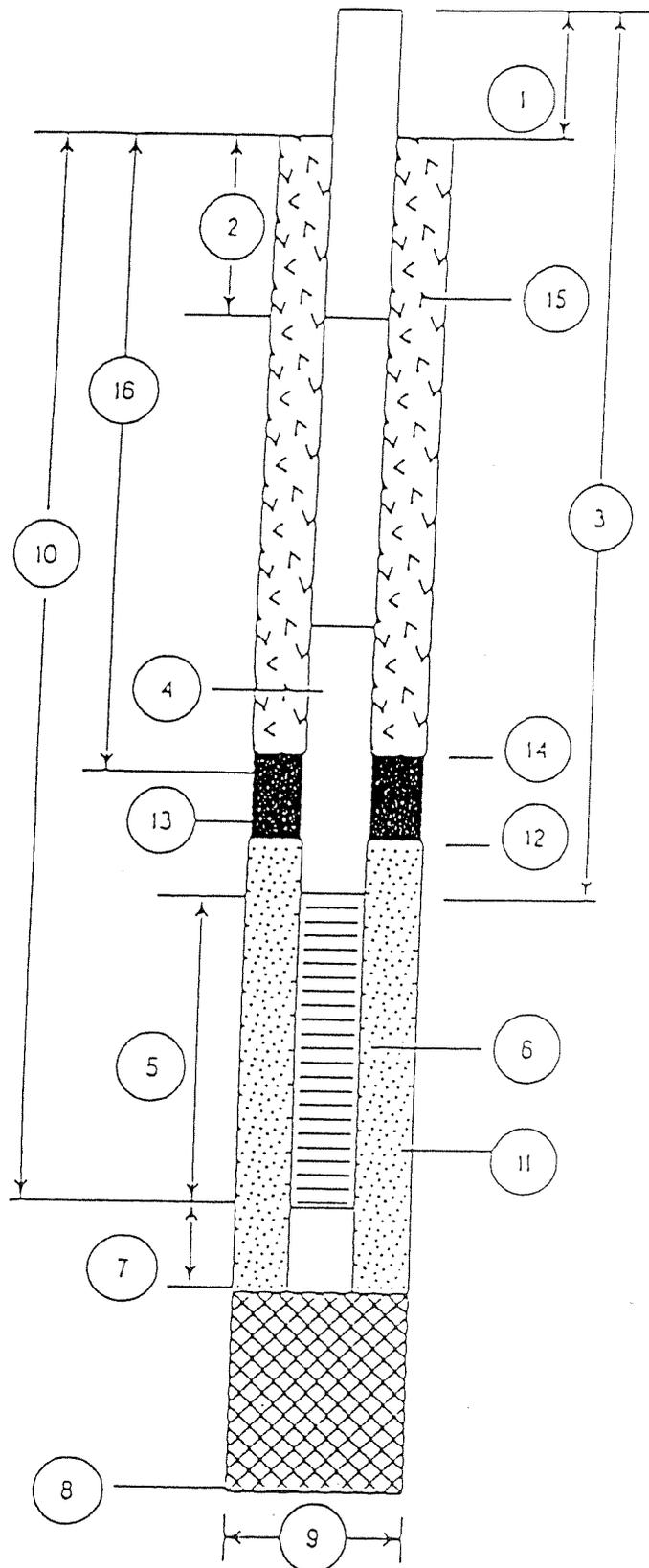
Well Developer's Signature _____

DEPARTMENT OF THE NAVY
 SOUTHERN DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-18-04

DATE OF INSTALLATION: 5/11/95



1. Height of Casing above ground: 0
2. Depth to first Coupling: 3'
Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" ϕ Schedule 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" ϕ Schedule 40 PVC .010 in. slots
7. Length of Sump: 6"
8. Total Depth of Boring: 14'
9. Diameter of Boring: 6.25"
10. Depth to Bottom of Screen: 12.5'
11. Type of Screen Filter: 20/30 Silica Sand
Quantity Used: 600 lb Size:
12. Depth to Top of Filter: 2'
13. Type of Seal: Bentonite
Quantity Used: 20 lb
14. Depth to Top of Seal: 1.5'
15. Type of Grout: Portland Cement
Grout Mixture:
Method of Placement:
18. Tot. Depth of 6 in. Steel Casing: N/A



Tetra Tech NUS, Inc.

WELL COMPLETION FORM

JOB NAME: NTC Orlando

JOB NUMBER: 7457 PROJECT MANAGER: Steve McCoy

LOGGED BY: Skip Barton EDITED BY:

WELL NAME: OLD-18-05 DATE: 4/24/01

DRILLING COMPANY:

EQUIPMENT: 4.25 INCH HOLLOW STEM AUGER DRILLER: Gary Wagner

INCH ROTARY WASH HOURS DRILLED: 0.5

GALLONS OF WATER USED DURING DRILLING: NA

METHOD OF DECONTAMINATION PRIOR TO DRILLING: steam/pressure wash

DEVELOPMENT

METHOD OF DEVELOPMENT: submersible pump

BEGAN DATE: 4/27/01 TIME: 1848

YEILD:	TIME:	DATE:
GPM	FROM TO	
GPM	FROM TO	
GPM	FROM TO	

TOTAL WATER REMOVED DURING DEVELOPMENT: 20 GALLONS

DESCRIPTION OF TURBIDITY AT END OF DEVELOPMENT: MOD. TURBID

ODOR OF WATER: decayed organic (faint)

WATER DISCHARGED TO: STORM SEWERS

MATERIALS USED

6 50 lb.	SACKS OF	30/45	SAND
0.25 96 lb.	SACKS OF	Type I Portland	CEMENT
5	GALLONS OF GROUT USED		
0.1	SACKS POWDERED BENTONITE		
1/2 50 lb.	SACKS OF	30/65	SAND
2.5	FEET OF	2 INCH PVC BLANK CASING	
10	FEET OF	2 INCH PVC SLOTTED SCREEN	

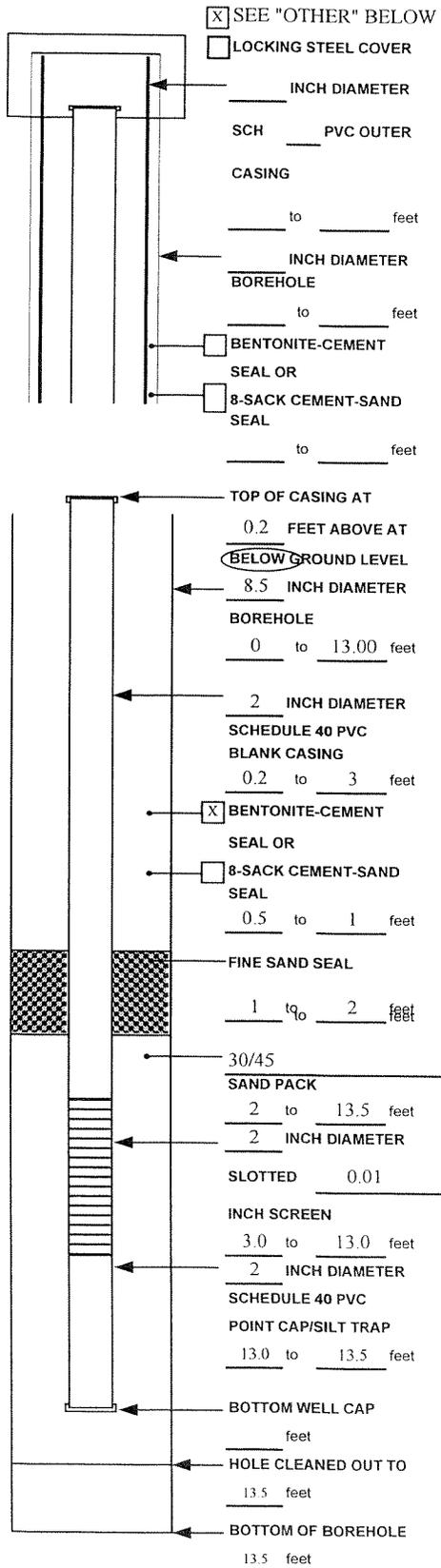
YARD3 CEMENT-SAND (REDI-MIX) ORDERED

YARDS3 CEMENT-SAND (REDI-MIX) USED

CONCRETE PUMPER USED? NO YES

NAME

WELL COVER USED: OTHER 8-inch diameter, bolt-down manhole cover



NOT TO SCALE

ADDITIONAL INFORMATION:



WELL COMPLETION FORM

JOB NAME: NTC Orlando

JOB NUMBER: 7457 PROJECT MANAGER: Steve McCoy

LOGGED BY: Skip Barton EDITED BY:

WELL NAME: OLD-18-06 DATE: 4/24/01

DRILLING COMPANY:

EQUIPMENT: 4.25 INCH HOLLOW STEM AUGER DRILLER: Gary Wagner
 INCH ROTARY WASH

HOURS DRILLED: 1

GALLONS OF WATER USED DURING DRILLING: NA

METHOD OF DECONTAMINATION PRIOR TO DRILLING: steam/pressure wash

DEVELOPMENT

METHOD OF DEVELOPMENT: submersible pump

BEGAN DATE: 4/27/01 TIME: 1227

YEILD:	GPM	TIME:	FROM	TO	DATE:

TOTAL WATER REMOVED DURING DEVELOPMENT: 210 GALLONS

DESCRIPTION OF TURBIDITY AT END OF DEVELOPMENT: CLEAR SLIGHTLY CLOUDY MOD. TURBID VERY MUDDY

ODOR OF WATER: decayed organic (faint)

WATER DISCHARGED TO: GROUND SURFACE TANK TRUCK STORM SEWERS STORAGE TANK DRUMS OTHER

MATERIALS USED

8 50 lb.	SACKS OF	30/45	SAND
0.5 96 lb.	SACKS OF	Type I Portland	CEMENT
	GALLONS OF GROUT USED		
	SACKS POWDERED BENTONITE		
1 50 lb.	SACKS OF	30/65	SAND
6	FEET OF	2 INCH PVC BLANK CASING	
15	FEET OF	2 INCH PVC SLOTTED SCREEN	

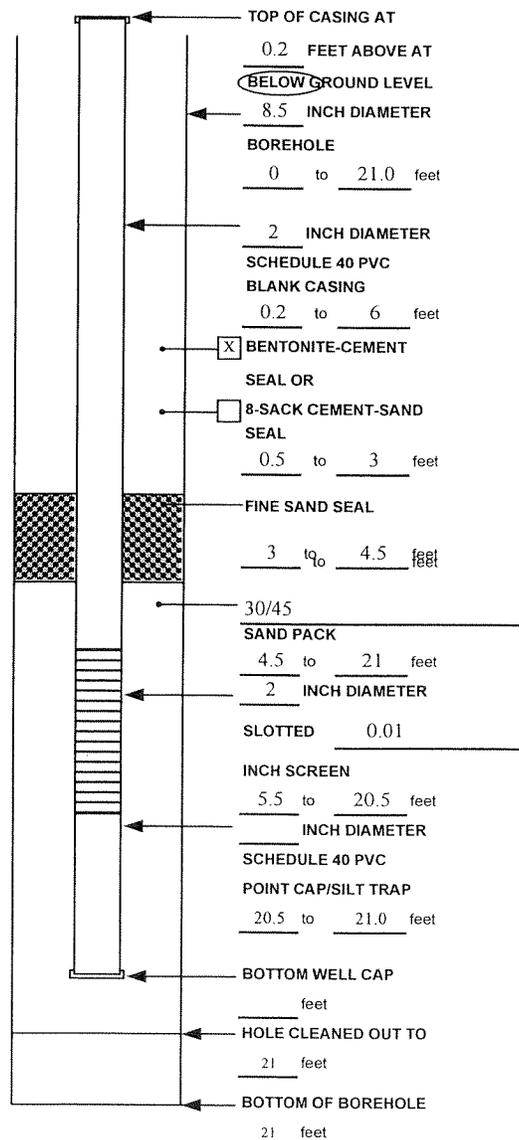
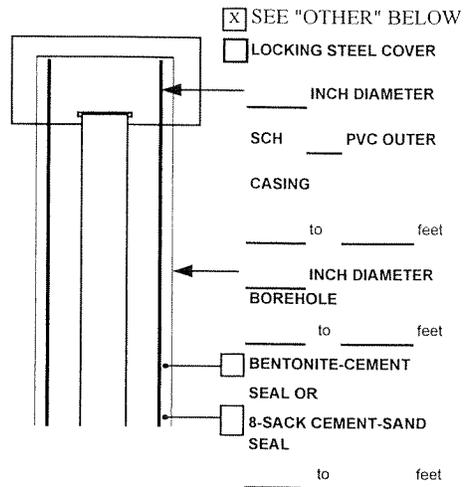
YARD3 CEMENT-SAND (REDI-MIX) ORDERED

YARDS3 CEMENT-SAND (REDI-MIX) USED

CONCRETE PUMPER USED? NO YES

NAME

WELL COVER USED: LOCKING STEEL COVER CHRISTY BOX OTHER 8-inch diameter, bolt-down manhole cover



NOT TO SCALE

ADDITIONAL INFORMATION:

Date 10/25/00

Groundwater Purging and Sampling Log
Tetra Tech NUS

Project Site Name: NTC Orlando
Project No.: 7457/

Sample Location: OLD-18-01

Domestic Well Data

Flow-Thru Cell

Sample ID No.: NTC186-00110

Monitoring Well Data

Make/Model: HORIBA U-22

Sampled By: C. Morrison

Serial Nos.: 9012014

Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. / Ltrs. per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1454	5.41	0.322	32.18	9.7	2.35	5	4.89	100
1	0.041 / 0.155	1459	5.39	0.321	32.24	9.15	1.76	-1		
2	0.163 / 0.617	1504	5.38	0.327	32.84	9.30	1.45	-3		
4	0.653 / 2.47	1509	5.39	0.330	33.07	8.74	1.21	-3		
6	1.469 / 5.56	1514	5.39	0.332	33.22	8.82	1.28	-9		
8	2.611 / 9.88	1519	5.38	0.332	32.49	8.88	0.99	-9		
10	4.08 / 15.44	1522	5.37	0.333	32.50	9.01	0.95	-9		
	[1 gal. = 3.785 L]	1525	5.37	0.333	32.97	9.04	0.89	-7	✓	✓

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 12.5'
Static Water Level: 4.85'
Tube Intake Depth: 10.5'

Start Purge (hr): 1444
End Purge (hr): 1525
Total Purge Time (min): 41
Total Vol. Purged: 4100 L

WATER QUALITY SAMPLE PARAMETERS

Date	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	m/min	
Date: <u>10/25/00</u> Time: <u>1535</u>		<u>5.37</u>	<u>0.333</u>	<u>32.97</u>	<u>9.04</u>	<u>0.89</u>	<u>-7</u>	<u>4.89</u>	<u>100</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B HCl	3 40 ml glass vials	
SVOCs/PAHs	8270C/8310 None	2 1-liter amber glass	
Pesticides	8081A None	1 1-liter amber glass	
Herbicides	8151 None	1 1-liter amber glass	
X-tra Organic	8XXX None	1 or 2 1-liter amber glass	
TAL Metals	6000/7000 HNO ₃	1-liter HDPE	1

ADDITIONAL INFORMATION

Comments:

Method:
 Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailer

Tubing Type:
 Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: N/A
Duplicate ID No.: N/A

Signature(s): Chris Morrison

Groundwater Purging and Sampling Log

Tetra Tech NUS

Date 10/25/00

Page 1 of 1

Project Site Name: NTC Orlando

Project No.: 7457/

Sample Location: 18-02.

Domestic Well Data

Flow-Thru Cell

Sample ID No.: NTC18600210

Monitoring Well Data

Make/Model: HORIBA U-22

Sampled By: BRB

Other Well Type: _____

Serial Nos.: 9282040/928026

C-O-C No.: _____

PURGING DATA

Casing	Gals	Liters	Time	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Size (in.)	per ft. of Water		Hr:Min	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	m/min
0.5	0.01	0.038	1300	5.02	0.176	30.15	61	2.47	-97	4.59	100
1	0.041	0.155	1305	5.02	0.176	30.12	50	2.03	-100	4.58	↓
3	0.163	0.617	1310	5.02	0.174	30.14	37	1.31	-106	4.58	↓
4	0.653	2.47	1320	5.01	0.172	30.39	34	1.04	-107	4.58	↓
6	1.469	5.56	1325	4.98	0.171	30.39	30	0.75	-104	4.58	80
8	2.611	9.88	1330	4.97	0.170	30.21	21	0.76	-105	4.58	↓
10	4.08	15.44	1335	4.96	0.168	30.18	21	0.60	-103	4.58	↓
	[1 gal. = 3.785 L]		1340	4.97	0.168	30.12	21	0.77	-101	4.58	↓
			1345	4.95	0.168	29.93	21	0.68	-102	4.58	↓
PID Reading (ppm):	0		1350	4.90	0.167	30.01	21	0.70	-104	4.58	↓
			1355	4.90	0.166	30.05	18	0.60	-103	4.58	↓
			1400	4.88	0.166	30.30	16	0.59	-101	4.58	↓
Well Casing Diameter:	2"		1405	4.87	0.166	30.33	15	0.56	-100	4.58	↓
Total Well Depth:			1410	4.87	0.165	30.30	15	0.58	-100	4.58	↓
Static Water Level:											
Tube Intake Depth:											
Start Purge (hr):	1255										
End Purge (hr):	1410										
Total Purge Time (min):	75										
Total Vol. Purged:	6000 ML										

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	m/min
10/25/00									
1410	clear	4.87	0.165	30.30	15	0.58	-100	4.58	80

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl	3 40 ml glass vials	
SVOCs/PAHs	None	2 1-liter amber glass	
Pesticides	None	1 1-liter amber glass	✓
Herbicides	None	1 1-liter amber glass	✓
X-tra Organic	None	1 or 2 1-liter amber glass	
TAL Metals	HNO ₃	1 1-liter HDPE	✓

ADDITIONAL INFORMATION

<p>Comments:</p>	<p>Method:</p> <p><input checked="" type="checkbox"/> Peristaltic Pump</p> <p><input type="checkbox"/> Centrifugal Pump</p> <p><input type="checkbox"/> Bladder Pump</p> <p><input type="checkbox"/> Tube Evacuation</p> <p><input type="checkbox"/> Vacuum Jug Assembly</p> <p><input type="checkbox"/> Bailor</p>
	<p>Tubing Type:</p> <p><input type="checkbox"/> Polyethylene</p> <p><input type="checkbox"/> Teflon</p> <p><input checked="" type="checkbox"/> Teflon-lined Polyethylene</p>

QA/QC SAMPLES

MS/MRD: <u>N/A</u>	Duplicate ID No.: <u>N/A</u>	Signature(s):
--------------------	------------------------------	---------------

Date 10/25/00

Groundwater Purging and Sampling Log
Tetra Tech NUS

Project Site Name: NTC Orlando

Project No.: 74571

Sample Location: OLD 18-03

NTC18000310
Sample ID No: NTC18000310

Domestic Well Data

Flow-Thru Cell

Make/Model: HORIBA U-22

Monitoring Well Data

Serial Nos.: 0612044

Sampled By: C. Morrison

Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr.Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1312	5.70	0.259	28.50	35	3.10	119	5.47	100
1	0.041	0.155	1317	5.77	0.255	28.07	33	2.88	127		
2	0.163	0.617	1322	5.70	0.255	28.41	31	2.59	128		
4	0.653	2.47	1327	5.70	0.254	28.41	28	2.48	127		
6	1.469	5.56	1332	5.75	0.254	28.40	26	2.41	128		
8	2.611	9.88	1337	5.75	0.247	27.91	26	2.43	126		
10	4.08	15.44	1342	5.75	0.247	28.25	24	2.42	123		
	[1 gal. = 3.785 L]		1347	5.75	0.247	28.32	24	2.42	122		
			1352	5.73	0.247	28.30	24	2.39	125		
PID Reading (ppm):	0		1357	5.72	0.248	28.41	23	2.32	125		
			1402	5.72	0.248	28.59	23	2.22	124		
			1407	5.71	0.249	28.68	22	2.17	124		
Well Casing Diameter:	2"		1410	5.71	0.250	28.75	22	2.16	125	✓	✓
Total Well Depth:	513.0'										
Static Water Level:	5.44'										
Tube Intake Depth:	10.0'										
Start Purge (hr):	1302										
End Purge (hr):	1410										
Total Purge Time (min):	68										
Total Vol. Purged:	6000 ml										

WATER QUALITY SAMPLE PARAMETERS

Date:	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
<u>10/25/00</u>		<u>5.71</u>	<u>0.250</u>	<u>28.75</u>	<u>22</u>	<u>2.16</u>	<u>125</u>	<u>5.47</u>	<u>100</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	1 1-liter amber glass
Herbicides	8151	None	1 1-liter amber glass
X-tra Organic	8XXX	None	1 or 2 1-liter amber glass
TAL Metals	6000/7000	HNO ₃	1 1-liter HDPE

ADDITIONAL INFORMATION

Comments: _____

Method: Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailor

Tubing Type: Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: N/A Duplicate ID No.: N/A Signature(s): Chris Morrison

Date 10/25/00

Groundwater Purging and Sampling Log

Tetra Tech NUS

Project Site Name: NTC Orlando
 Project No.: 74571

Sample Location: 18-04
 Sample ID No.: NTC18600410
 Sampled By: BBB
 C-O-C No.: _____

- Domestic Well Data
 Monitoring Well Data
 Other Well Type: _____

Flow-Thru Cell
 Make/Model: HORIBA U-22
P
 Serial Nos.: 4282040/928026

PURGING DATA											
Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1440	5.20	0.328	29.75	15	1.78	-16	3.95	100
1	0.041	0.155	1445	5.14	0.329	29.83	16	1.21	-11	3.99	100
2	0.163	0.617	1450	5.11	0.328	29.77	16	0.85	-8	4.02	100
4	0.653	2.47	1455	5.09	0.329	29.38	16	0.71	-15	4.02	80
6	1.469	5.56	1500	5.08	0.329	29.14	15	0.72	-20	4.03	80
8	2.611	9.88	1505	5.08	0.333	29.46	15	0.70	2	4.04	80
10	4.08	15.44	1510	5.06	0.333	29.82	15	0.61	3	4.05	80
	[1 gal. = 3.785 L]		1515	5.05	0.333	29.74	15	0.58	-2	4.06	80
			1520	5.05	0.332	29.74	15	0.58	-3	4.07	80
PID Reading (ppm):	0		1525	5.04	0.332	29.72	15	0.59	-4	4.07	80
			1530	5.04	0.332	29.73	15	0.58	-4	4.07	80

Well Casing Diameter: 2"
 Total Well Depth: 1259
 Static Water Level: 3.81
 Tube Intake Depth: 10.5
 Start Purge (hr): 1435
 End Purge (hr): 1530
 Total Purge Time (min): 55
 Total Vol. Purged: 5200ML

WATER QUALITY SAMPLE PARAMETERS										
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate	
	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
10/25/00	<u>Color</u>	<u>5.04</u>	<u>0.332</u>	<u>29.73</u>	<u>15</u>	<u>0.58</u>	<u>-4</u>	<u>4.07</u>	<u>80</u>	

ANALYSES INFORMATION			
Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B HCl	3 40 ml glass vials	
SVOCs/PAHs	None	2 1-liter amber glass	N/A
Pesticides	8081A None	1 1-liter amber glass	N/A
Herbicides	8151 None	1 1-liter amber glass	N/A
X-tra Organic	8XXX None	1 or 2 1-liter amber glass	
TAL Metals	6000/7000 HNO ₃	1 1-liter HDPE	X

ADDITIONAL INFORMATION

Comments: _____

Method: Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailor

Tubing Type: Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: N/A Duplicate ID No.: N/A Signature(s): [Signature]

Tetra Tech NUS Groundwater Purging and Sampling Log

Date 6-8-01

Page 1 of 1

Project Site Name: _____
Project No.: _____

Sample Location: OLD-18-05

Domestic Well Data

Flow-Thru Cell
Make/Model: _____

Sample ID No.: NTC18G00513

Monitoring Well Data

Serial No.: _____

Sampled By: John Nash

Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Q _{inj} per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1420	6.50	0.296	31.9	340	9.84	—	4.21	75
1	0.041	0.166	1428	6.51	0.303	31.0	320	9.82	—	4.55	75
2	0.183	0.617	1436	6.49	0.359	31.0	270	9.19	—	4.77	75
4	0.683	2.47	1443	6.39	0.399	31.0	260	8.62	—	4.97	75
6	1.488	5.68	1449	6.28	0.383	30.9	360	8.80	—	5.14	75
8	2.811	8.88	1454	6.19	0.360	30.8	500	8.97	—	5.24	75
10	4.08	15.44	1455								
		[1 gal. = 3.786 L]									

PID Reading (ppm):

Well Casing Diameter: 2"

Total Well Depth: 12.18'

Static Water Level: 4.18'

Tube Intake Depth: 8'

Start Purge (hr): 1417

End Purge (hr): 1455

Total Purge Time (min): 38

Total Vol. Purged: 28.5 L

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>6-8-01</u>									
Time: <u>1455</u>	<u>cloudy</u>	<u>6.19</u>	<u>0.360</u>	<u>30.8</u>	<u>500</u>	<u>8.97</u>	<u>—</u>	<u>5.24</u>	<u>75</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl	3 40 ml glass vials	
BVOCs/PAHs	None	2 1-liter amber glass	
Pesticides	None	1 1-liter amber glass	
Herbicides	None	1 1-liter amber glass	
X-tra Organic	None	1 or 2 1-liter amber glass	
TAL Metals	HNO ₃	1 1-liter HDPE	
TRPH	H ₂ SO ₄	1 1-liter amber glass	<input checked="" type="checkbox"/>

ADDITIONAL INFORMATION

Comments:

Method:

- Peristaltic Pump
- Centrifugal Pump
- Bladder Pump
- Tube Evacuation
- Vacuum Jug Assembly
- Bailor

Tubing Type:

- Polystyrene
- Teflon
- Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD

Duplicate ID No.:

Signature(s):

John Nash

**Tetra Tech NUS
Groundwater Purging and Sampling Log**

Date 6-8-01

Page 1 of 1

Project Site Name: _____
Project No.: _____

Sample Location: OLD-18-06

- Domestic Well Data
 Monitoring Well Data
 Other Well Type: _____

Flow-Thru Cell
Make/Model: _____
Serial No.: _____

Sample ID No.: NTC18G00613

Sampled By: John Nash

C-O-C No.: _____

PURGING DATA

Casing Size (In.)	Gals per ft. of Water	Liters	Time Hr:Min	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
				pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	mL/min
0.5	0.01	0.038	1158	6.04	0.200	26.0	15	12.89	-	2.71	90
1	0.041	0.156	1204	5.95	0.196	25.4	15	12.75	-	2.72	90
2	0.183	0.617	1217	6.02	0.190	25.4	25	12.35	-	2.73	90
4	0.853	2.47	1235	5.95	0.215	25.5	24	10.66	-	2.72	90
6	1.488	5.58	1243	5.96	0.196	25.9	22	10.06	-	2.72	90
8	2.611	9.88	1250	5.94	0.191	25.5	19	10.34	-	2.73	90
10	4.08	15.44	1255	5.96	0.191	25.4	22	10.28	-	2.72	90
	[1 gal. = 3.785 L]										

PID Reading (ppm):

Well Casing Diameter: 2"

Total Well Depth: 22.23

Static Water Level: 2.65

Tube Intake Depth: 12.23

Start Purge (hr): 1157

End Purge (hr): 1258

Total Purge Time (min): 61

Total Vol. Purged: 52 Liters

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	mL/min
Date: <u>6-8-01</u>									
Time: <u>1258</u>	<u>clear</u>	<u>5.96</u>	<u>0.191</u>	<u>25.4</u>	<u>22</u>	<u>10.28</u>	<u>-</u>	<u>2.72</u>	<u>90</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HC1	3 40 ml glass vials	
SVOCs/PAHs	None	2 1-liter amber glass	
Pesticides	None	1 1-liter amber glass	
Herbicides	None	1 1-liter amber glass	
Extra Organic	None	1 or 2 1-liter amber glass	
TAL Metals	HNO ₃	1 1-liter HDPE	
TRP-H	H ₂ SO ₄	1 1-liter amber glass	X

ADDITIONAL INFORMATION

Comments:

- Method:
- Peristaltic Pump
 - Centrifugal Pump
 - Bladder Pump
 - Tube Evacuation
 - Vacuum Jug Assembly
 - Bailor

- Tubing Type:
- Polyethylene
 - Teflon
 - Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD

Duplicate ID No.:

Signature(s):

John Nash

**Tetra Tech NUS
Groundwater Purging and Sampling Log**

Date 4-27-01

Page 1 of 1

Project Site Name: NTL ORLANDO
Project No.: 7457

Sample Location: GLD-18-02

Domestic Well Data

Flow-Thru Cell 0-22
Make/Model: Horiba

Sample ID No.: NTC18000213

Monitoring Well Data

Serial Nos.: 901213/927030

Sampled By: KJM

Other Well Type: _____

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1005	5.14	240	26.6	2.39	3.56	-80	5.10	100
1	0.041	0.155	1010	5.21	175	26.7	1.85	1.60	-92	5.09	100
2	0.163	0.617	1015	5.22	164	26.8	1.10	1.63	-106	5.08	100
4	0.653	2.47	1020	5.28	162	26.8	2.36	1.29	-116	5.08	100
6	1.469	5.56	1025	5.28	161	26.6	2.37	1.16	-115	5.08	100
8	2.611	9.88	1030	5.26	159	26.6	2.30	1.17	-115	5.08	100
10	4.08	15.44	1035	5.25	159	26.7	2.42	1.17	-117	5.08	100
[1 gal. = 3.785 L]											

PID Reading (ppm): 0

Well Casing Diameter: 2"

Total Well Depth: 15

Static Water Level: 5.08

Tube Intake Depth: 3 FB

Start Purge (hr): 1000

End Purge (hr): 1035

Total Purge Time (min): 35 min

Total Vol. Purged: 3.5 Lt

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>4-27-01</u>	<u>Clear</u>	<u>5.25</u>	<u>159</u>	<u>26.7</u>	<u>2.31</u>	<u>1.16</u>	<u>-116</u>	<u>5.08</u>	<u>100</u>
Time: <u>1040</u>									

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	1 1-liter amber glass
Herbicides	8151	None	1 1-liter amber glass
X-tra Organic	8XXX	None	1 or 2 1-liter amber glass
TAL Metals	6000/7000	HNO ₃	1 1-liter HDPE
TRPH	FL PRO	H ₂ SO ₄	1 1-liter amber glass

ADDITIONAL INFORMATION

Comments: All parameters stable.

Method:

- Peristaltic Pump
- Centrifugal Pump
- Bladder Pump
- Tube Evacuation
- Vacuum Jug Assembly
- Bailor

Tubing Type:

- Polyethylene
- Teflon
- Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):

[Handwritten Signature]

**Tetra Tech NUS
Groundwater Purging and Sampling Log**

Date 042701

Page 1 of 1

Project Site Name: UNNO + 20050# 0355-4197
Project No.: 7457 NTCOMALD

Sample Location: SA-18-03

Domestic Well Data

Flow-Thru Cell

Sample ID No.: NTC 186-00313

Monitoring Well Data

Make/Model: Hani 3 U-22

Sampled By: PA

Other Well Type: _____

Serial Nos.: 790022 / 10052020

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0950	6.00	0.255	24.37	70.0	2.67	-40	6.18	100
1	0.041	0.155	0955	6.06	0.245	25.10	16.0	1.34	-56	6.18	100
2	0.163	0.617	1000	6.06	0.245	25.04	14.0	1.28	-57	6.16	100
4	0.653	2.47	1005	6.07	0.242	25.25	10.0	1.03	-55	6.15	100
6	1.469	5.56	1010	6.07	0.242	25.28	9.4	0.98	-53	6.15	100
8	2.611	9.88	1015	6.08	0.241	25.42	8.0	0.71	-52	6.16	100
10	4.08	15.44	1020	6.08	0.240	25.60	6.7	0.74	-57	6.16	100
	[1 gal. = 3.785 L]		1025	6.09	0.239	25.64	5.8	0.55	-63	6.18	100
			1030	6.09	0.239	25.64	5.3	0.44	-61	6.17	100
PID Reading (ppm):			1035	6.09	0.240	25.66	5.0	0.44	-61	6.17	100
			1040	6.10	0.246	25.60	5.0	0.44	-67	6.17	100
			1045	6.10	0.245	25.61	4.8	0.46	-68	6.17	100
Well Casing Diameter:	<u>2"</u>										
Total Well Depth:											
Static Water Level:	<u>6.03</u>										
Tube Intake Depth:											
Start Purge (hr):	<u>0945</u>										
End Purge (hr):	<u>1050</u>										
Total Purge Time (min):	<u>65</u>										
Total Vol. Purged:	<u>6.500 ml</u>										

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>042701</u>	<u>21</u>	<u>6.09</u>	<u>0.244</u>	<u>25.61</u>	<u>4.7</u>	<u>0.47</u>	<u>-68</u>	<u>6.17</u>	<u>100</u>
Time: <u>1050</u>	<u>21</u>	<u>6.09</u>	<u>0.244</u>	<u>25.61</u>	<u>4.7</u>	<u>0.47</u>	<u>-68</u>	<u>6.17</u>	<u>100</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	HCl	3 40 ml glass vials	
SVOCs/PAHs	None	2 1-liter amber glass	
Pesticides	None	1 1-liter amber glass	
Herbicides	None	1 1-liter amber glass	
X-tra Organic	None	1 or 2 1-liter amber glass	
TAL Metals	HNO ₃	1 1-liter HDPE	
TRPH	H ₂ SO ₄	1 1-liter amber glass	<input checked="" type="checkbox"/>

ADDITIONAL INFORMATION

Comments: _____

Method: Peristaltic Pump Centrifugal Pump Bladder Pump Tube Evacuation Vacuum Jug Assembly Bailor

Tubing Type: Polyethylene Teflon Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: _____ Duplicate ID No.: _____ Signature(s): 

**Tetra Tech NUS
Groundwater Purging and Sampling Log**

Date 4/27/01

Project Site Name: _____
 Project No.: 7547
 Sample Location: OLD 18-04
 Domestic Well Data Flow-Thru Cell
 Make/Model: Horiba U-22 Sample ID No.: NTC18600473
 Monitoring Well Data Serial Nos.: _____
 Sampled By: JA
 Other Well Type: _____ C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1008	5.14	0.263	26.8	7	2.33	-71	4.0	100
1	0.041	0.155	1014	5.15	0.262	26.8	8	1.71	-79	4.20	100
2	0.163	0.617	1023	5.24	0.269	27.0	8	0.65	-95	4.24	100
4	0.653	2.47	1028	5.26	0.417	27.1	8	0.80	-99	4.25	100
6	1.469	5.56	1035	5.26	0.278	27.2	8	0.88	-108	4.28	100
8	2.611	9.88	1044	5.31	0.282	27.3	8	0.78	-105	4.30	100
10	4.08	15.44	1054	5.28	0.282	27.5	7	0.60	-102	4.33	100
	[1 gal. = 3.785 L]		1104	5.23	0.273	27.5	6	0.59	-102	4.35	100
PID Reading (ppm): _____											
Well Casing Diameter: <u>2"</u>											
Total Well Depth: <u>13'</u>											
Static Water Level: <u>4.0'</u>											
Tube Intake Depth: <u>9'</u>											
Start Purge (hr): <u>1000</u>											
End Purge (hr): <u>1110</u>											
Total Purge Time (min): <u>70</u>											
Total Vol. Purged: <u>7.08</u>											

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>4/27/01</u> Time: <u>1110</u>	<u>brackish</u>	<u>5.23</u>	<u>0.273</u>	<u>27.5</u>	<u>6</u>	<u>0.59</u>	<u>-102</u>	<u>4.35</u>	<u>100</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	1 1-liter amber glass
Herbicides	8151	None	1 1-liter amber glass
X-tra Organic	8XXX	None	1 or 2 1-liter amber glass
TAL Metals ✓	6000/7000	HNO ₃	1 1-liter HDPE
TRPH	FL PRO	H ₂ SO ₄	1 1-liter amber glass

ADDITIONAL INFORMATION

Comments: _____

Method:
 Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailor

Tubing Type:
 Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: _____ Duplicate ID No.: _____

Signature(s): 

**Tetra Tech NUS
Groundwater Purging and Sampling Log**

Date 042901

Page 1 of 1

Project Site Name: _____
 Project No.: 7457 NTC/UNMAD LAP# 2020 SL# 0355-4197 Sample Location: SA-18-05
 Domestic Well Data Flow-Thru Cell
 Make/Model: 10181-V22 Sample ID No.: NTC 186 00501
 Monitoring Well Data Serial Nos.: 10181-022 10052020 Sampled By: BA
 Other Well Type: _____ C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0910	6.16	0.534	23.90	650	7.99	60	5.17	80
1	0.041	0.155	0915	6.13	0.572	24.34	686	7.30	57	5.74	80
2	0.163	0.617	0920	6.06	0.531	24.99	700	6.54	56	5.81	80
4	0.653	2.47	0925	6.00	0.519	25.28	750	5.85	55	5.95	80
6	1.469	5.56	0930	6.17	0.553	25.27	786	5.73	46	6.02	80
8	2.611	9.88	0935	6.20	0.594	25.29	800	2.53	40	6.06	80
10	4.08	15.44	0940	6.16	0.594	25.33	850	3.09	39	6.32	80
	[1 gal. = 3.785 L]		0945	6.16	0.597	25.35	850	3.38	43	6.36	80
			0950	6.16	0.600	25.31	850	3.05	47	6.38	80
PID Reading (ppm):			0955	6.16	0.599	25.32	850	2.97	46	6.4	80
			1000	6.16	0.598	25.32	850	2.94	47	6.43	80
Well Casing Diameter:	2"										
Total Well Depth:											
Static Water Level:	5.38										
Tube Intake Depth:	7.2										
	10.0										
Start Purge (hr):	0925										
End Purge (hr):											
Total Purge Time (min):											
Total Vol. Purged:											

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>042901</u>									
Time: <u>1005</u>	<u>Blank</u>	<u>6.16</u>	<u>0.598</u>	<u>25.32</u>	<u>850</u>	<u>2.96</u>	<u>47</u>	<u>6.45</u>	<u>80</u>

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B HCl	3 40 ml glass vials	
SVOCs/PAHs	8270C/8310 None	2 1-liter amber glass	
Pesticides	8081A None	1 1-liter amber glass	
Herbicides	8151 None	1 1-liter amber glass	
X-tra Organic	8XXX None	1 or 2 1-liter amber glass	
TAL Metals	6000/7000 HNO ₃	1 1-liter HDPE	
TRPH	FL PRO H ₂ SO ₄	1 1-liter amber glass	<u>2</u>

ADDITIONAL INFORMATION

Comments: samples discarded 043001 per Mike Campbell

Method:
 Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailer

Tubing Type:
 Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: _____ Duplicate ID No.: _____ Signature(s): [Signature]

Project Site Name

Project No. NTC 04/04/20 7457

LA MO 2020 SAN 0355-4197

Sample Location 7A/2-05

Domestic Well Data

Flow-Thru Cell

Sample ID No. NTC 19600501

Monitoring Well Data

Make/Model mu 32-U33

Sampled By PHS

Other Well Type

Serial Nos. 7918022 / T0052020

C-O-C No. _____

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1520	5.77	0.502	25.20	650	2.87	75	5.70	80
1	0.041	0.155	1525	5.83	0.466	25.42	600	1.36	54	5.81	80
2	0.163	0.617	1530	5.84	0.408	25.57	600	1.19	48	5.90	80
4	0.653	2.47	1535	5.84	0.443	25.62	550	1.54	33	6.22	80
6	1.469	5.56	1540	5.84	0.438	25.61	550	1.05	29	6.28	80
8	2.611	9.88	1545	5.85	0.436	25.63	500	0.82	29	6.34	80
10	4.08	15.44	1550	5.81	0.436	25.31	550	0.70	30	6.51	80
	[1 gal = 3.785 L]		1555	5.81	0.398	25.25	600	0.57	54	6.75	80
			1600	5.86	0.411	25.33	650	0.51	62	6.81	80
PID Reading (ppm)			1605	5.88	0.414	25.35	650	0.49	62	6.85	80
			1608	5.92	0.407	25.35	650	0.49	62	6.90	80
			1605	5.97	0.447	25.35	700	0.48	61	6.98	80
Well Casing Diameter	2"		1620	5.99	0.450	25.31	750	0.42	57	7.12	80
Total Well Depth	12.40		1625	6.03	0.459	25.35	800	0.40	49	7.22	80
Static Water Level	5.25		1630	6.07	0.492	25.59	950	0.35	38	7.34	80
Tube Intake Depth	9.0		1635	6.12	0.510	25.56	1000	0.33	28	7.45	80
			1640								
Start Purge (hr)	1515		1645								
End Purge (hr)			1650								
Total Purge Time (min)			1655								
Total Vol Purged			1700								
			1705								
			1710								
			1715								

WATER QUALITY SAMPLE PARAMETERS

Date	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Time	Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	2 1-liter amber glass
Herbicides	8151	None	2 1-liter amber glass
TAL Metals	6000/7000	HNO ₃	1 1-liter HDPE

ADDITIONAL INFORMATION

Comments:

*NOT SAMPLED DUE TO HIGH TURBIDITY.
KERZ = OUT OF RANGE

Method:

- Peristaltic Pump
- Centrifugal Pump
- Bladder Pump
- Tube Evacuation
- Vacuum Jug Assembly
- Bailor

Tubing Type:

- Polyethylene
- Teflon
- Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s):



Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 4/29/01

Page 1 of

Project Site Name: NTC Orlando
Project No.: 7547

Sample Location: OLID-18-06

Domestic Well Data

Flow-Thru Cell Flowbe
Make/Model: 4-22

Sample ID No.: NTC18600613

Monitoring Well Data

Sampled By: JTB

Other Well Type:

Serial Nos.:

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals per ft. of Water	Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	0840	5.80	272	22.4	100	8.42	-77	3.85	100
1	0.041	0.155	0845	5.43	297	22.4	110	2.46	-99	3.85	"
2	0.163	0.617	0850	5.42	284	22.5	110	2.12	-109	3.85	"
4	0.653	2.47	0855	5.85	283	22.5	85	1.43	-142	3.85	"
6	1.469	5.56	0900	5.92	277	22.5	80	2.21	-130	3.85	"
8	2.611	9.88	0905	5.89	275	22.5	80	1.33	-142	3.86	"
10	4.08	15.44	0910	5.79	268	22.5	80	0.81	-147	3.86	"
	[1 gal. = 3.785 L]		0915	5.77	265	22.6	80	0.56	-151	3.86	"
			0920	5.76	262	22.6	80	0.57	-154	3.86	"
PID Reading (ppm):			0925	5.75	261	22.6	80	0.81	-156	3.86	"
			0930	5.74	253	22.8	100	0.59	-158	3.86	"
			0935	5.71	247	22.8	100	0.46	-161	3.86	"
Well Casing Diameter:	2"		0940	5.71	247	22.8	100	0.45	-163	3.86	"
Total Well Depth:											
Static Water Level:											
Tube Intake Depth:	12'										
Start Purge (hr):	0840										
End Purge (hr):	0940										
Total Purge Time (min):	60										
Total Vol. Purged:	6.5L										

WATER QUALITY SAMPLE PARAMETERS

Date:	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	DTW	Flow Rate
Description	pH units	mS/cm	°C	NTU	mg/L	mV	ft BTOC	ml/min	
Date: <u>4/29/01</u>									
Time: <u>0941</u>	Clear	5.71	247	22.8	100	0.45	-163	3.86	100

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	1 1-liter amber glass
Herbicides	8151	None	1 1-liter amber glass
X-tra Organic	8XXX	None	1 or 2 1-liter amber glass
TAL Metals	6000/7000	HNO ₃	1 1-liter HDPE
TRPH	FL PRO	H ₂ SO ₄	1 1-liter amber glass

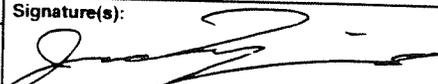
ADDITIONAL INFORMATION

Comments: Sample DISCARDED 043001 per Mike Campbell

Method: Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailer

Tubing Type: Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

MS/MSD: Duplicate ID No.: Signature(s): 

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 4-30-01

Page 1 of 1

Project Site Name: NTL Orlando
 Project No.: 7A57

Sample Location: OLD-18-06

Domestic Well Data

Flow-Thru Cell 1/2 in

Sample ID No.: NTL18600613

Monitoring Well Data

Make/Model: V-22

Sampled By: KJM

Other Well Type:

Serial Nos.: 9012113/927030

C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals. per ft. of Water	Liters	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01	0.038	1520	5.35	.304	22.8	65.2	2.60	-89	3.71	100
1	0.041	0.155	1530	5.33	.289	22.4	76.7	1.05	-109	3.71	80
2	0.163	0.617	1540	5.27	.264	22.7	75.7	0.87	-114	3.71	80
4	0.653	2.47	1550	5.30	.257	22.9	69.9	0.84	-124		80
6	1.469	5.56	1600	5.37	.245	21.8	72.3	0.73	-131		
8	2.611	9.88	1610	5.38	.243	22.2	72.2	0.74	-134		
10	4.08	15.44	1620	5.43	.239	22.2	72.3	0.75	-140		
	[1 gal. = 3.785 L]		1630	5.47	.235	22.7	76.9	0.66	-144		
			1640	5.48	.236	21.9	80.8	0.59	-146		
PID Reading (ppm):			1650	5.47	.228	21.1	88.3	0.64	-147		
			1700	5.43	.207	21.5	73.8	0.49	-151		
Well Casing Diameter: 2"			1715	5.40	.205	21.5	142.2	0.59	-151		
Total Well Depth: 15			1730	5.41	.202	21.5	149.0	0.53	-152		
Static Water Level: 3.71			1745	5.41	.199	21.5	174.0	0.44	-153		
Tube Intake Depth: 5 FB			1800	5.43	.198	21.5	180.0	0.51	-153		
			1820	5.42	.198	21.5	182.0	0.49	-153	↓	↓
Start Purge (hr): 1515											
End Purge (hr): 1830											
Total Purge Time (min): 195 min											
Total Vol. Purged: 195 gal											

WATER QUALITY SAMPLE PARAMETERS

Date:	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Time:									

ANALYSES INFORMATION

Analysis	Preservative	Container Requirements	Collected
TCL VOCs	8260B	HCl	3 40 ml glass vials
SVOCs/PAHs	8270C/8310	None	2 1-liter amber glass
Pesticides	8081A	None	1 1-liter amber glass
Herbicides	8151	None	1 1-liter amber glass
X-tra Organic	8XXX	None	1 or 2 1-liter amber glass
TAL Metals	6000/7000	HNO ₃	1 1-liter HDPE
TRPH	FL PRO	H ₂ SO ₄	1 1-liter amber glass

ADDITIONAL INFORMATION

Comments: NO SAMPLE TAKEN
Consider This Development DATA.

Method: Peristaltic Pump
 Centrifugal Pump
 Bladder Pump
 Tube Evacuation
 Vacuum Jug Assembly
 Bailer

Tubing Type:
 Polyethylene
 Teflon
 Teflon-lined Polyethylene

QA/QC SAMPLES

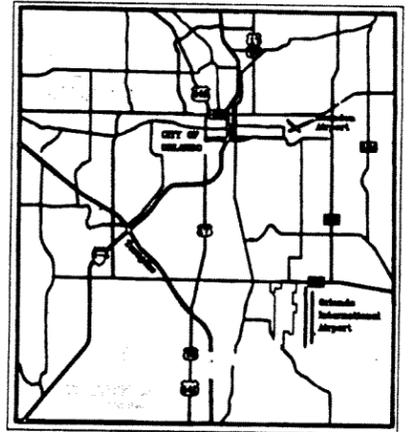
MS/MSD: Duplicate ID No.:

Signature(s):

[Handwritten Signature]

DATA LIST

MARKED WELL No.	(Grid) EASTING (center of PVC)	NORTHING	Elevation of PVC (high point)	Elevation of ground surface
OLD-18-01	546423.44	1491609.76	89.90	90.3
OLD-18-02	546593.18	1491413.12	89.68	89.9
OLD-18-03	546545.24	1491261.76	90.31	90.5
OLD-18-04	546396.26	1491677.18	89.22	89.6
OLD-18-05	546235.43	1491450.18	90.23	90.5
OLD-18-06	546125.44	1491498.29	88.94	89.2



EDC PARCEL

FOUND 1/2" R&C,
stamped LB 6552

Concrete Monument
w/ OIA cap "156"
Elev. = 90.514

MONITOR WELL
OLD-18-05

MONITOR WELL
OLD-18-01

FOUND 1/2" R&C,
stamped LB 6552

MONITOR WELL
OLD-18-06

STUDY AREA #18

FOUND 1/2" R&C,
stamped LB 6552

MONITOR WELL
OLD-18-04

MONITOR WELL
OLD-18-02

MONITOR WELL
OLD-18-03

Surveyor's Notes

1. This Survey is NOT valid without the signature and original raised seal of a FLORIDA LICENSED SURVEYOR AND MAPPER.
2. The elevations shown hereon are relative to the North American Vertical Datum of 1988 (NAVD88). Said elevations are based upon the following benchmarks: U.S. Coast and Geodetic Survey Benchmark M-122, Elev. 94.629 ft. Orlando International Airport Geodetic Control Station 0155, Elev. 90.547 ft. Orlando International Airport Geodetic Control Station 0156, Elev. 90.514 ft.
3. The horizontal coordinate values shown hereon are relative to the North American datum of 1983, adjustment of 1990 and projected in the State Plane Coordinate System, Florida East Zone 0901.
4. Date of Field Survey: September 24, 2001
5. The Specific Purpose of this survey was to establish State Plane Coordinate values and NAVD88 Elevations for the location of 5 well sites.
6. This survey is for the benefit of TETRA TECH NUS, INC.

Robert M. Jones, P.L.S. 4201

FIELD BOOK: 627, PAGE 41-43, 60-64
LAST DATE OF FIELD SURVEY: 11.20.2001



* The MACTEC family of companies include the firms formerly known as Regional Engineers, Planners & Surveyors (REPS) and Harding Lawson Associates (HLA) Certificate of authorization number LB-0006969

DRAWING NAME: Tetra Tech Study18.dwg

Appendix A
 Table A-1. Summary of Water Table Elevation Measurements
 Study Area 18
 September 1995 to January 1997

Naval Training Center, Orlando
 Orlando, FL

WELL	OLD1801	OLD1802	OLD1803	OLD1804		
NORTHING	1,491,609.88	1,491,413.08	1,491,261.75	1,491,450.28		
EASTING	546,423.21	546,693.18	546,645.19	546,235.24		
TOC ELEV	90.79	90.59	91.24	90.11		
Sep-95	85.98	87.56	87.64	87.50		
Oct-95	86.57	87.34	87.34	87.25		
Nov-95	85.65	86.05	85.85	86.11		
Jan-96	86.77	85.84	86.87	87.38		
Mar-96	86.27	86.09	85.90	86.50		
Apr-96	85.67	86.47	86.25	85.89		
Jun-96	85.82	86.53	86.38	86.79		
Jul-96	85.86	87.15	87.05	86.24		
Sep-96	86.69	87.70	88.01	87.42		
Jan-97	85.38	85.44	85.14	85.83		
TOC = Top of Casing						
Elevations are in feet above mean sea level.						
Northings and Eastings are referenced to the NAD 1983 Florida East Zone Datum.						

TABLE A-2

MONITORING WELL LOCATIONS AND CONSTRUCTION
STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

MONITORING WELL	DATE INSTALLED	SCREENED INTERVAL (feet below TOC)	LOCATIONS		ELEVATIONS ^(a)	
			NORTHING	EASTING	TOP OF CASING	GROUND SURFACE
OLD-18-01	5/12/1995	2.5 - 12.5	1,491,609.76	546,423.44	89.90	90.3
OLD-18-02	5/12/1995	2.5 - 12.5	1,491,413.12	546,693.18	89.68	89.9
OLD-18-03	5/13/1995	2.5 - 12.5	1,491,261.76	546,645.24	90.31	90.5
OLD-18-04	5/11/1995	2.5 - 12.5	1,491,677.18	546,396.26	89.22	89.6
OLD-18-05	4/24/2001	3 - 13	1,491,450.18	546,235.43	90.23	90.5
OLD-18-06	4/24/2001	5.5 - 20.5	1,491,498.29	546,125.44	88.94	89.2

All wells are 2-inch, Type II wells in surface mounts.

^(a) Elevations are expressed in feet above mean sea level.

TOC - Top of casing.

All horizontal locations are relative to the North American Datum of 1983, as adjusted in 1990.

All elevations are relative to the North American Vertical Datum of 1988.

APPENDIX B

SUMMARY OF ANALYTICAL RESULTS

- Table B-1 Summary of Detections in Surface Soil Analytical Results, Study Area 18, Initial Site Screening
- Table B-2 Summary of Detections in Subsurface Soil Analytical Results, Study Area 18, Initial Site Screening
- Table B-3 Summary of Detections in Groundwater Analytical Results, Study Area 18, Initial Site Screening
- Table B-4 Summary of Detections in Soil Analytical Results, Study Area 18, Supplemental PAH Sampling
- Table B-5 Summary of Soil Analytical Results, Study Area 18, Initial Site Screening
- Table B-6 Summary of Soil Analytical Results, Study Area 18, Supplemental PAH Sampling
- Table B-7 Summary of Groundwater Analytical Results, Study Area 18, Initial Site Screening
- Table B-8 Summary of Groundwater Analytical Results, Study Area 18, Supplemental PAH Sampling
- Table B-9 Groundwater Analytical Results, Study Area 18, October 2000
- Table B-10 Soil Analytical Results, Study Area 18, April 2001
- Table B-11 Groundwater Analytical Results, Study Area 18, June 2001
- Table B-12 Soil Analytical Results, Study Area 18, August 2001

TABLE B-1
SUMMARY OF DETECTIONS IN SURFACE SOIL
ANALYTICAL RESULTS,
STUDY AREA 18,
INITIAL SITE SCREENING

Appendix B
 Table B-1. Summary of Detections in Surface Soil Analytical Results, Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Identifier	Background ¹	SCTL for	RBC ³ for	RBC ³ for	18B00501	18B00601	18S00700	18S00700D	18S00800	18S00900	18S01000
		Residential Soil ²	Residential Soil	Industrial Soil	4/11/1995	4/11/1995	4/10/1995	4/10/1995	4/11/1995	4/11/1995	4/11/1995
Sampling Date	Feet bls				0-1	0-1	0-1	0-1	0-1	0-1	0-1
Volatile Organics, ug/kg											
Acetone	--	770,000	7,800,000 n	200,000,000 n	7 J	8 J					
Tetrachloroethene	--	10,000	12,000 c	110,000 c							2 J
Xylene (total)	--	290,000	1.60E+08	1.00E+09			1 J				
Semivolatile Organics, ug/kg											
Acenaphthene	--	2,300,000	4,700,000 n	120,000,000 n					350 J		
Anthracene	--	19,000,000	23,000,000 n	610,000,000 n				59 J	350 J		
Benzo(a)anthracene	--	1,400	880 c	7,800 c			300 J	410 J	2300		
Benzo(a)pyrene	--	100	88 c	780 c			300 J	430	1900		
Benzo(b)fluoranthene	--	1,400	880 c	7,800 c			480	500	2100		
Benzo(g,h,i)perylene	--	2,300,000	2,300,000 n	61,000,000 n			100 J	94 J	1,200		
Benzo(k)fluoranthene	--	15,000	8,800 c	78,000 c			440	600	1,700		
bis(2-Ethylhexyl)phthalate	--	75,000	46,000 c	410,000 c			480				
Carbazole	--	53,000	32,000 c	290,000 c			45 J		260 J		
Chrysene	--	140,000	88,000 c	780,000 c			370 J	530	2,200		
Dibenz(a,h)anthracene		100	88 c	780 c			66 J	82 J	320 J		
Fluoranthene	--	2,800,000	3,100,000 n	82,000,000 n			660	920	4,500 D		97 J
Fluorene	--	2,100,000	3,100,000 n	82,000,000 n					200 J		
Indeno(1,2,3-cd)pyrene	--	1,500	880 c	7,800 c			150 J	180 J	1200		
Phenanthrene	--	1,900,000	2,300,000 n	61000000 n			240 J	340 J	2,300		
Pyrene	--	2,200,000	2,300,000 n	61,000,000 n			620	720	2,600 D		
Pesticides/PCBs, ug/kg											
4,4'-DDD	--	4,500	2,700 c	76,000 n			8.6 NJ	7 NJ	160 J		
4,4'-DDE	--	3,200	1,900 c	17,000 c			17 NJ	23 J	320		1,300 CD
4,4'-DDT	--	3,100	1,900 c	17,000 c			7.6 J	11 J	250 J		2500 CD
Aldrin	--	60	38 c	340 c			13 J	14 J			
alpha-Chlordane	--	3000	490 c	4,400 c			40 J	54 J	290		450 CD
Aroclor-1260	--	600	83 c	740 c							
Dieldrin	--	70	40 c	360 c			150 J	160 J	99		

Appendix B
 Table B-1. Summary of Detections in Surface Soil Analytical Results, Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Identifier	Background ¹	SCTL for Residential Soil ²	RBC ³ for Residential Soil	RBC ³ for Industrial Soil	18B00501	18B00601	18S00700	18S00700D	18S00800	18S00900	18S01000	
					4/11/1995	4/11/1995	4/10/1995	4/10/1995	4/11/1995	4/11/1995	4/11/1995	
Sampling Date												
Feet bls												
gamma-Chlordane	--	3000	490 c	4,400 c				43 J	60 J	330		340 CD
Heptachlor epoxide	--	100	70 c	630 c								62 J
Inorganics, mg/kg												
Aluminum	4,870	72,000	78,000 n	1,000,000 n	5,740 J	6,870 J	1,800	1,640	2,860 J	1,550 J		3,110 J
Antimony	--	26	31 n	820 n				2.9 B				
Arsenic	1.9	0.8	0.43 c/23 n	3.8 c/610 n	0.66 BJ	0.58 BJ	0.8 B	0.77 B	0.55 B			1.1 B
Barium	21.6	105	5,500 n	140,000 n	12.1 BJ	18.2 J	22.7 B	31.4 B	70 J	3.4 J		2250 J
Beryllium	0.46	120	0.15 c	1.3 c	0.06 B	0.06 B	0.12 B	0.09 B	0.29 B	0.02 B		0.31 B
Cadmium	--	75	39 n	1,000 n				2.1	1.2 B			
Calcium	33,568	ND	1,000,000	1,000,000	1,090 BJ	928 J	47,400	49,500	39,800 J	592 J		78,200 J
Chromium	7.7	290	390 n	10,000 n	6.8 J	9.4 J	28.9 J	13.6 J	32.1 J	2 J		46.4 J
Cobalt	--	4,700	4,700 n	120,000 n					0.79 B			3.9 B
Copper	2.6	105	3,100 n	82,000 n				13.9	14.9	7.5		12
Iron	843	23000	23,000 n	610,000 n	265 J	303 J	889	833	423 J	221 J		779 J
Lead	21.3	500	400	400	4.3	6.8	182	134	94.4	1.3		133
Magnesium	381	ND	460,468	460,468	78.2 J	114 J	389 B	436 B	1,420 J	56.6 J		2,230 J
Manganese	10.8	1600	1,800 n	47,000 n	0.8 J	0.74 J	13.5 J	13.2 J	99.7 J	0.26 J		111 J
Mercury	0.05	3.7	23 n	610 n	0.06	0.1	0.05 B	0.05 B	0.04 B			0.05
Nickel	--	105	1,600 n	41,000 n		3.5 B	4.5 B	3.4 B				3.1 B
Potassium	210	ND	1,000,000	1,000,000					165 B			197 B
Selenium	1.1	390	390 n	10,000 n			0.19 B					
Sodium	--	ND	1,000,000	1,000,000	5.3 B	5.4 B	172 B	178 B	45.9 B			105 B
Vanadium	4.9	15	550 n	14,000 n	2.1 B	3.5 B	12.3 B	11.6 B	4.6 B			8.6 B
Zinc	4.6	23,000	23,000 n	610,000 n	1.1 J	0.32 J	148 J	127 J	47.2 J	0.5 J		100 J
General chemistry												
pH, Solid (units)	ND	ND	ND	ND	7.1				8.05	7.05		8.00

Appendix B
 Table B-1. Summary of Detections in Surface Soil Analytical Results, Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Identifier	Background ¹	SCTL for Residential Soil ²	RBC ³ for Residential Soil	RBC ³ for Industrial Soil	18S01000D	18S01100
Sampling Date					4/11/1995	4/11/1995
Feet bls					0-1	0-1
Volatile Organics, ug/kg						
Acetone	--	770,000	7,800,000 n	200,000,000 n		
Tetrachloroethene	--	10,000	12,000 c	110,000 c		
Xylene (total)	--	290,000	1.60E+08	1.00E+09		
Semivolatile Organics, ug/kg						
Acenaphthene	--	2,300,000	4,700,000 n	120,000,000 n		
Anthracene	--	19,000,000	23,000,000 n	610,000,000 n		
Benzo(a)anthracene	--	1,400	880 c	7,800 c	130 J	120 J
Benzo(a)pyrene	--	100	88 c	780 c	140 J	210 J
Benzo(b)fluoranthene	--	1,400	880 c	7,800 c	180 J	330 J
Benzo(g,h,i)perylene	--	2,300,000	2,300,000 n	61,000,000 n	140 J	200 J
Benzo(k)fluoranthene	--	15,000	8,800 c	78,000 c	170 J	280 J
bis(2-Ethylhexyl)phthalate	--	75,000	46,000 c	410,000 c		190 J
Carbazole	--	53,000	32,000 c	290,000 c		
Chrysene	--	140,000	88,000 c	780,000 c	180 J	310 J
Dibenz(a,h)anthracene		100	88 c	780 c		
Fluoranthene	--	2,800,000	3,100,000 n	82,000,000 n	250 J	360 J
Fluorene	--	2,100,000	3,100,000 n	82,000,000 n		
Indeno(1,2,3-cd)pyrene	--	1,500	880 c	7,800 c	120 J	200 J
Phenanthrene	--	1,900,000	2,300,000 n	61,000,000 n		
Pyrene	--	2,200,000	2,300,000 n	61,000,000 n	180 J	260 J
Pesticides/PCBs, ug/kg						
4,4'-DDD	--	4,500	2,700 c	76,000 n		
4,4'-DDE	--	3,200	1,900 c	17,000 c	1,300 CD	13 J
4,4'-DDT	--	3,100	1,900 c	17,000 c	2000 CD	
Aldrin	--	60	38 c	340 c		
alpha-Chlordane	--	3000	490 c	4,400 c	380 CD	5.6 J
Aroclor-1260	--	600	83 c	740 c		190 J
Dieldrin	--	70	40 c	360 c		26

Appendix B
 Table B-1. Summary of Detections in Surface Soil Analytical Results, Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Identifier	Background ¹	SCTL for Residential Soil ²	RBC ³ for Residential Soil	RBC ³ for Industrial Soil	18S01000D	18S01100
Sampling Date					4/11/1995	4/11/1995
Feet bls					0-1	0-1
gamma-Chlordane	--	3000	490 c	4,400 c	260 CD	7 J
Heptachlor epoxide	--	100	70 c	630 c	30 J	
Inorganics, mg/kg						
Aluminum	4,870	72,000	78,000 n	1,000,000 n	1,820 J	6,310 J
Antimony	--	26	31 n	820 n		
Arsenic	1.9	0.8	0.43 c/23 n	3.8 c/610 n	1.6 J	0.84 B
Barium	21.6	105	5,500 n	140,000 n	2750 J	48 B
Beryllium	0.46	120	0.15 c	1.3 c	0.18 B	0.82 B
Cadmium	--	75	39 n	1,000 n		
Calcium	33,568	ND	1,000,000	1,000,000	79,200 J	45,100 J
Chromium	7.7	290	390 n	10,000 n	24.5 J	9.2 J
Cobalt	--	4,700	4,700 n	120,000 n	4.4 B	
Copper	2.6	105	3,100 n	82,000 n	11.3	6.8
Iron	843	23000	23,000 n	610,000 n	718 J	684 J
Lead	21.3	500	400	400	147	89.1
Magnesium	381	ND	460,468	460,468	1,160 J	3,620 J
Manganese	10.8	1600	1,800 n	47,000 n	65.1 J	178 J
Mercury	0.05	3.7	23 n	610 n	0.03 B	
Nickel	--	105	1,600 n	41,000 n		
Potassium	210	ND	1,000,000	1,000,000		671 B
Selenium	1.1	390	390 n	10,000 n		
Sodium	--	ND	1,000,000	1,000,000	78.1 B	122 B
Vanadium	4.9	15	550 n	14,000 n	6 B	10.7 B
Zinc	4.6	23,000	23,000 n	610,000 n	57 J	80.8 J
General chemistry						
pH, Solid (units)	ND	ND	ND	ND	8.15	

Appendix B
Table B-1. Notes to Summary of Detections in Surface Soil Analytical Results, Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

NOTES:

The background screening value is twice the average of detected concentrations for inorganic analytes.

SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.

Values indicated are for direct exposure scenario. Value for chromium is for chromium (IV).

Value for mercury is for inorganic mercury.

RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available; value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium, sodium) screening values were derived based on recommended daily allowances.

RBC for benzo(g,h,i)perylene and phenanthrene are not available, value is based on pyrene.

$\mu\text{g}/\text{kg}$ = micrograms per DDE = dichlorodiphenyldichloroethene.

mg/kg = milligrams per DDT = dichlorodiphenyltrichloroethane.

n = noncarcinogenic effects DDD = dichlorodiphenyldichloroethane.

c = carcinogenic effects.

ND = Not determined.

bls = below land surface

B = Reported concentration is between the instrument detection limit and Contract Required Detection Limit.

J = Reported concentration is an estimated quantity.

D = Reported concentrations if from a dilution/reanalysis.

C = Confirmed by gas chromatography/mass spectroscopy.

PF = This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.

FDEP = Florida Department of Environmental Protection.

OSWER = Office of Solid Waste and Emergency Response.

USEPA = U.S. Environmental Protection Agency.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram ($\mu\text{g}/\text{kg}$) soil dry weight.

TABLE B-2
SUMMARY OF DETECTIONS IN SUBSURFACE SOIL
ANALYTICAL RESULTS,
STUDY AREA 18,
INITIAL SITE SCREENING

Appendix B
 Table B-2. Summary of Detections in Subsurface Soil Analytical Results, Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Identifier	Background ¹	SCTL for	RBC ³ for	RBC ³ for	Industrial Soil	18B00101 5/12/1995	18B00201 5/12/1995	18B00301 5/14/1995	18B00401 5/11/1995	18B00401D 5/11/1995	18B00502 4/11/1995
		Residential Soil ²	Residential Soil	Soil							
Sampling Date	Feet bls					5-7	6-8	6-8	6-8	6-8	3-4
Volatile Organics, ug/kg											
2-Butanone	--	48,000,000	47,000,000 n	1,000,000,000 n		9 J					
Acetone	--	770,000	7,800,000 n	200,000,000 n		48	34	24	39	30	
Methylene chloride	--	16,000	85,000 c	760,000 c			8 J				
Inorganics, mg/kg											
Aluminum	11,130	72,000	78,000 n	1,000,000 n		1,610	1,930	7,490	1,450 J	1,650 J	1,020 J
Arsenic	2.0	0.8	0.43 c/23 n	3.8 c/610 n		0.77 B	0.48 J	0.76 B			
Barium	11.3	105	5,500 n	140,000 n		7.1 J	7.5 J	16 J	8.8 J	10.1 J	2.6 BJ
Beryllium	0.18	120	0.15 c	1.3 c		0.04 J		0.05 J	0.05 J	0.06 J	0.04 B
Calcium	321	ND	1,000,000	1,000,000		171 B	939 B	83.1 B	147 J	131 J	392 BJ
Chromium	11.3	290	390 n	10,000 n		3.2	2.6	6.9			1 BJ
Copper	2.8	105	3,100 n	82,000 n					0.9 B	0.81 B	
Iron	829	23,000	23,000 n	610,000 n		488	186	249	388 J	429 J	76.8 J
Lead	7.0	500	400	400		3.8 J	1.9 J	3.7 J	2.5 J	2.4 J	1
Magnesium	38.9	ND	460,468	460,468		85.7 B	41.6 B	51 B	94 B	106 B	19.4 BJ
Manganese	0.69	1,600	1,800 n	47,000 n		1.5 B	1 B	0.75 B	0.94 B	0.95 B	0.34 BJ
Mercury	0.12	4	23 n	610 n				0.04 B	0.03 B	0.04 B	
Nickel	11.3	105	1,600 n	41,000 n				3.5 B			
Sodium	--	ND	1,000,000	1,000,000		14.9 B	6.5 B	8.7 B	21.3 B		
Vanadium	5.9	15	550 n	14,000 n		1.5 B	1.6 B	7.7 B	2.6 B	3.7 B	
Zinc	0.66	23,000	23,000 n	610,000 n					0.66 B	0.41 B	0.53 BJ
General chemistry, mg/kg											
pH, Solid		NA									7.7

Appendix B
Table B-2. Notes to Summary of Detections in Subsurface Soil Analytical Results, Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

NOTES:

The background screening value is twice the average of detected concentrations for inorganic analytes.

SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.

SCTL values are not applicable because there is no exceedance of groundwater cleanup target levels.

RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available; value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium, sodium) screening values were derived based on recommended daily allowances.

RBC for benzo(g,h,i)perylene and phenanthrene are not available, value is based on pyrene.

$\mu\text{g}/\text{kg}$ = micrograms per kilogram.

DDE = dichlorodiphenyldichloroethane.

mg/kg = milligrams per kilogram.

DDT = dichlorodiphenyltrichloroethane.

n = noncarcinogenic effects.

DDD = dichlorodiphenyldichloroethane.

c = carcinogenic effects.

ND = Not determined.

NA = Not applicable

bls = below land surface

B = Reported concentration is between the instrument detection limit (IDL) and Contract Required Detection Limit (CRDL).

J = Reported concentration is an estimated quantity.

D = Reported concentrations if from a dilution/reanalysis.

PF = This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.

FDEP = Florida Department of Environmental Protection.

OSWER = Office of Solid Waste and Emergency Response.

USEPA = U.S. Environmental Protection Agency.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram ($\mu\text{g}/\text{kg}$) soil dry weight.

Bold/shaded values indicate exceedance of regulatory guidance and background.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-3
SUMMARY OF DETECTIONS IN GROUNDWATER
ANALYTICAL RESULTS,
STUDY AREA 18,
INITIAL SITE SCREENING

Appendix B
Table B-3. Summary of Detections in Groundwater Analytical Results, Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Well ID	Background ¹	FDEPGCTL	FEDMCL	RBC ² for Tap Water	OLD-18-01	OLD-18-01	OLD-18-02	OLD-18-03	OLD-18-04	
Identifier					18G00101	18G00102	18G00201	18G00301	18G00401	
Sampling Date					5/30/1995	6/17/1996	5/18/1995	5/18/1995	5/18/1995	
Volatile Organics, ug/L										
Xylene (total)	--	20 ³ /10,000 ⁵	s/p	10,000	12,000 n		0.3 J		1	
Semivolatile Organics, ug/L										
Acenaphthene	--	210	st	ND	2,200 n		2 J			
bis(2-Ethylhexyl)phthalate	1	6 ⁶	p/c	6	4.8 c		1		2	
Naphthalene	--	20	o/st	ND	1,500 n		12			
Inorganics, ug/L										
Aluminum	4,067	200 ³	s	ND	37,000 n	65,600	5,620	21,900	14,100	7,360
Arsenic	5	50 ⁵	p/c	50	0.045 c/11 n	14.6 J	3 BJ	33.4		6.2 J
Barium	31.4	2,000 ⁵	p/st	2,000	2,600 n	590 J	71.1 B	159 B	74.4 B	208
Beryllium	--	4 ⁵		4	0.016 c	3.6 B	0.57 B	0.36 B	0.32 B	1.5 B
Cadmium							3.8 B			
Calcium	36,830	ND		ND	1,000,000	14,300	7,760	6,490	1,660 B	5,130
Chromium	7.8	100 ⁵	p	100	180 n	95.6	21.8	27.5		27.8
Cobalt	--	420	st	ND	2,200 n	8.3 J	3 B	3.4 B	3.3 B	3.6 B
Copper	5.4	1,000 ³	st	1300 ⁷	1500 n	27.6	11.8 B	4.8 B		
Iron	1,227	300 ³	s	ND	11,000 n	23,400	5,410	4,500	4,530	13,400
Lead	4	15 ⁵	p	15	15	54.8		12	3.9	5.1
Magnesium	4,560	ND		ND	118,807	9,950	3,020 B	2,370 B	2,760 B	5,610
Manganese	17	50 ⁵	s/st	ND	840 n	53.5	27.6	20.3	14.8 B	19.6
Mercury	0.12	2	p/st	2	11 n	0.68	0.12 B			
Nickel	--	100 ⁵	p/st	100	730 n	76	13.8 B			
Potassium	5,400	ND		ND	297,016	7,190	9,470	1,200 B	1,060 B	3,040 B
Selenium	9.7	50 ⁵	p/st	50	180 n	8.5				
Sodium	18,222	160,000 ⁵	p	ND	396,022	30,000	31,700 J	10,000	9,620	28,900
Thallium	3.8	2	st	2	2.9 n	79.4 J				
Vanadium	20.6	49 ⁴	st	ND	260 n	211	19.8 B	22.4 B	18.1 B	38.4 B
Zinc	4	5,000 ³	s/st	ND	11000 n	20.1				
General chemistry, mg/L										
Total Suspended Solids	ND	ND		ND	ND	106	8	8		37

Appendix B
Table B-3. Notes to Summary of Detections in Groundwater Analytical Results, Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

NOTES:

Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.

FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.

FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.

RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

s = secondary groundwater standard.

st = systemic toxicant.

mc = based on minimum criteria

p = primary standard.

o = organoleptic.

n = noncarcinogenic effects.

c = carcinogen (GCTLs) or carcinogenic effects (RBCs).

ND = Not determined.

NA = Not analyzed.

N/A = Not Applicable

USEPA = U.S. Environmental Protection Agency.

B = Reported concentration is between the instrument detection limit and the contract required detection limit.

J = Reported concentration is an estimated quantity.

D = Reported concentrations if from a dilution/reanalysis.

µg/L = micrograms per liter.

mg/L = milligrams per liter.

Bold/shaded numbers indicate exceedance of groundwater guidance and background.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-4
SUMMARY OF DETECTIONS IN SOIL
ANALYTICAL RESULTS,
STUDY AREA 18,
SUPPLEMENTAL PAH SAMPLING

Appendix B
 Table B-4. Summary of Detections in Soil Analytical Results
 Supplemental PAH Sampling
 Study Area 18

Naval Training Center, Orlando
 Orlando, FL

Identifier	SCTL for	RBC for	RBC for Industrial					
	Residential Soil ²	Residential Soil	Soil	18S01301	18B01301	18S01401	18B01401	18B01501
Sampling Date				11/21/1997	11/21/1997	11/21/1997	11/21/1997	11/25/1997
Sampling depth, ft bls				0-1	1-2	0-1	1-2	2-3
Semivolatile organics, ug/kg								
1-Methylnaphthalene	930,000	ND	ND					
Acenaphthene	2,800,000	4,700,000 n	120,000,000 n					570
Acenaphthylene	670,000	2,300,000 n	61,000,000 n					1000
Anthracene	20,000,000	23,000,000 n	610,000,000 n					77
Benzo(a)anthracene	1,400	880 c	7,800 c	15 PF				51
Benzo(a)pyrene	100	88 c	780 c					49
Benzo(b)fluoranthene	1,400	880 c	7,800 c					110
Benzo(g,h,i)perylene	14,000	2,300,000 n	61,000,000 n					110
Benzo(k)fluoranthene	14,000	8,800 c	78,000 c			4.3		52
Chrysene	140,000	88,000 c	780,000 c	37		13	10	52
Dibenz(a,h)anthracene	100	88 c	780 c					110
Fluoranthene	2,900,000	3,100,000 n	82,000,000 n	6.7	6		4.5	97
Fluorene	2,400,000	3,100,000 n	82,000,000 n					120
Indeno(1,2,3-cd)pyrene	1,400	880 c	7,800 c					50
Naphthalene	1,300,000	3,100,000 n	82,000,000 n					540
Phenanthrene	1,700,000	2,300,000 n	61,000,000 n					68
Pyrene	2,200,000	2,300,000 n	61,000,000 n		24		5.6	45

Appendix B
 Table B-4. Summary of Detections in Soil Analytical Results
 Supplemental PAH Sampling
 Study Area 18

Naval Training Center, Orlando
 Orlando, FL

Identifier	SCTL for	RBC for	RBC for Industrial					
	Residential Soil ²	Residential Soil	Soil	18S01601	18B01601	18S01701	18S01701D	18B01701
Sampling Date				11/21/1997	11/21/1997	11/24/1997	11/24/1997	11/24/1997
Sampling depth, ft bls				0-1	1-2	0-1	0-1	1-2
Semivolatile organics, ug/kg								
1-Methylnaphthalene	930,000	ND	ND					
Acenaphthene	2,800,000	4,700,000 n	120,000,000 n			290		
Acenaphthylene	670,000	2,300,000 n	61,000,000 n					
Anthracene	20,000,000	23,000,000 n	610,000,000 n					
Benzo(a)anthracene	1,400	880 c	7,800 c			140	26	24
Benzo(a)pyrene	100	88 c	780 c			310		20
Benzo(b)fluoranthene	1,400	880 c	7,800 c				51	54
Benzo(g,h,i)perylene	14,000	2,300,000 n	61,000,000 n			270	51	51
Benzo(k)fluoranthene	14,000	8,800 c	78,000 c	2.6		120	24	22
Chrysene	140,000	88,000 c	780,000 c		4.6	180	42	38
Dibenz(a,h)anthracene	100	88 c	780 c			67 PF	38	
Fluoranthene	2,900,000	3,100,000 n	82,000,000 n			180		63
Fluorene	2,400,000	3,100,000 n	82,000,000 n					
Indeno(1,2,3-cd)pyrene	1,400	880 c	7,800 c			43 PF		44
Naphthalene	1,300,000	3,100,000 n	82,000,000 n					
Phenanthrene	1,700,000	2,300,000 n	61,000,000 n					
Pyrene	2,200,000	2,300,000 n	61,000,000 n			57	65	57

Appendix B
 Table B-4. Summary of Detections in Soil Analytical Results
 Supplemental PAH Sampling
 Study Area 18

Naval Training Center, Orlando
 Orlando, FL

Identifier	SCTL for	RBC for	RBC for Industrial					
	Residential Soil ²	Residential Soil	Soil	18S01801	18B01801	18S01901	18B01901	18S02001
Sampling Date				11/24/1997	11/25/1997	11/24/1997	11/24/1997	11/24/1997
Sampling depth, ft bls				0-1	1-2	0-1	1-2	0-1
Semivolatile organics, ug/kg								
1-Methylnaphthalene	930,000	ND	ND				120	
Acenaphthene	2,800,000	4,700,000 n	120,000,000 n		39			
Acenaphthylene	670,000	2,300,000 n	61,000,000 n	38				
Anthracene	20,000,000	23,000,000 n	610,000,000 n					
Benzo(a)anthracene	1,400	880 c	7,800 c	31 PF	4.5	64 PF		8.6 PF
Benzo(a)pyrene	100	88 c	780 c	49	5	92	13	6.7
Benzo(b)fluoranthene	1,400	880 c	7,800 c	56	10	100	7.3	12
Benzo(g,h,i)perylene	14,000	2,300,000 n	61,000,000 n	43		82	18	11
Benzo(k)fluoranthene	14,000	8,800 c	78,000 c	22	4.2	40	4.7 PF	6.4
Chrysene	140,000	88,000 c	780,000 c	47	7.1	76	8.7	11
Dibenz(a,h)anthracene	100	88 c	780 c	4.5 PF		15 PF	5.1 PF	6.7 PF
Fluoranthene	2,900,000	3,100,000 n	82,000,000 n	120	8.9	140	12	13
Fluorene	2,400,000	3,100,000 n	82,000,000 n					
Indeno(1,2,3-cd)pyrene	1,400	880 c	7,800 c	16		15 PF		8.6
Naphthalene	1,300,000	3,100,000 n	82,000,000 n	41		78		
Phenanthrene	1,700,000	2,300,000 n	61,000,000 n			64		
Pyrene	2,200,000	2,300,000 n	61,000,000 n	140		110	28	11

Appendix B
Table B-4. Summary of Detections in Soil Analytical Results
Supplemental PAH Sampling
Study Area 18

Naval Training Center, Orlando
Orlando, FL

NOTES:

Analytical data not subjected to full independent data validation.

SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-785 FAC, April 30, 1998.

SCTL values are not applicable because there is no exceedance of groundwater cleanup target levels.

RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith.

RBC for phenanthrene is not available, value is based on pyrene.

n = noncarcinogenic pathway

c = carcinogenic pathway

ug/kg = micrograms per kilogram.

USEPA = U.S. Environmental Protection Agency.

PF = This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.

Bold/shaded values indicate exceedance of FDEP residential soil cleanup goals.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-5

**SUMMARY OF SOIL
ANALYTICAL RESULTS,
STUDY AREA 18,
INITIAL SITE SCREENING**

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18B00101	18B00201	18B00301	18B00401	18B00401D	18B00501		18B00502	18B00601
Lab ID	G7556002	G7556003	G7562006	G7550003	G7550004	G7316001	G7316001RE	G7316002	G7316003
Sampling Date	12-May-95	12-May-95	14-May-95	11-May-95	11-May-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Volatile Organics, ug/kg									
1,1,1-Trichloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,1,2,2-Tetrachloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,1,2-Trichloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,1-Dichloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,1-Dichloroethene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,2-Dichloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,2-Dichloroethene (total)	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
1,2-Dichloropropane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
2-Butanone	9 J	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
2-Hexanone	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
4-Methyl-2-pentanone	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Acetone	48	34	24	39	30	7 J	NA	11 U	8 J
Benzene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Bromodichloromethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Bromoform	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Bromomethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Carbon disulfide	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Carbon tetrachloride	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Chlorobenzene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Chloroethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Chloroform	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Chloromethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
cis-1,3-Dichloropropene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Dibromochloromethane	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Ethylbenzene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Methylene chloride	11 U	8 J	12 U	12 U	12 U	11 U	NA	11 U	11 U
Styrene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Tetrachloroethene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Toluene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
trans-1,3-Dichloropropene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Trichloroethene	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Vinyl chloride	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18B00101	18B00201	18B00301	18B00401	18B00401D	18B00501		18B00502	18B00601
Lab ID	G7556002	G7556003	G7562006	G7550003	G7550004	G7316001	G7316001RE	G7316002	G7316003
Sampling Date	12-May-95	12-May-95	14-May-95	11-May-95	11-May-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Xylene (total)	11 U	12 U	12 U	12 U	11 U	11 U	NA	11 U	11 U
Semivolatile Organics, ug/kg									
1,2,4-Trichlorobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
1,2-Dichlorobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
1,3-Dichlorobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
1,4-Dichlorobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,2'-oxybis(1-Chloropropane)	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,4,5-Trichlorophenol	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
2,4,6-Trichlorophenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,4-Dichlorophenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,4-Dimethylphenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,4-Dinitrophenol	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
2,4-Dinitrotoluene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2,6-Dinitrotoluene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2-Chloronaphthalene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2-Chlorophenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2-Methylnaphthalene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2-Methylphenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
2-Nitroaniline	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
2-Nitrophenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
3,3'-Dichlorobenzidine	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
3-Nitroaniline	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
4,6-Dinitro-2-methylphenol	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
4-Bromophenyl-phenylether	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
4-Chloro-3-methylphenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
4-Chloroaniline	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
4-Chlorophenyl-phenylether	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
4-Methylphenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
4-Nitroaniline	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
4-Nitrophenol	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
Acenaphthene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Acenaphthylene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Anthracene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18B00101	18B00201	18B00301	18B00401	18B00401D	18B00501		18B00502	18B00601
Lab ID	G7556002	G7556003	G7562006	G7550003	G7550004	G7316001	G7316001RE	G7316002	G7316003
Sampling Date	12-May-95	12-May-95	14-May-95	11-May-95	11-May-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Benzo(a)anthracene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Benzo(a)pyrene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Benzo(b)fluoranthene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Benzo(g,h,i)perylene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Benzo(k)fluoranthene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
bis(2-Chloroethoxy)methane	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
bis(2-Chloroethyl)ether	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
bis(2-Ethylhexyl)phthalate	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Butylbenzylphthalate	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Carbazole	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Chrysene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Di-n-butylphthalate	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Di-n-octylphthalate	380 UJ	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Dibenz(a,h)anthracene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Dibenzofuran	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Diethylphthalate	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Dimethylphthalate	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Fluoranthene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Fluorene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Hexachlorobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Hexachlorobutadiene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Hexachlorocyclopentadiene	380 U	400 U	410 U	390 U	390 U	370 UJ	NA	370 UJ	360 UJ
Hexachloroethane	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Indeno(1,2,3-cd)pyrene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Isophorone	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
N-Nitroso-di-n-propylamine	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
N-Nitrosodiphenylamine (1)	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Naphthalene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Nitrobenzene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Pentachlorophenol	950 U	1000 U	1000 U	980 U	970 U	920 U	NA	920 U	900 U
Phenanthrene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Phenol	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U
Pyrene	380 U	400 U	410 U	390 U	390 U	370 U	NA	370 U	360 U

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18B00101	18B00201	18B00301	18B00401	18B00401D	18B00501		18B00502	18B00601	
Lab ID	G7556002	G7556003	G7562006	G7550003	G7550004	G7316001	G7316001RE	G7316002	G7316003	
Sampling Date	12-May-95	12-May-95	14-May-95	11-May-95	11-May-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	
Pesticides/PCBs, ug/kg										
4,4'-DDD	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
4,4'-DDE	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
4,4'-DDT	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
Aldrin	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
alpha-BHC	2 U	2 U	2 U	2 UJ	2 UJ	1.9 U	1.9 UR	1.9 U	1.9 U	
alpha-Chlordane	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Aroclor-1016	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
Aroclor-1221	79 U	80 U	79 U	77 U	78 U	74 U	74 UR	74 U	75 U	
Aroclor-1232	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
Aroclor-1242	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
Aroclor-1248	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
Aroclor-1254	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
Aroclor-1260	39 U	39 U	39 U	38 U	38 U	37 U	37 UR	37 U	37 U	
beta-BHC	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
delta-BHC	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Dieldrin	3.9 U	3.9 U	3.9 U	3.8 UJ	3.8 UJ	3.7 U	3.7 UR	3.7 U	3.7 U	
Endosulfan I	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Endosulfan II	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
Endosulfan sulfate	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
Endrin	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
Endrin aldehyde	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
Endrin ketone	3.9 U	3.9 U	3.9 U	3.8 U	3.8 U	3.7 U	3.7 UR	3.7 U	3.7 U	
gamma-BHC (Lindane)	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
gamma-Chlordane	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Heptachlor	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Heptachlor epoxide	2 U	2 U	2 U	2 U	2 U	1.9 U	1.9 UR	1.9 U	1.9 U	
Methoxychlor	20 U	19 U	19 UR	19 U	19 U					
Toxaphene	200 U	190 U	190 UR	190 U	190 U					
Herbicides, ug/kg										
2,4,5-T	NA	NA	NA							
2,4,5-TP (Silvex)	NA	NA	NA							
2,4-D	NA	NA	NA							

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

	Sample ID	18B00101	18B00201	18B00301	18B00401	18B00401D	18B00501	18B00502	18B00601	
	Lab ID	G7556002	G7556003	G7562006	G7550003	G7550004	G7316001	G7316002	G7316003	
	Sampling Date	12-May-95	12-May-95	14-May-95	11-May-95	11-May-95	11-Apr-95	11-Apr-95	11-Apr-95	
Inorganics, mg/kg										
Aluminum		1610	1930	7490	1450 J	1650 J	5740 J	NA	1020 J	6870 J
Antimony		6.7 UJ	7.2 UJ	7.1 UJ	6.9 U	6.8 U	6.5 U	NA	6.6 U	6.4 U
Arsenic		0.77 B	0.48 J	0.76 B	0.44 U	0.44 U	0.66 BJ	NA	0.42 U	0.58 BJ
Barium		7.1 J	7.5 J	16 J	8.8 J	10.1 J	12.1 BJ	NA	2.6 BJ	18.2 J
Beryllium		0.04 J	0.02 UJ	0.05 J	0.05 J	0.06 J	0.06 B	NA	0.04 B	0.06 B
Cadmium		0.7 U	0.75 U	0.74 U	0.72 U	0.72 U	0.69 U	NA	0.69 U	0.67 U
Calcium		171 B	939 B	83.1 B	147 J	131 J	1090 BJ	NA	392 BJ	928 J
Chromium		3.2	2.6	6.9	3.1 U	2.8 U	6.8 J	NA	1 BJ	9.4 J
Cobalt		0.66 U	0.7 U	0.69 U	0.67 U	0.67 U	0.64 U	NA	0.64 U	0.62 U
Copper		0.78 U	0.79 U	0.83 U	0.9 B	0.81 B	0.87 U	NA	0.48 U	0.74 U
Iron		488	186	249	388 J	429 J	265 J	NA	76.8 J	303 J
Lead		3.8 J	1.9 J	3.7 J	2.5 J	2.4 J	4.3	NA	1	6.8
Magnesium		85.7 B	41.6 B	51 B	94 B	106 B	78.2 J	NA	19.4 BJ	114 J
Manganese		1.5 B	1 B	0.75 B	0.94 B	0.95 B	0.8 J	NA	0.34 BJ	0.74 J
Mercury		0.03 U	0.03 U	0.04 B	0.03 B	0.04 B	0.06	NA	0.03 U	0.1
Nickel		3.2 U	3.5 U	3.5 B	3.3 U	3.3 U	3.1 U	NA	3.2 U	3.5 B
Potassium		100 U	108 U	106 U	103 U	102 U	98 U	NA	98.6 U	95.2 U
Selenium		0.52 U	0.56 U	0.55 U	0.53 U	0.53 U	0.51 UJ	NA	0.51 UJ	0.49 U
Silver		0.59 U	0.63 U	0.62 U	0.6 U	0.6 U	0.57 U	NA	0.58 U	0.56 U
Sodium		14.9 B	6.5 B	8.7 B	21.3 B	20 U	5.3 B	NA	3.8 U	5.4 B
Thallium		0.41 U	0.44 U	0.43 U	0.42 U	0.42 U	0.4 U	NA	0.4 U	0.39 U
Vanadium		1.5 B	1.6 B	7.7 B	2.6 B	3.7 B	2.1 B	NA	0.56 U	3.5 B
Zinc		0.6 U	0.8 U	0.53 U	0.66 B	0.41 B	1.1 J	NA	0.53 BJ	0.32 J
General chemistry, mg/kg										
pH, Solid		NA	NA	NA	NA	NA	7.1	NA	7.7	NA

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18S00700	18S00700D	18S00800		18S00900	18S01000		18S01000D		18S01100
Lab ID	G7315001	G7315002	G7316004	G7316004DL	G7316005	G7316006	G7316006DL	G7316007	G7316007DL	G7316008
Sampling Date	10-Apr-95	10-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Volatile Organics, ug/kg										
1,1,1-Trichloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,1,2,2-Tetrachloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,1,2-Trichloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,1-Dichloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,1-Dichloroethene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,2-Dichloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,2-Dichloroethene (total)	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
1,2-Dichloropropane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
2-Butanone	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
2-Hexanone	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
4-Methyl-2-pentanone	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Acetone	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Benzene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Bromodichloromethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Bromoform	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Bromomethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Carbon disulfide	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Carbon tetrachloride	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Chlorobenzene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Chloroethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Chloroform	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Chloromethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
cis-1,3-Dichloropropene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Dibromochloromethane	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Ethylbenzene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Methylene chloride	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Styrene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Tetrachloroethene	13 U	13 U	11 U	NA	11 U	2 J	NA	11 U	NA	13 U
Toluene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
trans-1,3-Dichloropropene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Trichloroethene	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Vinyl chloride	13 U	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18S00700	18S00700D	18S00800		18S00900	18S01000		18S01000D		18S01100
Lab ID	G7315001	G7315002	G7316004	G7316004DL	G7316005	G7316006	G7316006DL	G7316007	G7316007DL	G7316008
Sampling Date	10-Apr-95	10-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Xylene (total)	1 J	13 U	11 U	NA	11 U	11 U	NA	11 U	NA	13 U
Semivolatile Organics, ug/kg										
1,2,4-Trichlorobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
1,2-Dichlorobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
1,3-Dichlorobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
1,4-Dichlorobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,2'-oxybis(1-Chloropropane)	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,4,5-Trichlorophenol	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
2,4,6-Trichlorophenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,4-Dichlorophenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,4-Dimethylphenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,4-Dinitrophenol	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
2,4-Dinitrotoluene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2,6-Dinitrotoluene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2-Chloronaphthalene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2-Chlorophenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2-Methylnaphthalene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2-Methylphenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
2-Nitroaniline	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
2-Nitrophenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
3,3'-Dichlorobenzidine	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
3-Nitroaniline	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
4,6-Dinitro-2-methylphenol	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
4-Bromophenyl-phenylether	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
4-Chloro-3-methylphenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
4-Chloroaniline	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
4-Chlorophenyl-phenylether	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
4-Methylphenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
4-Nitroaniline	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
4-Nitrophenol	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
Acenaphthene	440 U	420 U	350 J	320 DR	350 U	360 U	NA	360 U	NA	430 U
Acenaphthylene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Anthracene	440 U	59 J	350 J	340 DR	350 U	360 U	NA	360 U	NA	430 U

Appendix B
Table B-5. Summary of Soil Analytical Results
Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Sample ID	18S00700	18S00700D	18S00800		18S00900	18S01000		18S01000D		18S01100
Lab ID	G7315001	G7315002	G7316004	G7316004DL	G7316005	G7316006	G7316006DL	G7316007	G7316007DL	G7316008
Sampling Date	10-Apr-95	10-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Benzo(a)anthracene	300 J	410 J	2300	1900 DR	350 U	360 U	NA	130 J	NA	120 J
Benzo(a)pyrene	300 J	430	1900	1800 DR	350 U	360 U	NA	140 J	NA	210 J
Benzo(b)fluoranthene	480	500	2100	2000 DR	350 U	360 U	NA	180 J	NA	330 J
Benzo(g,h,i)perylene	100 J	94 J	1200	1000 DR	350 U	360 U	NA	140 J	NA	200 J
Benzo(k)fluoranthene	440	600	1700	1800 DR	350 U	360 U	NA	170 J	NA	280 J
bis(2-Chloroethoxy)methane	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
bis(2-Chloroethyl)ether	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
bis(2-Ethylhexyl)phthalate	480	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	190 J
Butylbenzylphthalate	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Carbazole	45 J	420 U	260 J	270 DR	350 U	360 U	NA	360 U	NA	430 U
Chrysene	370 J	530	2200	2000 DR	350 U	360 U	NA	180 J	NA	310 J
Di-n-butylphthalate	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Di-n-octylphthalate	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Dibenz(a,h)anthracene	66 J	82 J	320 J	240 DR	350 U	360 U	NA	360 U	NA	430 U
Dibenzofuran	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Diethylphthalate	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Dimethylphthalate	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Fluoranthene	660	920	3300 ER	4500 D	350 U	97 J	NA	250 J	NA	360 J
Fluorene	440 U	420 U	200 J	720 UR	350 U	360 U	NA	360 U	NA	430 U
Hexachlorobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Hexachlorobutadiene	440 U	420 U	360 UJ	720 UR	350 U	360 U	NA	360 U	NA	430 U
Hexachlorocyclopentadiene	440 U	420 U	360 U	720 UR	350 UJ	360 UJ	NA	360 UJ	NA	430 UJ
Hexachloroethane	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Indeno(1,2,3-cd)pyrene	150 J	180 J	1200	960 DR	350 U	360 U	NA	120 J	NA	200 J
Isophorone	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
N-Nitroso-di-n-propylamine	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
N-Nitrosodiphenylamine (1)	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Naphthalene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Nitrobenzene	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Pentachlorophenol	1100 U	1000 U	900 U	1800 UR	890 U	900 U	NA	900 U	NA	1100 U
Phenanthrene	240 J	340 J	2300	2000 DR	350 U	360 U	NA	360 U	NA	430 U
Phenol	440 U	420 U	360 U	720 UR	350 U	360 U	NA	360 U	NA	430 U
Pyrene	620	720	3100 ER	2600 D	350 U	360 U	NA	180 J	NA	260 J

Appendix B
 Table B-5. Summary of Soil Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18S00700	18S00700D	18S00800		18S00900	18S01000		18S01000D		18S01100
Lab ID	G7315001	G7315002	G7316004	G7316004DL	G7316005	G7316006	G7316006DL	G7316007	G7316007DL	G7316008
Sampling Date	10-Apr-95	10-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Pesticides/PCBs, ug/kg										
4,4'-DDD	8.6 NJ	7 NJ	160 J	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
4,4'-DDE	17 NJ	23 J	320	NA	3.7 U	1200 R	1300 CD	1200 R	1300 CD	13 J
4,4'-DDT	7.6 J	11 J	250 J	NA	3.7 U	1700 R	2500 CD	1600 R	2000 CD	8.4 U
Aldrin	13 J	14 J	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
alpha-BHC	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
alpha-Chlordane	40 J	54 J	290	NA	1.9 U	420 R	450 CD	340 R	380 CD	5.6 J
Aroclor-1016	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	84 U
Aroclor-1221	450 UJ	440 UJ	1400 U	NA	74 U	360 U	3600 UR	360 U	3600 UR	170 U
Aroclor-1232	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	84 U
Aroclor-1242	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	84 U
Aroclor-1248	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	84 U
Aroclor-1254	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	84 U
Aroclor-1260	220 UJ	210 UJ	710 U	NA	37 U	180 U	1800 UR	180 U	1800 UR	190 J
beta-BHC	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
delta-BHC	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
Dieldrin	150 J	160 J	99	NA	3.7 U	18 U	180 UR	18 U	180 UR	26
Endosulfan I	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
Endosulfan II	22 UJ	21 UJ	71 U	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
Endosulfan sulfate	22 UJ	21 UJ	71 U	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
Endrin	22 UJ	21 UJ	71 U	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
Endrin aldehyde	22 UJ	21 UJ	71 U	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
Endrin ketone	22 UJ	21 UJ	71 U	NA	3.7 U	18 U	180 UR	18 U	180 UR	8.4 U
gamma-BHC (Lindane)	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
gamma-Chlordane	43 J	60 J	330	NA	1.9 U	320 R	340 CD	240 R	260 CD	7 J
Heptachlor	11 UJ	11 UJ	37 U	NA	1.9 U	9.1 U	91 UR	9.1 U	91 UR	4.3 U
Heptachlor epoxide	11 UJ	11 UJ	37 U	NA	1.9 U	62 J	91 UR	30 J	91 UR	4.3 U
Methoxychlor	110 UJ	110 UJ	370 U	NA	19 U	91 U	910 UR	91 U	910 UR	43 U
Toxaphene	1100 UJ	1100 UJ	3700 U	NA	190 U	910 U	9100 UR	910 U	9100 UR	430 U
Herbicides, ug/kg										
2,4,5-T	NA	NA	0.2 U	NA	0.2 U	0.2 U	NA	0.2 U	NA	NA
2,4,5-TP (Silvex)	NA	NA	0.1 U	NA	0.1 U	0.1 U	NA	0.1 U	NA	NA
2,4-D	NA	NA	0.5 U	NA	0.5 U	0.5 U	NA	0.5 U	NA	NA

Appendix B
Table B-5. Summary of Soil Analytical Results
Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Sample ID	18S00700	18S00700D	18S00800		18S00900	18S01000		18S01000D		18S01100
Lab ID	G7315001	G7315002	G7316004	G7316004DL	G7316005	G7316006	G7316006DL	G7316007	G7316007DL	G7316008
Sampling Date	10-Apr-95	10-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95	11-Apr-95
Inorganics, mg/kg										
Aluminum	1800	1640	2860 J	NA	1550 J	3110 J	NA	1820 J	NA	6310 J
Antimony	2.9 B	2.3 U	6.4 U	NA	6.3 U	6.4 U	NA	6.5 U	NA	7.7 U
Arsenic	0.8 B	0.77 B	0.55 B	NA	0.4 U	1.1 B	NA	1.6 J	NA	0.84 B
Barium	22.7 B	31.4 B	70 J	NA	3.4 J	2250 J	NA	2750 J	NA	48 BJ
Beryllium	0.12 B	0.09 B	0.29 B	NA	0.02 B	0.31 B	NA	0.18 B	NA	0.82 B
Cadmium	2.1	1.2 B	0.67 U	NA	0.66 U	0.67 U	NA	0.68 U	NA	0.81 U
Calcium	47400	49500	39800 J	NA	592 J	78200 J	NA	79200 J	NA	45100 J
Chromium	28.9 J	13.6 J	32.1 J	NA	2 J	46.4 J	NA	24.5 J	NA	9.2 J
Cobalt	0.72 U	0.7 U	0.79 B	NA	0.62 U	3.9 B	NA	4.4 B	NA	0.76 U
Copper	13.9	14.9	7.5	NA	1.4 U	12	NA	11.3	NA	6.8
Iron	889	833	423 J	NA	221 J	779 J	NA	718 J	NA	684 J
Lead	182	134	94.4	NA	1.3	133	NA	147	NA	89.1
Magnesium	389 B	436 B	1420 J	NA	56.6 J	2230 J	NA	1160 J	NA	3620 J
Manganese	13.5 J	13.2 J	99.7 J	NA	0.26 J	111 J	NA	65.1 J	NA	178 J
Mercury	0.05 B	0.05 B	0.04 B	NA	0.02 U	0.05	NA	0.03 B	NA	0.03 U
Nickel	4.5 B	3.4 B	3.1 U	NA	3 U	3.1 B	NA	3.1 U	NA	3.7 U
Potassium	122 U	118 U	165 B	NA	94.5 U	197 B	NA	96.9 U	NA	671 B
Selenium	0.19 B	0.15 U	0.49 UJ	NA	0.49 U	0.49 UJ	NA	0.5 U	NA	0.6 U
Silver	0.61 U	0.59 U	0.56 U	NA	0.55 U	0.56 U	NA	0.57 U	NA	0.68 U
Sodium	172 B	178 B	45.9 B	NA	3.6 U	105 B	NA	78.1 B	NA	122 B
Thallium	0.16 U	0.15 U	0.39 U	NA	0.39 U	0.39 U	NA	0.4 U	NA	0.47 U
Vanadium	12.3 B	11.6 B	4.6 B	NA	0.53 U	8.6 B	NA	6 B	NA	10.7 B
Zinc	148 J	127 J	47.2 J	NA	0.5 J	100 J	NA	57 J	NA	80.8 J
General chemistry, mg/kg										
pH, Solid	NA	NA	8.05	NA	7.05	8	NA	8.15	NA	NA

TABLE B-6

**SUMMARY OF SOIL
ANALYTICAL RESULTS,
STUDY AREA 18,
SUPPLEMENTAL PAH SAMPLING**

Appendix B
 Table B-6. Summary of Soil Analytical Results, Study Area 18
 Supplemental PAH Sampling

Naval Training Center, Orlando
 Orlando, FL

SampleID	18S01301	18B01301	18S01401	18B01401	18S01501	18B01501	18S01601	18B01601	18S01701	18S01701D
LabID	A7K220128013	A7K220128014	A7K220128015	A7K220128016	A7K220130001	A7K260160010	A7K220130003	A7K220130004	A7K250138002	A7K250138003
Sampling Date	11/21/1997	11/21/1997	11/21/1997	11/21/1997	11/21/1997	11/25/1997	11/21/1997	11/21/1997	11/24/1997	11/24/1997
1-Methylnaphthalene	39 U	36 U	37 U	39 U	38 U	37 U	36 U	37 U	72 U	180 U
2-Methylnaphthalene	39 U	36 U	37 U	39 U	38 U	37 U	36 U	37 U	72 U	180 U
Acenaphthene	39 U	36 U	37 U	39 U	38 U	570	36 U	37 U	290	180 U
Acenaphthylene	39 U	36 U	37 U	39 U	38 U	1000	36 U	37 U	72 U	180 U
Anthracene	39 U	36 U	37 U	39 U	38 U	77	36 U	37 U	72 U	180 U
Benzo(a)anthracene	15 PF	3.6 U	3.7 U	3.9 U	3.7 U	51	3.6 U	3.6 U	140	26
Benzo(a)pyrene	3.9 U	3.6 U	3.7 U	3.9 U	3.7 U	49	3.6 U	3.6 U	310	18 U
Benzo(b)fluoranthene	3.9 U	3.6 U	3.7 U	3.9 U	3.7 U	110	3.6 U	3.6 U	320	51
Benzo(ghi)perylene	3.9 U	3.6 U	3.7 U	3.9 U	3.7 U	110	3.6 U	3.6 U	270	51
Benzo(k)fluoranthene	2 U	1.8 U	4.3	2 U	1.9 U	52	2.6	1.9 U	120	24
Chrysene	37	3.6 U	13	10	3.7 U	52	3.6 U	4.6	180	42
Dibenz(a,h)anthracene	3.9 U	3.6 U	3.7 U	3.9 U	3.7 U	110	3.6 U	3.6 U	67 PF	38
Fluoranthene	6.7	6	3.7 U	4.5	3.7 U	97	3.6 U	3.6 U	180	18 U
Fluorene	39 U	36 U	37 U	39 U	38 U	120	36 U	37 U	72 U	180 U
Indeno(1,2,3-cd)pyrene	3.9 U	3.6 U	3.7 U	3.9 U	3.7 U	50	3.6 U	3.6 U	43 PF	18 U
Naphthalene	39 U	36 U	37 U	39 U	38 U	540	36 U	37 U	72 U	180 U
Phenanthrene	39 U	36 U	37 U	39 U	38 U	68	36 U	37 U	72 U	180 U
Pyrene	3.9 U	24	3.7 U	5.6	3.7 U	45	3.6 U	3.6 U	57	65

Appendix B
 Table B-6. Summary of Soil Analytical Results, Study Area 18
 Supplemental PAH Sampling

Naval Training Center, Orlando
 Orlando, FL

SampleID	18B01701	18S01801	18B01801	18S01901	18B01901	18S02001	18B02001	18S02101	18B02101
LabID	A7K250138004	A7K250138005	A7K260160008	A7K250138007	A7K250138008	A7K250138009	A7K260160011	A7K250138011	A7K260160009
Sampling Date	11/24/1997	11/24/1997	11/25/1997	11/24/1997	11/24/1997	11/24/1997	11/25/1997	11/24/1997	11/25/1997
1-Methylnaphthalene	190 U	35 U	37 U	45 U	120	40 U	39 U	38 U	37 U
2-Methylnaphthalene	190 U	35 U	37 U	45 U	42 U	40 U	39 U	38 U	37 U
Acenaphthene	190 U	35 U	39	45 U	42 U	40 U	39 U	38 U	37 U
Acenaphthylene	190 U	38	37 U	45 U	42 U	40 U	39 U	38 U	37 U
Anthracene	190 U	35 U	37 U	45 U	42 U	40 U	39 U	38 U	37 U
Benzo(a)anthracene	24	31 PF	4.5	64 PF	4.2 U	8.6 PF	3.9 U	3.7 U	3.7 U
Benzo(a)pyrene	20	49	5	92	13	6.7	3.9 U	3.7 U	3.7 U
Benzo(b)fluoranthene	54	56	10	100	7.3	12	3.9 U	3.7 U	3.7 U
Benzo(ghi)perylene	51	43	3.7 U	82	18	11	3.9 U	3.7 U	3.7 U
Benzo(k)fluoranthene	22	22	4.2	40	4.7 PF	6.4	2 U	1.9 U	1.9 U
Chrysene	38	47	7.1	76	8.7	11	3.9 U	3.7 U	3.7 U
Dibenz(a,h)anthracene	19 U	4.5 PF	3.7 U	15 PF	5.1 PF	6.7 PF	3.9 U	3.7 U	3.7 U
Fluoranthene	63	120	8.9	140	12	13	3.9 U	3.7 U	3.7 U
Fluorene	190 U	35 U	37 U	45 U	42 U	40 U	39 U	38 U	37 U
Indeno(1,2,3-cd)pyrene	44	16	3.7 U	15 PF	4.2 U	8.6	3.9 U	3.7 U	3.7 U
Naphthalene	190 U	41	37 U	78	42 U	40 U	39 U	38 U	37 U
Phenanthrene	190 U	35 U	37 U	64	42 U	40 U	39 U	38 U	37 U
Pyrene	57	140	3.7 U	110	28	11	3.9 U	3.7 U	3.7 U

TABLE B-7
SUMMARY OF GROUNDWATER
ANALYTICAL RESULTS,
STUDY AREA 18,
INITIAL SITE SCREENING

Appendix B
Table B-7. Summary of Groundwater Analytical Results
Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Sample ID	18G00101	18G00102	18G00201	18G00301	18G00401
Lab ID	G7705002	MB169003	G7607007	G7607008	G7607009
Sampling Date	30-May-95	17-Jun-96	18-May-95	18-May-95	18-May-95
Volatile organics, ug/L					
1,1,1-Trichloroethane	NA	NA	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	NA	1 U	1 U	1 U
1,1,2-Trichloroethane	NA	NA	1 U	1 U	1 U
1,1-Dichloroethane	NA	NA	1 U	1 U	1 U
1,1-Dichloroethene	NA	NA	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	NA	1 U	1 U	1 U
1,2-Dibromoethane	NA	NA	1 U	1 U	1 U
1,2-Dichloroethane	NA	NA	1 U	1 U	1 U
1,2-Dichloropropane	NA	NA	1 U	1 U	1 U
2-Butanone	NA	NA	5 UR	5 UR	5 UR
2-Hexanone	NA	NA	5 UR	5 UR	5 UR
4-Methyl-2-pentanone	NA	NA	5 U	5 U	5 U
Acetone	NA	NA	7 UR	6 UR	5 UR
Benzene	NA	NA	1 U	1 U	1 U
Bromochloromethane	NA	NA	1 U	1 U	1 U
Bromodichloromethane	NA	NA	1 U	1 U	1 U
Bromoform	NA	NA	1 U	1 U	1 U
Bromomethane	NA	NA	1 U	1 U	1 U
Carbon disulfide	NA	NA	1 U	1 U	1 U
Carbon tetrachloride	NA	NA	1 U	1 U	1 U
Chlorobenzene	NA	NA	1 U	1 U	1 U
Chloroethane	NA	NA	1 U	1 U	1 U
Chloroform	NA	NA	1 U	1 U	1 U
Chloromethane	NA	NA	1 U	1 U	1 U
cis-1,2-Dichloroethene	NA	NA	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	NA	1 U	1 U	1 U
Dibromochloromethane	NA	NA	1 U	1 U	1 U
Ethylbenzene	NA	NA	1 U	1 U	1 U
Methylene chloride	NA	NA	2 U	2 U	2 U
Styrene	NA	NA	1 U	1 U	1 U
Tetrachloroethene	NA	NA	1 U	1 U	1 U
Toluene	NA	NA	1 U	1 U	1 U
trans-1,2-Dichloroethene	NA	NA	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	NA	1 U	1 U	1 U
Trichloroethene	NA	NA	1 U	1 U	1 U
Vinyl chloride	NA	NA	1 U	1 U	1 U
Xylene (total)	NA	NA	0.3 J	1 U	1
Semivolatile organics, ug/L					
1,2,4-Trichlorobenzene	10 U	NA	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	NA	1 U	1 U	1 U
1,3-Dichlorobenzene	10 U	NA	1 U	1 U	1 U
1,4-Dichlorobenzene	10 U	NA	1 U	1 U	1 U
2,2'-oxybis(1-Chloropropane)	10 U	NA	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	NA	25 U	25 U	25 U
2,4,6-Trichlorophenol	10 U	NA	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	NA	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	NA	10 U	10 U	10 U
2,4-Dinitrophenol	25 UJ	NA	25 UJ	25 UJ	25 UJ
2,4-Dinitrotoluene	10 U	NA	10 U	10 U	10 U

Appendix B
Table B-7. Summary of Groundwater Analytical Results
Study Area 18
Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Sample ID	18G00101	18G00102	18G00201	18G00301	18G00401
Lab ID	G7705002	MB169003	G7607007	G7607008	G7607009
Sampling Date	30-May-95	17-Jun-96	18-May-95	18-May-95	18-May-95
2,6-Dinitrotoluene	10 U	NA	10 U	10 U	10 U
2-Chloronaphthalene	10 U	NA	10 U	10 U	10 U
2-Chlorophenol	10 U	NA	10 U	10 U	10 U
2-Methylnaphthalene	10 U	NA	10 U	10 U	10 U
2-Methylphenol	10 U	NA	10 U	10 U	10 U
2-Nitroaniline	25 U	NA	25 U	25 U	25 U
2-Nitrophenol	10 U	NA	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	NA	10 U	10 U	10 U
3-Nitroaniline	25 U	NA	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	NA	25 U	25 U	25 U
4-Bromophenyl-phenylether	10 U	NA	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	NA	10 U	10 U	10 U
4-Chloroaniline	10 U	NA	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	NA	10 U	10 U	10 U
4-Methylphenol	10 U	NA	10 U	10 U	10 U
4-Nitroaniline	25 U	NA	25 U	25 U	25 U
4-Nitrophenol	25 U	NA	25 U	25 U	25 U
Acenaphthene	10 U	NA	2 J	10 U	10 U
Acenaphthylene	10 U	NA	10 U	10 U	10 U
Anthracene	10 U	NA	10 U	10 U	10 U
Benzo(a)anthracene	10 U	NA	10 U	10 U	10 U
Benzo(a)pyrene	0.2 U	NA	0.2 U	0.2 U	0.2 U
Benzo(b)fluoranthene	10 U	NA	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	NA	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	NA	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	10 U	NA	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10 U	NA	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	2 U	NA	1	1 U	2 U
Butylbenzylphthalate	10 U	NA	10 U	10 U	10 U
Carbazole	10 U	NA	10 U	10 U	10 U
Chrysene	10 U	NA	10 U	10 U	10 U
Di-n-butylphthalate	10 U	NA	10 U	10 U	10 U
Di-n-octylphthalate	10 U	NA	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	NA	10 U	10 U	10 U
Dibenzofuran	10 U	NA	10 U	10 U	10 U
Diethylphthalate	10 U	NA	10 U	10 U	10 U
Dimethylphthalate	10 U	NA	10 U	10 U	10 U
Fluoranthene	10 U	NA	10 U	10 U	10 U
Fluorene	10 U	NA	10 U	10 U	10 U
Hexachlorobenzene	1 U	NA	1 U	1 U	1 U
Hexachlorobutadiene	10 U	NA	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	NA	10 U	10 U	10 U
Hexachloroethane	10 U	NA	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	NA	10 U	10 U	10 U
Isophorone	10 U	NA	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10 U	NA	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)	10 U	NA	10 U	10 U	10 U
Naphthalene	10 U	NA	12	10 U	10 U
Nitrobenzene	10 U	NA	10 U	10 U	10 U
Pentachlorophenol	1 U	NA	1 U	1 U	1 U

Appendix B
 Table B-7. Summary of Groundwater Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

Sample ID	18G00101	18G00102	18G00201	18G00301	18G00401
Lab ID	G7705002	MB169003	G7607007	G7607008	G7607009
Sampling Date	30-May-95	17-Jun-96	18-May-95	18-May-95	18-May-95
Phenanthrene	10 U	NA	10 U	10 U	10 U
Phenol	10 U	NA	10 U	10 U	10 U
Pyrene	10 U	NA	10 U	10 U	10 U
Pesticides/PCBs, ug/L					
4,4'-DDD	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
4,4'-DDE	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
4,4'-DDT	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Aldrin	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
alpha-BHC	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
alpha-Chlordane	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Aroclor-1016	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1221	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1232	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1242	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1248	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1254	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Aroclor-1260	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
beta-BHC	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
delta-BHC	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Dieldrin	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Endosulfan I	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Endosulfan II	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Endosulfan sulfate	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Endrin	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Endrin aldehyde	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
Endrin ketone	0.1 UJ	NA	0.1 UJ	0.1 UJ	NA
gamma-BHC (Lindane)	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
gamma-Chlordane	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Heptachlor	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Heptachlor epoxide	0.05 UJ	NA	0.05 UJ	0.05 UJ	NA
Methoxychlor	0.5 UJ	NA	0.5 UJ	0.5 UJ	NA
Toxaphene	5 UJ	NA	5 UJ	5 UJ	NA
Herbicides, ug/L					
2,4,5-T	0.5 U	NA	2 U	2 U	NA
2,4,5-TP (Silvex)	0.5 U	NA	1.7 U	1.7 U	NA
2,4-D	2.5 U	NA	12 U	12 U	NA
2,4-DB	2.5 U	NA	9.1 U	9.1 U	NA
Dalapon	5 U	NA	58 U	58 U	NA
Dicamba	0.5 U	NA	2.7 U	2.7 U	NA
Dichlorprop	2.5 U	NA	6.5 U	6.5 U	NA
Dinoseb	0.5 U	NA	0.7 U	0.7 U	NA
MCPA	250 U	NA	2500 U	2500 U	NA
MCPP	250 U	NA	2000 U	2000 U	NA
Inorganics, ug/L					
Aluminum	65600	5620	21900	14100	7360
Antimony	2.5 UJ	2.6 U	2.5 U	2.5 U	2.5 U
Arsenic	14.6 J	3 BJ	33.4	1.9 U	6.2 J
Barium	590 J	71.1 B	159 B	74.4 B	208
Beryllium	3.6 B	0.57 B	0.36 B	0.32 B	1.5 B
Cadmium	3.1 U	3.8 B	3.1 U	3.1 U	3.1 U

Appendix B
 Table B-7. Summary of Groundwater Analytical Results
 Study Area 18
 Initial Site Screening

Naval Training Center, Orlando
 Orlando, FL

	Sample ID	18G00101	18G00102		18G00201	18G00301	18G00401
	Lab ID	G7705002	MB169003		G7607007	G7607008	G7607009
	Sampling Date	30-May-95	17-Jun-96		18-May-95	18-May-95	18-May-95
Calcium		14300	7760		6490	1660 B	5130
Chromium		95.6	21.8		27.5	14.4 U	27.8
Cobalt		8.3 J	3	B	3.4 B	3.3 B	3.6 B
Copper		27.6	11.8	B	4.8 B	3 U	1.4 U
Iron		23400	5410		4500	4530	13400
Lead		54.8	2.7	U	12	3.9	5.1
Magnesium		9950	3020	B	2370 B	2760 B	5610
Manganese		53.5	27.6		20.3	14.8 B	19.6
Mercury		0.68	0.12	B	0.12 U	0.12 U	0.12 U
Nickel		76	13.8	B	14.2 U	14.2 U	14.2 U
Potassium		7190	9470		1200 B	1060 B	3040 B
Selenium		8.5	1.4	U	2.3 U	2.3 U	2.3 U
Silver		2.6 U	2.2	U	2.6 U	2.6 U	2.6 U
Sodium		30000	31700	J	10000	9620	28900
Thallium		79.4 J	0.86	U	18.1 UJ	18.1 UJ	18.1 UJ
Vanadium		211	19.8	B	22.4 B	18.1 B	38.4 B
Zinc		20.1	9.4	U	4.4 U	4 U	4.6 U
General Chemistry, mg/L							
Total Suspended Solids		106	8		8	1 U	37

Appendix B
Notes for Summary of Analytical Results Tables
Study Area 18

Naval Training Center, Orlando
Orlando Florida

NA = Identified parameter not analyzed.

Sample ID = Sample Identifier

Lab ID = Laboratory identifier

Units:

mg/kg milligram per kilogram

μ g/kg microgram per kilogram

mg/L milligram per liter

μ g/L microgram per liter

The following standard analytical data qualifiers have the following definitions:

- U The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit
The number preceding the U qualifier is the reported sample quantitation limit.
- J The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.
- UJ The analyte/compound was not detected above the reported sample quantitation limit.
The reported quantitation limit, however, is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte/compound in the sample.
- R The sample results are rejected during data validation because of serious deficiencies in meeting quality control criteria.
- B For inorganics only, reported concentration is between the instrument detection limit and the contract required detection limit.
- PF This laboratory qualifier indicates that the reported result is uncertain since the percent difference between the original and confirmation analysis is greater than 50%.
- D D = Reported concentrations if from a dilution/reanalysis.
- C C = Confirmed by gas chromatography/mass spectroscopy.
- NA Not analyzed.

TABLE B-8
SUMMARY OF GROUNDWATER
ANALYTICAL RESULTS,
STUDY AREA 18,
SUPPLEMENTAL PAH SAMPLING

Table B-8.
Groundwater Analytical Results
Study Area 18
May 1999

Naval Training Center, Orlando
Orlando, Florida

Sample ID	GCTL (a)	NTC	NTC18G00110	NTC18G00210	NTC18G00310	NTC18G00410	NTC18GMW110
Lab ID	CRITERIA	BACKGROUND	F4206-4	F4206-5	F4206-6	F4206-7	F4206-1
Sample Date	ug/L	SCREENING	5/26/1999	5/26/1999	5/26/1999	5/26/1999	5/26/1999
Volatile Organics (ug/L)							
TETRACHLOROETHYLENE	3						
TRICHLOROETHYLENE	3						
Inorganics (ug/L)							
ARSENIC	50	5	3.4				NA
ARSENIC (dissolved)	50	5	4				NA
BARIUM	2000	31.4	82.8	70.8	27.1	164	NA
BARIUM (dissolved)	2000	31.4	84.3	67	25.4	158	NA
BERYLLIUM	4	NA	2.6	1.6	1.4	4	NA
BERYLLIUM (dissolved)	4	NA	3	2	1.8	3.9	NA
CHROMIUM	100	7.8		3.6	3		NA
CHROMIUM (dissolved)	100	7.8		3	2.6		NA
COBALT	420	NA	1.5	1.5	0.89	2.8	NA
COBALT (dissolved)	420	NA	2	2.3	2.2	4.9	NA
COPPER	1000	5.4				7.1	NA
COPPER (dissolved)	1000	5.4					NA
LEAD	15	4			2.4		NA
LEAD (dissolved)	15	4					NA
MAGNESIUM	NA	4560	3110	2170	3580	3990	NA
MAGNESIUM (dissolved)	NA	4560	3230	2100	3470	3970	NA
MANGANESE	50	17		10.4	14.3		NA
MANGANESE (dissolved)	50	17		14.5	14.6		NA
MERCURY	2	0.12		0.28			NA
MERCURY (dissolved)	2	0.12					NA
NICKEL	100	NA	7.6	1.8	1.4	12.9	NA
NICKEL (dissolved)	100	NA	8.2	1.9	1.5	10.7	NA
POTASSIUM	NA	5400		797	1020	4310	NA
POTASSIUM (dissolved)	NA	5400		759	940	4630	NA
SELENIUM	50	9.7	4			4.4	NA
SELENIUM (dissolved)	50	9.7	3			2.9	NA
VANADIUM	49	20.6	20.4	3.4	24.2	20.9	NA
VANADIUM (dissolved)	49	20.6	22.2	2.9	19.8	19.4	NA

Table B-8.
Groundwater Analytical Results
Study Area 18
May 1999

Naval Training Center, Orlando
Orlando, Florida

Sample ID	GCTL (a)	NTC	NTC18GMW210	NTC18GMW310
Lab ID	CRITERIA	BACKGROUND	F4206-2	F4206-3
Sample Date	ug/L	SCREENING	5/26/1999	5/26/1999
Volatile Organics (ug/L)				
TETRACHLOROETHYLENE	3		0.81 J	
TRICHLOROETHYLENE	3		0.44 J	0.71 J
Inorganics (ug/L)				
ARSENIC	50	5	NA	NA
ARSENIC (dissolved)	50	5	NA	NA
BARIUM	2000	31.4	NA	NA
BARIUM (dissolved)	2000	31.4	NA	NA
BERYLLIUM	4	NA	NA	NA
BERYLLIUM (dissolved)	4	NA	NA	NA
CHROMIUM	100	7.8	NA	NA
CHROMIUM (dissolved)	100	7.8	NA	NA
COBALT	420	NA	NA	NA
COBALT (dissolved)	420	NA	NA	NA
COPPER	1000	5.4	NA	NA
COPPER (dissolved)	1000	5.4	NA	NA
LEAD	15	4	NA	NA
LEAD (dissolved)	15	4	NA	NA
MAGNESIUM	NA	4560	NA	NA
MAGNESIUM (dissolved)	NA	4560	NA	NA
MANGANESE	50	17	NA	NA
MANGANESE (dissolved)	50	17	NA	NA
MERCURY	2	0.12	NA	NA
MERCURY (dissolved)	2	0.12	NA	NA
NICKEL	100	NA	NA	NA
NICKEL (dissolved)	100	NA	NA	NA
POTASSIUM	NA	5400	NA	NA
POTASSIUM (dissolved)	NA	5400	NA	NA
SELENIUM	50	9.7	NA	NA
SELENIUM (dissolved)	50	9.7	NA	NA
VANADIUM	49	20.6	NA	NA
VANADIUM (dissolved)	49	20.6	NA	NA

GCTL - Groundwater Cleanup Target Level

J - Estimated concentration

NA - not applicable

(a) GCTL from Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-785, F.A.C. (1998)

Bold only - Exceeds GCTL but below background concentrations

Bold and shaded - Exceeds GCTL and the background concentration

TABLE B-9
GROUNDWATER ANALYTICAL RESULTS,
STUDY AREA 18,
OCTOBER 2000

**TABLE B-9
GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 18
OCTOBER 2000**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

WELL DESIGNATION	CAS NUMBER	Screening Criteria ^(a)		OLD-18-01	OLD-18-02	OLD-18-03	OLD-18-04
SAMPLE ID		Florida GCTL ^(b)	NTC BGSV ^(c)	NTC18G00110	NTC18G00210	NTC18G00310	NTC18G00410
LAB ID				A0J280105008	A0J280105005	A0J280105006	A0J280105007
SAMPLE DATE				10/25/2000	10/25/2000	10/25/2000	10/25/2000
Inorganics (µg/L)							
Aluminum	7429-90-5	200	4067	4620	508	1390	4360
Antimony	7440-36-0	6	4.1	4.3 U	4.3 U	5.4	4.3 U
Arsenic	7440-38-2	50	5	3.6 U	11.7	3.6 U	5.6
Barium	7440-39-3	2000	31.4	87.1	100	19.2	153
Beryllium	7440-41-7	4	*	0.64 U	0.28 U	0.26 U	1.2 U
Cadmium	7440-43-9	5	5.6	0.4 U	0.4 U	0.4 U	0.4 U
Calcium	7440-70-2	*	36,830	19,300	11,700	30,400	9900
Chromium	7440-47-3	100	7.8	16.7	2.6	2	21.5
Cobalt	7440-48-4	420	*	2.2 U	2.2 U	2.2 U	2.5
Copper	7440-50-8	1000	5.4	4.9	1.9 U	1.9 U	10.6
Iron	7439-89-6	300	1227	5150	2710	272 U	10,000
Lead	7439-92-1	15	4	1.6	1.3 U	1.3 U	3.7
Magnesium	7439-95-4	*	4560	3750	3550	2920	4320
Manganese	7439-96-5	50	17	56.6	11.8	7.6	31.1
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	7440-02-0	100	*	7.9	1.9 U	1.9 U	12
Potassium	7440-09-7	*	5400	6650	1160	2870	6970
Selenium	7782-49-2	50	9.7	4.3 U	4.3 U	4.3 U	4.3 U
Silver	7440-22-4	100	*	3.1 U	3.1 U	3.1 U	3.1 U
Sodium	7440-23-5	160,000	18,222	15,200	7230	8340	25,400
Thallium	7440-28-0	2	3.8	1.2 UJ	1.2 U	1.2 U	2.4 UJ
Vanadium	7440-62-2	49	20.6	14.9	2.8	11.3	19.8
Zinc	7440-66-6	5000	4	22.1	0.6 U	4.7 U	3.5 U

Notes:

*Indicates that the screening value is not available.

"J" qualifier indicates an estimated value.

"U" qualifier indicates a non-detect.

"R" qualifier indicates a rejected value.

NA Not analyzed.

Values in shaded cells are equal to or exceed the screening criteria.

^(a)For an inorganic analyte with an established SCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Organic analytes have no BGSVs.

^(b)Groundwater Cleanup Target Level (Development fo Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999).

^(c)Background Screening Value (Background Sampling Report for NTC Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

TABLE B-10
SOIL ANALYTICAL RESULTS,
STUDY AREA 18,
APRIL 2001

TABLE B-10

SOIL ANALYTICAL DATA
STUDY AREA 18
APRIL 2001

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

PAGE 1 OF 2

Sample Location	CAS NO	Screening Criteria ^(a)		OLD-18-05	OLD-18-05	OLD-18-06	OLD-18-06
		SCTL ^(b) Industrial	SCTL ^(b) Residential	0.5 - 1 NTC18S050.5 4/24/2001	5 - 5.5 NTC18S0505 4/24/2001	0.5 - 1 NTC18S060.5 4/24/2001	5 - 5.5 NTC18S0605 4/24/2001
Inorganics mg/kg							
Aluminum	7429-90-5	*	72000	2490	986	2100	4900
Antimony	7440-36-0	240	26	0.34 U	0.37 U	0.37 U	0.37 U
Arsenic	7440-38-2	3.7	0.8	0.24 U	0.26 U	0.26 U	0.26 U
Barium	7440-39-3	87000	110	3.9	3.9	8.6	14.9
Beryllium	7440-41-7	800	120	0.04 U	0.02 U	0.02 U	0.09 U
Cadmium	7440-43-9	1300	75	0.03 U	0.02 U	0.15 U	0.02 U
Calcium	7440-70-2	*	*	516	31.4	87600	755
Chromium	7440-47-3	*	*	3	1.7	4.7	5.7
Cobalt	7440-48-4	110000	4700	0.09 U	0.09 U	0.25 U	0.28 U
Copper	7440-50-8	73000	110	0.17 U	0.19 U	1.5	0.76
Iron	7439-89-6	480000	23000	253	256	525	1210
Lead	7439-92-1	920	400	4.9	1.9	3.4	8.6
Magnesium	7439-95-4	*	*	39.9	49.1	451	209
Manganese	7439-96-5	22000	1600	0.85	0.71	10.5	2.1
Mercury	7439-97-6	26	3.4	0.04	0.01 U	0.02	0.03
Nickel	7440-02-0	28000	110	0.83	0.58 U	1.6	2.2
Potassium	7440-09-7	*	*	16.7 U	17.7 U	33.6	63.2
Selenium	7782-49-2	10000	390	0.28 U	0.31 U	0.31 U	0.31 U
Silver	7440-22-4	9100	390	0.1 U	0.1 U	0.1 U	0.1 U
Sodium	7440-23-5			21.8 U	38.2 U	38.2 U	53.5 U
Thallium	7440-28-0			0.44 U	0.48 U	0.48 U	0.48 U
Vanadium	7440-62-2	7400	15	1.6	1.2	5.7	5.1
Zinc	7440-66-6	560000	23000	0.24 U	0.14 U	1.6	3.2
Volatile Organics (µg/kg)							
1,1,1-Trichloroethane	71-55-6	3300000	400000	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	1100	700	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	1800	1300	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	2000000	290000	1 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	100	90	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	700	500	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	800	600	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	21000000	3100000	5 J	5 U	6 U	5 U
2-Hexanone	591-78-6	34000	5100	4 U	4 U	4 U	4 U
4-Methyl-2-pentanone	108-10-1	1500000	220000	3 U	3 U	3 U	3 U
Acetone	67-64-1	5500000	780000	18 J	4 J	6 UR	10 J
Benzene	71-43-2	1600	1100	6 U	5 U	6 U	5 U
Bromodichloromethane	75-27-4	2000	1400	1 U	1 U	1 U	1 U
Bromoform	75-25-2	84000	48000	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	15000	2200	2 U	2 U	2 U	2 U
Carbon disulfide	75-15-0	1400000	200000	1 U	1 U	1 U	1 U
Carbon tetrachloride	56-23-5	600	400	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	200000	30000	1 U	1 U	1 U	1 U
Chlorodibromomethane	124-48-1	2100	1400	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	4000	2900	2 U	2 U	2 U	2 U
Chloroform	67-66-3	500	400	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	2300	1700	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	156-59-2	130000	19000	2 U	2 U	2 U	2 U
cis-1,3-Dichloropropene	10061-01-5	*	*	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	8400000	1100000	6 U	5 U	6 U	5 U
Methylene chloride	75-09-2	23000	16000	6 UJ	5 UJ	6 UJ	4 J
Styrene	100-42-5	21000000	2700000	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	17000	8900	1 U	1 U	1 U	1 U
Toluene	108-88-3	2600000	380000	6 U	5 U	6 U	5 U
Total xylenes	1330-20-7	40000000	5900000	6 U	5 U	6 U	5 U
trans-1,2-Dichloroethene	156-60-5	210000	31000	2 U	2 U	2 U	2 U
trans-1,3-Dichloropropene	10061-02-6	*	*	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	8500	6000	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	40	30	2 U	2 U	2 U	2 U

TABLE B-10

SOIL ANALYTICAL DATA
STUDY AREA 18
APRIL 2001

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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Notes:

*Indicates that the screening value is not available.

"J" qualifier indicates an estimated value.

"U" qualifier indicates a non-detect.

"R" qualifier indicates a rejected value.

NA Not analyzed.

Values in shaded cells are equal to or exceed the screening criteria.

^(a)For an inorganic analyte with an established SCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Organic analytes have no BGSVs.

^(b) Soil Cleanup Target Level 62-777, F.A.C., May 26, 1999.

TABLE B-11
GROUNDWATER ANALYTICAL RESULTS,
STUDY AREA 18,
JUNE 2001

TABLE B-11

**GROUNDWATER ANALYTICAL RESULTS
STUDY AREA 18
JUNE 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Sample Location	CAS NO	Screening Criteria ^(a)		OLD-18-05	OLD-18-05	OLD-18-06	OLD-18-06
		Florida GCTL ^(b)	NTC BGSV ^(c)	NTC18G00513 6/8/2001 Unfiltered	NTC18G00513-F 6/8/2001 Filtered	NTC18G00613 6/8/2001 Unfiltered	NTC18G00613-F 6/8/2001 Filtered
Inorganics µg/L							
Aluminum	7429-90-5	200	4067	23400	2850	775 U	102 U
Antimony	7440-36-0	6	4.1	1.22 U	1.8	1.22 U	1.22 U
Arsenic	7440-38-2	50	5	9.2	8.1	1.3	0.84 U
Barium	7440-39-3	2000	31.4	209	133	68.4	66
Beryllium	7440-41-7	4	*	1.4 U	0.51 U	0.23 U	0.23 U
Cadmium	7440-43-9	5	5.6	0.08 U	0.08 U	0.18 U	0.08 U
Calcium	7440-70-2	0	36,830	46400	55300	24400	24100
Chromium	7440-47-3	100	7.8	35.5	11.3	2 U	3 U
Cobalt	7440-48-4	420	*	3.1 U	1.9 U	0.58 U	0.92 U
Copper	7440-50-8	1000	5.4	12.7	3.3 U	0.28 U	0.28 U
Iron	7439-89-6	300	1227	8380	3940	5810	5900
Lead	7439-92-1	15	4	21.5	1.6 U	1.6 U	0.49 U
Magnesium	7439-95-4		4560	5780	5260	8420	8730
Manganese	7439-96-5	50	17	32.9	31.7	52.8	52.5
Mercury	7439-97-6	2	0.12	0.21	0.03 U	0.03 U	0.03 U
Nickel	7440-02-0	100	*	18	7.9	1.7 U	2.3 U
Potassium	7440-09-7		5400	9170	9800	2320	2300
Selenium	7782-49-2	50	9.7	4.3 U	1.8 U	1.2 U	1.01 U
Silver	7440-22-4	100	*	0.34 U	0.34 U	0.34 U	0.34 U
Sodium	7440-23-5	160000	18,222	12800	12600	16700	16700
Thallium	7440-28-0	2	3.8	1.58 U	1.58 U	1.58 U	1.58 U
Vanadium	7440-62-2	49	20.6	58.6	30.8	5.2 U	3.9 U
Zinc	7440-66-6	5000	4	11.8	8.9	246	31.5

Notes:

*Indicates that the screening value is not available.

"J" qualifier indicates an estimated value.

"U" qualifier indicates a non-detect.

"R" qualifier indicates a rejected value.

NA Not analyzed.

Values in shaded cells are equal to or exceed the screening criteria.

^(a)For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV. Analytes with no GCTL are not considered to have exceedances.

^(b)Groundwater Cleanup Target Level (Development fo Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999).

^(c)Background Screening Value (Background Sampling Report for NTC Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

TABLE B-12
SOIL ANALYTICAL RESULTS,
STUDY AREA 18,
AUGUST 2001

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

PAGE 1 OF 8

Sample Area	CAS NO	Screening Criteria ^(a)		S101	S102	S103		S104
		Florida SCTL ^(b)	NTC BGSV ^(c)	NTC18S10101 8/16/2001	NTC18S10201 8/16/2001	NTC18S10301 8/16/2001	NTC18S10301-D 8/16/2001	NTC18S10401 8/17/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	NA	NA	NA	NA	NA
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		390 U	410 U	370 U	370 U	370 U
2-Methylnaphthalene	91-57-6	83000		390 U	410 U	370 U	370 U	370 U
Acenaphthene	83-32-9	1900000		780 U	820 U	740 U	740 U	740 U
Acenaphthylene	208-96-8	1100000		780 U	820 U	740 U	740 U	740 U
Anthracene	120-12-7	18000000		390 U	410 U	370 U	370 U	370 U
Benzo(a)anthracene	56-55-3	1400		390 U	410 U	370 U	370 U	370 U
Benzo(a)pyrene	50-32-8	100		117	82 U	74 U	74 U	74 U
Benzo(b)fluoranthene	205-99-2	1400		97.9	82 U	74 U	74 U	74 U
Benzo(g,h,i)perylene	191-24-2	2300000		127	82 U	74 U	74 U	74 U
Benzo(k)fluoranthene	207-08-9	15000		46.5 J	82 U	74 U	74 U	74 U
Chrysene	218-01-9	140000		390 U	410 U	370 U	370 U	370 U
Dibenzo(a,h)anthracene	53-70-3	100		78 U	82 U	74 U	74 U	74 U
Fluoranthene	206-44-0	2900000		244 J	410 U	370 U	370 U	370 U
Fluorene	86-73-7	2200000		390 U	410 U	370 U	370 U	370 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		79.1	82 U	74 U	74 U	74 U
Naphthalene	91-20-3	40000		390 U	410 U	370 U	370 U	370 U
Phenanthrene	85-01-8	2000000		390 U	410 U	370 U	370 U	370 U
Pyrene	129-00-0	2200000		249 J	410 U	370 U	370 U	370 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		49	2.2	18	19	1.8 U

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Sample Area	CAS NO	Screening Criteria ^(a)		S105	S109		S110	S111
Sample Number		Florida	NTC	NTC18S10501	NTC18S10901	NTC18S10901-D	NTC18S11001	NTC18S11101
Sample Date		SCTL ^(b)	BGSV ^(c)	8/16/2001	8/17/2001	8/17/2001	8/17/2001	8/17/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	NA	NA	NA	NA	NA
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		380 U	370 U	390 U	430 U	410 U
2-Methylnaphthalene	91-57-6	83000		380 U	370 U	390 U	430 U	410 U
Acenaphthene	83-32-9	1900000		770 U	730 U	780 U	860 U	830 U
Acenaphthylene	208-96-8	1100000		770 U	730 U	780 U	860 U	830 U
Anthracene	120-12-7	18000000		380 U	370 U	390 U	430 U	410 U
Benzo(a)anthracene	56-55-3	1400		248 J	370 U	390 U	430 U	410 U
Benzo(a)pyrene	50-32-8	100		276	101	86.2	78.7 J	42.5 J
Benzo(b)fluoranthene	205-99-2	1400		182	96.2	82.2	59 J	45 J
Benzo(g,h,i)perylene	191-24-2	2300000		228	138	137	128	79.3 J
Benzo(k)fluoranthene	207-08-9	15000		92.7	51.7 J	46.9 J	86 U	83 U
Chrysene	218-01-9	140000		317 J	370 U	390 U	430 U	410 U
Dibenzo(a,h)anthracene	53-70-3	100		77 U	73 U	78 U	86 U	83 U
Fluoranthene	206-44-0	2900000		526	157 J	390 U	430 U	410 U
Fluorene	86-73-7	2200000		380 U	370 U	390 U	430 U	410 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		167	100	86.1	76 J	48 J
Naphthalene	91-20-3	40000		380 U	370 U	390 U	430 U	410 U
Phenanthrene	85-01-8	2000000		300 J	370 U	390 U	430 U	410 U
Pyrene	129-00-0	2200000		479	147 J	390 U	430 U	410 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		NA	NA	NA	NA	NA

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Sample Area	CAS NO	Screening Criteria ^(a)		S112	S113	S117	S118	
Sample Number		Florida	NTC	NTC18S11201	NTC18S11301	NTC18S11701	NTC18S11801	NTC18S11801-D
Sample Date		SCTL ^(b)	BGSV ^(c)	8/17/2001	8/17/2001	8/17/2001	8/17/2001	8/17/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	NA	NA	NA	NA	NA
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		380 U	370 U	2000 U	370 U	370 U
2-Methylnaphthalene	91-57-6	83000		380 U	370 U	2000 U	370 U	370 U
Acenaphthene	83-32-9	1900000		750 U	750 U	4000 U	740 U	750 U
Acenaphthylene	208-96-8	1100000		750 U	750 U	4000 U	740 U	750 U
Anthracene	120-12-7	18000000		380 U	370 U	2000 U	370 U	370 U
Benzo(a)anthracene	56-55-3	1400		380 U	370 U	1220 J	370 U	370 U
Benzo(a)pyrene	50-32-8	100		67 J	126	1280	74 U	75 U
Benzo(b)fluoranthene	205-99-2	1400		68.5 J	97.4	937	74 U	75 U
Benzo(g,h,i)perylene	191-24-2	2300000		90.2	193	1250	74 U	75 U
Benzo(k)fluoranthene	207-08-9	15000		75 U	50.6 J	467	74 U	75 U
Chrysene	218-01-9	140000		380 U	370 U	1310 J	370 U	370 U
Dibenzo(a,h)anthracene	53-70-3	100		75 U	75 U	400 U	74 U	75 U
Fluoranthene	206-44-0	2900000		380 U	208 J	2930	370 U	370 U
Fluorene	86-73-7	2200000		380 U	370 U	2000 U	370 U	370 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		72.6 J	96.1	969	74 U	75 U
Naphthalene	91-20-3	40000		380 U	370 U	2000 U	370 U	370 U
Phenanthrene	85-01-8	2000000		380 U	370 U	1930 J	370 U	370 U
Pyrene	129-00-0	2200000		380 U	182 J	2480	370 U	370 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		NA	NA	NA	NA	NA

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

PAGE 4 OF 8

Sample Area	CAS NO	Screening Criteria ^(a)		S119	S120	S121	S122	S125
		Florida SCTL ^(b)	NTC BGSV ^(c)	NTC18S11901	NTC18S12001	NTC18S12101	NTC18S12201	NTC18S12501
Sample Number	Sample Date			8/17/2001	8/17/2001	8/17/2001	8/17/2001	8/17/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	NA	NA	NA	NA	NA
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		350 U	360 U	360 U	1300 U	360 U
2-Methylnaphthalene	91-57-6	83000		350 U	360 U	360 U	1300 U	360 U
Acenaphthene	83-32-9	1900000		700 U	730 U	720 U	2600 U	730 U
Acenaphthylene	208-96-8	1100000		700 U	730 U	720 U	2600 U	730 U
Anthracene	120-12-7	18000000		350 U	360 U	360 U	1150 J	360 U
Benzo(a)anthracene	56-55-3	1400		350 U	360 U	360 U	3350	360 U
Benzo(a)pyrene	50-32-8	100		70 U	46 J	72 U	3480	73 U
Benzo(b)fluoranthene	205-99-2	1400		70 U	39.9 J	72 U	2240	73 U
Benzo(g,h,i)perylene	191-24-2	2300000		70 U	56.3 J	72 U	2890	38.7 J
Benzo(k)fluoranthene	207-08-9	15000		70 U	73 U	72 U	1120	73 U
Chrysene	218-01-9	140000		350 U	360 U	360 U	3120	360 U
Dibenzo(a,h)anthracene	53-70-3	100		70 U	73 U	72 U	293	73 U
Fluoranthene	206-44-0	2900000		350 U	360 U	360 U	8320	360 U
Fluorene	86-73-7	2200000		350 U	360 U	360 U	1220 J	360 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		70 U	42.1 J	72 U	2390	73 U
Naphthalene	91-20-3	40000		350 U	360 U	360 U	1300 U	360 U
Phenanthrene	85-01-8	2000000		350 U	360 U	360 U	6520	360 U
Pyrene	129-00-0	2200000		350 U	360 U	360 U	6880	360 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		NA	NA	NA	NA	NA

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Sample Area	CAS NO	Screening Criteria ^(a)		S127		S128	S129	S130
Sample Number		Florida	NTC	NTC18S12701	NTC18S12701-D	NTC18S12801	NTC18S12901	NTC18S13001
Sample Date		SCTL ^(b)	BGSV ^(c)	8/16/2001	8/16/2001	8/17/2001	8/16/2001	8/16/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	453 J	23.3 J	12.2	131 J	8.9 J
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		380 U	360 U	360 U	370 U	350 U
2-Methylnaphthalene	91-57-6	83000		380 U	360 U	360 U	370 U	350 U
Acenaphthene	83-32-9	1900000		760 U	730 U	730 U	750 U	700 U
Acenaphthylene	208-96-8	1100000		760 U	730 U	730 U	750 U	700 U
Anthracene	120-12-7	18000000		380 U	360 U	360 U	370 U	350 U
Benzo(a)anthracene	56-55-3	1400		380 U	360 U	360 U	370 U	350 U
Benzo(a)pyrene	50-32-8	100		76 U	73 U	73 U	75 U	70 U
Benzo(b)fluoranthene	205-99-2	1400		76 U	73 U	73 U	75 U	70 U
Benzo(g,h,i)perylene	191-24-2	2300000		76 U	73 U	73 U	75 U	70 U
Benzo(k)fluoranthene	207-08-9	15000		76 U	73 U	73 U	75 U	70 U
Chrysene	218-01-9	140000		380 U	360 U	360 U	370 U	350 U
Dibenzo(a,h)anthracene	53-70-3	100		76 U	73 U	73 U	75 U	70 U
Fluoranthene	206-44-0	2900000		380 U	360 U	360 U	370 U	350 U
Fluorene	86-73-7	2200000		380 U	360 U	360 U	370 U	350 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		76 U	73 U	73 U	75 U	70 U
Naphthalene	91-20-3	40000		380 U	360 U	360 U	370 U	350 U
Phenanthrene	85-01-8	2000000		380 U	360 U	360 U	370 U	350 U
Pyrene	129-00-0	2200000		380 U	360 U	360 U	370 U	350 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		NA	NA	NA	NA	NA

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Sample Area	CAS NO	Screening Criteria ^(a)		S131	S132	S134	S135	S137
		Florida	NTC	NTC18S13101	NTC18S13201	NTC18S13401	NTC18S13501	NTC18S13701
		SCTL ^(b)	BGSV ^(c)	8/16/2001	8/16/2001	8/16/2001	8/16/2001	8/28/2001
Inorganics mg/kg								
Barium	7440-39-3	110	21.6	9.8 J	105	29.1	12.2 J	NA
Semivolatiles (PAHs) µg/kg								
1-Methylnaphthalene	90-12-0	68000		360 U	NA	NA	360 U	335 J
2-Methylnaphthalene	91-57-6	83000		360 U	NA	NA	360 U	382
Acenaphthene	83-32-9	1900000		720 U	NA	NA	720 U	760 U
Acenaphthylene	208-96-8	1100000		720 U	NA	NA	720 U	760 U
Anthracene	120-12-7	18000000		360 U	NA	NA	360 U	380 U
Benzo(a)anthracene	56-55-3	1400		360 U	NA	NA	360 U	380 U
Benzo(a)pyrene	50-32-8	100		39.3 J	NA	NA	41.9 J	76 U
Benzo(b)fluoranthene	205-99-2	1400		39.6 J	NA	NA	40.1 J	76 U
Benzo(g,h,i)perylene	191-24-2	2300000		59.6 J	NA	NA	54.8 J	76 U
Benzo(k)fluoranthene	207-08-9	15000		72 U	NA	NA	72 U	76 U
Chrysene	218-01-9	140000		360 U	NA	NA	360 U	380 U
Dibenzo(a,h)anthracene	53-70-3	100		72 U	NA	NA	72 U	76 U
Fluoranthene	206-44-0	2900000		360 U	NA	NA	360 U	380 U
Fluorene	86-73-7	2200000		360 U	NA	NA	360 U	380 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		35.4 J	NA	NA	42.4 J	76 U
Naphthalene	91-20-3	40000		360 U	NA	NA	360 U	358 J
Phenanthrene	85-01-8	2000000		360 U	NA	NA	360 U	380 U
Pyrene	129-00-0	2200000		360 U	NA	NA	360 U	380 U
Pesticides µg/kg								
Dieldrin	60-57-1	70		NA	NA	NA	NA	NA

TABLE B-12

**SOIL ANALYTICAL RESULTS
STUDY AREA 18
AUGUST 2001**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Sample Area	CAS NO	Screening Criteria ^(a)		S141	S143	S144	S145
Sample Number		Florida	NTC	NTC18S14101	NTC18S14301	NTC18S14401	NTC18S14501
Sample Date		SCTL ^(b)	BGSV ^(c)	8/28/2001	8/28/2001	8/28/2001	8/28/2001
Inorganics mg/kg							
Barium	7440-39-3	110	21.6	NA	NA	NA	NA
Semivolatiles (PAHs) µg/kg							
1-Methylnaphthalene	90-12-0	68000		380 U	1600 U	450 U	390 U
2-Methylnaphthalene	91-57-6	83000		380 U	1600 U	450 U	390 U
Acenaphthene	83-32-9	1900000		760 U	3200 U	900 U	780 U
Acenaphthylene	208-96-8	1100000		760 U	3200 U	900 U	780 U
Anthracene	120-12-7	18000000		380 U	1900	450 U	390 U
Benzo(a)anthracene	56-55-3	1400		380 U	5260	895	390 U
Benzo(a)pyrene	50-32-8	100		76 U	5600	1150	78 U
Benzo(b)fluoranthene	205-99-2	1400		76 U	3740	829	78 U
Benzo(g,h,i)perylene	191-24-2	2300000		76 U	4790	884	78 U
Benzo(k)fluoranthene	207-08-9	15000		76 U	1970	426	78 U
Chrysene	218-01-9	140000		380 U	5020	1070	390 U
Dibenzo(a,h)anthracene	53-70-3	100		76 U	475	178	78 U
Fluoranthene	206-44-0	2900000		380 U	13000	2350	390 U
Fluorene	86-73-7	2200000		380 U	1820	450 U	390 U
Indeno(1,2,3-cd)pyrene	193-39-5	1500		76 U	4050	898	78 U
Naphthalene	91-20-3	40000		380 U	1600 U	450 U	390 U
Phenanthrene	85-01-8	2000000		380 U	9740	1160	390 U
Pyrene	129-00-0	2200000		380 U	10800	1960	390 U
Pesticides µg/kg							
Dieldrin	60-57-1	70		NA	NA	NA	NA

TABLE B-12
SOIL ANALYTICAL RESULTS
AUGUST 2001

STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

PAGE 8 OF 8

Notes:

^(a) For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.

^(b) Soil Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F. A. C., May 26, 1999).

^(c) Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

Shaded cells indicate concentrations that are equal to or exceed the screening criteria.

NA = Identified parameter not analyzed.

Sample ID = Field sample Identifier

Lab ID = Laboratory sample identifier

mg/kg milligrams per kilogram

μg/kg micrograms per kilogram

The analytical data qualifiers have the following standard definitions:

U The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit

The number preceding the U qualifier is the reported sample quantitation limit.

J The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.

APPENDIX C

**SITE ASSESSMENT REPORT,
HARDING LAWSON ASSOCIATES, INC.,
OCTOBER 1998**

SITE ASSESSMENT REPORT

**BUILDING 7182
MCCOY ANNEX**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Unit Identification Code: N65928

Contract No.: N62467-89-D-0317/137

Prepared by:

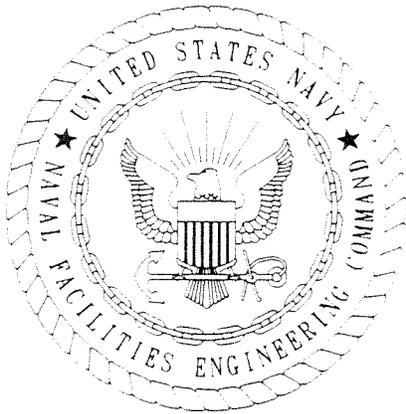
**Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

Prepared for:

**Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418**

Nick Ugolini, Code 1843, Engineer-in-Charge

October 1998



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/137 are complete and accurate and comply with all requirements of this contract.

DATE: October 22, 1998

NAME AND TITLE OF CERTIFYING OFFICIAL: John Kaiser
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Manuel Alonso, P.G.
Project Technical Lead

(DFAR 252.227-7036)



FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Underground Storage Tank (UST) program. This program complies with Subtitle I of the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984. In addition, the UST program complies with all State and local storage tank regulations as they pertain to the locations of each naval facility.

The UST program includes the following activities:

- registration and management of Navy and Marine Corps storage tank systems,
- site assessment planning,
- site field investigations,
- preparation of site assessment reports,
- remedial (corrective) action planning,
- implementation of the remedial action plans, and
- tank and pipeline closures.

The Southern Division, Naval Facilities Engineering Command manages the UST program, and the Florida Department of Environmental Protection oversees the Navy UST program at the Naval Training Center (NTC), Orlando, Florida.

In addition to the UST program, NTC, Orlando, in conjunction with the Department of the Navy, has instituted several programs to address the requirements of Base Realignment and Closure (BRAC). BRAC Cleanup Teams composed of representatives from the Navy, as well as Federal and State regulatory agencies, have been formed to address the multitude of issues surrounding base closure and to enhance environmental decision making at BRAC installations where property will be available for transfer to the community. This team approach is intended to foster partnering, accelerate the environmental cleanup process, and expedite timely, cost-effective, and environmentally responsible disposal and reuse decisions.

At NTC, Orlando, the BRAC process includes the evaluation of the environmental condition of the property to ensure the suitability of transfer, reuse, or lease. Questions regarding the UST program at the NTC, Orlando should be addressed to Mr. Nick Ugolini, Code 1843, at (843) 820-5596.

EXECUTIVE SUMMARY

Harding Lawson Associates (HLA) has been authorized by Southern Division, Naval Facilities Engineering Command to prepare site assessment reports for petroleum-impacted sites discovered during the Base Realignment and Closure (BRAC) Tank Management Plan implementation at the Naval Training Center (NTC), Orlando, McCoy Annex property in Orange County, Florida. This Site Assessment Report (SAR) has been prepared to evaluate soil and groundwater conditions at the Housing Office, Building 7182.

This site assessment has been conducted following the guidelines contained in Section 62-770.600, Florida Administrative Code (FAC). A brief summary of the assessment results is provided below.

1. One 1,000-gallon underground storage tank (UST) stored heating fuel at Building 7182. The UST was removed on January 31, 1997, by the Navy Public Works Center (PWC) Pensacola. During the removal of the 1,000-gallon UST, five soil samples collected from the excavation had organic vapor analyzer (OVA) readings ranging from 15 part per million (ppm) to 311 ppm. Approximately 3 cubic yards of petroleum impacted soil were removed from the excavation and transported to an off-site thermal treatment facility. Following removal of the UST and excavation of the soil, a temporary monitoring well was installed and sampled by PWC Pensacola. Laboratory analytical results indicated the presence of trichloroethene at a concentration of 5 micrograms per liter ($\mu\text{g}/\text{l}$), which is above the State of Florida maximum contaminant level (MCL) of 3 $\mu\text{g}/\text{l}$. No dissolved petroleum hydrocarbon contamination exceeding the State of Florida cleanup target levels (CTLs) as defined in Chapter 62-770, FAC, was found at the site. PWC Pensacola submitted a Tank Closure Assessment Report (TCAR) in May 1997. The TCAR recommended the preparation of an SAR.
2. Site assessment activities were conducted by HLA from April 28, 1998, to August 5, 1998. On August 4, 1998, soil borings were completed using a van-mounted TerraProbeSM unit in the vicinity of the former tank area to assess whether or not petroleum-impacted soil was present. No evidence of petroleum-impacted soil was detected. Soil samples were collected and shipped to Savannah Laboratories and Environmental Services, Inc., to confirm OVA screening results.
3. On July 2, 1998, three shallow monitoring wells (MW-1, MW-2, and MW-3) were installed to assess the horizontal extent of dissolved petroleum hydrocarbon contamination in the shallow aquifer. The shallow monitoring wells were installed to a depth of 12 feet below land surface.
4. On August 5, 1998, groundwater samples collected from the monitoring wells indicated that no dissolved petroleum hydrocarbon contamination exceeding Chapter 62-770, FAC CTLs was present. However, laboratory analytical results indicated the presence of methylene chloride and tetrachloroethene at concentrations exceeding State of Florida MCLs, as defined in Chapter 62-550, FAC.
5. Groundwater flow direction was determined to be from southwest to northeast with a hydraulic gradient of 1.84×10^{-3} feet per foot.

6. No active potable water wells are located within one mile of this site.
7. HLA recommends a No Further Action proposal for the former UST area and suspected petroleum contamination at the site. However, further assessment activities are necessary to address the presence of chlorinated solvents found in groundwater at the site.

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Building 7182, McCoy Annex
Naval Training Center
Orlando, Florida

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- Appendix B: Tank Closure Assessment Report
- Appendix C: Well Construction Details
- Appendix D: Lithologic Logs
- Appendix E: Water Sampling Log Forms
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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CAR	Contamination Assessment Report
CTL	cleanup target level
EDB	ethylene dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida-Petroleum Residual Organic
HLA	Harding Lawson Associates
$\mu\text{g}/\ell$	micrograms per liter
MCL	maximum contaminant level
NTC	Naval Training Center
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
ppm	part per million
PWC	Public Works Center
SAR	Site Assessment Report
TCAR	Tank Closure Assessment Report
TOC	top of casing
TRPH	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOA	volatile organic aromatic

1.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

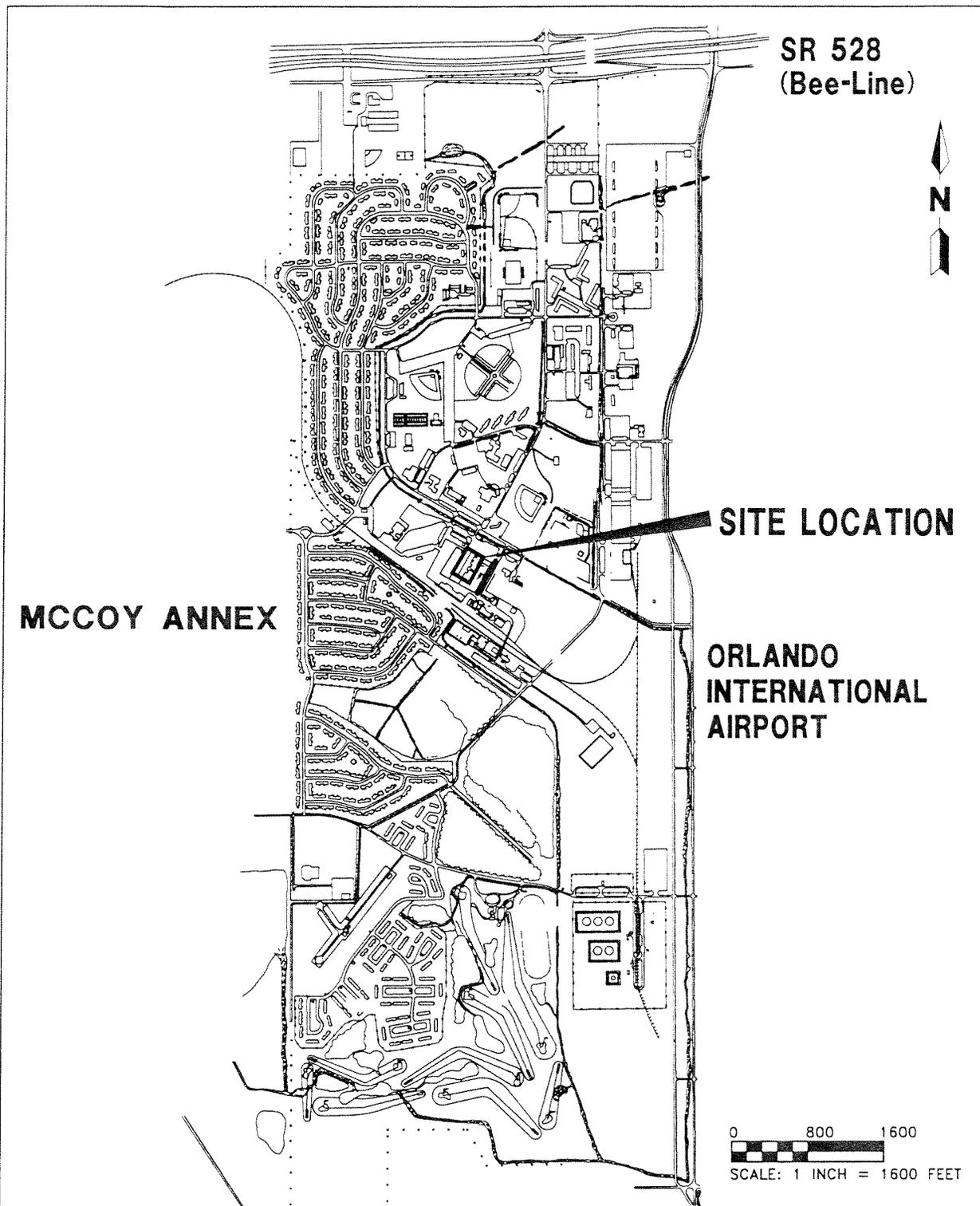
Building 7182 (Housing Office) is located at the southeast corner of the intersection of Binnacle Way and 5th Street in the south-central part of the Naval Training Center (NTC), Orlando McCoy Annex, in Orange County, Florida. Figure 1-1 shows the site location and a map of the surrounding area. The site lies within the northwest part of Section 5, Township 23 South and Range 30 East, as shown on the Pine Castle, Florida, U.S. Geological Survey Quadrangle Map. Figure 1-2 is the topographic map of the site and surrounding area.

Building 7182 is a one-story building constructed of concrete block. This 14,450-square-foot building was constructed in 1952, and has been used as a housing office since May 1993. The property was owned and operated by the U.S. Navy and occupied by the Navy Construction Battalion from 1968 to 1993. Prior to 1968, the Air Force owned and operated the property as a maintenance shop. Based on a review of aerial photographs, the property was undeveloped prior to construction of the building in 1952. Photographs of the site that show existing physical features are included in Appendix A, Site Photographs.

One petroleum storage tank system had been operated at Building 7182. The system was located west of the building and consisted of a 1,000-gallon underground storage tank (UST) and associated piping that stored heating fuel. The tank system was associated with the Building 7182 heating system. The location of the petroleum storage tank system is shown on Figure 1-3, Site Plan.

The 1,000-gallon UST was removed by the Navy Public Works Center (PWC) Pensacola on January 31, 1997. One temporary monitoring well was installed in the center of the former UST area. Laboratory analytical results indicated the presence of trichloroethene at a concentration of 5 micrograms per liter ($\mu\text{g}/\ell$), above the State of Florida maximum contaminant level (MCL) of 3 $\mu\text{g}/\ell$. No dissolved petroleum hydrocarbon contamination exceeding the State of Florida cleanup target levels (CTLs) as defined in Chapter 62-770, Florida Administrative Code (FAC) was found at the site. In addition, five soil samples collected from the excavation had organic vapor analyzer (OVA) readings ranging from 15 part per million (ppm) to 311 ppm. Approximately 3 cubic yards of petroleum-impacted soil were removed from the excavation and transported to a thermal treatment facility. A Tank Closure Assessment Report (TCAR) was submitted by PWC Pensacola in May 1997. The TCAR recommended the preparation of a Site Assessment Report (SAR). A copy of the TCAR is included in Appendix B, TCAR.

This SAR summarizes the data gathered during the site assessment activities at Building 7182, which were performed by Harding Lawson Associates (HLA). General information such as regional physiography, geology, hydrogeology, investigative methodologies, and procedures are included in the NTC, Orlando, McCoy Annex, Contamination Assessment Report (CAR) (ABB Environmental Services, Inc. [ABB-ES], 1996).



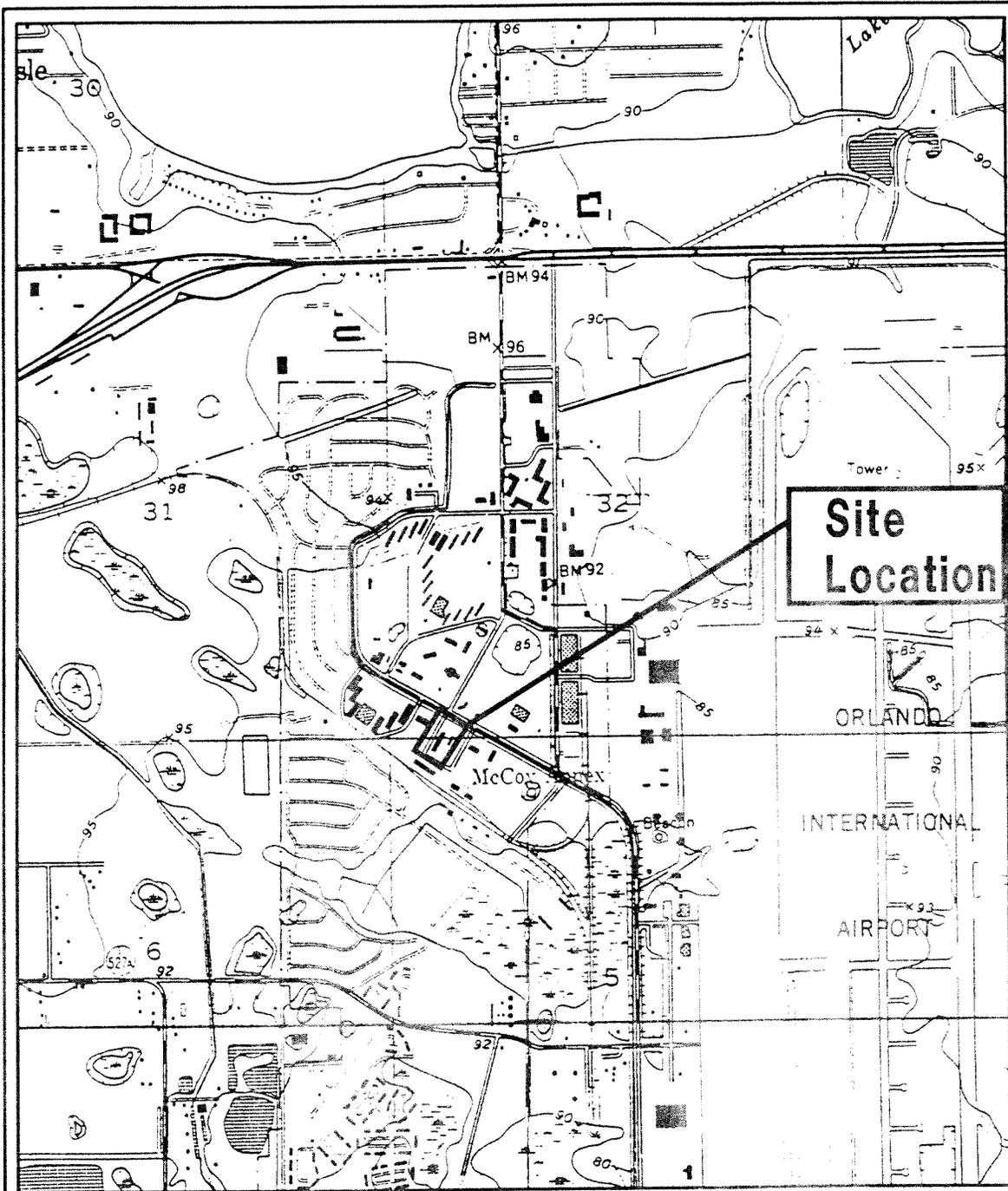
**FIGURE 1-1
SITE VICINITY MAP**



**SITE ASSESSMENT REPORT
BUILDING 7182
MCCOY ANNEX**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

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Reference: USGS Topographic Map
 Pine Castle Quadrangle
 Florida, Orange County
 7.5 Minute Series (Topographic)
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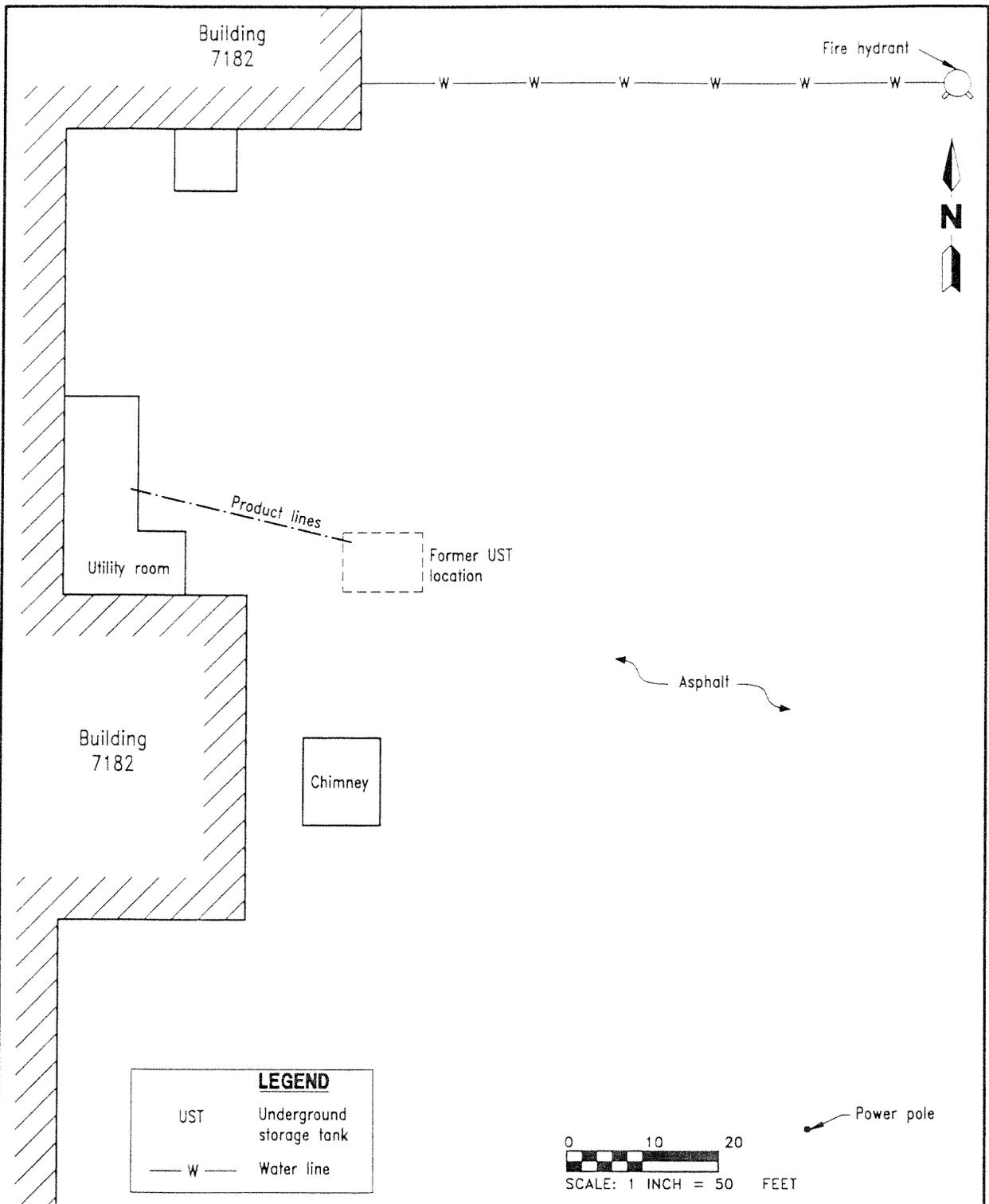
0 1,000 2,000
 SCALE: 1 INCH = 2,000 FEET

**FIGURE 1-2
 TOPOGRAPHIC MAP**

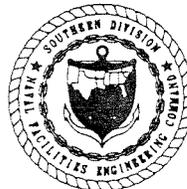


**SITE ASSESSMENT REPORT
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**FIGURE 1-3
SITE PLAN**



**SITE ASSESSMENT REPORT
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ORLANDO, FLORIDA**

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2.0 SITE ASSESSMENT METHODOLOGY

2.1 SOIL BORING PROGRAM. In order to assess if petroleum-impacted soil exists on site and to determine the optimal locations for collection of soil samples for laboratory analysis, six soil borings (SB-1 through SB-6) were completed at Building 7182. A TerraProbeSM was used on August 4, 1998, to collect soil samples for screening using an OVA. Figure 2-1 shows the soil boring and sampling locations. The borings were completed into the water table, which was encountered at approximately 4 feet below land surface (bls).

Eighteen soil samples were collected from the six soil borings for OVA screening and two soil samples were collected, packed on ice, and shipped to Savannah Laboratories and Environmental Services, Inc., for analysis. The soil samples for OVA field screening were collected at 0 to 2 feet, 2 to 4 feet, and 4 to 6 feet bls. Headspace organic vapor readings were measured for all soil screening samples by placing the soil sample in a 16-ounce glass jar and using a calibrated OVA, Foxboro 128 equipped with a flame ionization detector, following procedures outlined in Chapter 62-770, FAC. Carbon filters were utilized to differentiate total hydrocarbon response from naturally occurring methane gas. Filtered and unfiltered readings were obtained from two separate jars. All sampling and analysis was performed in accordance with HLA's FDEP-approved Comprehensive Quality Assurance Plan.

2.2 SOIL SAMPLING PROGRAM. In order to confirm and characterize petroleum-impact to soil, two soil samples (SS-1 and SS-2) were collected for laboratory analysis on August 4, 1998. One soil sample was collected from the downgradient side (northeast) of the former UST area and one soil sample was collected from the south side of the former UST area. Soil sample locations are shown on Figure 2-1. No OVA results above 2 parts per million (ppm) were obtained during the screening. Soil samples were packed on ice and shipped to Savannah Laboratories and Environmental Services, Inc., of Savannah, Georgia, for analysis. The soil samples were analyzed using U.S. Environmental Protection Agency (USEPA) Methods 8020, 8310, and total recoverable petroleum hydrocarbons (TRPH) using the Florida-Petroleum Residual Organics (FL-PRO).

2.3 MONITORING WELL INSTALLATION PROGRAM. Three shallow monitoring wells (MW-1, MW-2, and MW-3) were installed at the site on July 2, 1998 (Figure 2-1). The wells were installed using hollow-stem auger drilling techniques to a depth of 12 feet bls. A typical shallow monitoring well construction detail is provided as Figure 2-2. Each shallow well was constructed with 10 feet of 2-inch-diameter 0.010-inch slotted well screen coupled to 2 feet of 2-inch Schedule 40 solid polyvinyl chloride pipe. This assembly was placed in the borehole so that the screen interval is located at a depth that encompasses seasonal water table fluctuations. The annular space between the screen and the borehole was filled with 20/30 grade silica sand to 0.5 feet above the screened interval and a 1-foot fine sand (30/65 grade) seal was placed on top of the filter pack. The remaining annular space was sealed to grade with neat cement grout mixture. A summary of the well construction details is presented in Table 2-1, and Appendix C, Well Construction Details, contains the well completion logs provided by the drilling subcontractor.

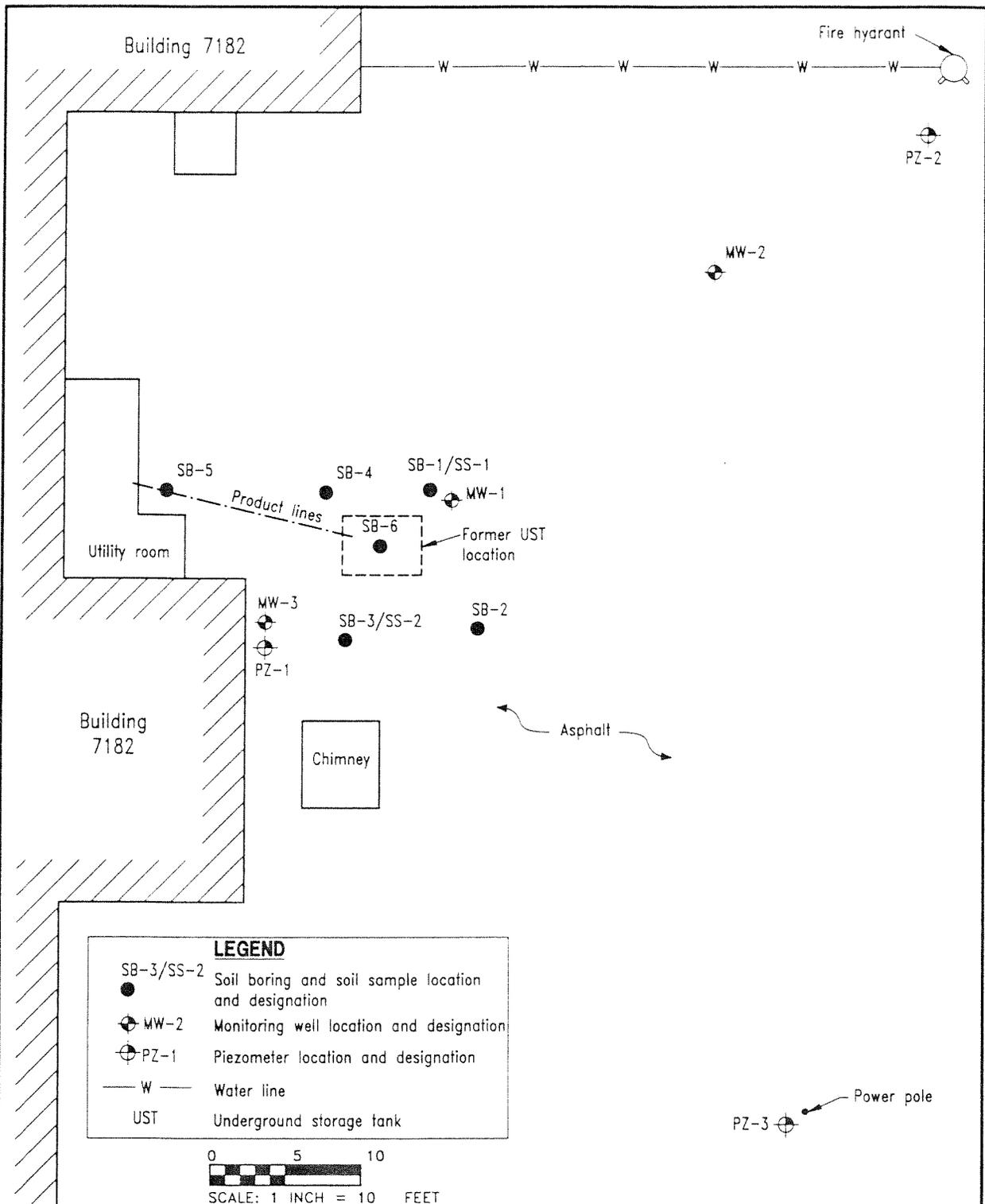


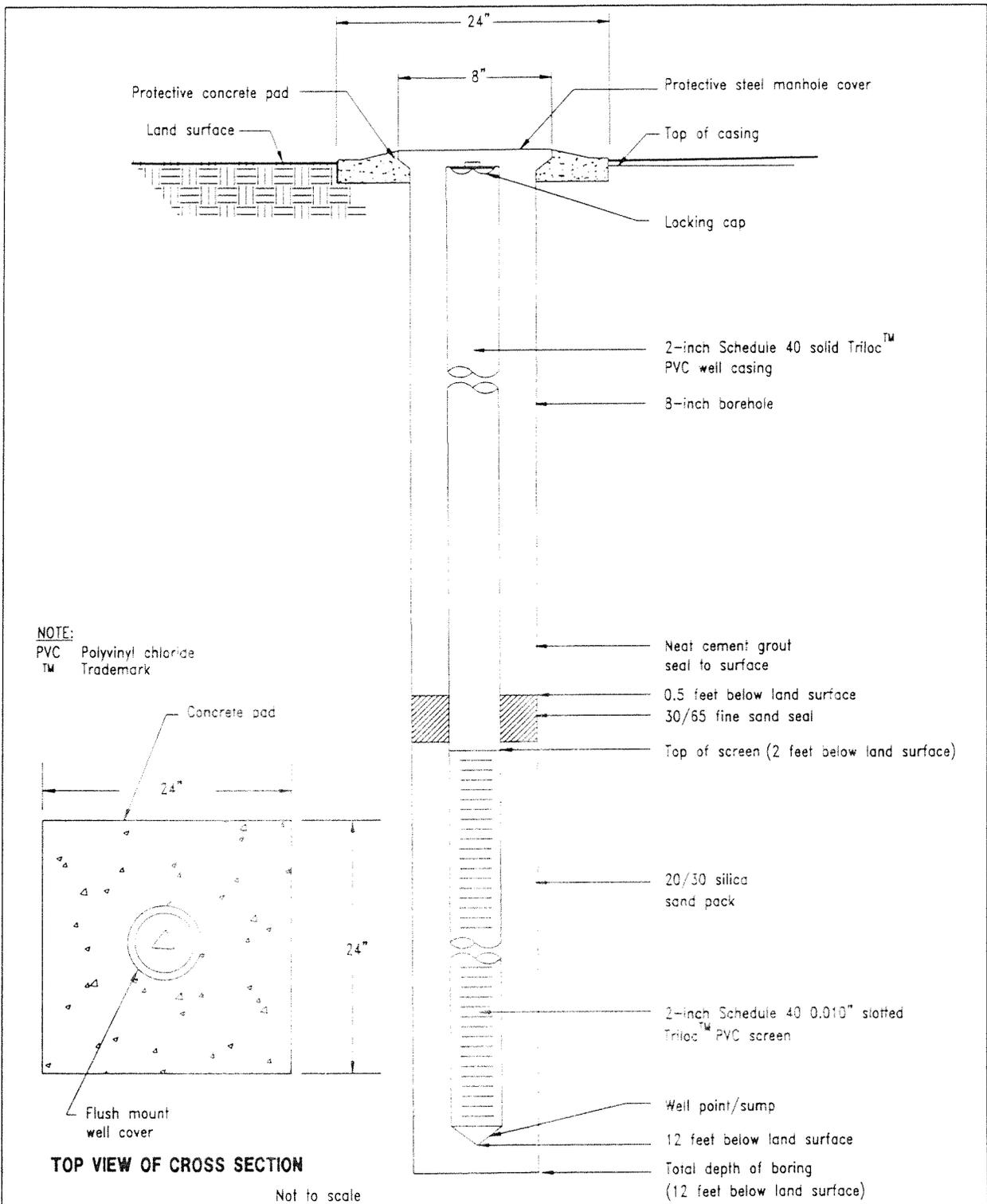
FIGURE 2-1
SOIL BORING LOCATION PLAN
AUGUST 4, 1998



SITE ASSESSMENT REPORT
BUILDING 7182
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**FIGURE 2-2
TYPICAL SHALLOW MONITORING WELL
CONSTRUCTION DETAIL**



**SITE ASSESSMENT REPORT
BUILDING 7182
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**Table 2-1
Groundwater Monitoring Well Construction Data Summary**

Site Assessment Report
Building 7182, McCoy Annex
Naval Training Center
Orlando, Florida

Well Number	Date Installed	Total Depth (feet bis)	Well Diameter (inches)	Screened Interval (feet bis)	Slot Size (inches)
MW-1	7/2/98	12	2	2 to 12	0.01
MW-2	7/2/98	12	2	2 to 12	0.01
MW-3	7/2/98	12	2	2 to 12	0.01

Note: bis = below land surface.

All monitoring wells were completed flush mount with surface grade well vaults, and locking well caps were installed to conform with standards outlined in Chapter 40C-3, FAC. Each monitoring well was developed by pumping until clear and free of sediment. Thorough field decontamination procedures were strictly enforced to prevent possible cross contamination between field monitoring points. All drilling equipment, including drilling rods, bits, and hollow-stem auger, was thoroughly decontaminated between each well installation.

2.4 GROUNDWATER SAMPLING PROGRAM. Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3 on August 5, 1998. The samples were packed on ice and transported to Savannah Laboratories and Environmental Services, Inc., of Savannah, Georgia, for analysis. Groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3 were analyzed for the sampling requirements established in Chapter 62-770, FAC, for sites with petroleum discharges defined under the Kerosene Analytical Group, which includes the following USEPA Methods: 504 (ethylene dibromide [EDB]), 601 (volatile halocarbons), 602 (volatile organic aromatics [VOA]), 239.2 (total lead), 610 (polynuclear aromatic hydrocarbons [PAHs]), and TRPH using the FL-PRO.

2.5 GROUNDWATER ELEVATION SURVEY. The elevation and slope of the water table was calculated using the field-surveyed top-of-well casing data for each monitoring well and correlating the elevation data to a common datum. On June 12, July 13, and August 5, 1998, depth to groundwater was measured from the top of casing (TOC) to the nearest hundredth of a foot in each of the piezometers and monitoring wells with an electronic water-level indicator. The groundwater depths were subtracted from the TOC elevation to obtain relative water table elevations. The wells were checked for the presence of free product by visual inspection of groundwater samples taken from each well and the use of an oil-water interface probe.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 SITE STRATIGRAPHY. For purposes of this investigation, site stratigraphy and aquifer evaluation were limited to the surficial aquifer beneath the site. The soil profile for the Building 7182 site is based on visual examination of soil samples collected from soil borings and drill cuttings obtained during this investigation. A typical stratigraphic soil profile consists of a tan to brown fine-grained sand down to a depth of 12 feet bls. A lithologic cross section has not been prepared for the site because the lithologic unit lacks variation and petroleum impact to groundwater. Lithologic logs for monitoring wells installed during this investigation are included as Appendix D, Lithologic Logs.

3.2 SITE HYDROGEOLOGY AND GROUNDWATER FLOW DIRECTION. Groundwater elevations across the site were calculated by measuring water levels on June 12, July 13, and August 5, 1998, in site monitoring wells and piezometers and by surveying the relative TOC elevations. The hydraulic gradient across the site was calculated by measuring the change in elevation head between monitoring wells MW-3 (upgradient well) and MW-2 (downgradient well) and dividing this head difference by the horizontal distance between these two wells. The scaled horizontal distance is 38 feet, and the change in elevation head between the wells, as measured on August 5, 1998, was 0.07 foot. The calculated hydraulic gradient is equal to 1.84×10^{-3} feet per foot. The site groundwater flow direction, based on the water table surface contour maps, is from southwest to northeast. Piezometer PZ-1 was removed during the installation of monitoring well MW-3. Piezometer PZ-2 was not used to calculate groundwater flow direction for the July 13 and August 5, 1998, sampling events. Table 3-1 is a summary of groundwater elevation data for the on June 12, July 13, and August 5, 1998, water table measuring events. Figures 3-1, 3-2, and 3-3 are the water table surface contour maps for on June 12, July 13, and August 5, 1998, respectively.

3.3 AQUIFER CHARACTERISTICS. Due to the lack of dissolved petroleum groundwater contamination, no slug tests were performed at this site.

3.4 POTABLE WELL SURVEY. A potable well survey for the surrounding area is included in the McCoy Annex CAR (ABB-ES, 1996). There are two inactive, potable wells within a one-mile radius of the site, including WW-1 (0.7 mile northeast) and WW-2 (0.5 mile northeast). In addition, five irrigation wells are located within a 1-mile radius of the site, including WW-7 (0.7 mile southeast), WW-12 (0.9 mile southwest), WW-13 (1.0 mile southwest), WW-14 (0.9 mile southwest), and WW-16 (0.9 mile southwest). See Figure 5-1, Potable and Irrigation Well Locations, of the McCoy Annex CAR (ABB-ES, 1996).

3.5 SURFACE WATER. There are no surface water bodies in the vicinity of the site. The nearest standing water is located in the drainage ditch running along the south side of Binnacle Way, approximately 300 feet northeast of the site. Surface water flow in the ditch is from northwest to southeast.

**Table 3-1
Groundwater Elevation Summary**

Site Assessment Report
Building 7182, McCoy Annex
Naval Training Center
Orlando, Florida

Well Number	Date	Depth to Product (ft btoc)	Depth to Water (ft btoc)	Product Thickness (feet)	Top-of-Casing Elevation (feet) ¹	Water-Level Elevation (feet) ¹
MW-1	06/12/98	--	NA	--	95.02	NA
	07/13/98	--	4.43	--		90.59
	08/05/98	--	4.36	--		90.66
MW-2	06/12/98	--	NA	--	94.81	NA
	07/13/98	--	4.26	--		90.55
	08/05/98	--	4.20	--		90.61
MW-3	06/12/98	--	NA	--	95.38	NA
	07/13/98	--	4.77	--		90.61
	08/05/98	--	4.70	--		90.68
PZ-1	06/12/98	--	9.42	--	100.00	90.58
	07/13/98	--	NA	--		NA
	08/05/98	--	NA	--		NA
PZ-2	06/12/98	--	8.99	--	99.52	90.53
	07/13/98	--	8.93	--		90.59
	08/05/98	--	8.85	--		90.67
PZ-3	06/12/98	--	8.13	--	98.69	90.56
	07/13/98	--	8.07	--		90.62
	08/05/98	--	8.01	--		90.68

¹ Referenced to arbitrary datum.

Notes: ft btoc = feet below top of casing.

-- = not applicable.

NA = not applicable.

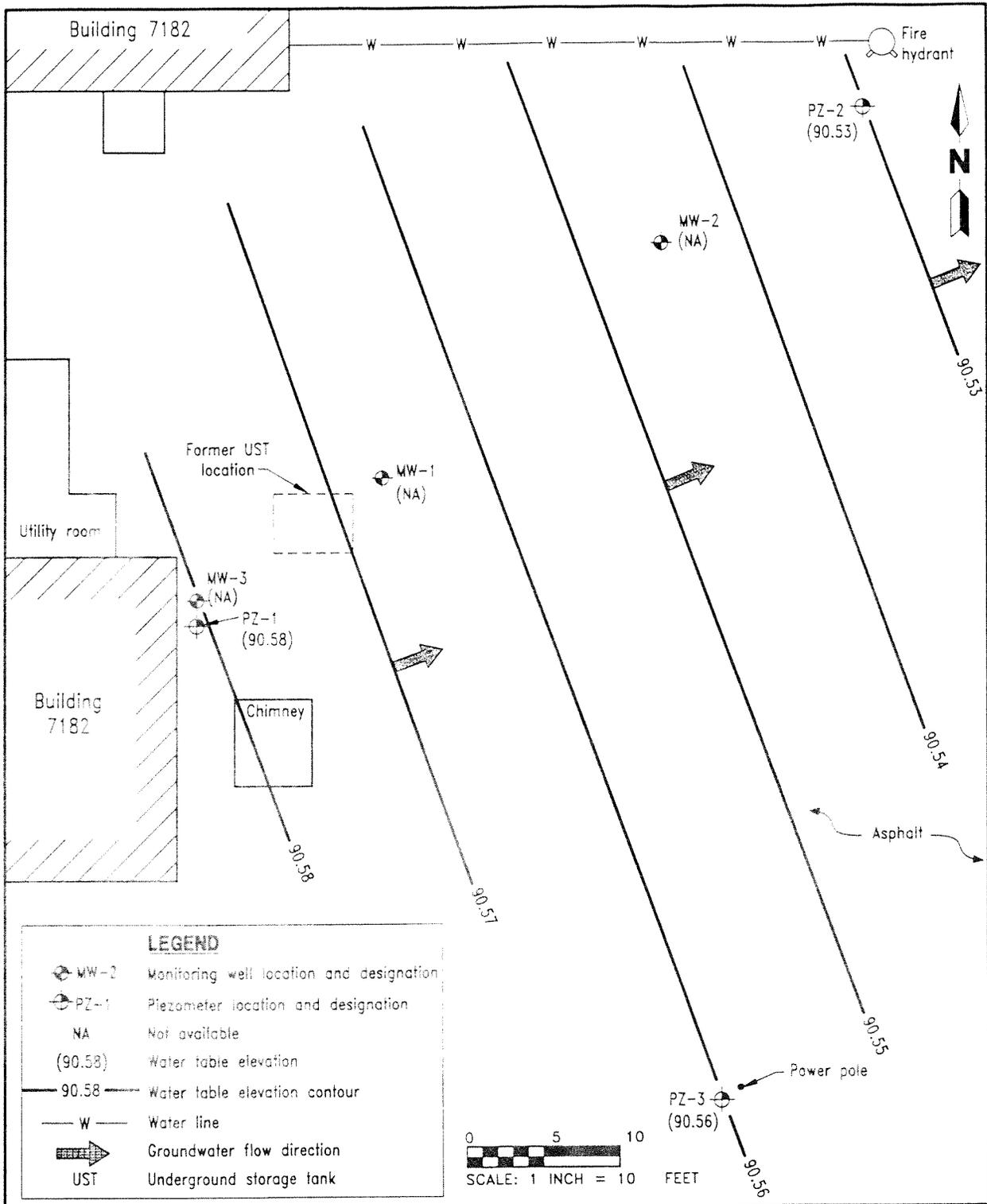


FIGURE 3-1
WATER TABLE ELEVATION CONTOUR MAP
JUNE 12, 1998



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ORLANDO, FLORIDA

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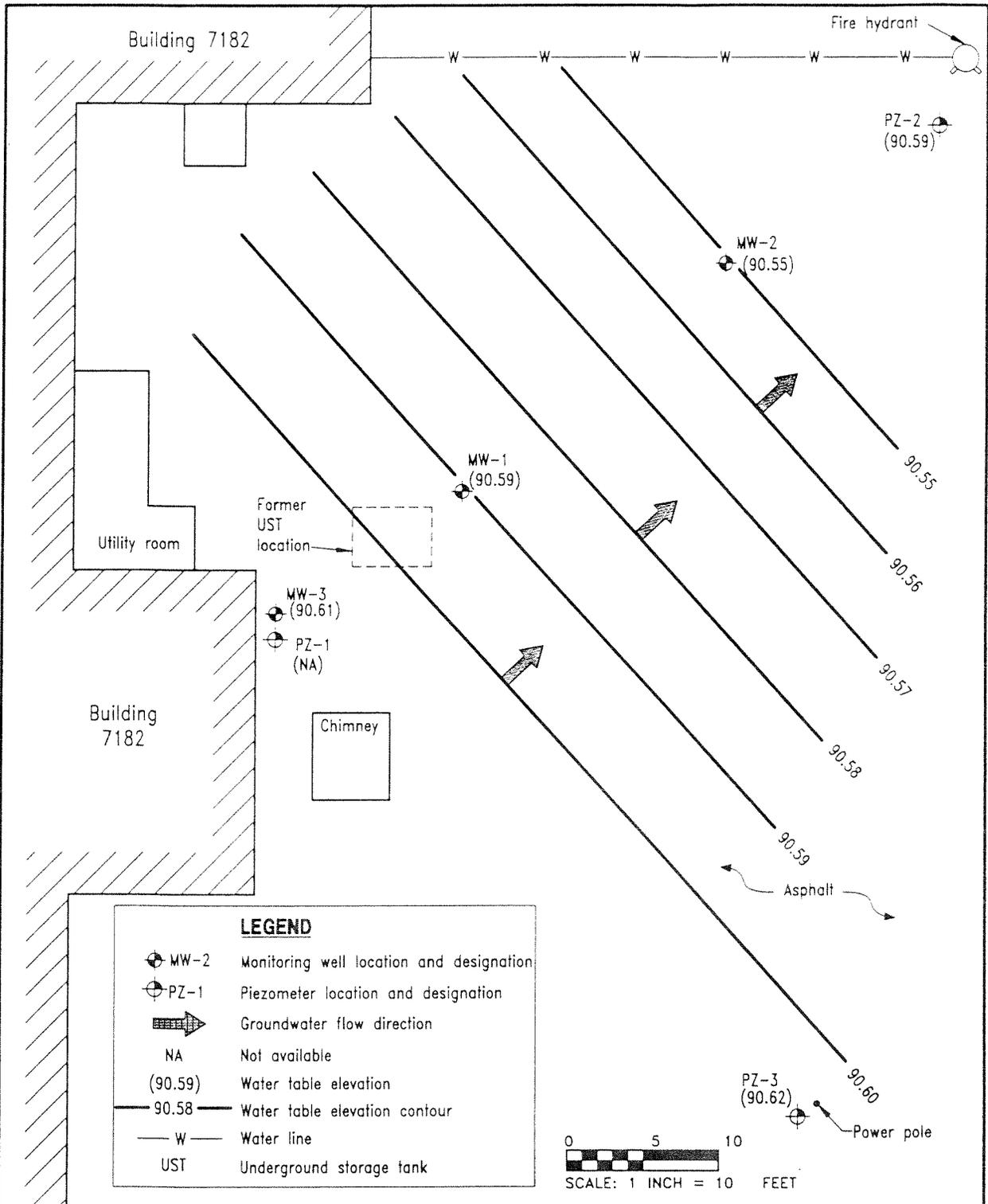


FIGURE 3-2
WATER TABLE ELEVATION CONTOUR MAP
JULY 13, 1998



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BUILDING 7182
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ORLANDO, FLORIDA

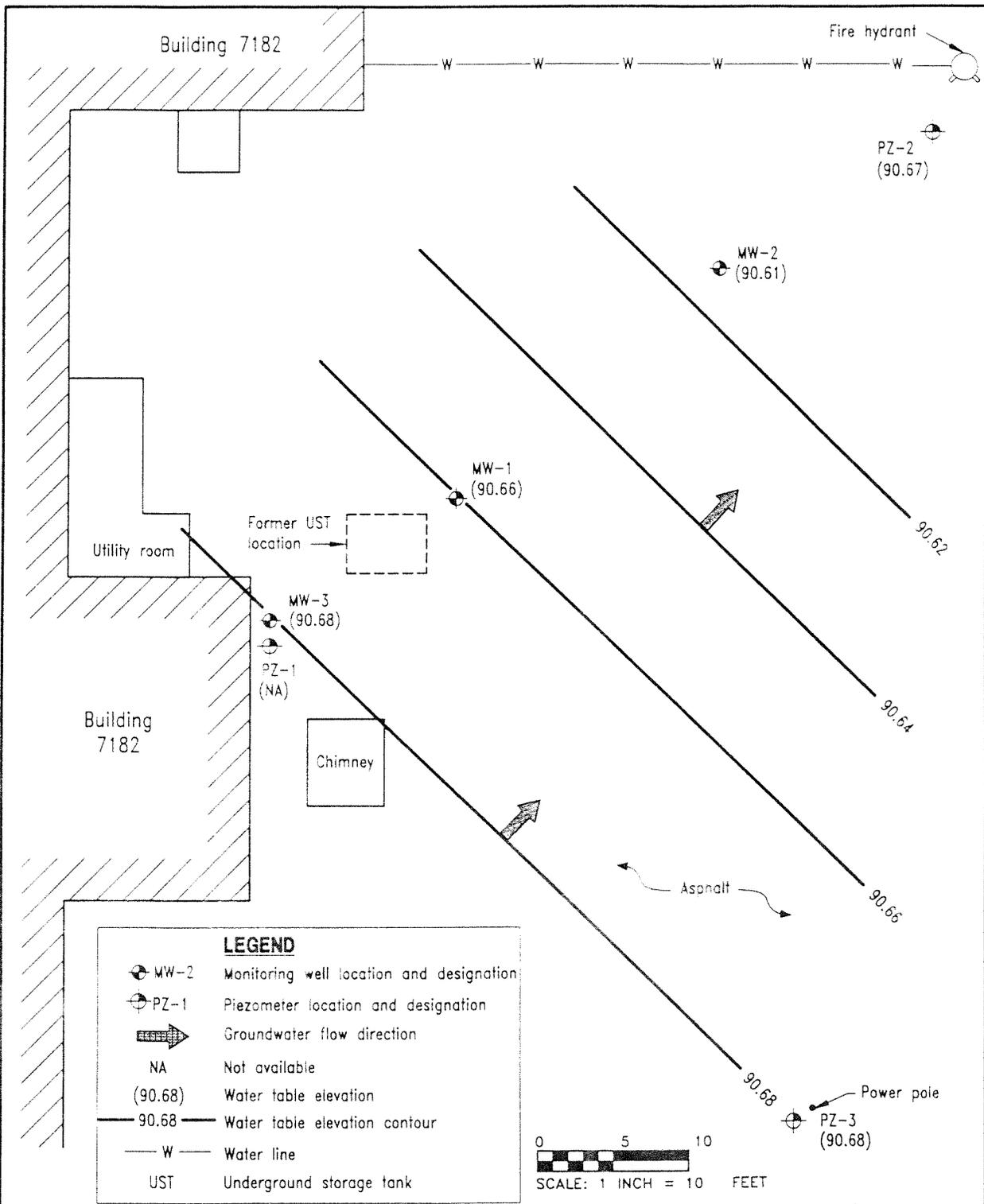


FIGURE 3-3
WATER TABLE ELEVATION CONTOUR MAP
AUGUST 5, 1998



SITE ASSESSMENT REPORT
BUILDING 7182
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NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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4.0 SITE ASSESSMENT RESULTS

4.1 SOIL CONTAMINATION. Six soil borings (SB-1 through SB-6) were advanced using a TerraProbeSM on August 4, 1998. Figure 2-1 shows the soil boring locations. Eighteen soil samples were collected at discrete intervals for OVA analysis. A summary of OVA results is presented in Table 4-1.

OVA analyses indicated that no petroleum-impacted soil was encountered in the vicinity of the former tank or product lines.

Two composite soil samples were collected for laboratory analysis, including SS-1 (SB-1 from 2 to 4 feet bls) and SS-2 (SB-3 from 2 to 4 feet bls). The soil samples were analyzed by an off-site laboratory using USEPA Methods 8020 and 8310 and TRPH using the FL-PRO. Laboratory analytical results indicate the presence of several compounds at concentrations above laboratory standard detection limits but below State of Florida soil CTLs, including toluene (SS-1, 0.018 milligrams per kilogram [mg/kg] and SS-2, 0.01 mg/kg), ethylbenzene (SS-1, 0.027 mg/kg and SS-2, 0.012 mg/kg), and total xylenes (SS-1, 0.13 mg/kg and SS-2, 0.057 mg/kg). A summary of the soil laboratory analytical results is presented in Table 4-2.

4.2 FREE PRODUCT OCCURRENCE. No free product was detected during the site assessment activities.

4.3 GROUNDWATER CONTAMINATION. Three shallow monitoring wells (MW-1, MW-2, and MW-3) were installed at the site on July 2, 1998, and sampled on August 5, 1998. These monitoring wells were installed to assess the direction of groundwater flow and the horizontal extent of dissolved petroleum hydrocarbon contamination. Monitoring well locations are shown on Figure 4-1.

Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3 on August 5, 1998. Groundwater samples were analyzed for Chapter 62-770, FAC Kerosene Analytical Group parameters, which include the following USEPA Methods: 504 (EDB), 601 (volatile halocarbons), 602 (VOA), 239.2 (total lead), 610 (PAHs), and TRPH using the FL-PRO. Laboratory analytical results indicate the presence of methylene chloride (MW-2, 24 $\mu\text{g}/\ell$ and MW-3, 28 $\mu\text{g}/\ell$) and tetrachloroethene (MW-3, 4.9 $\mu\text{g}/\ell$) at concentrations exceeding the State of Florida MCLs. In addition, cis/trans-1,2-dichloroethene was detected in monitoring wells MW-1 (24 $\mu\text{g}/\ell$) and MW-2 (49 $\mu\text{g}/\ell$) at concentrations below State of Florida MCLs. No dissolved petroleum hydrocarbon contamination exceeding the State of Florida CTLs, as defined in Chapter 62-770, FAC, was found at the site. Two compounds were reported at concentrations above laboratory standard detection limits but below Chapter 62-770, FAC, CTLs, including acenaphthene (MW-1, 1.1 $\mu\text{g}/\ell$), phenanthrene (MW-1, 0.35 $\mu\text{g}/\ell$), 1-methylnaphthalene (MW-1, 4.5 $\mu\text{g}/\ell$), 2-methylnaphthalene (MW-1, 4.6 $\mu\text{g}/\ell$) and naphthalene (MW-1, 5.4 $\mu\text{g}/\ell$ and MW-2, 1.6 $\mu\text{g}/\ell$). Since the laboratory diluted the sample from monitoring well MW-2, the detection limit for benzene was increased to 2 $\mu\text{g}/\ell$, which is above the CTL of 1 $\mu\text{g}/\ell$. Water sampling log forms are included in Appendix E. Laboratory analytical reports are included in Appendix F, and results are summarized in Table 4-3.

Table 4-1
Summary of Organic Vapor Analyses, August 4, 1998

Site Assessment Report
 Building 7182, McCoy Annex
 Naval Training Center
 Orlando, Florida

Hand Auger Boring Designation	Sample Depth (feet bls)	Unfiltered (ppm)	Filtered (ppm)	Total Hydrocarbons (ppm)	Physical Observations
SB-1	0 to 2	<1	<1	<1	No petroleum odor, no staining.
SS-1	2 to 4	<1	<1	<1	No petroleum odor, no staining.
	4 to 6	<1	<1	<1	No petroleum odor, no staining.
SB-2	0 to 2	<1	<1	<1	No petroleum odor, no staining.
	2 to 4	1	<1	1	No petroleum odor, no staining.
	4 to 6	<1	<1	<1	No petroleum odor, no staining.
SB-3	0 to 2	1	<1	1	No petroleum odor, no staining.
SS-2	2 to 4	2	<1	2	No petroleum odor, no staining.
	4 to 6	<1	<1	<1	No petroleum odor, no staining.
SB-4	0 to 2	<1	<1	<1	No petroleum odor, no staining.
	2 to 4	<1	<1	<1	No petroleum odor, no staining.
	4 to 6	<1	<1	<1	No petroleum odor, no staining.
SB-5	0 to 2	<1	<1	<1	No petroleum odor, no staining.
	2 to 4	<1	<1	<1	No petroleum odor, no staining.
	4 to 6	<1	<1	<1	No petroleum odor, no staining.

Notes: Water table present at approximately 4 feet bls.

bls = below land surface.

ppm = parts per million.

<1 = nondetectable limit for organic vapor analyzer.

**Table 4-2
Summary of Soil Analytical Results**

Site Assessment Report
Building 7182, McCoy Annex
Naval Training Center
Orlando, Florida

Parameter	Direct Exposure Soil Cleanup Target Levels ¹		Soil Sample/Sample Date	
	Residential	Industrial	SS-1	SS-2
			8/4/98	8/4/98
Benzene	1.1	1.5	<0.006	<0.0062
Toluene	300	2,000	0.018	0.01
Ethylbenzene	240	240	0.027	0.012
Total xylenes	290	290	0.13	0.057
MTBE	350	6,100	<0.06	<0.062
TRPH	350	2,500	<12	<12
Acenaphthene	2,300	22,000	<0.06	<0.062
Acenaphthylene	1,100	11,000	<0.024	<0.025
Benzo(a)pyrene	0.1	0.5	<0.0048	<0.005
Benzo(g,h,i)perylene	2,300	45,000	<0.012	<0.012
Benzo(b)fluoranthene	1.4	5	<0.0048	<0.005
Benzo(k)fluoranthene	15	52	<0.0048	<0.005
Chrysene	140	490	<0.0048	<0.005
Benzo(a)anthracene	1.4	5.1	<0.0048	<0.005
Fluoranthene	2,800	45,000	<0.012	<0.012
Fluorene	2,100	24,000	<0.012	<0.012
Indeno(1,2,3-cd)pyrene	1.5	5.2	<0.012	<0.012
Dibenz(a,h)anthracene	0.1	0.5	<0.012	<0.012
Naphthalene	1,000	8,600	<0.024	<0.025
Phenanthrene	1,900	29,000	<0.0048	<0.005
Anthracene	19,000	290,000	<0.0048	<0.005
Pyrene	2,200	40,000	<0.012	<0.012

¹ Cleanup target levels for residential and industrial exposure as defined in Table IV of Chapter 62-770, Florida Administrative Code.

Notes: All concentrations in milligrams per kilogram.

MTBE = methyl tert-butyl ether.

TRPH = total recoverable petroleum hydrocarbons (by Florida-Petroleum Residual Organics analysis).

< = less than.

**Table 4-3
Summary of Groundwater Analytical Results**

Site Assessment Report
Building 7182, McCoy Annex
Naval Training Center
Orlando, Florida

Parameter	Chapter 62-770, FAC, Target Cleanup Levels (ppb) ¹	Monitoring Well/Sample Date			
		MW-1 8/5/98	MW-2 8/5/98	MW-3 8/5/98	RB-1 8/5/98
Benzene	1*	<1	<2	<1	<1
Toluene	40*	<1	<2	<1	<1
Ethylbenzene	30*	<1	<2	<1	<1
Total xylenes	20*	<2	<2	<2	<2
MTBE	35	<10	<20	<10	<10
1,2-Dibromomethane (EDB)	0.02*	<0.020	<0.020	<0.020	<0.020
Total lead	15*	<5	<5	<5	<5
TRPH (mg/ℓ)	5	<0.3	<0.3	<0.3	<0.3
Acenaphthene	20	1.1X	<1	<1	<1
Acenaphthylene	210	<1	<1	<1	<1
Benzo(a)pyrene	0.2*	<0.2	<0.2	<0.2	<0.2
Benzo(g,h,i)perylene	210	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.2	<0.2	<0.2	<0.2	<0.2
Benzo(k)fluoranthene	0.5	<0.2	<0.2	<0.2	<0.2
Chrysene	5	<0.2	<0.2	<0.2	<0.2
Benzo(a)anthracene	0.2	<0.2	<0.2	<0.2	<0.2
Fluoranthene	280	<0.5	<0.5	<0.5	<0.5
Fluorene	280	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	0.2	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.2	<0.5	<0.5	<0.5	<0.5
Naphthalene	20	5.4	1.6	<1	<1
Phenanthrene	210	0.35	<0.2	<0.2	<0.2
Anthracene	2,100	<0.2	<0.2	<0.2	<0.2
Pyrene	210	<0.5	<0.5	<0.5	<0.5
1-Methylnaphthalene	NA	4.5	<1	<1	<1
2-Methylnaphthalene	NA	4.6	<1	<1	<1
1,2-Dichloroethane	3*	<1	<1	<1	<1
cis/trans-1,2-Dichloroethene	70/100*	24	49	<1	<1
Methylene chloride	5*	<5	24	28	<5
Tetrachloroethene	3*	<1	<2	4.9	<1

¹ An asterisk (*) indicates information is provided in Chapter 62-520 or 62-550, FAC.

Notes: All concentrations in micrograms per liter, unless otherwise noted.

FAC = Florida Administrative Code.

ppb = parts per billion.

< = less than.

MTBE = methyl tert-butyl ether.

EDB = ethylene dibromide.

TRPH = total recoverable petroleum hydrocarbons (by Florida-Petroleum Residual Organics analysis).

mg/ℓ = milligrams per liter.

X = less than 40 percent relative percent difference, lower value reported.

NA = not available.

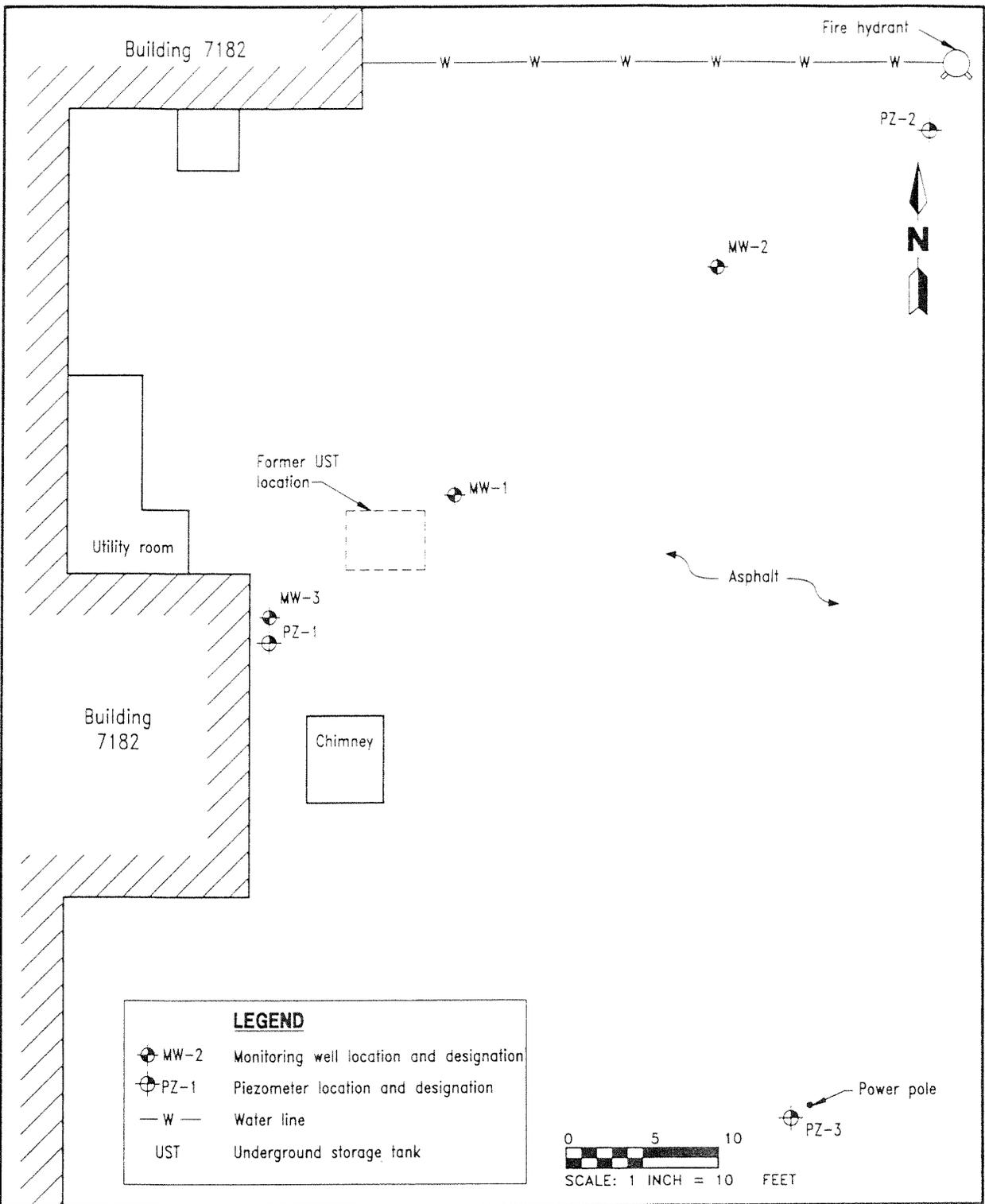


FIGURE 4-1
MONITORING WELL LOCATION PLAN



SITE ASSESSMENT REPORT
BUILDING 7182
MCCOY ANNEX
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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5.0 SOURCE OF HYDROCARBONS

5.1 HYDROCARBON TYPE AND MASS DISTRIBUTION. The hydrocarbon type reportedly stored in the 1,000-gallon UST at Building 7182 was heating fuel. The laboratory analytical results indicate no petroleum-impacted soil or groundwater above the State of Florida CTLs was present at the site. Because no petroleum-impacted soil or groundwater was encountered, mass distribution calculations were not performed. Because the chlorinated solvent contamination was not adequately defined, mass distribution calculations were not performed.

5.2 SOURCE OF HYDROCARBON. The suspected source of the small amounts of hydrocarbons in the soil and groundwater is the former 1,000-gallon UST. Petroleum discharges could be attributed to overfill or small spills while filling the UST. The source of chlorinated solvents at the site is not known, although Building 7182 has been used for maintenance activities.

5.3 MECHANISM OF TRANSPORT. The drainage ditch located approximately 300 feet northeast of the site appears to influence the direction of groundwater flow in the surficial aquifer in the area.

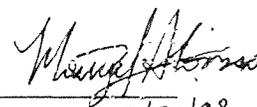
6.0 CONCLUSIONS AND RECOMMENDATIONS

Laboratory analytical results indicate there is no petroleum-impacted soil or groundwater above State of Florida CTLs at the Building 7182 site. Laboratory analytical results also indicate the presence of chlorinated solvents at concentrations that exceed the State of Florida MCLs.

HLA recommends a No Further Action proposal for the petroleum storage system formerly located at the site. HLA also recommends additional assessment activities to find the source and define the horizontal and vertical extent of chlorinated solvent contamination present in the site vicinity.

7.0 PROFESSIONAL REVIEW CERTIFICATION

This document, *Site Assessment Report, Building 7182, McCoy Annex, Naval Training Center, Orlando, Florida*, has been prepared under the direction of a Professional Geologist registered in the State of Florida. The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report or referenced in public literature. Recommendations are based upon interpretations of the applicable regulatory requirements, guidelines, and relevant issues discussed with regulatory personnel during the site investigation. If conditions that differ from those described are determined to exist, the undersigned geologist should be notified to evaluate the effects of any additional information on this assessment or the recommendations made in this report. This report meets the criteria set forth in Chapter 492 of the Florida Statutes with regard to good professional practices as applied to Chapter 62-770, FAC. This SAR was developed for the Building 7182 site at the McCoy Annex, NTC, Orlando, in Orlando, Florida, and should not be construed to apply to any other site.



Manuel Alonso
Professional Geologist
P.G. No. 0001256

10/30/98

Date

REFERENCES

ABB Environmental Services, Inc. 1996. *Contamination Assessment Report, McCoy Annex, Naval Training Center, Orlando, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command (February).

APPENDIX A
SITE PHOTOGRAPHS



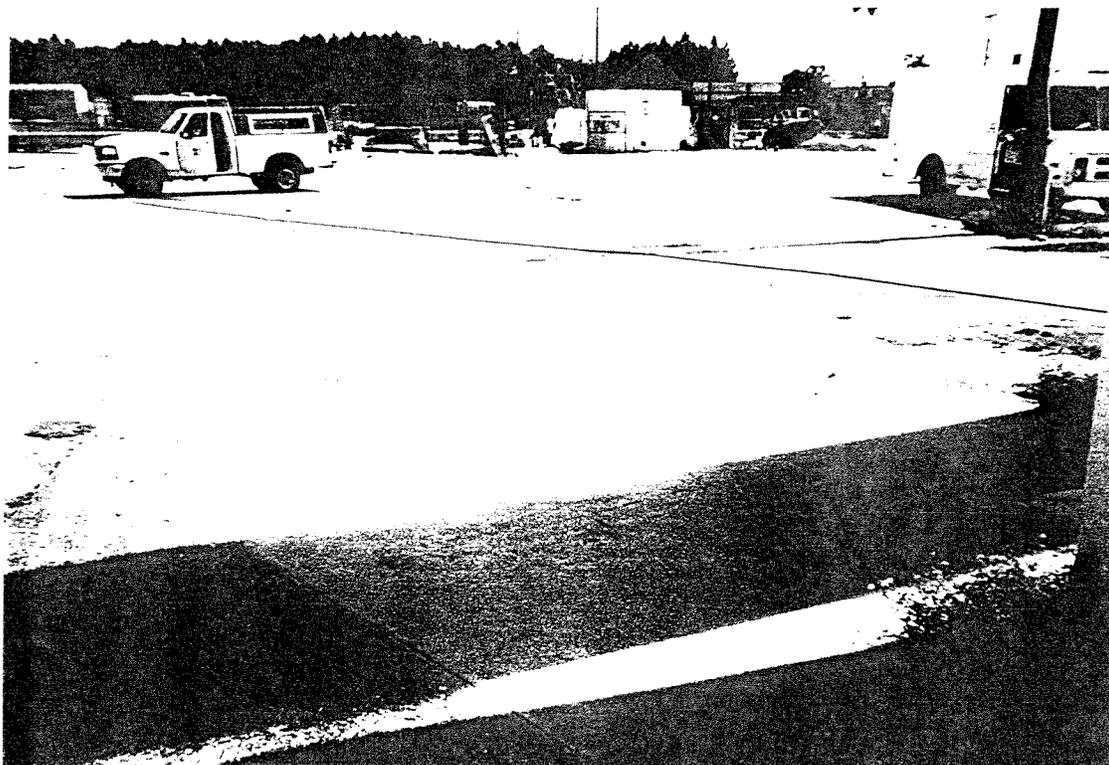
Photograph 1: View of former 1,000-gallon underground storage tank (UST) area at Building 7182, facing north.



Photograph 2: View of former 1,000-gallon UST area at Building 7182, facing west.



Photograph 3: View of former 1,000-gallon UST area at Building 7182, facing south.



Photograph 4: View of former 1,000-gallon UST area at Building 7182, facing east.

APPENDIX B

TANK CLOSURE ASSESSMENT REPORT

CLOSURE ASSESSMENT
UNDERGROUND STORAGE TANK
BUILDING 7182

NAVAL TRAINING CENTER
MCCOY ANNEX
ORLANDO, FLORIDA

Unit Identification Code: N65928

Prepared by:

Navy Public Works Center
Environmental Department
310 John Tower Road
Pensacola, Florida, 32508

Prepared for:

Naval Facilities Engineering Command
Southern Division
2155 Eagle Drive
Charleston, South Carolina 29418

Nick Ugolini, Code 1843, Engineer-in-Charge

May 1997

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 Underground Storage Tank
 Building 7182
 Naval Training Center, McCoy Annex
 Orlando, Florida

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15.0	Project Number	2
16.0	Report Date	2

FIGURES

- Figure 1: Regional Map
- Figure 3: Vicinity Map
- Figure 3: Site Map

ATTACHMENTS

- Attachment A: Photographs
- Attachment B: Application for Closure of Pollutant Storage Tank System
- Attachment C: Underground Storage Tank Installation and Removal Form
- Attachment D: Closure Assessment Form, Groundwater Analysis, & OVA Readings
- Attachment E: Disposal Document - Scrap Metal
- Attachment F: Disposal Document - Contaminated Soil
- Attachment G: Decontamination Certification

GLOSSARY

FAC	Florida Administrative Code
OVA	Organic Vapor Analyzer
AST	Aboveground Storage Tank
UST	Underground Storage Tank
USEPA	U.S. Environmental Protection Agency

CLOSURE ASSESSMENT REPORT
UNDERGROUND STORAGE TANK
BUILDING 7182

1.0 Facility

Building 7182
Naval Training Center
McCoy Annex
Orlando, Orange County, Florida

2.0 Operator

Commander, Naval Training Center
1350 Grace Hopper Avenue, Code 010E
Orlando, Florida 32813-8405

3.0 Site Location

See Figure 1.

4.0 Date of Closure

31 January 1997

5.0 Tank Status

There was one 1000 gallon underground storage tank (UST) removed from the east side of Building 7182 by the Public Works Center (PWC) as depicted by Figure 3. A photograph of the removals is provided in Attachment A. The UST was emptied prior to commencement of work by International Oil Service. The UST was completely decontaminated and rendered unuseable by PWC. The UST was properly disposed by the Defense Reutilization and Marketing Office (DRMO).

There was contaminated soil encountered during the removal process. The contaminated soil was removed horizontally until the OVA readings were below fifty (50) parts per million. The soil was removed vertically until groundwater was encountered at approximately six (6) feet below land surface.

6.0 Tank Contents

Heating Fuel

7.0 Tank Condition

The UST was in good condition at the time of removal.

8.0 Tank Area

The size of the excavation was approximately ten (10) feet wide by twenty-five (25) feet long and six (6) feet deep. The excavation was filled with clean fill, compacted to grade, and paved with concrete

9.0 Soil Screening

- Five (5) soil samples were collected for headspace screening with an organic vapor analyzer (OVA). The samples were extracted at each corner and under the middle of the UST as depicted by Figure 3.
- The soil screening was conducted in accordance with the headspace screening criteria in Chapter 62-770 FAC and PWC's Comprehensive Quality Assurance Plan.

10.0 Groundwater Analysis

A temporary groundwater monitoring well was placed at the center of the UST excavation, the well was developed and groundwater samples were collected on 18 March 1997. The samples were transported to the PWC Laboratory in Pensacola, Florida. The samples were analyzed using U.S. Environmental Protection Agency (EPA) Methods 8260 and 8270.

11.0 Conclusions

There were indications of petroleum contamination observed from the soil and groundwater sampling.

12.0 Recommendations

A Contamination Assessment Report (CAR) should be initiated.

13.0 Closure Assessment

Performed by the Public Works Center (PWC) Pensacola, Florida.

14.0 Project Manager

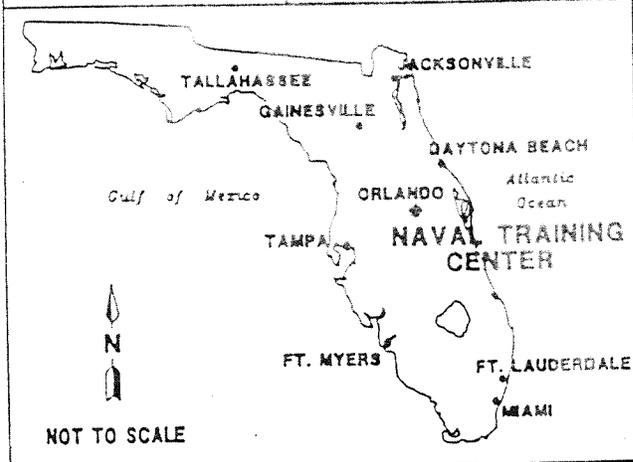
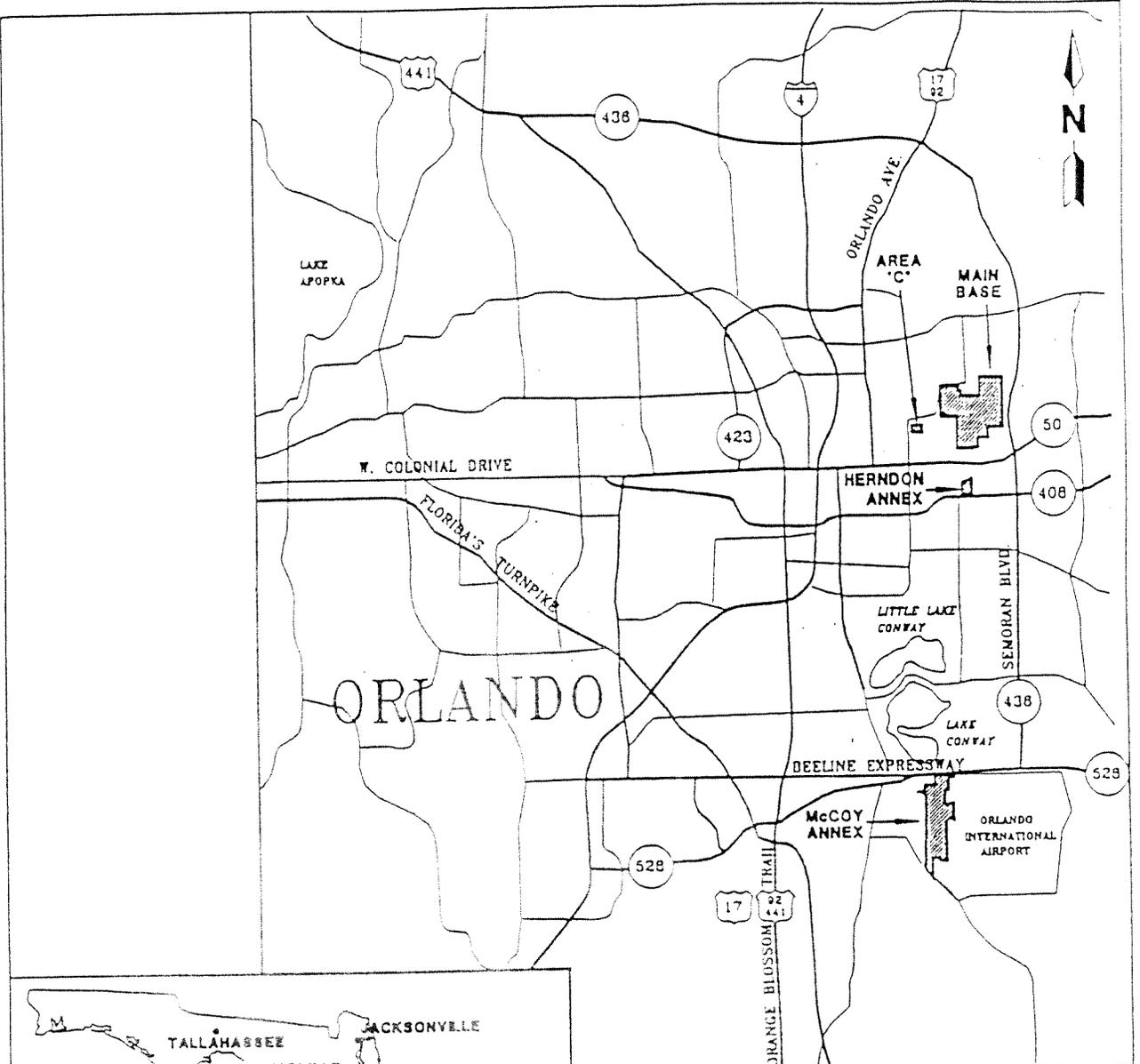
Mr. Paul R. Semmes, P.E.

15.0 Project Number

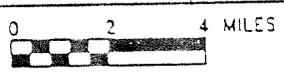
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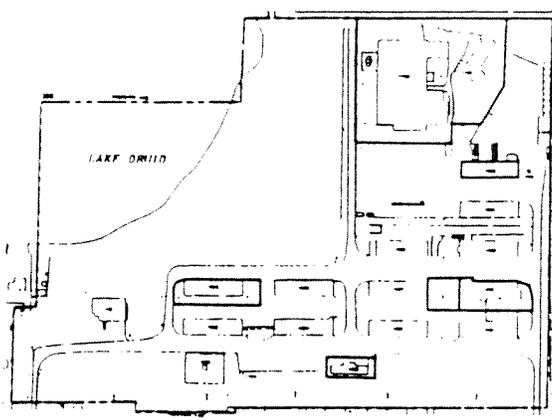
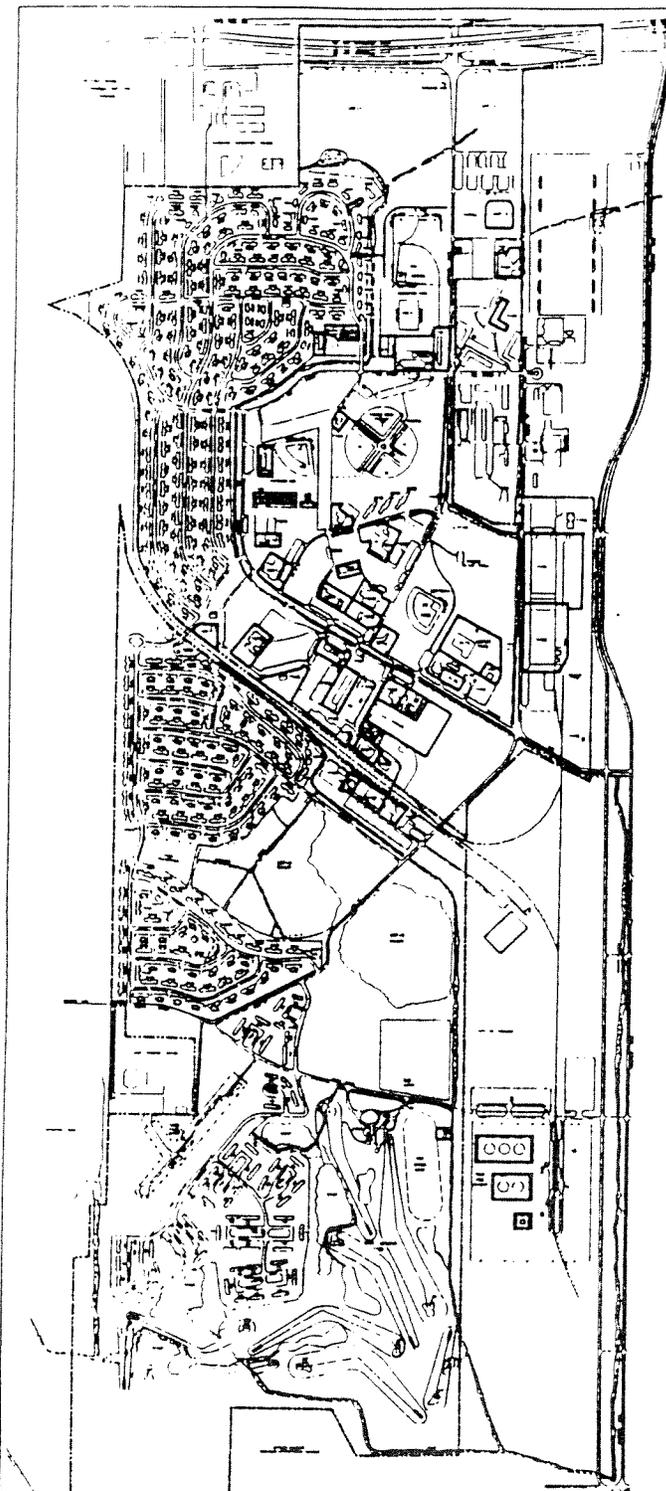
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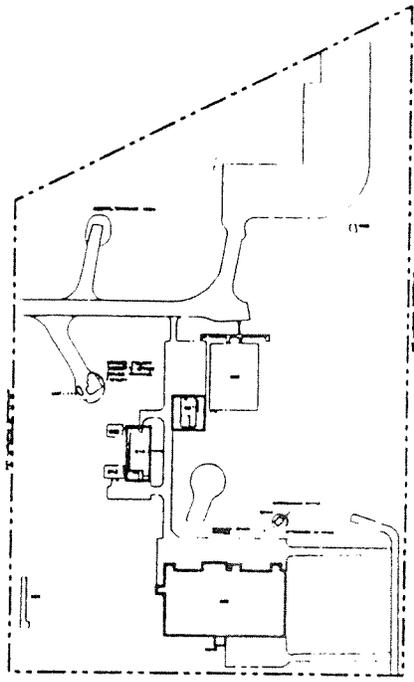
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ORLANDO, FLORIDA

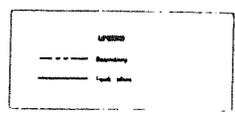
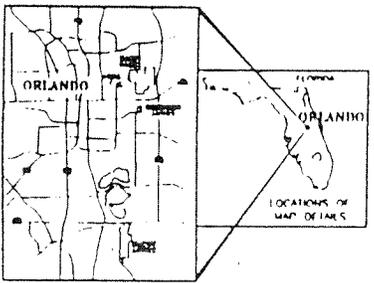


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AREA C

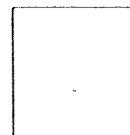
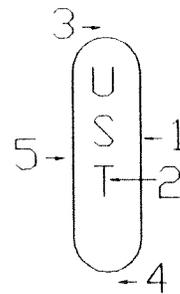


NAVAL TRAINING CENTER
HERNDON ANNEX

NAVAL TRAINING CENTER
MCCOY ANNEX



BLDG 7182



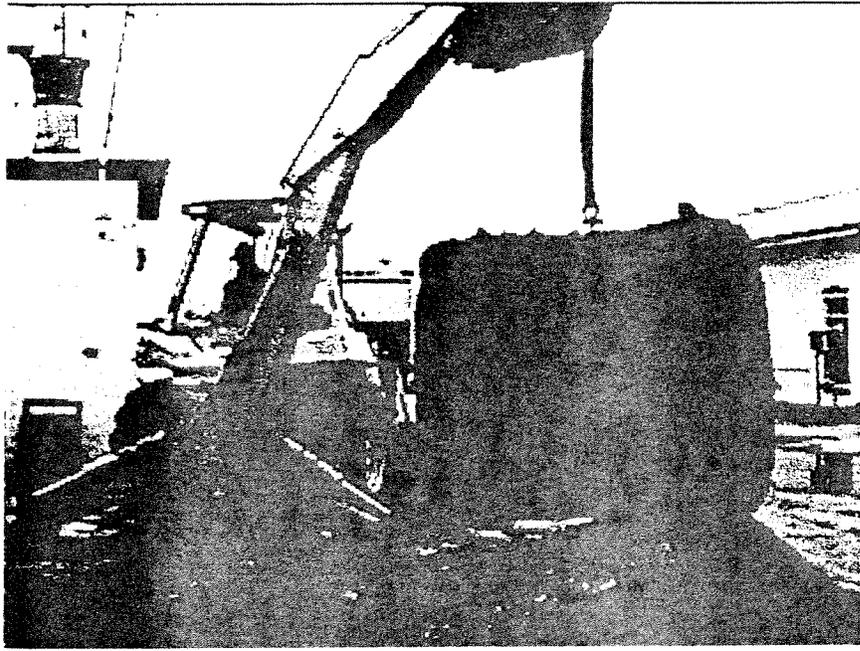
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QVA READINGS

- 1- 6' BLS, 15 PPM
- 2- 6' BLS, 67/32 PPM
- 3- 6' BLS, 159/18 PPM
- 4- 6' BLS, 771/460 PPM
- 5- 6' BLS, 236/79 PPM

REF: BLDG 7182		DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND		
DESIGNED _____		NAVY PUBLIC WORKS CENTER		
DRAWN _____		NAVAL AIR STATION PENSACOLA, FLORIDA		
CHECKED _____		NAVAL TRAINING CENTER		
DIV DIR _____		NTC ORLANDO, MCCOY ANNEX		
LDG DIV DIR _____		ORLANDO, FLORIDA		
ENGRG DEPT. HDL _____				
APPROVED _____	DATE _____	SIZE CODE IDENT NO	ENVIRON DEPT NO	PWC DRAWING NO
ENVIRONMENTAL DEPARTMENT		900		
APPROVED _____	DATE _____	SCALE AS SHOWN	SPEC	SHEET OF
PAUL R. SMOGOS, P.E.				

ATTACHMENTS



APPLICATION FOR CLOSURE OF POLLUTANT STORAGE TANK SYSTEM

Provide the facility information requested below.

FDEP Facility # 48/8841262 Facility Name U S Navy

Facility Location Naval Training Center, Building 7182

Property Owner Commander, Naval Training Center

Property Owner Address Code 010E, 1350 Grace Hopper Ave, Orlando, FL 32813-8405

Phone (407) 646-4663

Method of Tank Closure Removal

Pollutant Storage Systems Specialty Contractor (PSSSC) who will be on site supervising closure activities. Attach copy of PSSSC license.

Individual Licensed as PSSSC N/A PSSSC # N/A

Firm U.S. Navy - Public Works Center (PWC)

Address 310 John Tower Road, Pensacola, FL 32508

Indicate the firm (s) that will degas, remove, and transport the tank(s), and the method of degassification.

Degassification Method Air Eduction

Firm Removing Tanks U S Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (904) 293-0635

Firm Transporting Tanks U. S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (904) 293-0635

Firm Receiving Tanks for Ultimate Disposal U.S. Navy - DRMO

Contact Mr. Edward Walker Phone (407) 646-4420

Indicate the laboratory that will conduct groundwater analysis.

Contracted Laboratory U.S. Navy - PWC Phone (904) 452-4728

Contact Mr. Joe Moore FDEP QA/QC 920121G

Indicate firm(s) transporting and disposing of contaminated soils.

Firm Transporting Soils C. A. Meyer

Contact Mr. Frank Cox Phone (407) 849-0770

Firm Remediating/Disposing Soils C. A. Meyers

Contact Mr. Frank Cox Phone _____

Disposal/Remediation Method Thermal Treatment

Indicate the firm(s) that will transport and ultimately dispose of residual product and sludge from the tanks.

Firm Transporting Residual Product and Sludge International Oil Service

Contact Mr. Garry Allen Phone (800) 282-9585

Firm Receiving/Disposal Residual Product and Sludge International Oil Service

Contact Mr. Garry Allen Phone (800) 282-9585

Indicate the firm and names of personnel that will conduct field sampling.

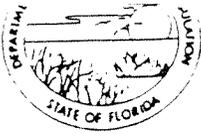
Contracted Firm U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (904) 293-0635

Person (s) Sampling Mr. Paul Semmes, P.E.

Equipment used for soil screening (Specific Make and Model) Organic Vapor Analyzer

(OVA) Thermo Environmental (680 HVM) equipped w/Flame Ionization Detector (FID)



Underground Storage Tank Installation and Removal Form
For Certified Contractors

Pollutant Storage System Specialty Contractors as defined in Section 489.113, Florida Statutes (Certified contractors as defined in Section 17-761.200 Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards.

General Facility Information

- 1. DER Facility Identification No.: 48/8841262
2. Facility Name: US Navy - Naval Training Center Telephone: (407) 646-4663
3. Street Address (physical location): Building 7182, Naval Training Center, McCoy Annex
4. Owner Name: Commander, Naval Training Center Telephone: (407) 646-4663
5. Owner Address: 1350 Grace Hopper Avenue (Code 010E), Orlando, Florida 32813-8405
6. Number of Tanks: a. Installed at this time b. Removed at this time
7. Tank(s) Manufactured by: Unknown
8. Date Work Initiated: 1/31/97 9. Date Work Completed: 1/31/97

Underground Pollutant Tank Installation Checklist

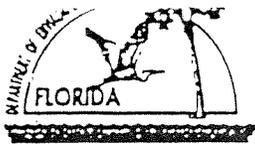
Please certify the completion of the following installation requirements by placing an (X) in the appropriate box.

- 1. The tanks and piping are corrosion resistant and approved for use by State and Federal Laws.
2. Excavation, backfill and compaction completed in accordance with NFPA (National Fire Protection Association) 30(87), API (American Petroleum Institute) 1615, PEI (Petroleum Equipment Institute) RP100-87 and the manufacturers' specifications.
3. Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the manufacturers' specifications.
4. Steel tanks and piping are cathodically protected in accordance with NFPA 30(87), API 1632, UL (Underwriters Laboratory) 1746, STI (Steel Tank Institute) R892-89 and the manufacturer's specifications.
5. Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87.
6. Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.)
7. Spill and overflow protection devices installed in accordance with Section 17-761.500, F.A.C.
8. Secondary containment installed for tanks and piping as applicable in accordance with Section 17-761.500, F.A.C.

Please Note: The numbers following the abbreviations (e.g. API 1615) are publication or specification numbers issued by these institutions

Underground Pollutant Tank Removal Checklist

- 1. Closure assessment performed in accordance with Section 17-761.800, F.A.C.
Underground tank removed and disposed of as specified in API 1604 in accordance with Section 17-761.800, F.A.C.



Form File Number:
Effective Date: December 10, 1990
DEP Application No.
(Filed in by DEP)

Closure Assessment Form

Of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assessment was performed in accordance with Rule 62-761.800(3) or 62-762.800(3), Florida Administrative Code.

Please Print or Type
Complete All Applicable Blanks

- 1. Date 4/18/97
2. DEP Facility ID Number: 48/8841262 3. County Orange
4. Facility Name: US Navy - Naval Training Center, McCoy Annex
5. Facility Owner: Commander, Naval Training Center (Code 010E)
6. Facility Address: Building 7182, Naval Training Center, McCoy Annex
7. Mailing Address: 1350 Grace Hopper Avenue, Orlando, Florida 32813-8405
8. Telephone Number: (407) 646-4663 9. Facility Operator: Mr Mark Zill
10. Are the Storage Tank(s): (Circle one or both) A. Aboveground or B. Underground
11. Type of Product(s) Stored: Heating Fuel
12. Were the Tank(s): (Circle one) A. Replaced B. Removed C. Closed in Place D. Upgraded (aboveground tanks only)
Number of Tanks closed: One 14. Age of Tanks: 45

Facility Assessment Information

- Yes No Not Applicable
1. Was a Discharge Reporting Form submitted to the Department?
If yes, When: Where:
2. Is the depth to ground water less than 20 feet?
3. Are monitoring wells present around the storage system?
If yes, please specify Vapor Monitoring Water Monitoring
4. Is there free product present in the monitoring wells or within the excavation?
5. Were the petroleum hydrocarbon vapor levels in the soil greater than 500 parts per million for gasoline?
Specify sample type: Vapor Monitoring wells Soil sample(s)
6. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene?
Specify sample type: Vapor Monitoring wells Soil sample(s)
7. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels?
(See target levels on reverse side of this form and supply laboratory data sheet(s).
8. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
9. Are any potable wells located within 1/4 of a mile radius of the facility?
10. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance:
11. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.
12. If a facility has a pollutant storage tank system that has both gasoline and kerosine/diesel stored on site, both EPA method 602 and EPA method 610 must be performed on the ground water samples.

Navy Public Works Center

Environmental Laboratory

Bldg. 3887, Code 920
 NAS Pensacola, FL 32508 - 6500
 Phone (904) 452-4728/3642
 DSN 922-4728/3642
 FAX 922-2783

Client: NPWC Environmental
 Address: Bldg 3887, Code 910
 NAS Pensacola, FL 32508
 Phone #: 452-8587
 Contact: Paul Semmes

Analytical Report

Total Volatiles by Method 8260

Lab Report Number: 71113
 Sample Date: 03/18/97
 Received Date: 03/20/97
 Sample Site: NTC McCoy FL
 Job Order No.: 102 4021

LAB Sample ID#	1- 71113			
Sample Name / Location	# 7182			
Collector's Name	B. Weimer			
Date & Time Collected	03/18/97 @ 1115 & 1135			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	03/22/97 JM			
Date of Analysis	03/22/97			
Sample Matrix	GW			
Dilution	X 1			
Compound Name	1- 71113	units	Det. Limit	Flags
Benzene	BDL	ug/L	1	
Bromobenzene	BDL	ug/L	1	
Bromochloromethane	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
n-Butylbenzene	BDL	ug/L	1	
sec-Butylbenzene	BDL	ug/L	1	
tert-Butylbenzene	BDL	ug/L	2	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
2-Chlorotoluene *	BDL	ug/L	1	
4-Chlorotoluene *	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dibromo-3-chloropropane *	BDL	ug/L	5	
1,2-Dibromoethane	BDL	ug/L	1	
Dibromomethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodifluoromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
cis-1,2-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
1,3-Dichloropropane	BDL	ug/L	1	
2,2-Dichloropropane	BDL	ug/L	1	
1,1-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Ethyl ether *	BDL	ug/L	1	
Hexachlorobutadiene	BDL	ug/L	2	
2-Hexanone *	BDL	ug/L	1	
Isopropylbenzene	BDL	ug/L	1	
p-Isopropyltoluene	BDL	ug/L	1	

Navy Public Works Center Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola, FL 32508
Phone #: 452-8587
Contact: Paul Semmes

Analytical Report

Total Volatiles by Method 8260

Lab Report Number: 71113
Sample Date: 03/18/97
Received Date: 03/20/97
Sample Site: NTC McCoy FL
Job Order No.: 102 4021

Compound Name	1- 71113	units	Det. Limit	Flags
Methylene Chloride	BDL	ug/L	1	
Methyl ethyl ketone (MEK) *	BDL	ug/L	2	
Methyl isobutyl ketone (MIBK) *	BDL	ug/L	1	
Methyl-tert-butyl ether (MTBE)	BDL	ug/L	1	
Naphthalene	BDL	ug/L	1	
n-Propylbenzene	BDL	ug/L	1	
Styrene	BDL	ug/L	1	
1,1,1,2-Tetrachloroethane	BDL	ug/L	1	
1,1,1,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,2,3-Trichlorobenzene	BDL	ug/L	1	
1,2,4-Trichlorobenzene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	5	ug/L	1	
Trichlorofluoromethane	BDL	ug/L	1	
1,1,2-Trichloro-1,2,2-Trifluoroethane *	BDL	ug/L	1	
1,2,3-Trichloropropane	BDL	ug/L	1	
1,2,4-Trimethylbenzene	BDL	ug/L	1	
1,3,5-Trimethylbenzene	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
m,p-Xylene	BDL	ug/L	1	
o-Xylene	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

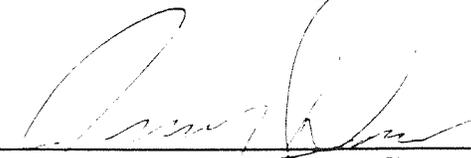
	Acceptance Limits	Percent Recovery
1,2-Dichloroethane-d4	75-133	95
Toluene-d8	86-119	101
Bromofluorobenzene	85-116	99

Explanation of Flags:

COMMENTS :

BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram. * = FL HRS certification pending.

Approved by :



Jerry Dees, Laboratory Director

Date: 4/1/97

Report Generated

Navy Public Works Center Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg. 3887, Code 910
NAS Pensacola, FL 32508
Phone #: 452-8587
Contact: Paul Semmes

Analytical Report

610 PAH's by Method 8270

Lab Report Number: 71113
Sample Date: 03/18/97
Received Date: 03/20/97
Sample Site: NTC McCoy FL
Job Order No.: 102 4021

LAB Sample ID#	1- 71113				
Sample Name / Location	# 7182				
Collector's Name	B. Weimer				
Date & Time Collected	03/18/97 @ 1115 & 1135				
Sample Type (composite or grab)	Grab				
Analyst	M. Chambers				
Date of Extraction / Initials	03/27/97 JJ				
Date of Analysis	03/30/97				
Sample Matrix	GW				
Dilution	X				
Compound Name	1-	71113	units	MDL	Flags
Acenaphthene	BDL		ug/L	2	
Acenaphthylene	BDL		ug/L	2	
Anthracene	BDL		ug/L	2	
Benzo(a)anthracene	BDL		ug/L	2	
Benzo(a)pyrene	BDL		ug/L	2	
Benzo(b)fluoranthene	BDL		ug/L	2	
Benzo(g,h,i)perylene	BDL		ug/L	2	
Benzo(k)fluoranthene	BDL		ug/L	3	
Chrysene	BDL		ug/L	2	
Dibenz(a,h)anthracene	BDL		ug/L	2	
Fluoranthene	BDL		ug/L	2	
fluorene	BDL		ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL		ug/L	2	
1-Methylnaphthalene *	BDL		ug/L	2	
2-Methylnaphthalene	BDL		ug/L	3	
Naphthalene	BDL		ug/L	2	
Phenanthrene	BDL		ug/L	2	
Pyrene	BDL		ug/L	2	

SURROGATE SPIKE RECOVERIES

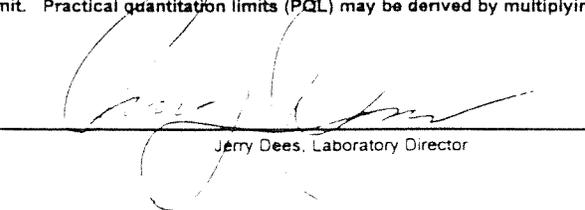
	Acceptance	Percent Recovery
	Limits	
Nitrobenzene-d5	35-114	86
2-Fluorobiphenyl	43-116	92
Terphenyl-d14	33-141	80

Explanation of Flags:

COMMENTS : Surrogate recovery limits derived from EPA OLM01 0 SOW 3/90

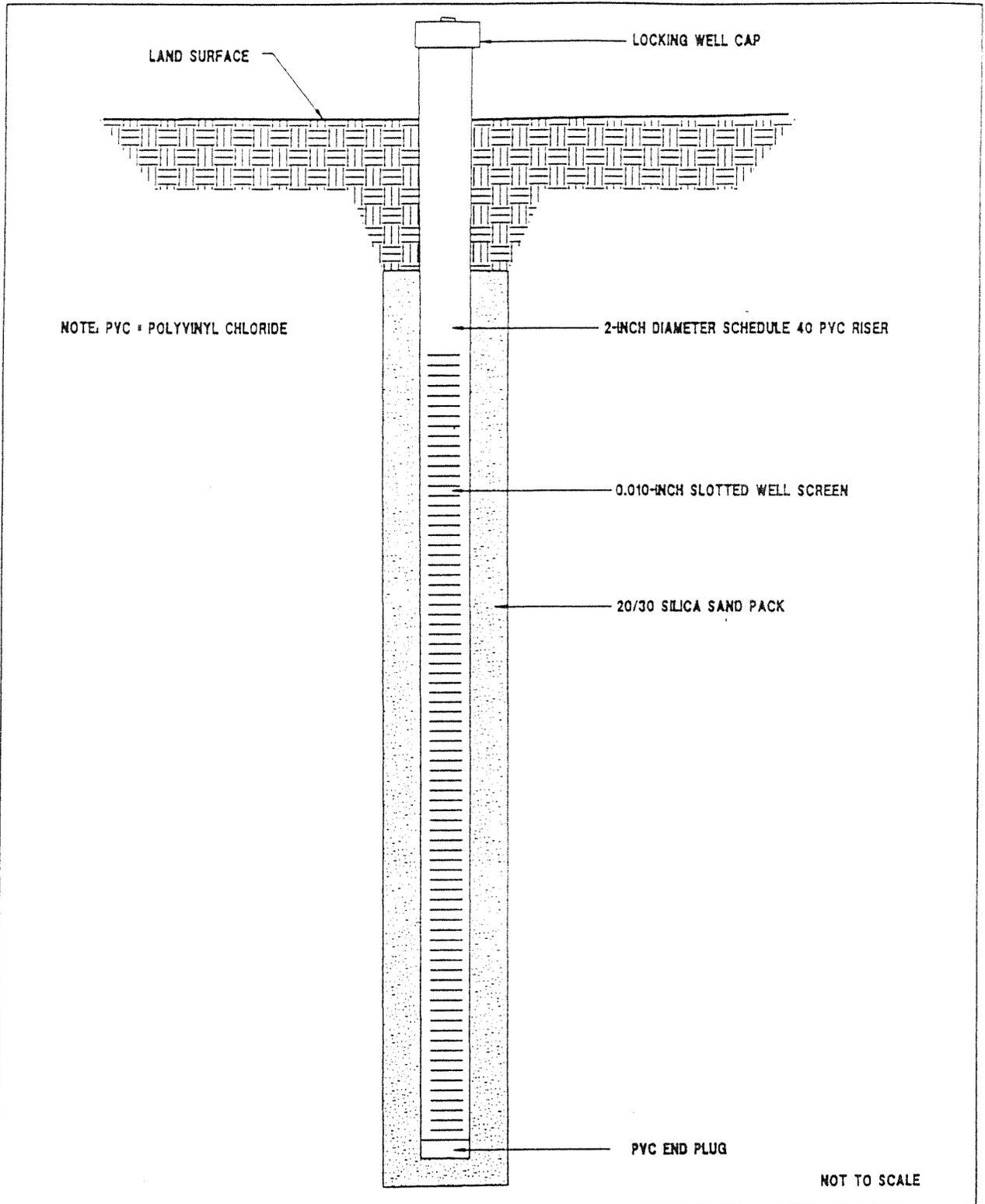
BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. * = FL HRS certification pending.
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by :


Jerry Dees, Laboratory Director

Date: 4/1/97

Report Generated



TYPICAL TEMPORARY MONITORING WELL
INSTALLATION DETAIL



NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Summary of OVA Readings

Closure Assessment Report
Underground Storage Tank
Building 7182
Naval Training Center
McCoy Annex
Orlando, Florida

Hand Auger Sample No.	Depth (Feet)	Unfiltered (ppm)	Filtered (ppm)
SS-1	8	15	N/A
SS-2	8	67	32
SS-3	8	159	18
SS-4	8	771	460
SS-5	8	236	79

Readings for unfiltered samples are total hydrocarbon readings including methane. readings for filtered samples are methane only.

Notes: ppm = parts per million.

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
DI	PI	M	UI	QUANTITY	SUPPLE-	S	F	DIS-	PRO-	P	RDD	A	RI	OC	CM	UNIT PRICE	DOLLARS	CTS	JTC	Orlando	RRMO	SY2354										
CEN	FROM	S	IS		MENTARY	I	UN	TRI-	JECT	R	EEA	D		/	O	DOLLARS	CTS															
T			T	M	ADDRESS	G	D	BU-		I	OLT	V		P	N	\$ 1000.00	3400.00															
A5J 063S EA000															2S S/R/T N/A H			4. MARK FOR HM or HW														
N6592870840550															5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS													
MSDS#:															7084		\$120															
5430															10. QTY. RECD	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL												
967900 TANKS															17		08.0 lbs															
NSN#:															18. FREIGHT CLASSIFICATION NOMENCLATURE Heating fuel storage tanks																	
0000-00-000-0000															17. ITEM NOMENCLATURE Storage tanks 12000																	
Tanks were triple rinsed. Ends have been removed.															18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE														
																	(5100)															
HZBLD7182															22. RECEIVED BY		23. DATE RECEIVED															
HZBLDG137															[Signature]		3-26-79															
PACKAGED IN ACCORDANCE WITH DOT 49 CFR 170-189															1																	
MARK S. ZILL															EDWARD H. WALKER																	
ENVIRONMENTAL MANAGEMENT															PROPERTY MANAGEMENT																	
SCL EICAA																																
CBA																																
Bill to: N65928																																
CLIN #: 0000 @ \$0.00																																
Total Disposal Cost: \$ 00.00																																
AA 1771804.62M4 250 065928 0 068566 2D 70840550 065928-7-18-07QQ																																
DOT Shipping Name: Heating Fuel Storage Tanks																																
EC CA 2A HS															POSTED																	

DD FORM 1348-1A (3C) JUL 91 ISSUE REVISED

24. DOCUMENT NUMBER & SUFFIX (20-41)

25. NATIONAL SECURITY ADO (18-21)

26. INC. (4-8) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

27. ADDITIONAL UNIT

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
Not Required

Manifest Document No.

2. Page 1 of 1

Generator's Name and Mailing Address
COMMANDER NAVAL TRAINING CENTER
CODE 010E ATTN: MARK ZILL

1350 GRACE HOPPER AVE
ORLANDO FL 32813

LOAD # 02

4. Generator's Phone (407) 646-4663

5. Transporter 1 Company Name

C.A. MEYER

6. US EPA ID Number
Not Required

TRUCK # 284

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
C.A. MEYER PAVING & CONSTRUCTION CO.
14023 Tiny Morsa Blvd.
Clermont, Florida 32711

10. US EPA ID Number
Not Required

A. Transporter's Phone 407-349-0770

B. Transporter's Phone

C. Facility's Phone (407) 377-3777

11. Waste Shipping Name and Description

12. Containers

No. Type

13. Total Quantity

14. Unit Weight

a. **Non-Hazardous Petroleum Contaminated Soil**

1 1TRK

Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

***US EPA ID# Not Required. Non-Hazardous Waste**

15. Special handling instructions and additional information

Transporter hereby certifies that all of the material in this load was placed on my truck at the address referenced above. Nothing has been added to this load after departure from address listed above.

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of hazardous waste

Printed/Typed Name

Signature

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in item 19

Printed/Typed Name

Signature

Month Day Year

GENERATOR'S COPY



DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
310 JOHN TOWER ROAD
PENSACOLA, FLORIDA 32508-5303

IN REPLY REFER TO

CERTIFICATE OF DECONTAMINATION

It is hereby certified that the following Storage Tanks have been decontaminated by PWC Pensacola AST/UST Storage System Tank Team:

106	129	351
354	356	358
361	363	364
366	369	371
375	384	2010
2035	2122	7182

The Storage Tanks listed above have been triple rinsed and cleaned in accordance with 40 CFR 261.7(b)(3)(i) and have been rendered unuseable.


Signature

Paul R Semmes, PE
Environmental Engineer
Title

5/6/97
Date

APPENDIX C
WELL CONSTRUCTION DETAILS

WELL COMPLETION LOG

Water Mgmt. Dist: St. Johns

Permit Number: _____

Work Order: 6424

Type of Well: Monitoring

Well Number: 7182 MW-1

Method Used: 4.25" HSA

Borehole Dia. 6"

Site Information:

Name: NTC

Address: McCoy Annex

C.S.Z.: Orlando, Florida

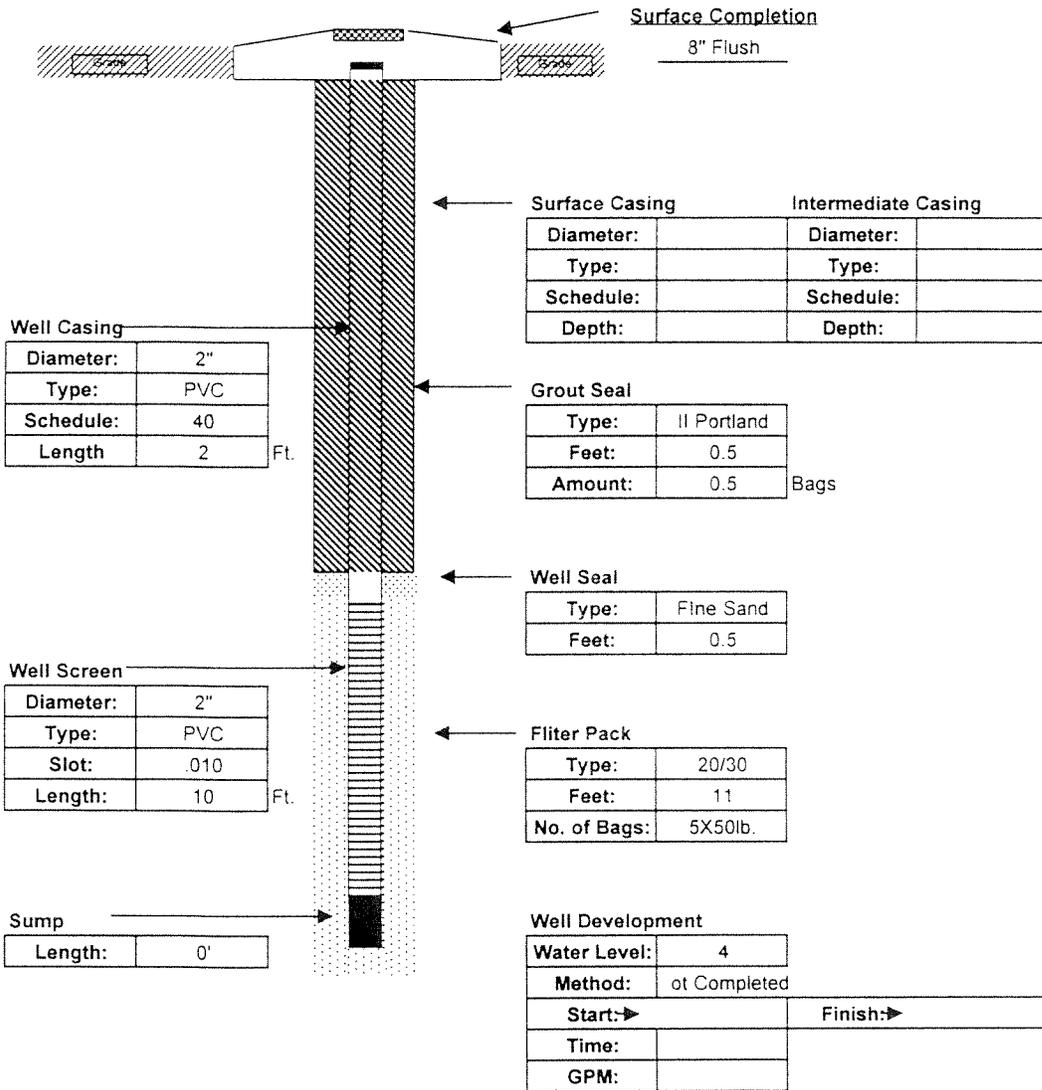
S/T/R: _____

Client / Consultant Information

Consultant: Harding Lawson Associates

Field Rep: Scott Donelick

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	0.5	5X50lb.	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		0.5	← Feet →	11	0.5



Well Casing

Diameter:	2"
Type:	PVC
Schedule:	40
Length:	2 Ft.

Surface Casing		Intermediate Casing	
Diameter:		Diameter:	
Type:		Type:	
Schedule:		Schedule:	
Depth:		Depth:	

Grout Seal

Type:	II Portland
Feet:	0.5
Amount:	0.5 Bags

Well Seal

Type:	Fine Sand
Feet:	0.5

Well Screen

Diameter:	2"
Type:	PVC
Slot:	.010
Length:	10 Ft.

Filter Pack

Type:	20/30
Feet:	11
No. of Bags:	5X50lb.

Sump

Length:	0'
---------	----

Well Development

Water Level:	4
Method:	not Completed
Start: ▶	Finish: ▶
Time:	
GPM:	

Contractor Information

Contractor #	6424
Completion:	07/02/98
Driller:	Jeff Ziegler
Lead Hand:	Otis Johnson
3rd Man:	Robbie
Drill Rig:	B-59

Company:	Groundwater Protection, Inc.
Address:	4315 S.W. 34th Street
C,S,Z:	Orlando, Florida 32811
Phone/FAX:	(407) 426-7885 / (407) 426-7586

WELL COMPLETION LOG

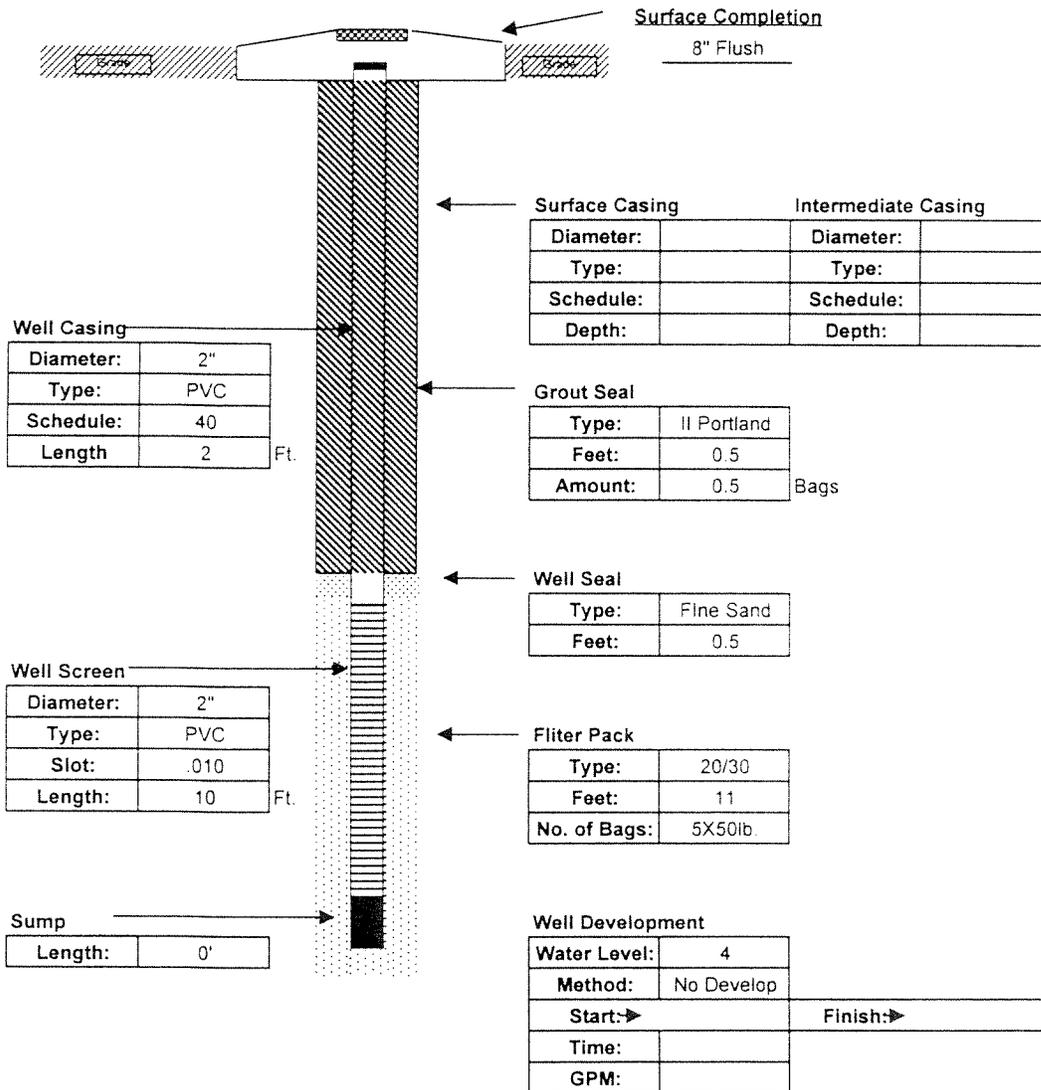
Water Mgmt. Dist.: St. Johns
 Permit Number: _____

Site Information:
 Name: NTC
 Address: McCoy Annex
 C.S.Z.: Orlando, Florida
 S/T/R: _____

Work Order: 6424
 Type of Well: Monitoring
 Well Number: 7182 MW-3
 Method Used: 4.25" HSA
 Borehole Dia.: 6"

Client / Consultant Information
 Consultant: Harding Lawson Associates
 Field Rep: Scott Donelick

Well Diameter	Well Type	Well Depth	Screen Length	Casing Length	Bags Grout	Sand Bags/Weight	Filter Type	Well Seal
2"	PVC	12	10	2	0.5	5X50lb.	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		0.5	← Feet →	11	0.5



Contractor Information

Contractor #	6424
Completion:	07/02/98
Driller:	Jeff Ziegler
Lead Hand:	Otis Johnson
3rd Man:	Robbie
Drill Rig:	B-59

Company:	Groundwater Protection, Inc.
Address:	4315 S.W. 34th Street
C,S,Z:	Orlando, Florida 32811
Phone/FAX:	(407) 426-7885 / (407) 426-7586

APPENDIX D
LITHOLOGIC LOGS

TITLE: NTC, ORLANDO BUILDING 7182		LOG of WELL: MW-1	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 2547-15	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-298	COMPLTD: 7-2-98
METHOD: 4.25 INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2-12 FEET	PROTECTION LEVEL: 0
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO 345 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-2-98	SITE: BUILDING 7182	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				<1 0-4' (POSTHOLE) SAND, fine grained, brown to black, moist, no odor.		SP		
5				<1 4'-12' (cuttings) SAND, fine grained tan to brown, no odor, wet at approximately 4.5' BLS.		SP		
10								
15								
20								

TITLE: NTC, ORLANDO BUILDING 7182		LOG of WELL: MW-3	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 2547-15	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-2-98	COMPLTO: 7-2-98
THOD: 4.25 INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2-1/2 FEET	PROTECTION LEVEL: 0
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPH TO 1/4 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-2-98	SITE: BUILDING 7182	

DEPTH F	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC S / (BOL)	SOIL CLASS	BLOWS/6-IN	WELL DATA
				< 1 0-4' (POSTHOLE) SAND, fine grained, medium to dark brown, no odor, moist.		SP		
5				< 1 4'-12' (CUTTINGS) SAND, fine grained, tan to brown, no odor, wet at 4.5' BLS.		SP		
10								
15								
20								

APPENDIX E

WATER SAMPLING LOG FORMS



DEP Form # 62-770 900(1)
 Form Title: Petroleum or Petroleum Products
 Water Sampling Log
 Effective Date: September 23, 1997

Petroleum or Petroleum Products Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: <i>MW-1</i>	SAMPLE ID: <i>7182 MW-1</i>	DATE: <i>8/5/98</i>
SITE NAME: <i>BUILDING 7182</i>		SITE LOCATION: <i>MCCOY ANNEX</i>	

PURGE DATA								
WELL DIAMETER (in): <i>2</i>	TOTAL WELL DEPTH (ft): <i>12</i>	DEPTH TO WATER (ft): <i>4.36</i>	WELL CAPACITY (gal/ft): <i>0.16</i>					
1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =								
= (<i>12</i> - <i>4.36</i>) x <i>0.16</i> = <i>1.22</i>								
PURGE METHOD: <i>Peristaltic</i>				PURGING INITIATED AT: <i>0854</i>			PURGING ENDED AT: <i>0915</i>	
WELL VOLS. PURGED				PURGE RATE (gpm):		TOTAL VOLUME PURGED (gal): <i>5</i>		
	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER TURBIDITY
<i>0</i>	<i>0</i>	<i>6.21</i>	<i>24</i>	<i>317</i>			<i>CLEAR</i>	<i>26.40</i>
<i>1</i>	<i>1.2</i>	<i>6.26</i>	<i>25</i>	<i>300</i>			<i>"</i>	<i>11.64</i>
<i>2.5</i>	<i>2.0</i>	<i>6.28</i>	<i>25</i>	<i>312</i>			<i>"</i>	<i>11.24</i>
<i>4</i>	<i>5</i>	<i>6.29</i>	<i>25</i>	<i>310</i>			<i>"</i>	<i>11.18</i>

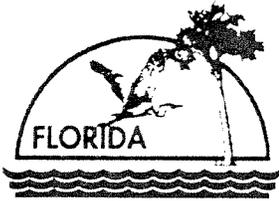
SAMPLING DATA						
SAMPLED BY / AFFILIATION: <i>SCOTT DONELICK / HLA</i>				SAMPLER(S) SIGNATURE(S): <i>[Signature]</i>		
SAMPLING METHOD(S): <i>PERISTALTIC</i>				SAMPLING INITIATED AT: <i>0917</i>		SAMPLING ENDED AT: <i>0921</i>
FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/>			FIELD-FILTERED: Y <input checked="" type="checkbox"/>		DUPLICATE: Y <input checked="" type="checkbox"/>	
SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
<i>3</i>	<i>CG</i>	<i>40ml</i>	<i>HCl</i>			<i>EPA 601/602</i>
<i>3</i>	<i>CG</i>	<i>40ml</i>	<i>HCl</i>			<i>EPA 504</i>
<i>2</i>	<i>AG</i>	<i>1 liter</i>	<i>HCl</i>			<i>FL-PRO</i>
<i>2</i>	<i>AG</i>	<i>1 liter</i>	<i>-</i>			<i>EPA 610 HPLC</i>
<i>1</i>	<i>HDP</i>	<i>500 ml</i>	<i>HNO₃</i>			<i>EPA 239.2 Pb</i>

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.



DEP Form # 62-776-900(1)
 Form Title Petroleum or Petroleum Products
Water Sampling Log
 Effective Date September 23, 1997

Petroleum or Petroleum Products Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: <u>MW-3</u>	SAMPLE ID: <u>7182 MW-3</u>	DATE: <u>8/5/98</u>
SITE NAME: <u>BUILDING 7182</u>		SITE LOCATION: <u>MCCLOY ANNEX</u>	

PURGE DATA							
WELL DIAMETER (in): <u>2</u>	TOTAL WELL DEPTH (ft): <u>12</u>	DEPTH TO WATER (ft): <u>4.70</u>	WELL CAPACITY (gal/ft): <u>0.16</u>				
1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY = $= (12 - 4.70) \times 0.16 = 1.17$							
PURGE METHOD: <u>Peristaltic</u>				PURGING INITIATED AT: <u>1002</u>		PURGING ENDED AT: <u>1030</u>	
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	PURGE RATE (gpm):		TOTAL VOLUME PURGED (gal): <u>4.5</u>
					COLOR	ODOR	APPEARANCE
<u>0.5</u>	<u>0.5</u>	<u>6.00</u>	<u>24.5</u>	<u>210</u>			<u>Clear</u> <u>10.92</u>
<u>1.5</u>	<u>1.7</u>	<u>6.08</u>	<u>25</u>	<u>210</u>			<u>"</u> <u>6.40</u>
<u>3</u>	<u>3.5</u>	<u>6.10</u>	<u>25</u>	<u>208</u>			<u>"</u> <u>5.40</u>
<u>4</u>	<u>4.7</u>	<u>6.11</u>	<u>25</u>	<u>214</u>			<u>"</u> <u>4.74</u>

SAMPLING DATA						
SAMPLED BY / AFFILIATION: <u>SCOTT DONELICK / HLA</u>				SAMPLER(S) SIGNATURE(S): <u>Scott Donelick</u>		
SAMPLING METHOD(S): <u>Peristaltic</u>				SAMPLING INITIATED AT: <u>1036</u>		SAMPLING ENDED AT: <u>1041</u>
FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/>			FIELD-FILTERED: Y <input checked="" type="checkbox"/>		DUPLICATE: Y <input checked="" type="checkbox"/>	
SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
<u>3</u>	<u>CG</u>	<u>40ml</u>	<u>HCl</u>			<u>EPA 601/602</u>
<u>3</u>	<u>CG</u>	<u>40ml</u>	<u>HCl</u>			<u>EPA 504</u>
<u>2</u>	<u>AG</u>	<u>1 liter</u>	<u>HCl</u>			<u>FL-PRO</u>
<u>2</u>	<u>AG</u>	<u>1 liter</u>	<u>-</u>			<u>EPA 610 HPLC</u>
<u>1</u>	<u>HDP</u>	<u>500ml</u>	<u>HNO₃</u>			<u>EPA 239.2 Pb</u>

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

APPENDIX F

GROUNDWATER AND SOIL LABORATORY ANALYTICAL REPORTS

BUILDING 7182
 NIC ORLANDO, FLORIDA, MCCOY ANNEX

Lab Sample Number:	S884722-3	S884722-4	S884722-5	S884722-6
Site	7182	7182	7182	7182
Locator	081GM101/7182MW-1	081GM201/7182-MW-2	081GM301/7182-MW-3	081RB101/7182-RB-1
Collect Date:	05-AUG-98	05-AUG-98	05-AUG-98	05-AUG-98
	VALUE QUAL UNITS DL			

EPA 601

Bromodichloromethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Bromoform	5 U	ug/l	5	10 U	ug/l	10	5 U	ug/l	5	5 U	ug/l	5
Bromomethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Chloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
2-Chloroethylvinyl ether	10 U	ug/l	10	20 U	ug/l	20	10 U	ug/l	10	10 U	ug/l	10
Chloroform	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Chloromethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Dibromochloromethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,2-Dichlorobenzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,3-Dichlorobenzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,4-Dichlorobenzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Dichlorodifluoromethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Cis/Trans-1,2-Dichloroethene	24	ug/l	1	49	ug/l	1	1 U	ug/l	1	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Methylene chloride	5 U	ug/l	5	24	ug/l	5	28	ug/l	5	5 U	ug/l	5
1,1,2,2-Tetrachloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Tetrachloroethene	1 U	ug/l	1	2 U	ug/l	2	4.9	ug/l	1	1 U	ug/l	1
1,1,1-Trichloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Trichloroethylene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Trichlorofluoromethane	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1

EPA 602

Benzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Toluene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Ethylbenzene	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Xylenes (total)	1 U	ug/l	1	2 U	ug/l	2	1 U	ug/l	1	1 U	ug/l	1
Methyl tert-butyl ether	10 U	ug/l	10	20 U	ug/l	20	10 U	ug/l	10	10 U	ug/l	10

EPA 504

1,2-Dibromoethane (EDB)	.02 U	ug/l	.02									
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PAH COMPOUNDS

Acenaphthene	1.1 X	ug/l	1	1 U	ug/l	1	1 U	ug/l	1	1 U	ug/l	1
Acenaphthylene	1 U	ug/l	1	1 U	ug/l	1	1 U	ug/l	1	1 U	ug/l	1
Anthracene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo(a)anthracene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo(a)pyrene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo(b)fluoranthene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo(g,h,i)perylene	.5 U	ug/l	.5	.5 U	ug/l	.5	.5 U	ug/l	.5	.5 U	ug/l	.5
Benzo(k)fluoranthene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2
Chrysene	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2	.2 U	ug/l	.2

BUILDING 7182
 NTC ORLANDO, FLORIDA, McCOY ANNEX

Lab Sample Number:	S884722-3	S884722-4	S884722-5	S884722-6								
Site	7182	7182	7182	7182								
Locator	081GM101/7182MW-1	081GM201/7182-MW-2	081GM301/7182-MW-3	081RB101/7182-RB-1								
Collect Date:	05-AUG-98	05-AUG-98	05-AUG-98	05-AUG-98								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Dibenzo(a,h)anthracene	.5	U	ug/l	.5												
Fluoranthene	.5	U	ug/l	.5												
Fluorene	.5	U	ug/l	.5												
Indeno(1,2,3-cd)pyrene	.5	U	ug/l	.5												
1-Methylnaphthalene	4.5	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
2-Methylnaphthalene	4.6	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Naphthalene	5.4	U	ug/l	1	1.6	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Phenanthrene	.35	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2
Pyrene	.5	U	ug/l	.5												
LEAD																
Lead	.005	U	mg/l	.005												
Flo Pro																
Petroleum Range Organics (F1-P)	.3	U	mg/l	.3												

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

BUILDING 7182
NTC ORLANDO, FLORIDA, McCOY ANNEX

Lab Sample Number:	S884722-1	S884722-2	S884722-7						
Site	7182	7182	7182						
Locator	081SS101/7182SS-1	081SS201/7182SS-2	Trip Blank						
Collect Date:	04-AUG-98	04-AUG-98	12-OCT-98						
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

PAH COMPOUNDS

Acenaphthene	60 U	ug/kg	60	62 U	ug/kg	62	-
Acenaphthylene	24 U	ug/kg	24	25 U	ug/kg	25	-
Anthracene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Benzo(a)anthracene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Benzo(a)pyrene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Benzo(b)fluoranthene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Benzo(g,h,i)perylene	12 U	ug/kg	12	12 U	ug/kg	12	-
Benzo(k)fluoranthene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Chrysene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Dibenzo(a,h)anthracene	12 U	ug/kg	12	12 U	ug/kg	12	-
Fluoranthene	12 U	ug/kg	12	12 U	ug/kg	12	-
Fluorene	12 U	ug/kg	12	12 U	ug/kg	12	-
Indeno(1,2,3-cd)pyrene	12 U	ug/kg	12	12 U	ug/kg	12	-
1-Methylnaphthalene	24 U	ug/kg	24	25 U	ug/kg	25	-
2-Methylnaphthalene	24 U	ug/kg	24	25 U	ug/kg	25	-
Naphthalene	24 U	ug/kg	24	25 U	ug/kg	25	-
Phenanthrene	4.8 U	ug/kg	4.8	5 U	ug/kg	5	-
Pyrene	12 U	ug/kg	12	12 U	ug/kg	12	-

LEAD

Lead	-	-	-	-	-	-	-
------	---	---	---	---	---	---	---

Flo Pro

Petroleum Range Organics (F)-P	12 U	mg/kg	12	12 U	mg/kg	12	-
--------------------------------	------	-------	----	------	-------	----	---

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

BUILDING 7182 "HITS TABLE"
 NTC ORLANDO, FLORIDA, McCOY ANNEX

Lab Sample Number:	S884722-3	S884722-4	S884722-5	S884722-6								
Site	7182	7182	7182	7182								
Locator	081GM101/7182MW-1	081GM201/7182-MW-2	081GM301/7182-MW-3	081RB101/7182-RB-1								
Collect Date:	05-AUG-98	05-AUG-98	05-AUG-98	05-AUG-98								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

	VALUE	QUAL UNITS	DL									
EPA 601												
Cis/Trans-1,2-Dichloroethene	24	ug/l	1	49	ug/l	1	- U	ug/l	1	- U	ug/l	1
Methylene chloride	- U	ug/l	5	24	ug/l	5	28	ug/l	5	- U	ug/l	5
Tetrachloroethene	- U	ug/l	1	- U	ug/l	2	4.9	ug/l	1	- U	ug/l	1
EPA 602												
Toluene	- U	ug/l	1	- U	ug/l	2	- U	ug/l	1	- U	ug/l	1
Ethylbenzene	- U	ug/l	1	- U	ug/l	2	- U	ug/l	1	- U	ug/l	1
Xylenes (total)	- U	ug/l	1	- U	ug/l	2	- U	ug/l	1	- U	ug/l	1
PAH COMPOUNDS												
Acenaphthene	1.1 X	ug/l	1	- U	ug/l	1	- U	ug/l	1	- U	ug/l	1
1-Methylnaphthalene	4.5	ug/l	1	- U	ug/l	1	- U	ug/l	1	- U	ug/l	1
2-Methylnaphthalene	4.6	ug/l	1	- U	ug/l	1	- U	ug/l	1	- U	ug/l	1
Naphthalene	5.4	ug/l	1	1.6	ug/l	1	- U	ug/l	1	- U	ug/l	1
Phenanthrene	.35	ug/l	.2	- U	ug/l	.2	- U	ug/l	.2	- U	ug/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

BUILDING 7182 "HITS TABLE"
 NTC ORLANDO, FLORIDA, McCOY ANNEX

Lab Sample Number:	S884722-1	S884722-2	S884722-7		
Site	7182	7182	7182		
Locator	081SS101/7182SS-1	081SS201/7182SS-2	Trip Blank		
Collect Date:	04-AUG-98	04-AUG-98	12-OCT-98		
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

EPA 601									
Cis/Trans-1,2-Dichloroethene	-			-					
Methylene chloride	-			-					
Tetrachloroethene	-			-					
EPA 602									
Toluene	18	ug/kg	5	10	ug/kg	5	- U	ug/l	1
Ethylbenzene	27	ug/kg	5	12	ug/kg	5	- U	ug/l	1
Xylenes (total)	130	ug/kg	5	57	ug/kg	5	- U	ug/l	1
PAH COMPOUNDS									
Acenaphthene	- U	ug/kg	60	- U	ug/kg	62	-		
1-Methylnaphthalene	- U	ug/kg	24	- U	ug/kg	25	-		
2-Methylnaphthalene	- U	ug/kg	24	- U	ug/kg	25	-		
Naphthalene	- U	ug/kg	24	- U	ug/kg	25	-		
Phenanthrene	- U	ug/kg	4.8	- U	ug/kg	5	-		

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

X 5102 LaRoche Avenue, Savannah, GA 31404
 2846 Industrial Plaza Drive, Tallahassee, FL 32301
 1414 SW 12th Avenue, Deerfield Beach, FL 33442
 1900 Lakeside Drive, Mobile, AL 36693
 16712 Benjamin Road, Suite 100, Tampa, FL 33634
 1100 Alpha Drive, Suite 110, Destrehan, LA 70047

Phone: (912) 354 7858 Fax: (912) 352 0165
 Phone: (904) 878-3994 Fax: (904) 878 9504
 Phone: (954) 421-7400 Fax: (954) 421-2584
 Phone: (334) 666 6633 Fax: (334) 666 6696
 Phone: (813) 885 7427 Fax: (813) 885-7049
 Phone: (504) 764-1100 Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: PROJECT NO: **2547-06** PO NUMBER: **NE7531076**

PROJECT LOC (State): **FL** SAMPLER(S) NAME: **SCOTT DONELICK** PHONE: **407-895-8845** FAX: **407-896-6150**

CLIENT NAME: **HLA** CLIENT PROJECT MANAGER: **John Kaiser**

CLIENT ADDRESS (CITY, STATE, ZIP): **1080 Woodcock Rd Orlando, FL 32803**

MATRIX TYPE: **EPA 601/602**
EPA 504 EOB
EPA 239.2 PB
EPA 610 HPLC
FL-PRO
EPA 602 ONLY

REQUIRED ANALYSES: **HCl/ACI** **HNO₃** **-** **HCl/ACI**

PAGE **1** OF **1**

STANDARD REPORT DELIVERY

EXPEDITED REPORT DELIVERY (surcharge)

Date Due

SAMPLE DATE	TIME	SL NO.	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS SUBMITTED							REMARKS	
				AQUEOUS (WATER, AIR)	SOLID OR SEMISOLID	NONAQUEOUS - LIQUID (oil, solvent, etc.)	HCl/ACI	HNO ₃	-	HCl/ACI		
8-5-98	0917		081GM101 / 7182 MW-1	X			3	3	1	2	2	
	0954		081GM201 / 7182 MW-2	X			3	3	1	2	2	
	1036		081GM301 / 7182 MW-3	X			3	3	1	2	2	
	0802		081RB101 / 7182 RB-1	X			3	3	1	2	2	
	-		TRIP BLANK	X								3

RELINQUISHED BY (SIGNATURE): <i>[Signature]</i>	DATE: 5/11/98	TIME: 5:00	RELINQUISHED BY (SIGNATURE): <i>[Signature]</i>	DATE: 8-5-98	TIME: 1700	RELINQUISHED BY (SIGNATURE):	DATE:	TIME:
RECEIVED BY (SIGNATURE): <i>[Signature]</i>	DATE: 5/11/98	TIME: 1600	RECEIVED BY (SIGNATURE): <i>[Signature]</i>	DATE: 8/5/98	TIME: 4:24	RECEIVED BY (SIGNATURE):	DATE:	TIME:

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE) *[Signature]* DATE: **8/4/98** TIME: **9:24** CUSTODY INTACT: YES NO CUSTODY SEAL NO.: **38-84720** SL LOG NO: **38-84720** LABORATORY REMARKS:

APPENDIX D

**REPORT OF INTERIM REMEDIAL ACTION,
ENVIRONMENTAL DETACHMENT CHARLESTON,
MAY 1999**

STUDY AREA 18

1. INTRODUCTION

1.1 STUDY AREA 18

SA 18 is located in the central portion of the McCoy Annex (Figure 1). The SA includes several buildings and a paved storage area. The paved storage area was used for the storage of gas cylinders, paints, appliances and recreational vehicles.

1.2 SA 18 INTERIM REMEDIAL ACTION

SOUTHDIV tasked the DET to perform an IRA for this site. The objective of the IRA was to excavate and dispose of soil contaminated with PAHs. The excavation was to continue until the sampling program indicated with reasonable confidence that the concentrations of contaminants at the site were less than non-residential limits specified by FDEP SCG, dated 30 April 1998 or USEPA Region III, dated 01 October 1998, whichever specifies the stricter criteria.

1.2.1 SA 18 Interim Remedial Action Execution Summary

The execution of this IRA consisted of excavating an area approximately 20' x 20' to a depth of 2' at HLA sample location 18S008 (Figure 2). Soil removed from the site was characterized as non-hazardous and was sent to a treatment facility for incineration. A Confirmation sample was collected from each sidewall upon completion of the excavation and tested for PAHs. The results of these samples were all less than the RGOs.

2.0 INTERIM REMEDIAL ACTION EXECUTION

2.1 ACTIONS PERFORMED BY THE INTERIM REMEDIAL ACTION WORK PLAN

Actions performed are listed below

- Collection of a waste characterization sample
- Removal of approximately 20' x 2' of asphalt from the western side of excavation
- Excavation and disposal of an area approximately 20' x 20' and 2' in depth
- Collection of confirmatory samples from each sidewall for analysis of PAHs
- Restoration of site by backfilling, grading to surrounding area, and hydroseeding

2.2 OBSERVATIONS NOTES

2.2.1 Soil Conditions

From ground surface to the bottom of the excavation the soil was dark silty sand.

3.0 INTERIM REMEDIAL ACTION OUTCOME

3.1 SITE CONDITIONS FOLLOWING COMPLETION OF WORK

Following completion of work, the DET had removed 30 tons of PAH contaminated soil. The site was backfilled, graded to surrounding area and hydroseeded. Site photographs are included in Appendix B1.

4.0 SAMPLING

4.1 CONFIRMATION SAMPLING

Upon completion of work a confirmation sample was taken on each sidewall and tested for PAHs (Figure 3). See appendix B2 for sampling documentation.

4.2 WASTE CHARACTERIZATION SAMPLING

Waste characterization sample SA-18008 was taken and analyzed for TCLP pesticides. See appendix B2 for sampling documentation.

5.0 WASTE GENERATION

5.1 Non-Hazardous Waste A total of 30 tons of non-hazardous PAH contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix B3.

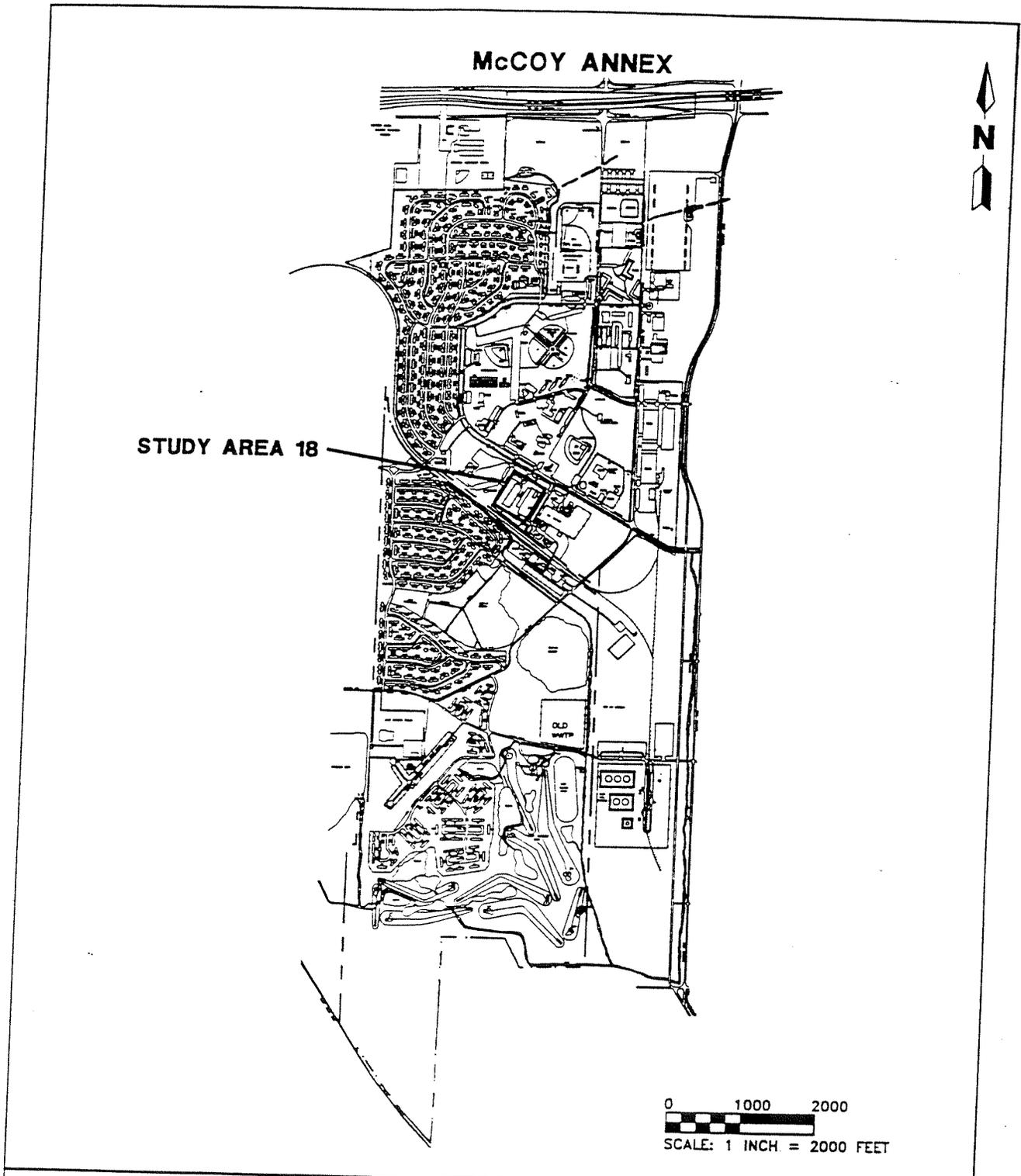


FIGURE 1
LOCATION OF STUDY AREA 18



**BASE REALIGNMENT AND CLOSURE
WORKPLAN FOR INTERIM
REMEDIAL ACTION, STUDY AREA 18**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

K:\02530\02530-04\WGP\02530778.DWG DEL-VC 09/16/98 AutoCAD R14

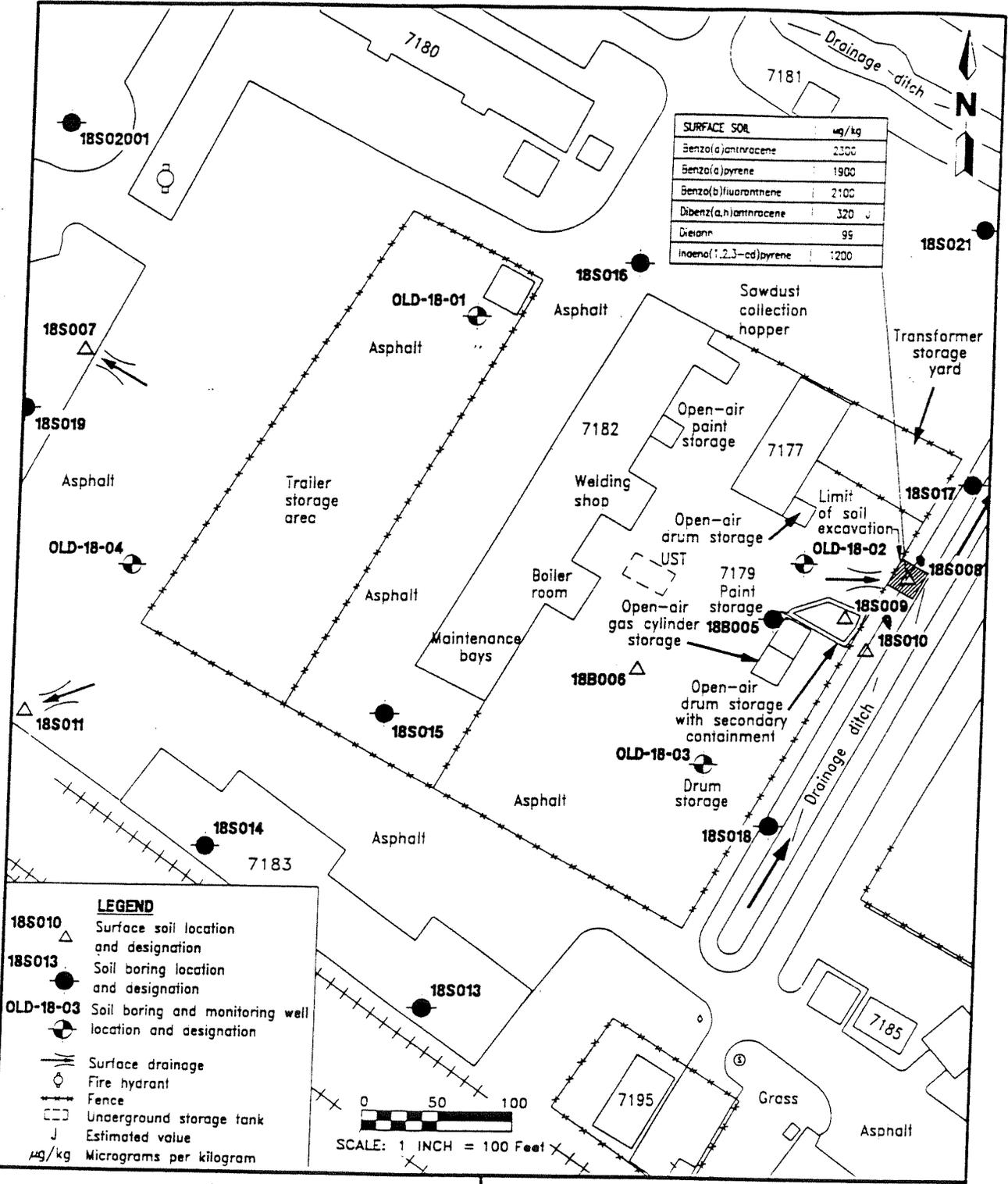


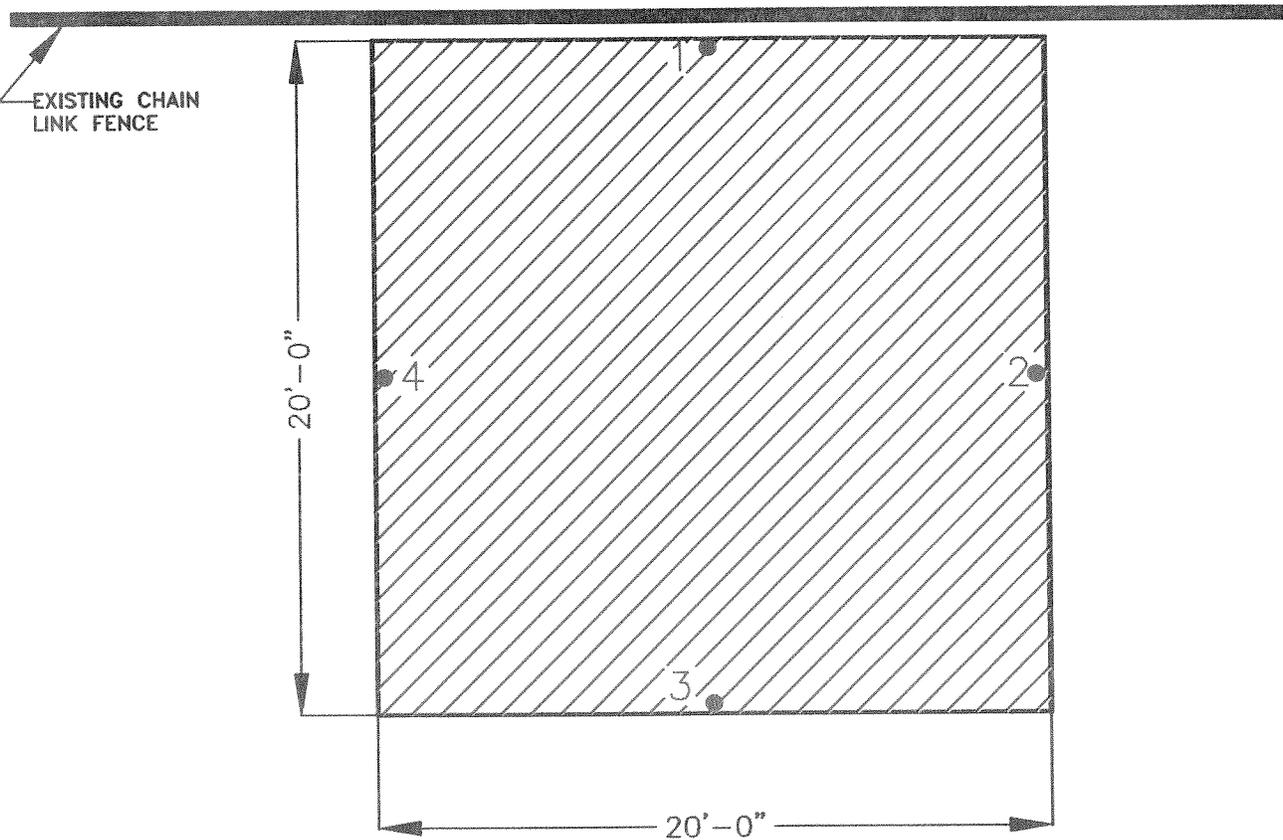
FIGURE 2
EXCEEDANCES OF INDUSTRIAL SCREENING
CRITERIA IN SURFACE SOIL
STUDY AREA 18, MCCOY ANNEX



BASE REALIGNMENT AND CLOSURE
WORKPLAN FOR INTERIM
REMEDIAL ACTION, STUDY AREA 18

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

K:\02530\02530-04\WKP\02530779.DWG, VC--88 09/25/88 09:32:27, AutoCAD R14

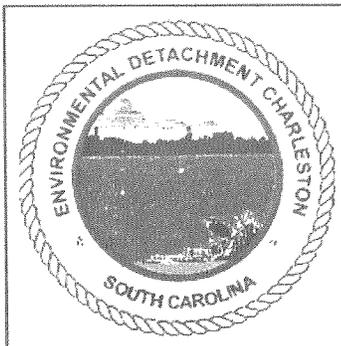
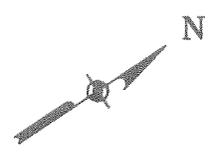


LEGEND

- 1 ● CONFIRMATORY SAMPLE ID 99SPORT0171-20
- 2 ● CONFIRMATORY SAMPLE ID 99SPORT0171-21
- 3 ● CONFIRMATORY SAMPLE ID 99SPORT0171-22
- 4 ● CONFIRMATORY SAMPLE ID 99SPORT0171-23



EXCAVATED TO 2 FEET DEEP



ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE - BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 3
McCoy ANNEX ORLANDO SA 18
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

DATE: 20 JULY 1999	PREPARED BY: A. J. MOYER	REV -
SCALE: NONE	SHEET: -	



Site prior to excavation looking north



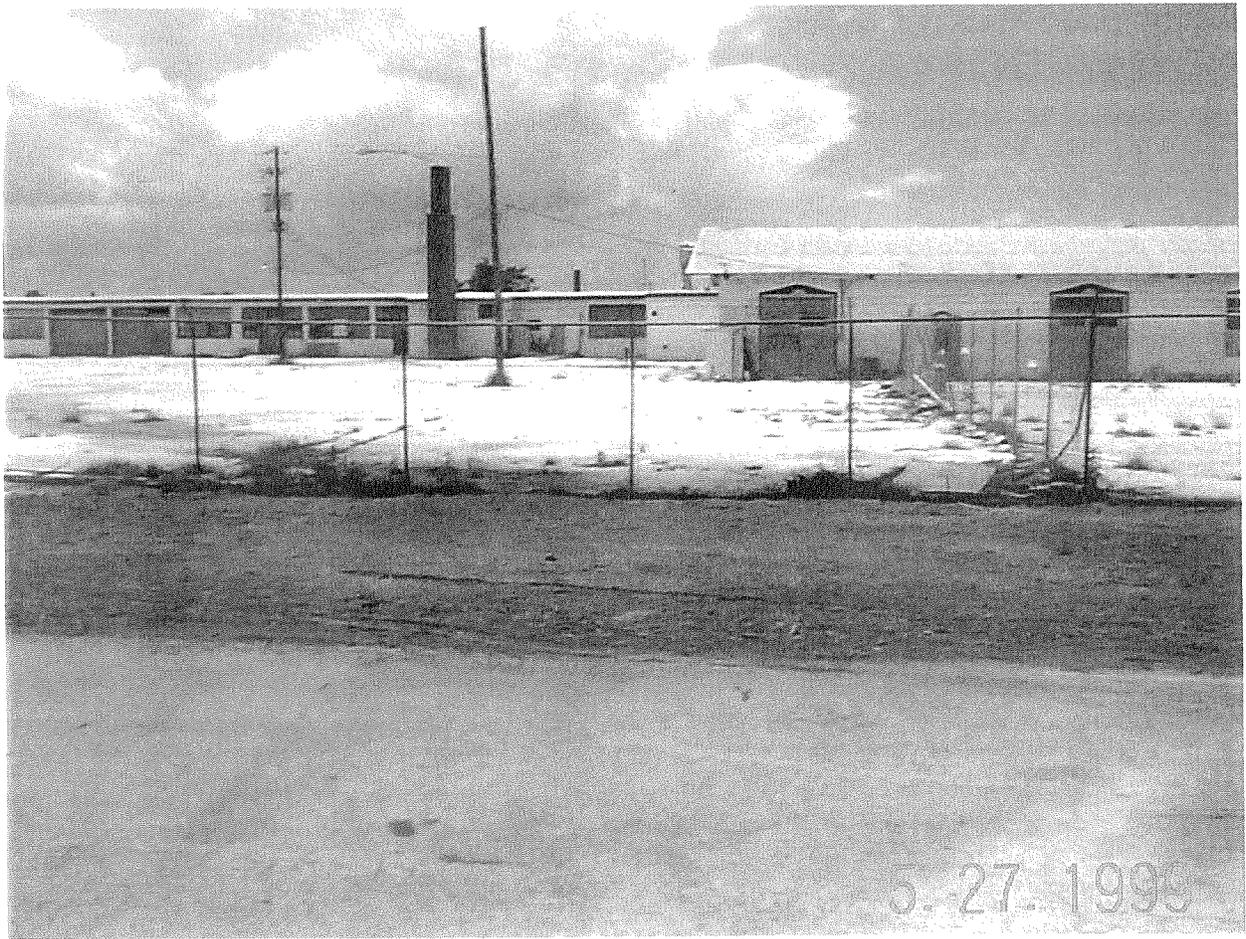
Site prior to excavation looking west



Site after excavation looking west

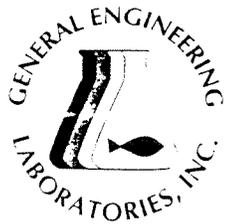


Site after excavation looking south



Site after hydroseeding

CONFIRMATION SAMPLES



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TN	02934	02934

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 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 07, 1999

Page 1 of 2

Sample ID : 99SPORT0171-20
 Lab ID : 9905155-20
 Matrix : Soil
 Date Collected : 05/05/99
 Date Received : 05/06/99
 Priority : Rush
 Collector : Client

Detection Limit
Reporting Limit

Dilution Factor

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	ND	639	1330	ug/kg	4.0	MKP	05/07/99	0930	148519	.
Acenaphthylene	U	ND	586	1330	ug/kg	4.0					
Anthracene	U	ND	346	1330	ug/kg	4.0					
Benzo(a)anthracene	U	ND	266	1330	ug/kg	4.0					
Benzo(a)pyrene	U	ND	293	1330	ug/kg	4.0					
Benzo(b)fluoranthene	U	ND	573	1330	ug/kg	4.0					
Benzo(ghi)perylene	U	ND	320	1330	ug/kg	4.0					
Benzo(k)fluoranthene	U	ND	533	1330	ug/kg	4.0					
Chrysene	U	ND	213	1330	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	ND	333	1330	ug/kg	4.0					
Fluoranthene	U	ND	266	1330	ug/kg	4.0					
Fluorene	U	ND	453	1330	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	ND	320	1330	ug/kg	4.0					
Naphthalene	U	ND	626	1330	ug/kg	4.0					
Phenanthrene	U	ND	240	1330	ug/kg	4.0					
Pyrene	U	ND	293	1330	ug/kg	4.0					

The following prep procedures were performed:

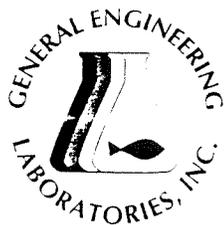
GC/MS Base/Neutral Compounds

CPU 05/06/99 1700 148519 2

Comments:

Surrogate recovery fails due to sample dilution.





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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 07, 1999

Page 2 of 2

Sample ID : 99SPORT0171-20

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	---

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	47.7	(44.7 - 110.)
Nitrobenzene-d5	M610	0.00*	(42.4 - 107.)
γ-Terphenyl-d14	M610	66.6	(45.5 - 104.)

M = Method	Method-Description
------------	--------------------

M 1	EPA 8270C
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

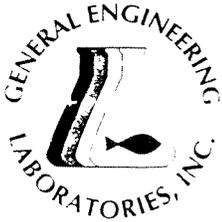
U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By:





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NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 10, 1999

Page 1 of 2

Sample ID : 99SPORT0171-21
 Lab ID : 9905155-21
 Matrix : Soil
 Date Collected : 05/05/99
 Date Received : 05/06/99
 Priority : Rush
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	ND	634	1320	ug/kg	4.0	MKP	05/07/99	2118	148574	1
Acenaphthylene	U	ND	581	1320	ug/kg	4.0					
Anthracene	U	ND	343	1320	ug/kg	4.0					
Benzo(a)anthracene	U	ND	264	1320	ug/kg	4.0					
Benzo(a)pyrene	U	ND	290	1320	ug/kg	4.0					
Benzo(b)fluoranthene	U	ND	568	1320	ug/kg	4.0					
Benzo(ghi)perylene	U	ND	317	1320	ug/kg	4.0					
Benzo(k)fluoranthene	U	ND	528	1320	ug/kg	4.0					
Chrysene	U	ND	211	1320	ug/kg	4.0					
Dibenz(a,h)anthracene	U	ND	330	1320	ug/kg	4.0					
Fluoranthene	J	374	264	1320	ug/kg	4.0					
Fluorene	U	ND	449	1320	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	ND	317	1320	ug/kg	4.0					
Naphthalene	U	ND	620	1320	ug/kg	4.0					
Phenanthrene	U	ND	238	1320	ug/kg	4.0					
Pyrene	U	ND	290	1320	ug/kg	4.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 05/07/99 1300 148574 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	63.8	(44.7 - 110.)
nitrobenzene-d5	M610	51.8	(42.4 - 107.)
p-Terphenyl-d14	M610	84.2	(45.5 - 104.)

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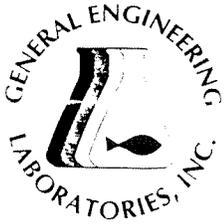
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 10, 1999

Page 2 of 2

Sample ID : 99SPORT0171-21

Surrogate Recovery	Test	Percent%	Acceptable Limits
--------------------	------	----------	-------------------

M = Method	Method-Description
M 1	EPA 8270C
M 2	EPA 3550

Notes:

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ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

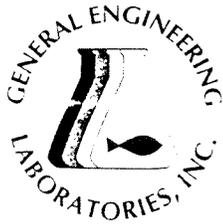
U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

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NJ	79002	79002
SC	10120	10582
TN	02934	02934

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 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 10, 1999

Page 1 of 2

Sample ID : 99SPORT0171-22
 Lab ID : 9905155-22
 Matrix : Soil
 Date Collected : 05/05/99
 Date Received : 05/06/99
 Priority : Rush
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	ND	158	330	ug/kg	1.0	MKP	05/07/99	2145	148574	1
Acenaphthylene	U	ND	145	330	ug/kg	1.0					
Anthracene	U	ND	85.8	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	66.0	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.6	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	142	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	79.2	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	132	330	ug/kg	1.0					
Chrysene	J	57.6	52.8	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.5	330	ug/kg	1.0					
Fluoranthene	J	68.5	66.0	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	79.2	330	ug/kg	1.0					
Naphthalene	U	ND	155	330	ug/kg	1.0					
Phenanthrene	U	ND	59.4	330	ug/kg	1.0					
Pyrene	U	ND	72.6	330	ug/kg	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

RDH 05/07/99 1300 148574 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	63.2	(44.7 - 110.)
nitrobenzene-d5	M610	60.3	(42.4 - 107.)
p-Terphenyl-d14	M610	75.9	(45.5 - 104.)

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NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 10, 1999

Page 2 of 2

Sample ID : 99SPORT0171-22

Surrogate Recovery	Test	Percent%	Acceptable Limits
--------------------	------	----------	-------------------

M = Method	Method-Description
M 1	EPA 8270C
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

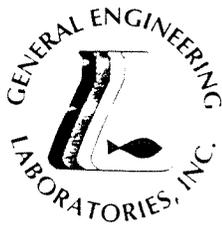
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U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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NJ	79002	79002
SC	10120	10582
TN	02934	02934

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 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

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Report Date: May 10, 1999

Page 1 of 2

Sample ID : 99SPORT0171-23
 Lab ID : 9905155-23
 Matrix : Soil
 Date Collected : 05/05/99
 Date Received : 05/06/99
 Priority : Rush
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	ND	158	330	ug/kg	1.0	MKP	05/08/99	1049	148574	.
Acenaphthylene	U	ND	145	330	ug/kg	1.0					
Anthracene	U	ND	85.8	330	ug/kg	1.0					
Benzo(a)anthracene	U	ND	66.0	330	ug/kg	1.0					
Benzo(a)pyrene	U	ND	72.6	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	142	330	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	79.2	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	132	330	ug/kg	1.0					
Chrysene	U	ND	52.8	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	82.5	330	ug/kg	1.0					
Fluoranthene	J	80.2	66.0	330	ug/kg	1.0					
Fluorene	U	ND	112	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	79.2	330	ug/kg	1.0					
Naphthalene	U	ND	155	330	ug/kg	1.0					
Phenanthrene	U	ND	59.4	330	ug/kg	1.0					
Pyrene	U	ND	72.6	330	ug/kg	1.0					

The following prep procedures were performed:
 GC/MS Base/Neutral Compounds

RDH 05/07/99 1300 148574 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	53.6	(44.7 - 110.)
Nitrobenzene-d5	M610	46.9	(42.4 - 107.)
p-Terphenyl-d14	M610	66.0	(45.5 - 104.)

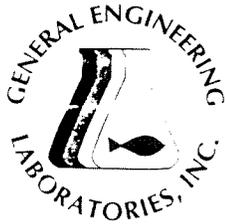
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TN	02934	02934

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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 10, 1999

Page 2 of 2

Sample ID : 99SPORT0171-23

Surrogate Recovery	Test	Percent %	Acceptable Limits
--------------------	------	-----------	-------------------

M = Method	Method-Description
M 1	EPA 8270C
M 2	EPA 3550

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Reviewed By

URGENT

General Engineering Lab, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 2

23 DAY TURNAROUND

Client Name/Facility Name <u>UTC Orlando</u>		SAMPLE ANALYSIS REQUIRED (X) - use remarks area to specify specific compounds or methods														Use F or P in the boxes to indicate whether sample was filtered and/or preserved			
Collected by/Company <u>Env Det Chas</u>		pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specific Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide		Coliform - specify type	PAH's	Remarks
SAMPLE ID	DATE															TIME			
99Sport 0171-1	5/5/99	1110	X	X													X	SA17S011	
99Sport 0171-2	5/5/99	1114	X	X													X	SA17S012	
99Sport 0171-3	5/5/99	1120	X	X													X	SA17S013	
99Sport 0171-4	5/5/99	1125	X	X													X	SA17S014	
99Sport 0171-5	5/5/99	1130	X	X													X	SA17S015.	
99Sport 0171-6	5/5/99	1134	X	X													X	SA17S016	
99Sport 0171-7	5/5/99	1139	X	X													X	SA17S017	
99Sport 0171-8	5/5/99	1145	X	X													X	SA17S018	
99Sport 0171-9	5/5/99	1150	X	X													X	SA17S019	
99Sport 0171-10	5/5/99	1156	X	X													X	SA17S020	
99Sport 0171-11	5/5/99	1202	X	X													X	SA17S021	
99Sport 0171-12	5/5/99	1207	X	X													X	SA17S022	
99Sport 0171-13	5/5/99	1213	X	X													X	SA17S023	
Relinquished by: <u>KW Cole</u>		Date: <u>5/5/99</u>	Time: <u>1910</u>	Received by: <u>W.R. Hiers, Jr.</u>		Date: <u>5/6/99</u>	Time: <u>1432</u>	Received by: <u>W.R. Hiers, Jr.</u>		Remarks: <u>W.R. Hiers, Jr.</u>									
Relinquished by: <u>Chas - W. Hiers</u>		Date: <u>5/6/99</u>	Time: <u>1505</u>	Received by lab by: <u>P. Newer</u>		Date: <u>5/6/99</u>	Time: <u>15:05</u>	Remarks:											

White = ple collector Yellow = file Pink = with report

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CHAIN OF CUSTODY RECORD
 — 23^{WORK} DAY TURNAROUND —

Client Name/Facility Name UTC Orlando			SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods																	Use F or P in the boxes to indicate whether sample was filtered and/or preserved	
Collected by/Company Env Def CHAS			# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method Required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	PAH 8310		Remarks
SAMPLE ID	DATE	TIME																		WELL	
99Sport 0171-14	5/5/99	1220		X	X															X	SA17S024
99Sport 0171-15	5/5/99	1226		X	X															X	SA17S025
99Sport 0171-16	5/5/99	1234		X	X															X	SA17S026
99Sport 0171-17	5/5/99	1240		X	X															X	SA17S027
99Sport 0171-18	5/5/99	1247		X	X															X	SA17S028
99Sport 0171-19	5/5/99	1255		X	X															X	SA17S029
99Sport 0171-20	5/5/99	1300		X	X															X	SA18S009
99Sport 0171-21	5/5/99	1315		X	X															X	SA18S010
99Sport 0171-22	5/5/99	1330		X	X															X	SA18S011
99Sport 0171-23	5/5/99	1345		X	X															X	SA18S012
99Sport 0171-24	5/5/99	1400		X	X															X	Duplicate of SA18S011 SA18C013
99Sport 0171-25	5/5/99	1516		X																X	FIELD BAK SA18S012 SA18F014
Relinquished by: RW Cop			Date: 5/5/99	Time: 1910	Received by: W.R. Hiers, Jr.			Relinquished by: W.R. Hiers, Jr.			Date: 5/6/99	Time: 1432	Received by: Orlan Washington								
Relinquished by: Orlan Washington			Date: 5/6/99	Time: 1500	Received by lab by: P. Nowler			Date: 5/6/99	Time: 15:25	Remarks: 											

White = file collector Yellow = file Pink = with report

WASTE CHARACTERIZATION

ENCO LABORATORIES

REPORT # : OR6327A

DATE REPORTED: April 30, 1999

PROJECT NAME : NTC-Orlando

PAGE 9 OF 13

RESULTS OF ANALYSIS

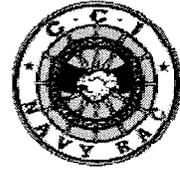
EPA METHOD 1311/8080 -
TCLP PESTICIDES

	<u>SA-18008</u>	<u>Units</u>
Chlordane (Total)	1.0 U	µg/L
Endrin	0.050 U	µg/L
Heptachlor	0.050 U	µg/L
Heptachlor Epoxide	0.050 U	µg/L
gamma-BHC (Lindane)	0.050 U	µg/L
Methoxychlor	1.0 U	µg/L
Toxaphene	2.0 U	µg/L
<u>Surrogate:</u>	<u>% RECOV</u>	<u>LIMITS</u>
2,4,5,6-TCMX	116	30-150
Extracted	104	34-138
Date Analyzed	04/23/99	
	04/24/99	

Compound was analyzed for but not detected to the level shown.

APPENDIX E

**SUMMARY OF SOIL REMOVAL AND RESULTS,
CH2M HILL CONSTRUCTORS, INC.
DECEMBER 2002**



TECHNICAL MEMORANDUM

Summary of Soil Removal Activities and Results Study Area 18, Naval Training Center Orlando, Florida

PREPARED FOR: **Orlando Partnering Team:**
Barbara Nwokike – Southern Division *David Grabka – FDEP*
Steve McCoy–TetraTech NUS *Greg Fraley - EPA*
Mark Salvetti – Harding ESE

PREPARED BY: Steve Tsangaris – CH2M HILL Constructors, Inc.

COPIES: Wayne Hansel – Southern Division

CONTRACT: Navy Contract # N62467-98-D-0995

CTO: CTO 017, Naval Training Center (NTC) Orlando

DATE: December 11, 2002

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) was contracted by the Department of the Navy, Southern Division Naval Facilities Engineering Command (Southern Division, NAVFAC), to perform the removal of polycyclic aromatic hydrocarbon (PAH) and barium contaminated soil at Study Area (SA) 18 at the Naval Training Center (NTC), Orlando, Florida. The soil removal was conducted in accordance with *Work Plan Addendum No. 05 for the PAH-Contaminated Soil Removal at Study Areas 16, 18, and 54 (CCI 2002)*. This work was authorized under Response Action Contract (RAC) No. N62467-98-D-0995, Contract Task Order (CTO) No. 0017.

1.1 Site Background

The site area is located in the central portion of McCoy Annex at the former NTC Orlando, Florida. The location of SA 18 is shown on Figure 1.

This site was used as a naval training facility, and specific areas on the site were used to park military equipment and maintenance vehicles where diesel fuel may have discharged to the ground. Four excavation areas (Areas 1 through 4) were identified based on previous assessment activities conducted by CLEAN contractors. The locations of these excavation areas are shown on Figure 2.

1.2 Project Objectives

The objective of the soil removal activities at SA 18 was to remove and dispose of barium or PAH-contaminated surface soil at the site exceeding the State of Florida residential Soil Cleanup Target Levels (SCTLs).

2.0 Contaminated Soil Removal Activities

The contaminated soil removal was performed during the period of March 3, 2002, through March 27, 2002. Four separate excavations (Areas 1, 2, 3, and 4) were performed at SA 18. The horizontal excavation limits were based on soil sample results obtained by the CLEAN contractor in August 2001. Soil was excavated within the horizontal limits of the excavation to a depth of 2 feet below land surface (bls). No additional soil excavation beyond the pre-established limits was conducted. Figures 3 through 6 shows the horizontal limits of excavation in Areas 1 through 4, respectively.

A description of the soil removal activities is presented in the following sections. A photograph log documenting various stages of the excavating and backfilling activities is included in Attachment A.

2.1 Site Preparation

In preparation for excavation, CCI obtained utility clearance and excavation permits. Underground utility locates were conducted by the Navy and other personnel at each of the areas. The only underground utility identified at SA 18 was an 8-inch diameter fire hydrant line near Area 4.

Prior to the contaminated soil removal, a 24-inch diameter concrete stormwater drain culvert located in the drainage swale of Excavation Area 3 was removed, properly disposed, and did not require replacement.

Survey stakes located throughout the site marked exact excavation limits. String lines were stretched across the excavation areas for use in measuring accurate excavation depth. Post-excavation confirmation sampling was not required.

2.2 Soil Excavation and Disposal

CCI's subcontractor (Environmental Field Services, Inc. along with J.N. Malcolm & Sons Excavating Company) removed 712 tons of contaminated soil as part of the soil removal activities at SA 18. All four areas of SA 18 were excavated to a depth of 2 feet bls using an excavator and skidsteer. The contaminated soil was direct loaded onto DOT-approved trucks and transported to the Orange County Landfill for proper disposal.

A transportation and disposal log, copies of waste profile information, and copies of the disposal manifests are provided in Attachment B. The certificates of disposal are enclosed in Attachment C.

2.3 Backfill and Site Restoration

A representative sample of backfill material was collected from the offsite source and analyzed for the presence of the following constituents using USEPA SW-846 procedures:

- Target compound list (TCL) volatile organic compound (VOCs) (Methods 5035 / 8260B)
- TCL semi-organic volatile organic compounds (SVOCs) (Method 8270C)
- TCL pesticides (Method 8081A)
- Herbicides (Method 8151)
- Polychlorinated biphenyls (PCBs) (Method 8082)
- Target analyte list (TAL) metals (Methods 7471 and 6010B)
- pH

The backfill material placed in the excavations was certified clean and a copy of the analytical data is provided in Attachment D.

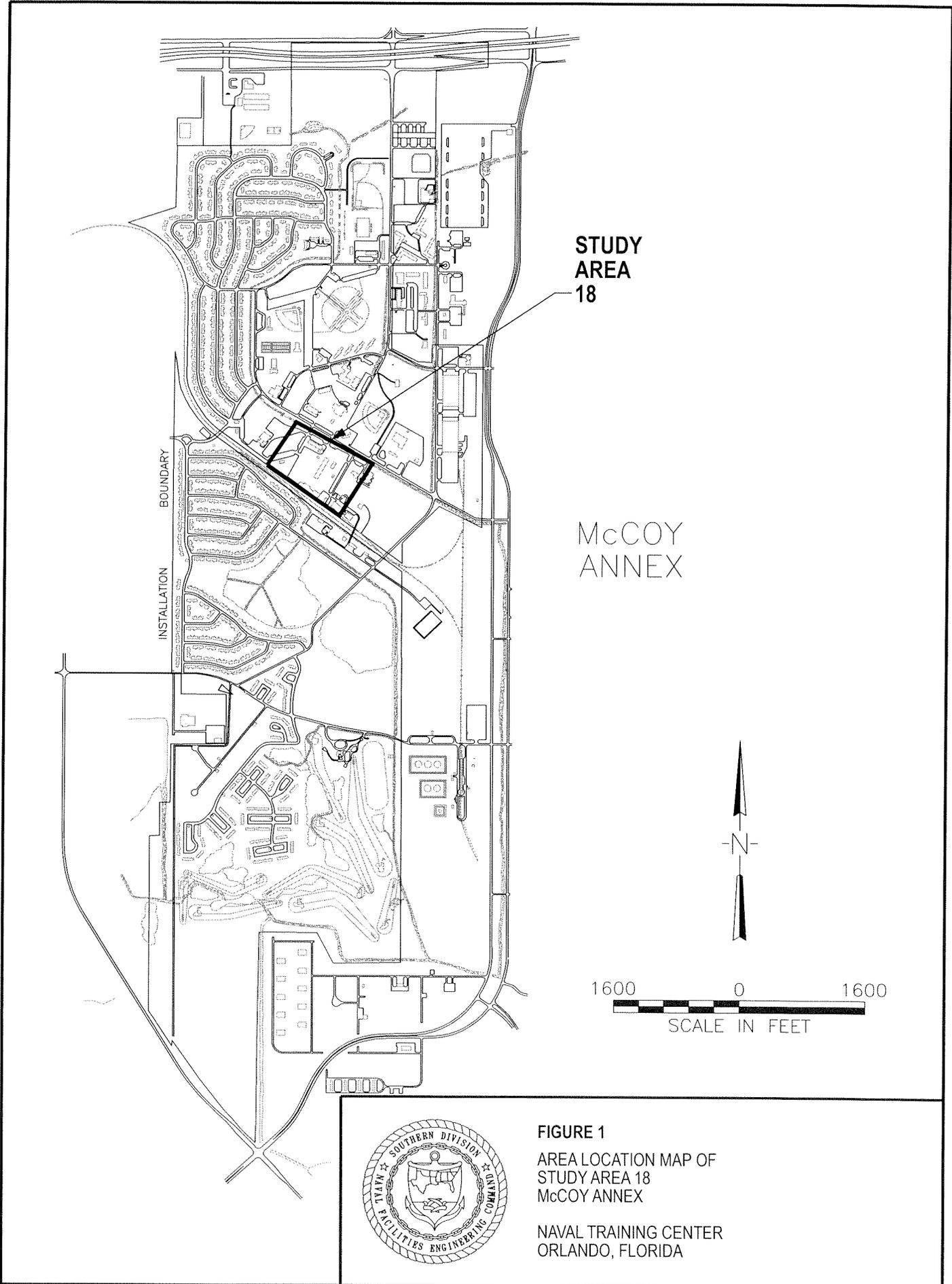
Each excavation was backfilled with 18 inches of clean soil followed by 6 inches of topsoil. The soil was placed in lifts and machine compacted to a minimum of 85 percent dry density in accordance with American Society for Testing and Materials (ASTM) D698. A copy of the compaction testing results is provided in Attachment E.

After completing the placement of backfill material, Environmental Field Services, Inc. and Glass Ground Maintenance placed Bahia sod in all four of the excavated areas of SA 18. Irrigation maintenance was provided for a period of 90 days. The excavated areas were restored to the approximate original drainage contours.

3.0 Conclusions

The objective of the soil removal activities at SA 18 was to remove and dispose of PAH or barium contaminated surface soil at the site exceeding the State of Florida residential SCTLs. CCI removed and disposed of 712 tons of contaminated soil from four areas at the site. Each area was restored with clean backfill and Bahia sod. As a result of the soil removal activities, these areas are suitable for residential land use.

FIGURES



SOURCE:
ROADS, BUILDINGS, ETC. ARE FROM A SURVEY
BY DEMAPS, INC. AND REPS, INC. IN 1997.

LEGEND

- MONITORING WELL ⊙
- SURFACE SOIL SAMPLE ⊕
- NO PARAMETERS > RESIDENTIAL SCTL ⊞
- AT LEAST 1 PARAMETER > RESIDENTIAL SCTL ⊞

NOTES:

- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) LOCATIONS FOR WELLS OLD-18-05 AND OLD-18-06 ARE APPROXIMATE.
- 3) EXCAVATION DEPTH 2 FEET; REPLACED WITH CLEAN SOIL AND SODDED.

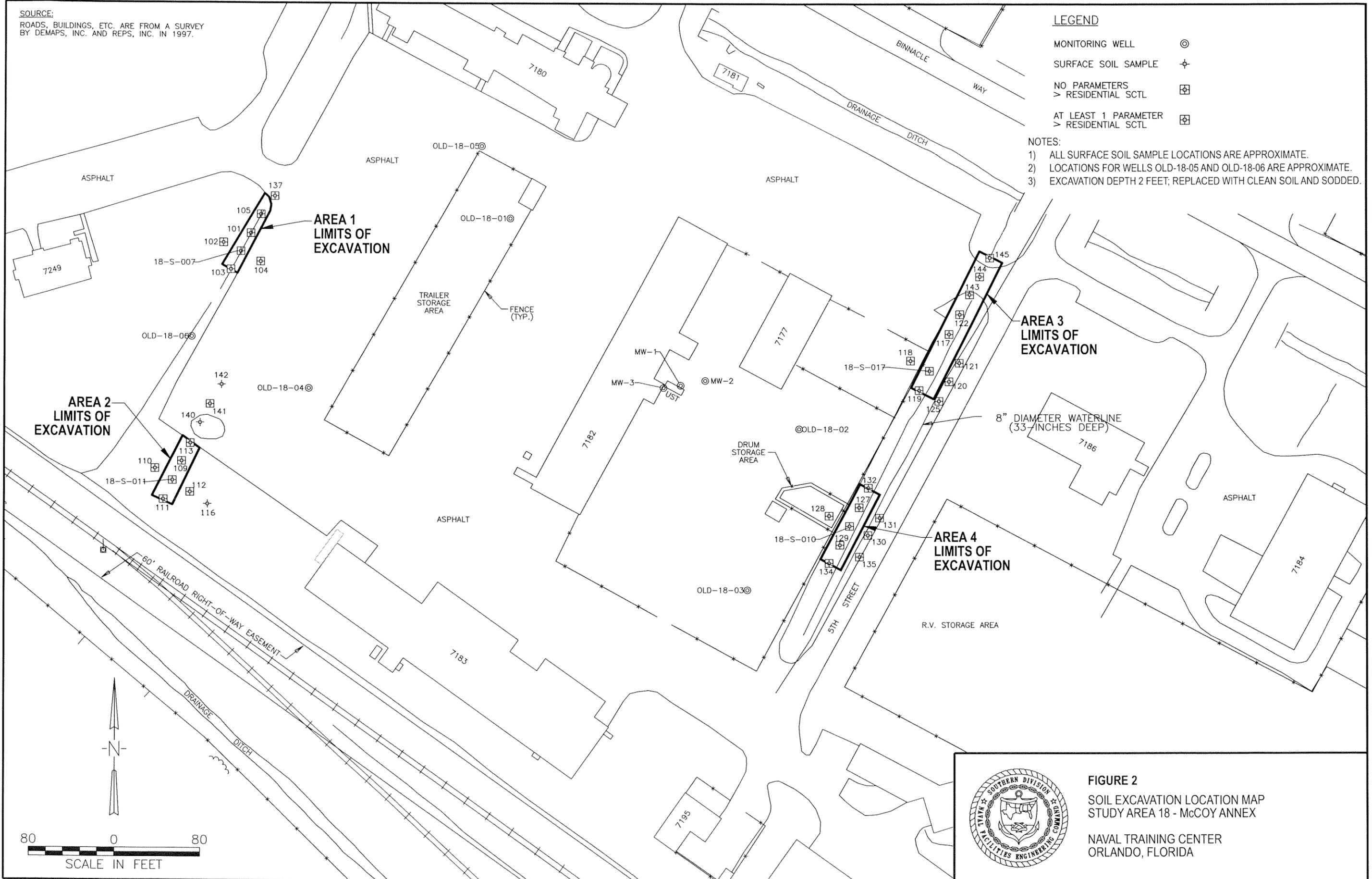
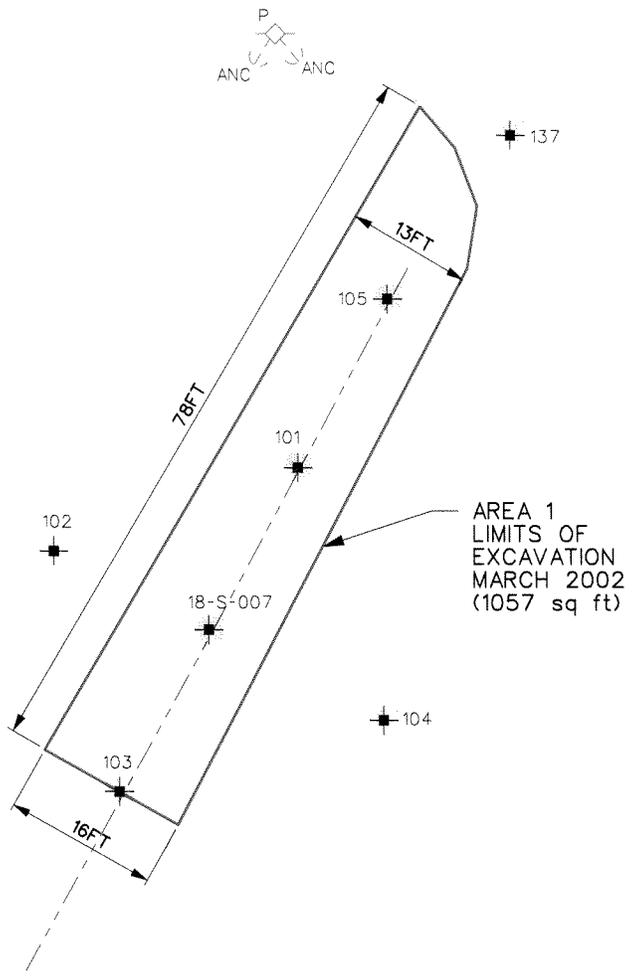
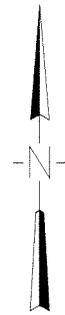


FIGURE 2
SOIL EXCAVATION LOCATION MAP
STUDY AREA 18 - McCOY ANNEX
NAVAL TRAINING CENTER
ORLANDO, FLORIDA



LEGEND

- MONITORING WELL
- SURFACE SOIL SAMPLE
NO PARAMETERS
> RESIDENTIAL SCTL
- SURFACE SOIL SAMPLE
AT LEAST 1 PARAMETER
> RESIDENTIAL SCTL

NOTES

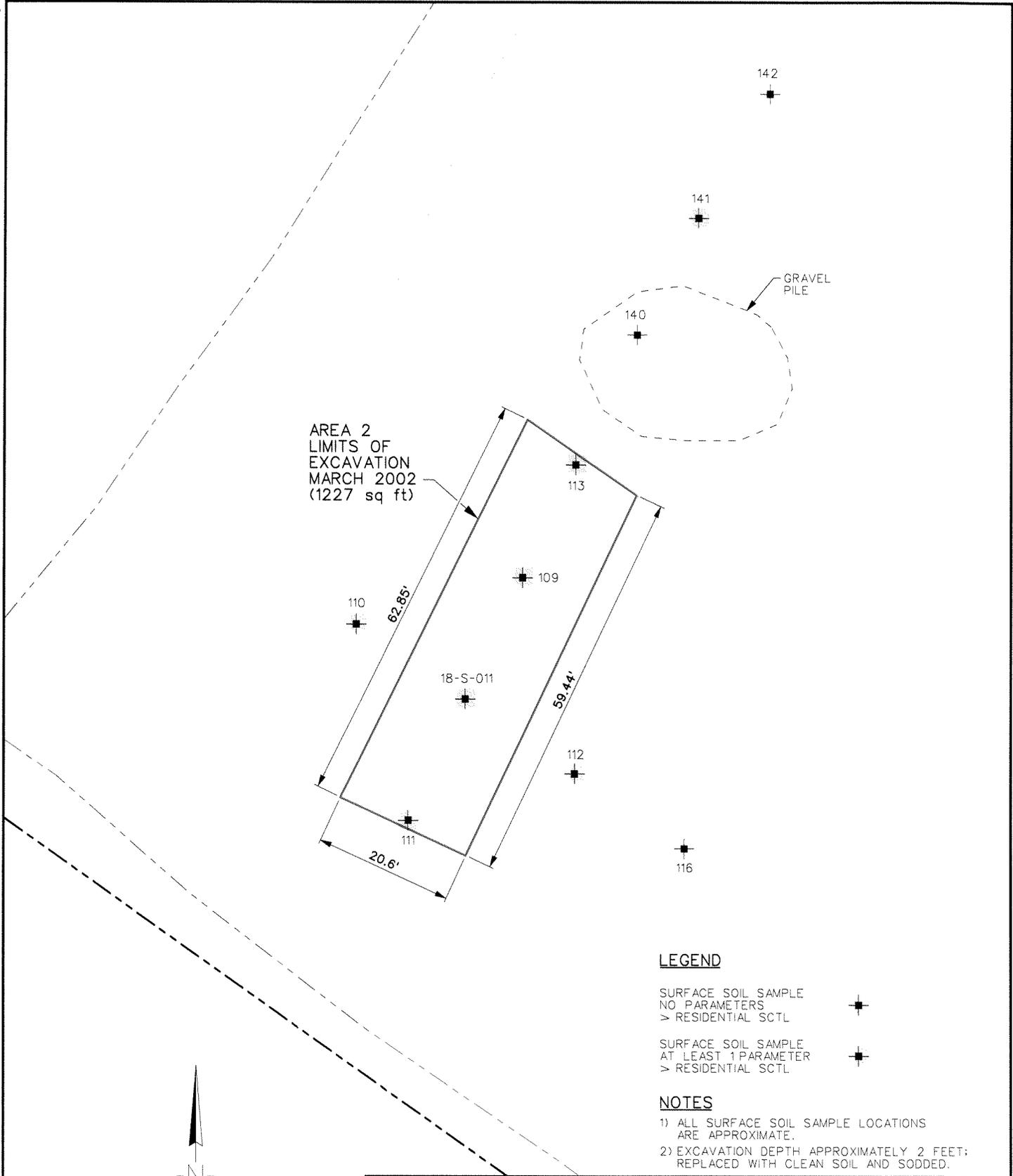
- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) EXCAVATION DEPTH APPROXIMATELY 2 FEET; REPLACED WITH CLEAN SOIL AND SODDED.

●
OLD-18-06



**FIGURE 3
AREA 1
SOIL EXCAVATION
STUDY AREA 18 - McCOY ANNEX**

NAVAL TRAINING CENTER
ORLANDO, FLORIDA



LEGEND

- SURFACE SOIL SAMPLE
NO PARAMETERS > RESIDENTIAL SCTL
- SURFACE SOIL SAMPLE
AT LEAST 1 PARAMETER > RESIDENTIAL SCTL

NOTES

- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) EXCAVATION DEPTH APPROXIMATELY 2 FEET; REPLACED WITH CLEAN SOIL AND SODDED.

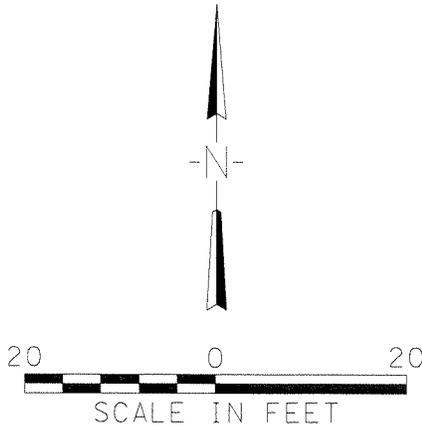
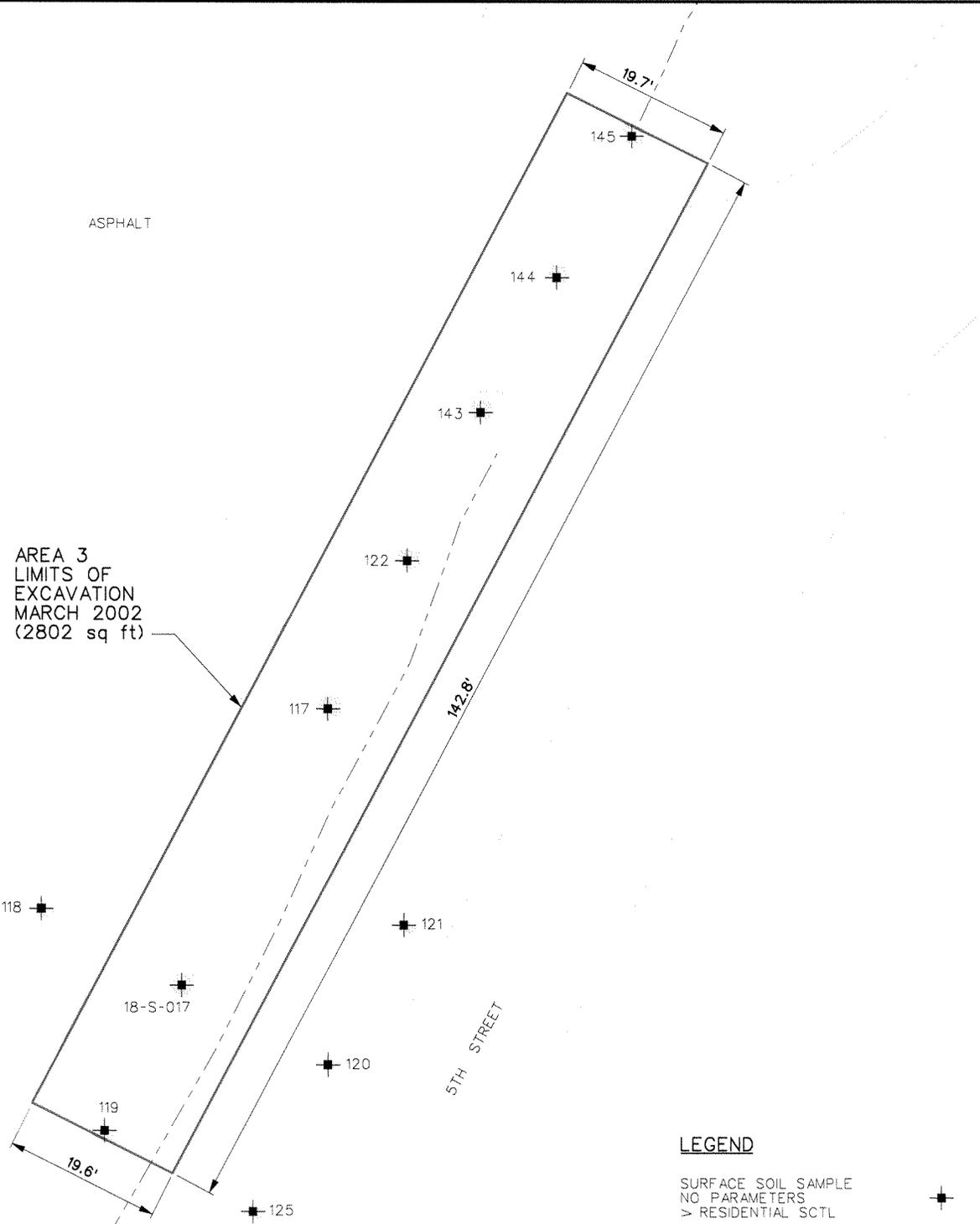


FIGURE 4
AREA 2
SOIL EXCAVATION
STUDY AREA 18 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA



AREA 3
LIMITS OF
EXCAVATION
MARCH 2002
(2802 sq ft)

ASPHALT

5TH STREET

LEGEND

- SURFACE SOIL SAMPLE
NO PARAMETERS
> RESIDENTIAL SCTL
- SURFACE SOIL SAMPLE
AT LEAST 1 PARAMETER
> RESIDENTIAL SCTL

NOTES

- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) EXCAVATION DEPTH APPROXIMATELY 2 FEET; REPLACED WITH CLEAN SOIL AND SODDED.

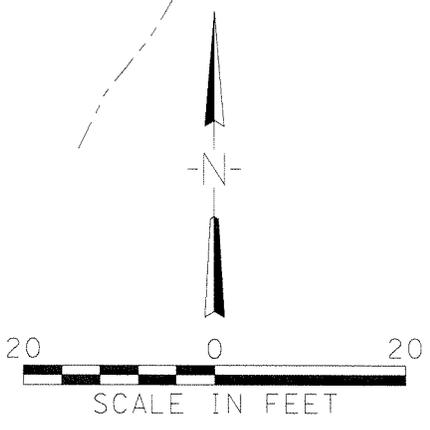


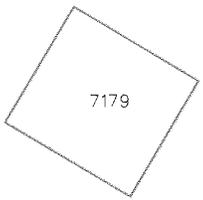
FIGURE 5
AREA 3
SOIL EXCAVATION
STUDY AREA 18 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

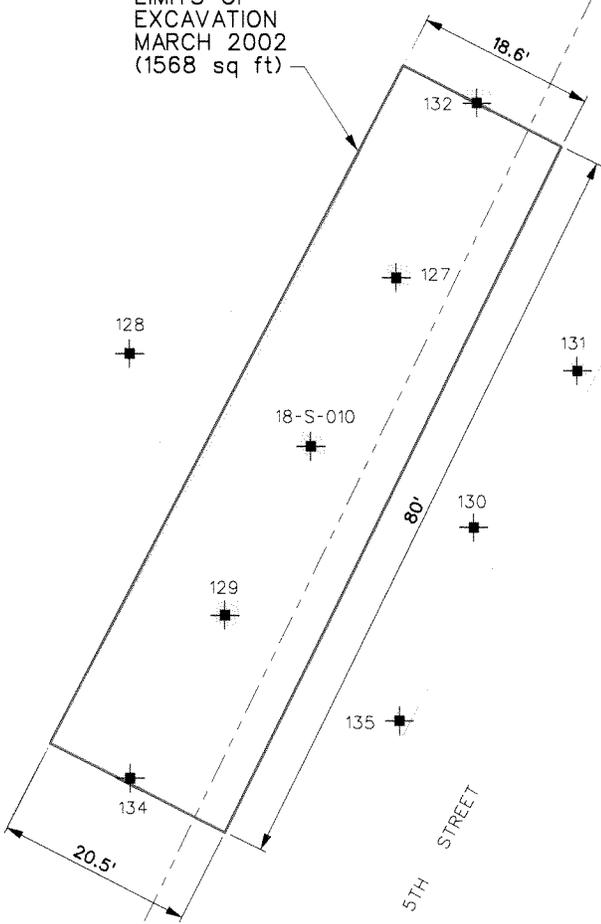


OLD-18-02

DRUM STORAGE AREA



AREA 4
LIMITS OF
EXCAVATION
MARCH 2002
(1568 sq ft)



OLD-18-03



LEGEND

- MONITORING WELL 
- SURFACE SOIL SAMPLE
NO PARAMETERS
> RESIDENTIAL SCTL 
- SURFACE SOIL SAMPLE
AT LEAST 1 PARAMETER
> RESIDENTIAL SCTL 

NOTES

- 1) ALL SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
- 2) EXCAVATION DEPTH APPROXIMATELY 2 FEET; REPLACED WITH CLEAN SOIL AND SODDED.



**FIGURE 6
AREA 4
SOIL EXCAVATION
STUDY AREA 18 - McCOY ANNEX**

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

ATTACHMENT A
PHOTOGRAPHIC LOG



Photo 1: Area 3 before excavation, looking north



Photo 2: Area 3 excavation in progress, looking north



Photo 3: Area 3 restored, looking south



Photo 4: Area 2 before excavation, looking south



Photo 5: Area 2 restored, looking south



Photo 6: Area 1 after excavation, looking north



Photo 7: Area 4 before excavation, looking south



Photo 8: Area 4 excavation in progress, looking south



Photo 9: Area 4 restored, looking north



Photo 10: Area 1 before excavation, looking northwest



Photo 11: Area 1 after excavation, looking south



Photo 12: Area 1 restored, looking south

ATTACHMENT B
WASTE DISPOSAL INFORMATION

STUDY AREA 18 TRANSPORTATION/DISPOSAL LOG

CTO No	Project No	Project Name	Site Description	Container Desig.	Contractor	Transporter	Date Transported	Load ID	Disposal Facility	Disp Fac OP. ID	Media	Waste Type (Haz, Nonhaz, TSCA)	Disposal Date	Manifest Number	Disposal Treatment Method				
															Incineration	Recycle	Landfill	Other	Unit
0017	152044	McCoy Annex	SA-18-1	213	EFS	J.N. Malcom	05-Mar-02	1	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93051			19.26		tons
0017	152044	McCoy Annex	SA-18-1	213	EFS	J.N. Malcom	05-Mar-02	2	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93056			28.5		tons
0017	152044	McCoy Annex	SA-18-1	218	EFS	J.N. Malcom	05-Mar-02	3	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93055			22.66		tons
0017	152044	McCoy Annex	SA-18-1	206	EFS	J.N. Malcom	05-Mar-02	4	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93054			17.92		tons
0017	152044	McCoy Annex	SA-18-1	200	EFS	J.N. Malcom	05-Mar-02	5	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93053			18.86		tons
0017	152044	McCoy Annex	SA-18-1	217	EFS	J.N. Malcom	05-Mar-02	6	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93052			19.66		tons
0017	152044	McCoy Annex	SA-18-2	213	EFS	J.N. Malcom	05-Mar-02	1	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93061			19.75		tons
0017	152044	McCoy Annex	SA-18-2	218	EFS	J.N. Malcom	05-Mar-02	2	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93060			24.67		tons
0017	152044	McCoy Annex	SA-18-2	206	EFS	J.N. Malcom	05-Mar-02	3	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93059			22.55		tons
0017	152044	McCoy Annex	SA-18-2	200	EFS	J.N. Malcom	05-Mar-02	4	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93058			23.41		tons
0017	152044	McCoy Annex	SA-18-2	217	EFS	J.N. Malcom	05-Mar-02	5	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93057			21.3		tons
0017	152044	McCoy Annex	SA-18-2	217	EFS	J.N. Malcom	05-Mar-02	6	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93062			16.46		tons
0017	152044	McCoy Annex	SA-18-3	213	EFS	J.N. Malcom	05-Mar-02	1	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93071			15.99		tons
0017	152044	McCoy Annex	SA-18-3	213	EFS	J.N. Malcom	05-Mar-02	2	Orange County	SO480128169006	Asphalt	N/H	05-Mar-02	N/A					tons
0017	152044	McCoy Annex	SA-18-3	217	EFS	J.N. Malcom	05-Mar-02	3	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93072			16.32		tons
0017	152044	McCoy Annex	SA-18-3	217	EFS	J.N. Malcom	05-Mar-02	4	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93076			22.09		tons
0017	152044	McCoy Annex	SA-18-3	200	EFS	J.N. Malcom	05-Mar-02	5	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93073			20.35		tons
0017	152044	McCoy Annex	SA-18-3	200	EFS	J.N. Malcom	05-Mar-02	6	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93077			20.88		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	05-Mar-02	7	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93074			19		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	05-Mar-02	8	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93069			16.4		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	05-Mar-02	9	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93078			24.83		tons
0017	152044	McCoy Annex	SA-18-3	206	EFS	J.N. Malcom	05-Mar-02	10	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93075			15.36		tons
0017	152044	McCoy Annex	SA-18-3	206	EFS	J.N. Malcom	05-Mar-02	11	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93070			14.83		tons
0017	152044	McCoy Annex	SA-18-3	206	EFS	J.N. Malcom	05-Mar-02	12	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93079			20.54		tons

STUDY AREA 18 TRANSPORTATION/DISPOSAL LOG

CTO No	Project No	Project Name	Site Description	Container Desig.	Contractor	Transporter	Date Transported	Load ID	Disposal Facility	Disp Fac OP. ID	Media	Waste Type (Haz, Nonhaz, TSCA)	Disposal Date	Manifest Number	Disposal Treatment Method				
															Incinerati	Recycle	Landfill	Other	Unit
0017	152044	McCoy Annex	SA-18-3	200	EFS	J.N. Malcom	06-Mar-02	13	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93081			23.9		tons
0017	152044	McCoy Annex	SA-18-3	200	EFS	J.N. Malcom	06-Mar-02	14	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93083			25.31		tons
0017	152044	McCoy Annex	SA-18-3	200	EFS	J.N. Malcom	06-Mar-02	15	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93085			26.44		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	06-Mar-02	16	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93080			20.9		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	06-Mar-02	17	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93082			23.53		tons
0017	152044	McCoy Annex	SA-18-3	218	EFS	J.N. Malcom	06-Mar-02	18	Orange County	SO480128169006	Soil	N/H	06-Mar-02	93084			20.96		tons
0017	152044	McCoy Annex	SA-18-4	217	EFS	J.N. Malcom	05-Mar-02	1	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93067			17.49		tons
0017	152044	McCoy Annex	SA-18-4	200	EFS	J.N. Malcom	05-Mar-02	2	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93068			17.64		tons
0017	152044	McCoy Annex	SA-18-4	200	EFS	J.N. Malcom	05-Mar-02	3	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93063			18.58		tons
0017	152044	McCoy Annex	SA-18-4	206	EFS	J.N. Malcom	05-Mar-02	4	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93064			17.19		tons
0017	152044	McCoy Annex	SA-18-4	218	EFS	J.N. Malcom	05-Mar-02	5	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93065			22.2		tons
0017	152044	McCoy Annex	SA-18-4	213	EFS	J.N. Malcom	05-Mar-02	6	Orange County	SO480128169006	Soil	N/H	05-Mar-02	93066			16.45		tons



UTILITIES DEPARTMENT . SOLID WASTE DIVISION

5901 Young Pine Road • Orlando, Florida 32829
407-836-6601 • Fax 407-836-6658

February 7, 2002

Dave Demas
Environmental Field Services, Inc
40 West State Road 32
Westfield IN 46074
(317) 896 -1116

RE: Diesel Contaminated Soil Disposal

Dear Mr. Demas:

As per your Email of February 7, 2002 the 1,500 tons of non-hazardous diesel contaminated soil are approved for disposal since it passes TCLP test and is, therefore, not a hazardous waste for landfilling purposes. The waste will be accepted for disposal at the Class I lined landfill at \$ /ton. All documentation has been filed for future reference. Should you have any questions, please contact Oscar Ramos at 407-836-6636

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Morrill", written over a light blue horizontal line.

Dan Morrill, P.E., Chief Engineer
Orange County
Solid Waste Division

OR/or

cc: Mr. James W. Becker
Special Waste 02

ATTACHMENT C
CERTIFICATE OF DISPOSAL

(SEE ORIGINAL DOCUMENT FOR ATTACHMENT C)

ATTACHMENT D
BACKFILL TEST RESULTS

(SEE ORIGINAL DOCUMENT FOR ATTACHMENT D)

ATTACHMENT E
COMPACTION TESTING RESULTS

(SEE ORIGINAL DOCUMENT FOR ATTACHMENT E)

APPENDIX F
STATISTICAL ANALYSIS OF SELECTED
SUBSURFACE SOIL RESULTS

Sample Number	Sample Depth	Result ug/kg	Modified Result ug/kg
18B01301	1-2	< 3.6	1.8
18B01401	1-2	< 3.9	1.95
18B01501	2-3	110	110
18B01601	1-2	< 3.6	1.8
18B01701	1-2	< 19	9.5
18B01801	1-2	<3.7	1.85
18B01901	1-2	5.1	5.1
18B02001	?	<3.9	1.95
18B02101	?	< 3.7	1.85

Result indicates concentration of dibenzo(a,h)anthracene

< indicates non-detect

Modified result includes 1/2 the reporting limit for non-detect results

? Indicates sample depth either 1-2' or 2-3'

Normal Data C:\ProUCL\Data\MJCsData.xls

Variable name	NumObs	Minimum	Maximum	Mean	Median	Std. Dev.	CV	Skewness	Variance
di(ah)a	9	1.8	110	15.08889	1.95	35.68634	2.365074	2.970236	1273.515

Log-transformed Data C:\ProUCL\Data\MJCsData.xls

Variable name	NumObs	Minimum	Maximum	Mean	Median	Std. Dev.	CV	Skewness	Variance
di(ah)a	9	0.587786665	4.70048	1.36918	0.667829	1.382266	1.009558	2.140301	1.910658

From File C:\ProUCL\Data\MJCsData.xls

Summary Statistics for	di(ah)a
Number of Samples	9
Minimum	1.8
Maximum	110
Mean	15.08889
Median	1.95
Standard Deviation	35.68634
Variance	1273.515
Coefficient of Variation	2.365074
Skewness	2.970236

Shapiro-Wilk Test Statistic	0.438742
Shapiro-Wilk 5% Critical Value	0.829

Data not Normal at 5% Significance Level

Data not Lognormal: Try Non-parametric UCL

95 % UCL (Assuming Normal Data)	
Student's-t	37.20904

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	47.23951
Modified-t	39.17195

95 % Non-parametric UCL	
CLT	34.65516
Jackknife	37.20904
Standard Bootstrap	33.46181
Bootstrap-t	440.4141
Chebyshev (Mean, Std)	66.93994

From File C:\ProUCL\Data\MJCsData.xls

Summary Statistics for	di(ah)a
Number of Samples	9
Minimum	1.8
Maximum	110
Mean	15.08889
Median	1.95
Standard Deviation	35.68634
Variance	1273.515
Coefficient of Variation	2.365074
Skewness	2.970236

95 % UCL (Assuming Normal Data)	
Student's-t	37.20904

95 % UCL (Adjusted for Skewness)	
Adjusted-CLT	47.23951
Modified-t	39.17195

95 % Non-parametric UCL	
CLT	34.65516
Jackknife	37.20904
Standard Bootstrap	33.39652
Bootstrap-t	439.3167
Chebyshev (Mean, Std)	66.93994

Summary Statistics for	ln(di(ah)a)
Minimum	0.587786665
Maximum	4.700480366
Mean	1.369179562
Standard Deviation	1.382265637
Variance	1.91065829

Shapiro-Wilk Test Statistic	0.655996933
Shapiro-Wilk 5% Critical Value	0.829

Data not Lognormal at 5% Significance Level

Data not Normal: Try Non-parametric UCL

Estimates Assuming Lognormal Distribution

MLE Mean	10.22165702
MLE Standard Deviation	24.52672866
MLE Coefficient of Variation	2.399486561
MLE Skewness	21.01358935
MLE Median	3.932123308
MLE 80% Quantile	12.644142
MLE 90% Quantile	23.22875394
MLE 95% Quantile	38.20653347
MLE 99% Quantile	97.93749145

MVU Estimate of Median	3.532047587
MVU Estimate of Mean	8.647751257
MVU Estimate of Std. Dev.	13.16180283
MVU Estimate of SE of Mean	4.130320677

UCL Assuming Lognormal Distribution	
95% H-UCL	80.83706944
95% Chebyshev (MVUE) UCL	26.65140169
99% Chebyshev (MVUE) UCL	49.74392311