

N65928.AR.002384  
NTC ORLANDO  
5090.3a

CONTAMINATION ASSESSMENT REPORT (CAR) BUILDING 2040 MAIN BASE WITH  
TRANSMITTAL NTC ORLANDO FL  
12/6/1996  
ABB ENVIRONMENTAL SERVICES, INC



December 6, 1996

Document No.: 08519.472

Commanding Officer  
Southern Division  
Naval Facilities Engineering Command  
Mr. Nick Ugolini, Code 1843  
2155 Eagle Drive  
N. Charleston, SC 29406

Subject: Contamination Assessment Report (CAR) for Building 2040  
Main Base  
NTC, Orlando, Florida  
CTO #107, Contract No. N62467-89-D-0317

Dear Mr. Ugolini:

Enclosed is the Contamination Assessment Report (CAR) for Building 2040, Main Base, NTC Orlando, Florida. The CAR for Building 2040 is submitted as Addendum 6 of the Main Base Master CAR and should be placed in the Main Base CAR Volume II. The index for Addendum 6 was previously provided to you in Volume I. Please insert this index along with the subject CAR into Volume II.

Figure 1-2 and the table of contents for the Main Base Master CAR have been updated to include the CAR for Building 2040. Please replace the Table of Contents (page iv) and Figure 1-2 (page 1-3) in the Main Base Master CAR with the ones provided.

If you have any questions or need additional information please contact the undersigned at 407/895-8845.

Very truly yours,  
**ABB ENVIRONMENTAL SERVICES, INC.**

John P. Kaiser  
Installation Manager

Manuel Monsó, P.G.  
Senior Geologist

JPK/lak  
Enclosure

cc: Wayne Hansel, Code 18B7, Southern Division  
Mark Zill, Code 010E, NTC, Orlando  
Lt. Gary Whipple, NTC, Orlando  
John Mitchell, FDEP  
File Copy (2 enc)

c:\wp51\ust\southdiv\bldg2040.car  
ABB Environmental Services Inc.

TABLE OF CONTENTS

Contamination Assessment Report  
Main Base  
Naval Training Center  
Orlando, Florida

Chapter	Title	Page No.
1.0	INTRODUCTION . . . . .	1-1
1.1	PURPOSE . . . . .	1-1
1.2	SCOPE . . . . .	1-4
2.0	SITE BACKGROUND . . . . .	2-1
2.1	PROPERTY LOCATION AND SIZE . . . . .	2-1
2.2	PROPERTY BACKGROUND INFORMATION . . . . .	2-1
3.0	SITE CONDITIONS . . . . .	3-1
3.1	REGIONAL PHYSIOGRAPHY . . . . .	3-1
3.2	REGIONAL GEOLOGY AND HYDROGEOLOGY . . . . .	3-1
4.0	CONTAMINATION ASSESSMENT METHODOLOGY . . . . .	4-1
4.1	SOIL ASSESSMENT . . . . .	4-1
4.2	MONITORING WELL INSTALLATION . . . . .	4-1
4.3	GROUNDWATER ELEVATION SURVEY . . . . .	4-2
4.4	SAMPLE COLLECTION AND ANALYSES . . . . .	4-5
4.4.1	Soil . . . . .	4-5
4.4.2	Groundwater . . . . .	4-5
4.4.3	Surface Water Sediment . . . . .	4-5
4.4.4	Surface Water . . . . .	4-6
4.5	AQUIFER TESTING . . . . .	4-6
5.0	POTABLE WELL SURVEY . . . . .	5-1
6.0	RESULTS, CONCLUSIONS, AND RECOMMENDATIONS . . . . .	6-1
7.0	PROFESSIONAL REVIEW CERTIFICATION . . . . .	7-1

REFERENCES

ATTACHMENTS

- Attachment A - Florida Department of Environmental Protection Comments
- Attachment B - Errata Pages

ADDENDA

Note: Because site assessments at the Main Base are scheduled through 1999, all site-specific information will be submitted as addenda to this Main Base property Contamination Assessment Report.

- Addendum 1 - CAR Building 2036, February 1996.
- Addendum 2 - CAR Building 224, June 1996.
- Addendum 3 - CAR Building 230, July 1996.
- Addendum 4 - CAR Building 218, July 1996.
- Addendum 5 - CAR Building 109, October 1996
- Addendum 6 - CAR Building 2040, December 1996

**Addendum 6**

**CONTAMINATION ASSESSMENT REPORT, BUILDING 2040**

**DISTRIBUTION**

SOUTHNAVFACENGCOM	2
NTC, Orlando, Florida	2
FDEP	1
ABB-ES, Orlando	4

**CONTAMINATION ASSESSMENT REPORT**

**BUILDING 2040  
MAIN BASE**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**Unit Identification Code: N65928**

**Contract No.: N62467-89-D-0317/107**

**Prepared by:**

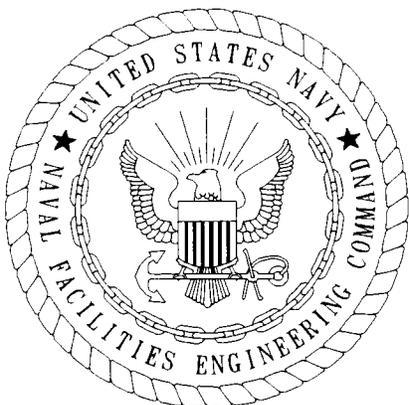
**ABB Environmental Services, Inc.  
2590 Executive Center Circle, East  
Tallahassee, Florida 32301**

**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**

**December 1996**



CERTIFICATION OF TECHNICAL  
DATA CONFORMITY (MAY 1987)

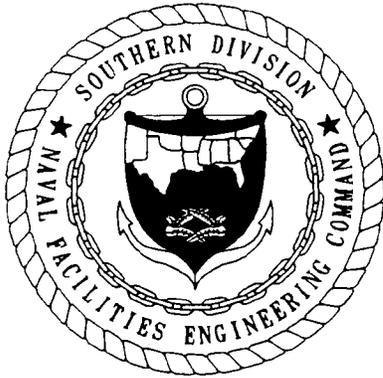
The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: December 4, 1996

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 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,
- contamination assessment planning,
- site field investigations,
- preparation of contamination assessment reports,
- remedial (corrective) action planning,
- implementation of the remedial action plans, and
- tank and pipeline closures.

## EXECUTIVE SUMMARY

ABB Environmental Services, Inc. (ABB-ES) has been authorized by Southern Division, Naval Facilities Engineering Command to prepare contamination assessment reports (CARs) for petroleum-impacted sites discovered during the BRAC Tank Management Plan implementation at the Naval Training Center (NTC), Orlando Main Base property in Orlando, Florida. This CAR has been prepared to evaluate soil and groundwater conditions at Building 2040.

This contamination 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. Two 650-gallon aboveground storage tanks (ASTs) stored heating fuel at building 2040. On December 11, 1995, the ASTs were removed by Florida Petroleum Services, Inc. Both ASTs were in good physical condition, but a small area of stained soil and stressed vegetation was observed just North of the tanks. On January 11, 1996, groundwater contamination was detected during the sampling of a temporary monitoring well (TW-1).
2. Contamination assessment activities were conducted by ABB-ES from July 9, 1996, to November 1, 1996. Hand auger borings were advanced throughout the study area to assess if excessively contaminated soil was present and to evaluate the extent of soil contamination. Contaminated soil was encountered at one boring.
3. Six additional piezometers (PZ-1 through PZ-6) were installed to depths ranging from 4.5 feet below land surface (bls) to 7 feet bls to delineate free-floating product and to define the direction of shallow groundwater flow.
4. Three shallow groundwater monitoring wells (MW-1 through MW-3) were installed to assess the horizontal extent of petroleum contamination in the shallow aquifer. The shallow monitoring wells were installed to a depth of 12 feet bls.
5. No dissolved petroleum hydrocarbon contamination exceeding Chapter 62-770, FAC, target cleanup levels was detected in groundwater samples from any of the monitoring wells.
6. Free product is present in temporary well TW-1 at 0.31 foot of thickness. No other monitoring well or piezometer has shown measurable amounts of free product.
7. Groundwater flow direction was determined to be from west to east with a hydraulic gradient of 0.003 foot per foot. Due to the absence of petroleum impact to groundwater, no deep well was installed and no aquifer characterization was performed.
8. No active potable water wells are located within 0.25 mile of this site.

TABLE OF CONTENTS

Contamination Assessment Report  
Building 2040, Main Base  
Naval Training Center  
Orlando, Florida

<u>Chapter</u>	<u>Title</u>	<u>Page No.</u>
1.0	SITE DESCRIPTION AND BACKGROUND INFORMATION . . . . .	1-1
2.0	CONTAMINATION ASSESSMENT METHODOLOGY . . . . .	2-1
2.1	SOIL BORING PROGRAM . . . . .	2-1
2.2	MONITORING WELL INSTALLATION PROGRAM . . . . .	2-1
2.3	GROUNDWATER SAMPLING PROGRAM . . . . .	2-1
2.4	GROUNDWATER ELEVATION SURVEY . . . . .	2-5
3.0	GEOLOGY AND HYDROGEOLOGY . . . . .	3-1
3.1	SITE STRATIGRAPHY . . . . .	3-1
3.2	SITE HYDROGEOLOGY AND GROUNDWATER FLOW DIRECTION . . . . .	3-1
3.3	AQUIFER CHARACTERISTICS . . . . .	3-1
3.4	POTABLE WELL SURVEY . . . . .	3-1
3.5	SURFACE WATER . . . . .	3-1
4.0	CONTAMINATION ASSESSMENT RESULTS . . . . .	4-1
4.1	SOIL CONTAMINATION . . . . .	4-1
4.2	FREE-PRODUCT OCCURRENCE . . . . .	4-1
4.3	GROUNDWATER CONTAMINATION . . . . .	4-1
5.0	SOURCE OF HYDROCARBONS . . . . .	5-1
5.1	HYDROCARBON TYPE . . . . .	5-1
5.2	SOURCE OF HYDROCARBON PLUME . . . . .	5-1
5.3	MECHANISM OF TRANSPORT . . . . .	5-1
6.0	RECOMMENDATIONS . . . . .	6-1
7.0	PROFESSIONAL REVIEW CERTIFICATION . . . . .	7-1

REFERENCES

APPENDICES

- Appendix A: Site Photographs
- Appendix B: Tank Closure Assessment Reports
- Appendix C: Lithologic Logs
- Appendix D: Well Construction Details
- Appendix E: Laboratory Analytical Reports

## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
CA	contamination assessment
CAR	Contamination Assessment Report
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
HSA	hollow-stem auger
KAG	Kerosene Analytical Group
NTC	Naval Training Center
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
ppm	parts per million
TCAR	Tank Closure Assessment Report
TRPH	total recoverable petroleum hydrocarbons
TOC	top of casing
USEPA	U. S. Environmental Protection Agency
VOA	volatile organic aromatic
VOH	volatile organic halocarbon

## 1.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

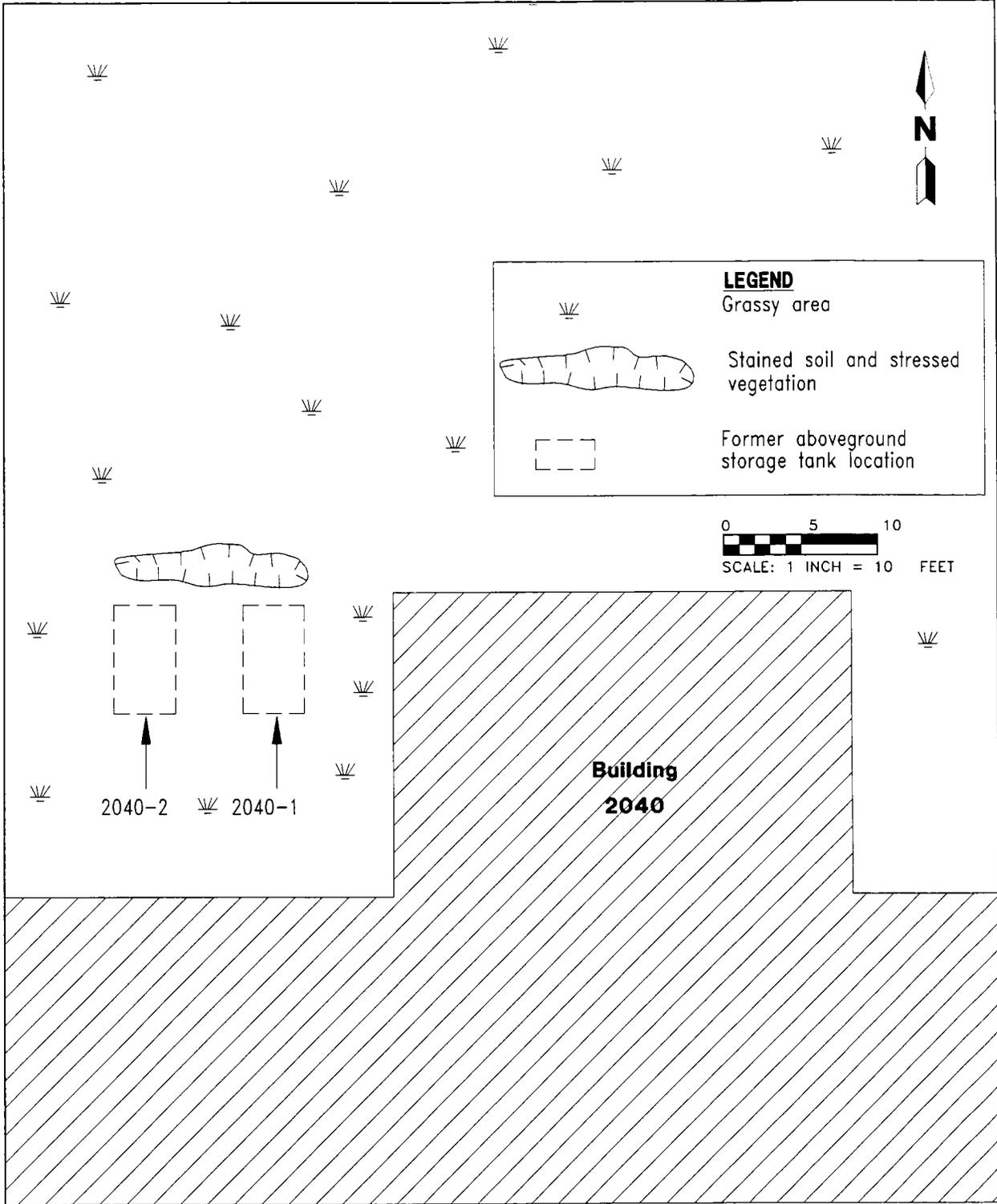
Building 2040 (administration building) is located in the central part of the Naval Training Center (NTC), Main Base, in Orange County, Florida. The site lies within the southwest part of Section 17, Township 22 South and Range 30 East, as shown on the Orlando East, Florida, U.S. Geological Survey Quadrangle Map. Figure 1-1 shows the site location and a map of the surrounding area. The site is located on King Avenue in the central part of the Main Base property.

Building 2040 is a one-story, 20,654-square-foot building constructed of concrete block walls and a shingled gabled roof. The building contains the Recruit Office, Personnel Support Storage, Reclaimed Clothing, Dental Clinic, Dental Repair Shop, and the Navy Band. Aerial photos indicate that the property was undeveloped land through 1943. Photographs of the site showing existing physical features are included in Appendix A, Site Photographs.

Two petroleum storage tank systems have been operated at the property. The tanks were two 650-gallon aboveground storage tanks (ASTs) containing heating fuel associated with the building heating systems. The former locations of the petroleum storage tank systems are shown on Figure 1-2, Site Plan.

The 650-gallon ASTs were removed on December 11, 1995, by Florida Petroleum Services, Inc., ABB Environmental Services, Inc. (ABB-ES), oversaw the AST removals and collected and analyzed soil samples. A temporary monitoring well (TW-1) was installed and sampled. The laboratory analytical results of the groundwater samples are included in the two Tank Closure Assessment Reports (TCARs) prepared for the site. Analytical results from the temporary well indicated the presence of total volatile organic aromatics (VOAs) (the sum of benzene, toluene, ethylbenzene, and xylenes) were found at 209.2 micrograms per liter. In accordance with Chapters 62-761 and 62-770, Florida Administrative Code (FAC), and based on the VOA concentrations in groundwater, the TCARs recommended a contamination assessment (CA). A copy of each of the two individual TCARs are included in Appendix B, Tank Closure Assessment Reports.

This Contamination Assessment Report (CAR) summarizes the data gathered during the petroleum storage tank system closure and CA activities at Building 2040. General information, such as regional physiography, geology, hydrogeology, investigative methodologies, and procedures are included in the NTC, Orlando Main Base CAR (ABB-ES, 1996).



**FIGURE 1-2  
SITE PLAN**



**CONTAMINATION ASSESSMENT  
REPORT  
BUILDING 2040  
MAIN BASE  
NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

H:\OLD\BRAC\CAR\BDG2040\JMK\12-02-96

## 2.0 CONTAMINATION ASSESSMENT METHODOLOGY

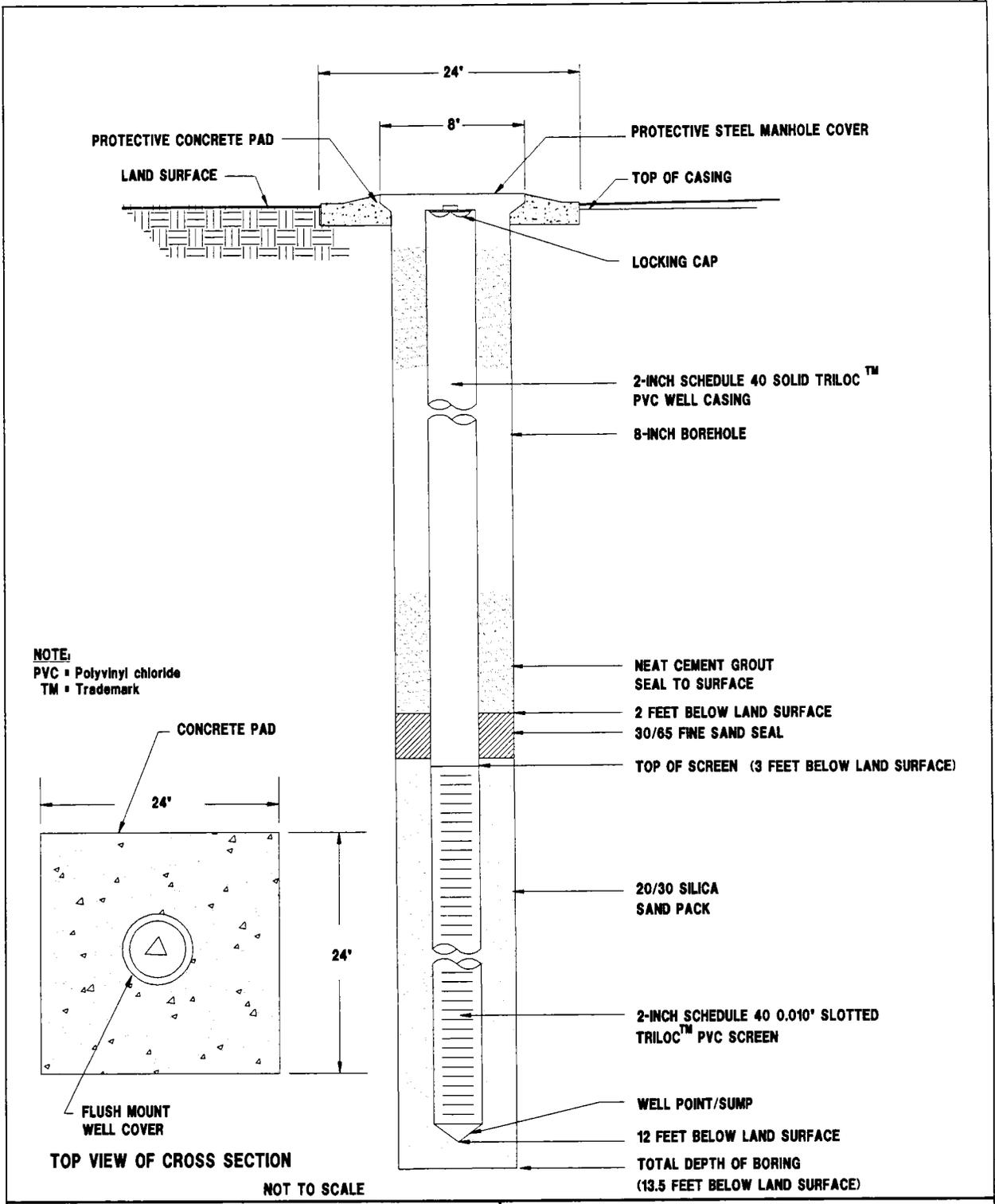
**2.1 SOIL BORING PROGRAM.** In order to determine if petroleum contaminated soil exists onsite following tank removal activities, eight hand auger borings were advanced using a 3.25-inch inside diameter stainless-steel bucket auger on August 21, 1996, and September 10, 1996. Figure 2-1 shows the locations of the hand-auger borings. The borings were completed into the water table, which was encountered at approximately 1.5 feet below land surface (bls).

A total of 16 soil samples was collected from the eight hand-auger borings. The soil samples were collected at 0 to 1 feet and 1 to 3 feet bls. Headspace organic vapor concentrations were measured for all soil samples by placing the soil sample in a 16-ounce glass jar and using a calibrated organic vapor analyzer (OVA), Foxboro 128 equipped with a flame ionization detector following procedures outlined in Section 62-770, FAC. Carbon filters were utilized to differentiate total hydrocarbon response from naturally occurring methane gas. Filtered and unfiltered readings were obtained from a single jar. All sampling and analysis was performed in accordance with ABB-ES Florida Department of Environmental Protection (FDEP)-approved Comprehensive Quality Assurance Plan.

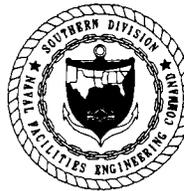
**2.2 MONITORING WELL INSTALLATION PROGRAM.** Three shallow monitoring wells (MW-1, MW-2, and MW-3) were installed at the site on July 10, 1996. The wells were installed using hollow-stem auger (HSA) techniques to a depth of approximately 12 feet bls. A typical shallow monitoring well construction detail is provided as Figure 2-2. Each well was constructed with 10 feet of 2-inch diameter 0.010-inch slotted well screen coupled to two feet of 2-inch schedule 40 solid polyvinyl chloride (PVC). This assembly was placed in the borehole so that the screen interval was 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 1 foot above the screened interval. 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. Appendix D, Well Construction Details, contains the well completion logs provided by the drilling subcontractor.

All monitoring wells were completed flush-mount with surface grade well vaults, and locking well caps were installed to conform with standards outlined in 40C-3, FAC. Each monitoring well was developed by overpumping 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 HSAs, was thoroughly decontaminated between each well installation.

**2.3 GROUNDWATER SAMPLING PROGRAM.** Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3 on July 18, 1996. These samples were packed on ice and transported to Quality Analytical Laboratories, Inc., in Montgomery, Alabama, for analysis. The groundwater samples were analyzed for the sampling requirements established in Chapter 62-770, FAC, for sites with heating fuel discharges that are defined under the Kerosene Analytical Group (KAG), which includes the following U.S. Environmental Protection Agency (USEPA) methods: 504



**FIGURE 2-2**  
**TYPICAL SHALLOW MONITORING WELL**  
**CONSTRUCTION DETAIL**



**CONTAMINATION ASSESSMENT**  
**REPORT**  
**BUILDING 2040**  
**MAIN BASE**  
**NAVAL TRAINING CENTER**  
**ORLANDO, FLORIDA**

(ethylene dibromide), 601 (volatile organic halocarbons [VOHs]), 602 (volatile organic aromatics [VOAs] plus methyl tert-butyl ether), 610 (polynuclear aromatic hydrocarbons [PAHs]), 239.2 (total lead) and 418.1 total recoverable petroleum hydrocarbons (TRPH).

**2.4 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 August 16, September 10, and November 1, 1996, depth to groundwater was measured from the top of casing (TOC) to the nearest hundredth of a foot in each of the 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 and piezometers were checked for the presence of free product by visual inspection of groundwater samples taken from each well and the use of an oil and water interface probe.

### 3.0 GEOLOGY AND HYDROGEOLOGY

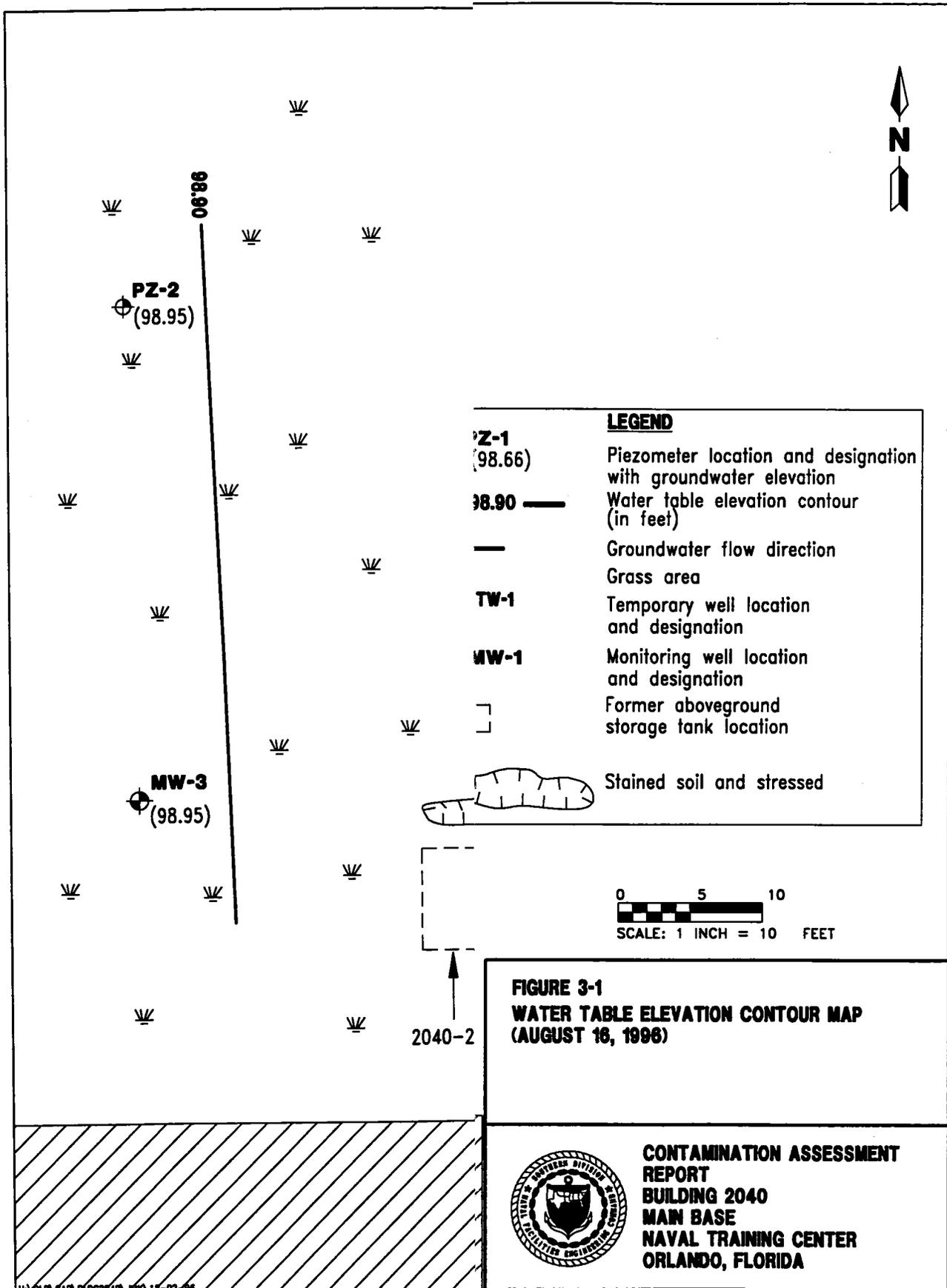
3.1 SITE STRATIGRAPHY. For purposes of this investigation, site stratigraphy and aquifer evaluation were limited to the surficial aquifer beneath the site. The soil profile for the Building 2040 site is based on visual examination of soil samples collected from soil borings and drill cuttings obtained during the investigation. A typical stratigraphic soil profile consists of a tan and gray mixture of fine to very fine sand and clay down to a depth of 12 feet bls. Lithologic logs for soil borings and monitoring wells installed during this investigation are included as Appendix C, Lithologic Logs.

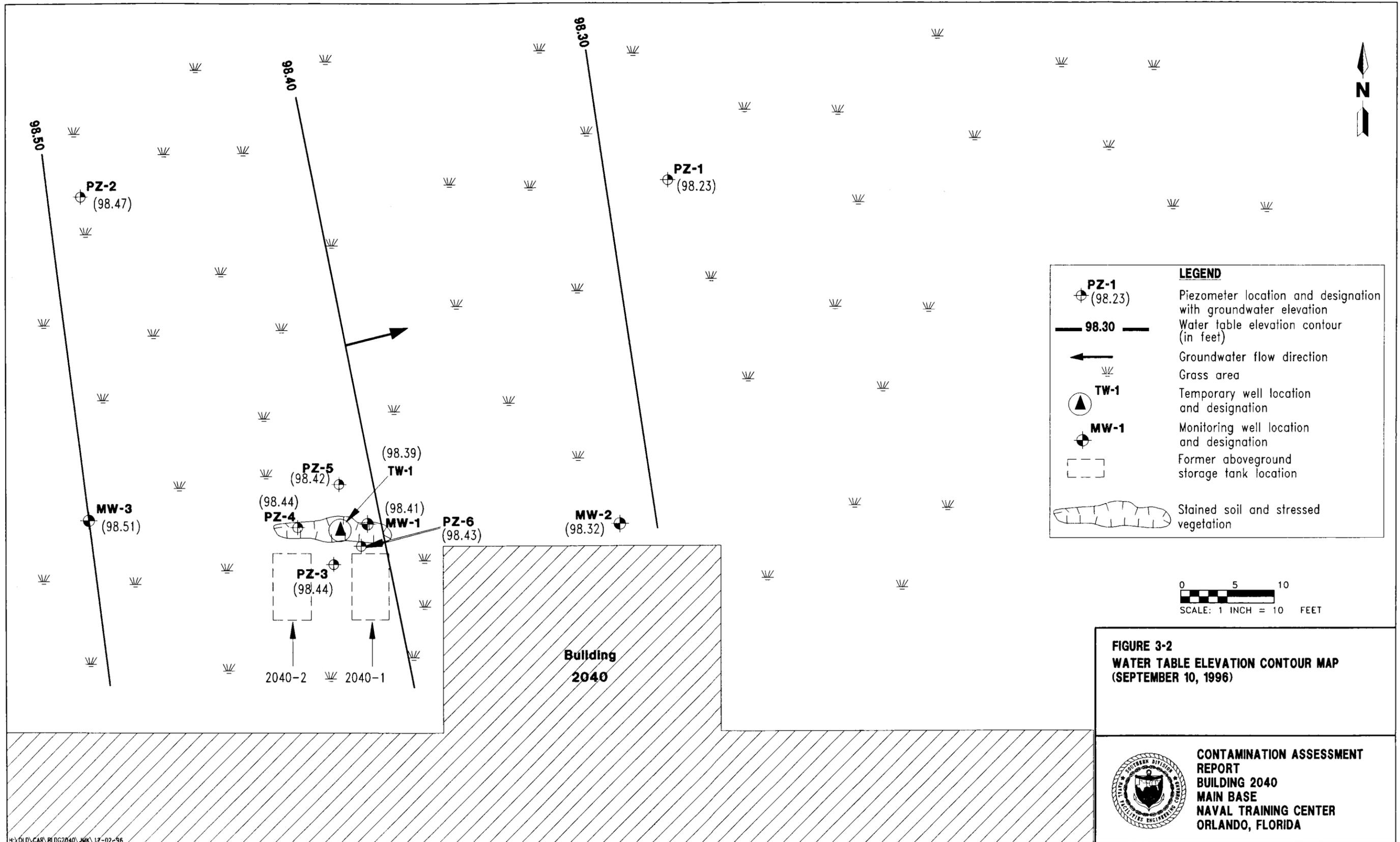
3.2 SITE HYDROGEOLOGY AND GROUNDWATER FLOW DIRECTION. Groundwater elevations across the site were calculated by measuring water levels on August 16, September 10, and November 1, 1996, in the site's monitoring wells and by surveying the relative TOC elevations. The hydraulic gradient across the site was calculated by measuring the change in elevation head between monitoring wells MW-2 (downgradient well) and MW-3 (upgradient well) and dividing this head difference by the horizontal distance between these two wells. The scaled horizontal distance is 60 feet, and the change in elevation head between the wells, as measured on August 16, 1996, was 0.18 foot. The calculated hydraulic gradient is equal to  $3.0 \times 10^{-3}$  feet per foot. The site groundwater flow direction, based on the water table surface map, is from West to East. Table 3-1 is a summary of groundwater elevation data for the August 16, September 10, and November 1, 1996 sampling events. Figures 3-1, 3-2, and 3-3 are the water table contour maps for August 16, September 10, and November 1, 1996, respectively. Temporary well TW-1 has free-floating product. A free-product connection was used to assess water table elevation at TW-1.

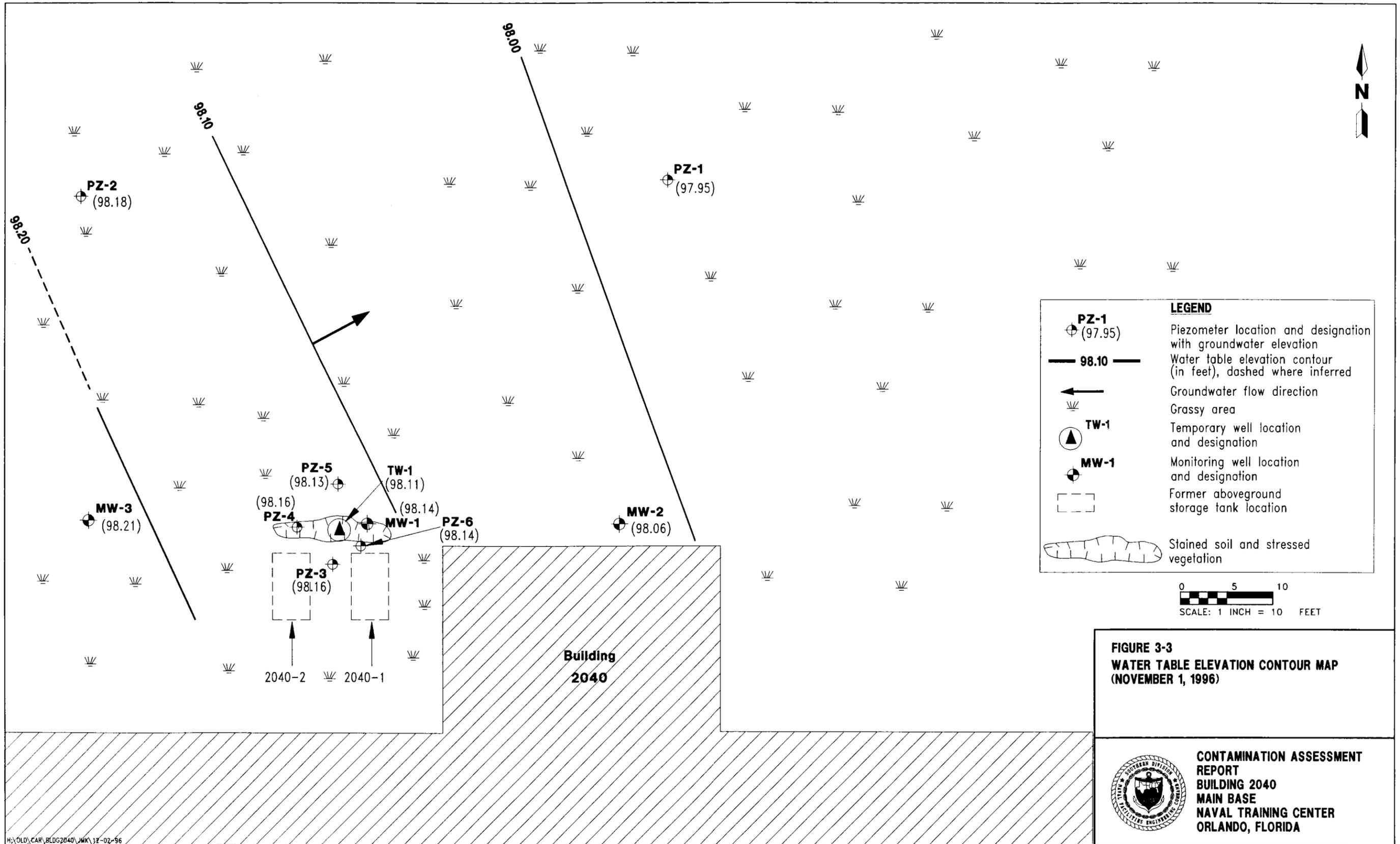
3.3 AQUIFER CHARACTERISTICS. No slug tests were performed at this site.

3.4 POTABLE WELL SURVEY. A potable well survey for the surrounding area is included in the Main Base CAR. No active potable wells are reported in the site vicinity. Potable well (WW-12), currently in use, is located approximately 3,200 feet from the site. Several irrigation wells are located in vicinity of the site, including: WW-5, 350 feet southeast; WW-4, less than 1,000 feet west-northwest; WW-3, 1,700 feet North; and WW-6, 2,200 feet South. See Figure 5-1, potable and irrigation well locations, of the Main Base CAR.

3.5 SURFACE WATER. The surface water body nearest to the site is Lake Baldwin, which is approximately 900 feet northeast of the site. In addition, several other lakes including, Lake Susannah (1,000 feet), Lake Gear (2,100 feet), and Lake Spier (2,000 feet) are located in the site vicinity.







## 4.0 CONTAMINATION ASSESSMENT RESULTS

4.1 SOIL CONTAMINATION. Eight hand auger borings (HA-1 through HA-8) were advanced using a 3.25-inch inside diameter stainless-steel, hand-operated bucket auger on August 21 and September 10, 1996. Figure 2-1 shows the hand-auger boring locations. Sixteen soil samples were collected at discrete intervals for head-space OVA analysis. A summary of OVA results is presented in Table 4-1.

Petroleum-impacted soil was encountered both during the tank closure assessment and the soil assessment conducted during this contamination assessment. Soil borings SB-2 and SB-3, taken shortly after the removal of the two ASTs, had OVA readings greater than the 50 parts per million (ppm) limit set forth by the FDEP for excessively contaminated soil with product from the KAG. Hand-auger boring HA-4 at zero to 1 foot bls, conducted on August 21, 1996, also had an OVA reading greater than 50 ppm.

4.2 FREE-PRODUCT OCCURRENCE. Free product was detected during both the tank closure assessment and this CA in temporary well TW-1. On November 1, 1996, it was recorded with an oil-water interface probe as being 0.31 foot in thickness.

4.3 GROUNDWATER CONTAMINATION. Three shallow monitoring wells (MW-1, MW-2, and MW-3) were installed at the site on July 10, 1996, and sampled on July 18, 1996. These wells were installed to assess the groundwater flow direction and the horizontal extent of hydrocarbon contamination. Locations of the monitoring wells are shown on Figure 4-1.

Groundwater samples were collected from monitoring wells MW-1 through MW-3 on July 18, 1996. Groundwater samples were analyzed for the KAG, which includes USEPA Method 601 (VOHs), USEPA Method 602 (VOAs, plus methyl tert-butyl ether), USEPA Method 504 (ethylene dibromide), USEPA 239.2 (total lead), USEPA Method 610 (PAHs), and USEPA Method 418.1 (TRPH). Laboratory analytical results indicate that dissolved petroleum contamination above Chapter 62-770, FAC, target cleanup levels was not detected in any of the monitoring wells.

The laboratory analytical reports are included in Appendix E, and the results are summarized in Table 4-2.

In monitoring well MW-2, 2-methylnaphthalene and 1-methylnaphthalene were detected at 4 and 2  $\mu\text{g}/\ell$ , respectively. In addition, total lead was detected at 17.9  $\mu\text{g}/\ell$  in MW-1, 20.3  $\mu\text{g}/\ell$  in MW-2, and 19.8  $\mu\text{g}/\ell$  in MW-3. TRPH was detected at 0.96 mg/ $\ell$  in MW-1, and 0.76 mg/ $\ell$  in MW-2. Both lead and TRPH are below State of Florida target cleanup levels.

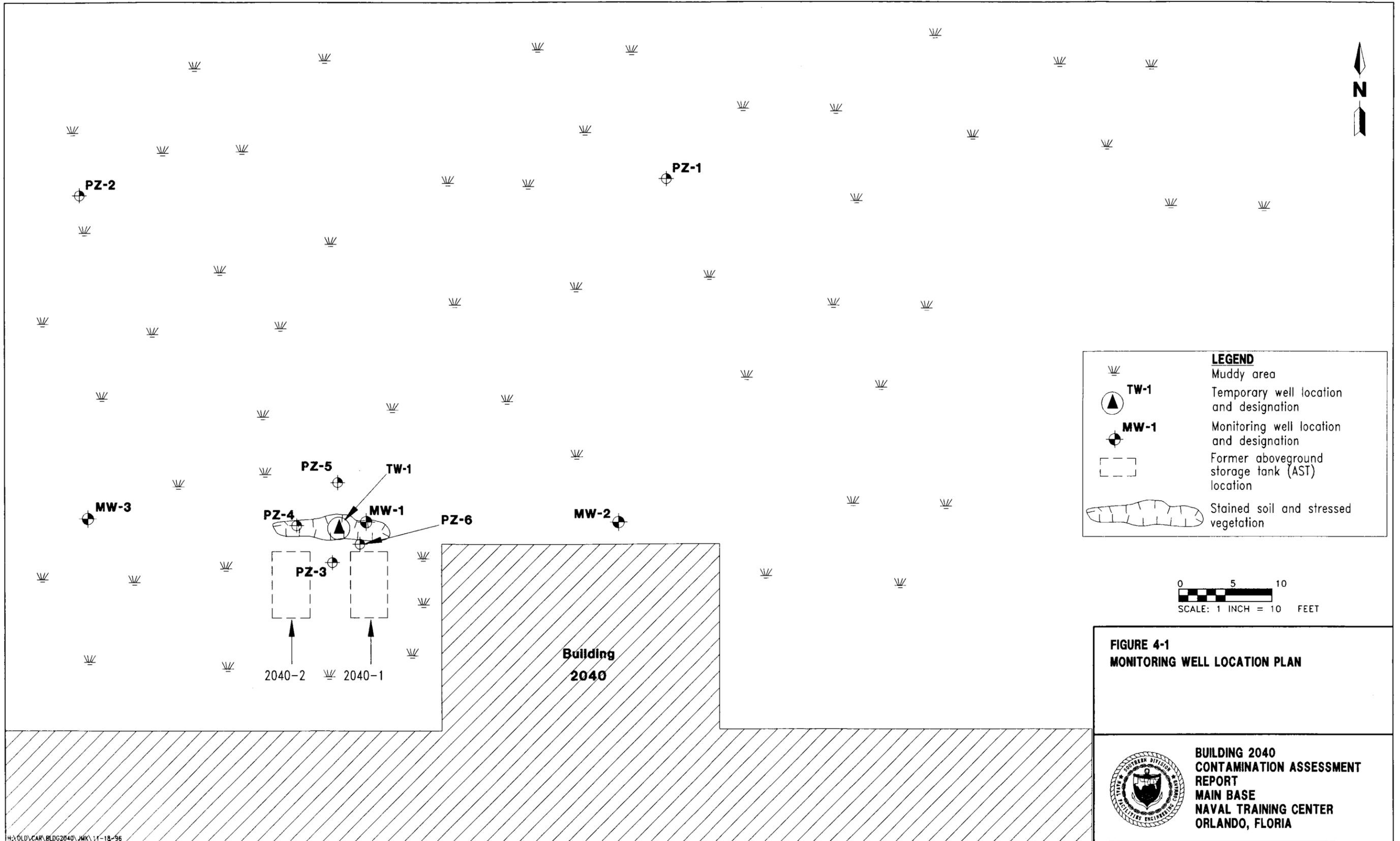
**Table 4-1  
Summary of Organic Vapor Analyses,  
August and September 1996**

Contamination Assessment Report  
Building 2040, Main Base  
Naval Training Center  
Orlando, Florida

Soil Boring Designation	Sample Depth (feet bls)	Unfiltered (ppm)	Filtered (ppm)	Total Hydrocarbons (ppm)	Physical Observations
HA-1	0-1	<1	<1	<1	No staining; no petroleum odor.
	<sup>1</sup> 1-3	18	14	4	No staining; no petroleum odor.
HA-2	0-1	6	2	4	No staining; no petroleum odor.
	1-3	28	24	4	No staining; no petroleum odor.
HA-3	0-1	5	5	0	No staining; no petroleum odor.
	1-3	20	18	2	No staining; no petroleum odor.
HA-4	0-1	60	8	52	Staining; petroleum odor.
	1-3	12	5	7	No staining; no petroleum odor.
HA-5	0-1	3	1	2	No staining; no petroleum odor.
	1-3	10	10	<1	No staining; no petroleum odor.
HA-6	0-1	6	3	3	No staining; no petroleum odor.
	1-3	18	9	9	No staining; no petroleum odor.
HA-7	0-1	<1	0	<1	No staining; no petroleum odor.
	1-3	1	1	<1	No staining; no petroleum odor.
HA-8	0-1	<1	<1	<1	No staining; no petroleum odor.
	1-3	<1	<1	<1	No staining; no petroleum odor.

<sup>1</sup> Water table encountered at approximately 1.5 feet bls.

Notes: bls = below land surface.  
ppm = parts per million.  
<1 = nondetectable limit for organic vapor analyzer.



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

Contamination Assessment Report  
Building 2040, Main Base  
Naval Training Center  
Orlando, Florida

Parameter	FAC Chapter 62-770 Target Cleanup Levels	Monitoring Well Number				
		1/11/96 TW-1	7/18/96			
			MW-1	MW-2	MW-3	Rinsate Blank
Benzene	1	5.2	<1	<1	<1	<1
Toluene	NA	36	<1	<1	<1	<1
Ethylbenzene	NA	18	<1	<1	<1	<1
Xylenes	NA	150	<1	<1	<1	<1
<b>Total VOAs</b>	<b>50</b>	<b>209.2</b>	<b>&lt;1</b>	<b>&lt;1</b>	<b>&lt;1</b>	<b>&lt;1</b>
MTBE	50	<1	<1	<1	<1	<1
EDB	0.02	NA	<0.02	<0.02	<0.02	<0.02
Total Lead	50	NA	17.9	20.3	19.8	<3
TRPH	5	NA	0.96	0.76	<0.05	<0.05
Naphthalenes (total)	100	<6	<6	6	6	<6
Acenaphthylene	<2	<2	<2	<2	<2	<2
Fluoranthrene	<2	<2	<2	<2	<2	<2
Phenanthrene	<2	<2	<2	<2	<2	<2
Pyrene	<2	<2	<2	<2	<2	<2

Notes: FAC = Florida Administrative Code.  
 < = less than.  
 NA = not analyzed.  
 Total VOAs = sum of the concentrations of benzene, toluene, ethylbenzene, and xylenes.  
 VOA = volatile organic compounds.  
 MTBE = Methyl tert-butyl ether.  
 EDB = ethylene dibromide.  
 TRPH = total recoverable petroleum hydrocarbons.

## 5.0 SOURCE OF HYDROCARBONS

5.1 HYDROCARBON TYPE. The hydrocarbon type formerly stored in the two ASTs at building 2040 is heating fuel. The laboratory analytical data and the type of product previously stored onsite support this assessment. Relatively low concentrations of PAHs are common for petroleum fuels with a low water solubility, such as heating fuel.

5.2 SOURCE OF HYDROCARBON PLUME. The suspected source of the small amounts of hydrocarbons in the groundwater is the former ASTs. Petroleum discharges could be attributed to overfill and/or overflows while filling the ASTs.

5.3 MECHANISM OF TRANSPORT. None of the drainage ditches or utility lines near the source of petroleum contamination appears to influence groundwater flow in the surficial aquifer of the study area.

## 6.0 RECOMMENDATIONS

Based on the results of this investigation, ABB-ES recommends that the petroleum-impacted soil found in the former AST area be excavated and any free product that is encountered should be removed by pumping and be properly disposed of. Following this excavation, and any pumping that is necessary, temporary well TW-1 should be replaced in order to determine that the free product has been removed from the area. All wells at the site should also be resampled in a final effort to determine whether or not the petroleum contamination has been corrected.

7.0 PROFESSIONAL REVIEW CERTIFICATION

This document, *Contamination Assessment Report, Building 2040, Main Base, 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 CAR Addendum was developed for the Building 2040 site at the Main Base, NTC, Orlando, in Orlando, Florida, and should not be construed to apply to any other site.



Manuel Alonso  
Professional Geologist  
P.G. No. 0001256

12-06-96

Date

## REFERENCES

ABB Environmental Services, Inc., 1996, Contamination Assessment Report, Main Base, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina, March.

Florida Department of Environmental Protection (FDEP), 1989, Guidelines for the Preparation of Contamination Assessment Reports for Petroleum Contaminated Sites, October.

FEDP, 1994, Guidelines for Assessment and Remediation of Petroleum Contaminated Soil, May.

**APPENDIX A**  
**SITE PHOTOGRAPHS**



Photograph 1: Facing South, view of Building 2040. Temporary monitoring well TW-1 in the foreground.



Photograph 2: Facing West, Building 2040 Site. MW-1, TW-1, and piezometers in the foreground.



Photograph 3: Facing East, former AST area at Building 2040.



Photograph 4: Facing North, stressed vegetation at former AST area at Building 2040.

**APPENDIX B**  
**TANK CLOSURE ASSESSMENT REPORTS**

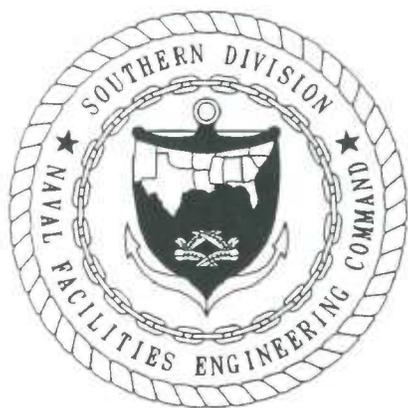


**TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-1  
MAIN BASE**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**UNIT IDENTIFICATION CODE: N65928  
CONTRACT NO.: N62467-89-D-0317/107**

**MAY 1996**



**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORTH CHARLESTON, SOUTH CAROLINA  
29419-9010**

**TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-1  
MAIN BASE**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**Unit Identification Code: N65928**

**Contract No. N62467-89-D-0317/107**

**Prepared by:**

**ABB Environmental Services, Inc.  
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**

**May 1996**



CERTIFICATION OF TECHNICAL  
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE:           May 9, 1996          

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)

TABLE OF CONTENTS

Tank Closure Assessment Report  
Building 2040-1  
Naval Training Center  
Orlando, Florida

<u>Chapter</u>	<u>Title</u>	<u>Page No.</u>
1.0	Facility . . . . .	1
2.0	Operator . . . . .	1
3.0	Site Location . . . . .	1
4.0	Date of Closure . . . . .	1
5.0	Tank Status . . . . .	1
6.0	Tank Contents . . . . .	1
7.0	Tank Condition . . . . .	1
8.0	Tank Area . . . . .	1
9.0	Soil Screening . . . . .	4
10.0	Groundwater Analysis . . . . .	4
11.0	Conclusions . . . . .	4
12.0	Recommendations . . . . .	4
13.0	Closure Assessment . . . . .	4
14.0	Project Manager . . . . .	6
15.0	Project Number . . . . .	6
16.0	Report Date . . . . .	6

ATTACHMENTS

- Attachment A: Photographs
- Attachment B: Tank Decontamination and Recycling Certification
- Attachment C: AST Installation and Removal Form
- Attachment D: Groundwater Laboratory Analytical Reports

LIST OF FIGURES

Tank Closure Assessment Report  
Building 2040-1  
Naval Training Center  
Orlando, Florida

<u>Figure</u>	<u>Title</u>	<u>Page No.</u>
1	Site Vicinity Map . . . . .	2
2	Site Plan . . . . .	3

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page No.</u>
1	Summary of Organic Vapor Analyses, January 5, 1996 . . . . .	5

## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
FAC	Florida Administrative Code
$\mu\text{g}/\ell$	micrograms per liter
OVA	organic vapor analysis
USEPA	U.S. Environmental Protection Agency

TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-1

**1.0 Facility**

Building 2040-1  
Naval Training Center  
Orlando, Orange County, Florida

**2.0 Operator**

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

**3.0 Site Location**

See Figure 1.

**4.0 Date of Closure**

December 11, 1995

**5.0 Tank Status**

A 650-gallon aboveground storage tank (AST) was removed by Florida Petroleum Services, Inc. (State Certificate #PCC045046). The AST was removed from the northside of the building as depicted on Figure 2. Photographs of the excavation are provided in Attachment A. The AST was cleaned by Florida Petroleum Services, Inc., and transported to Aaron Scrap Metals for disposal. The pipes associated with the AST were abandoned in place and capped. Copies of both the Decontamination Certificate and the Certificate of Recycling for the AST are included in Attachment B. The AST Installation and Removal Form is included in Attachment C.

**6.0 Tank Contents**

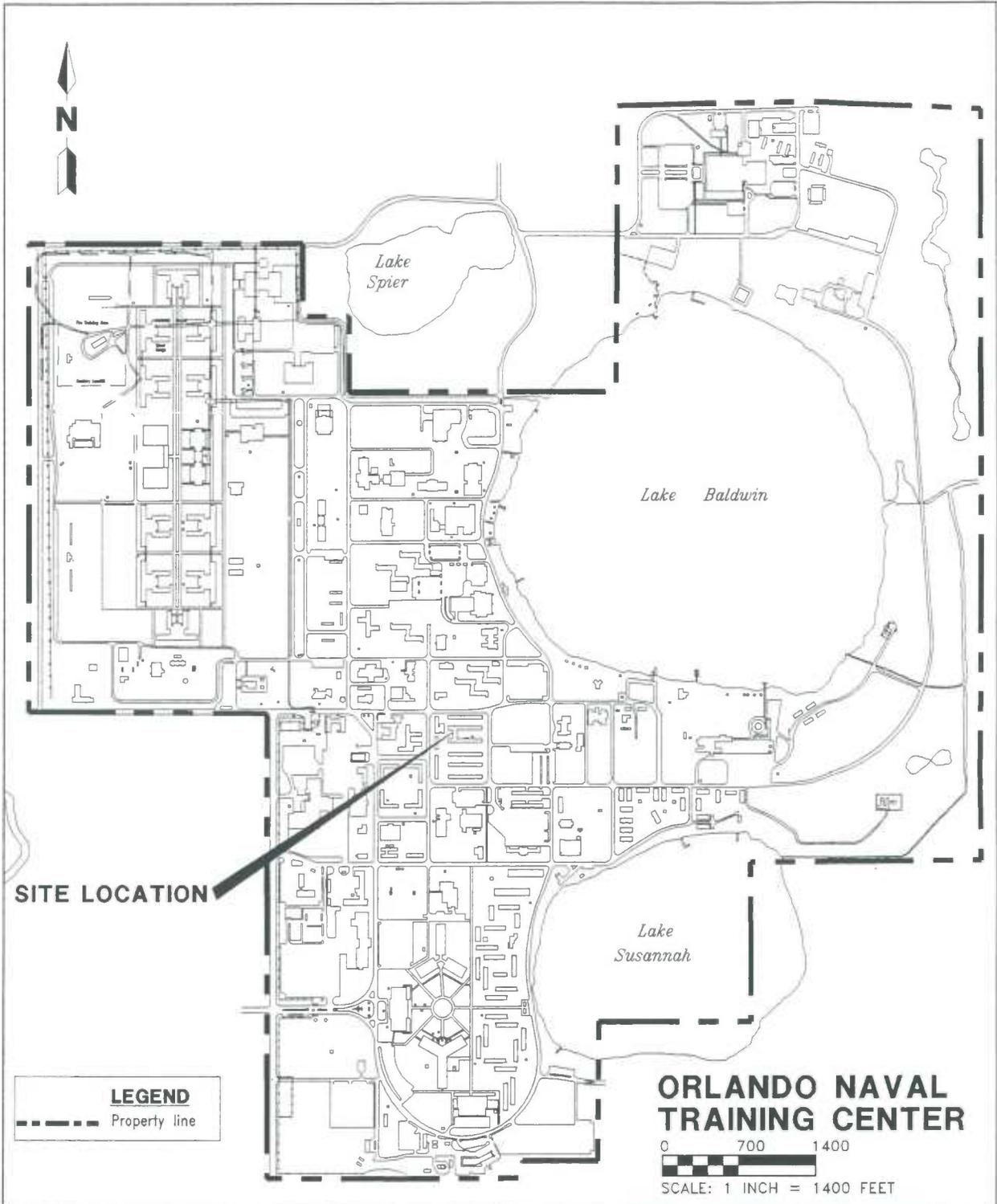
The AST contained heating fuel used for heating on the premises (non-regulated per Chapter 62-762, Florida Administrative Code [FAC]).

**7.0 Tank Condition**

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

**8.0 Tank Area**

The tank area is approximately 4 feet wide by 7 feet long (Figure 2).

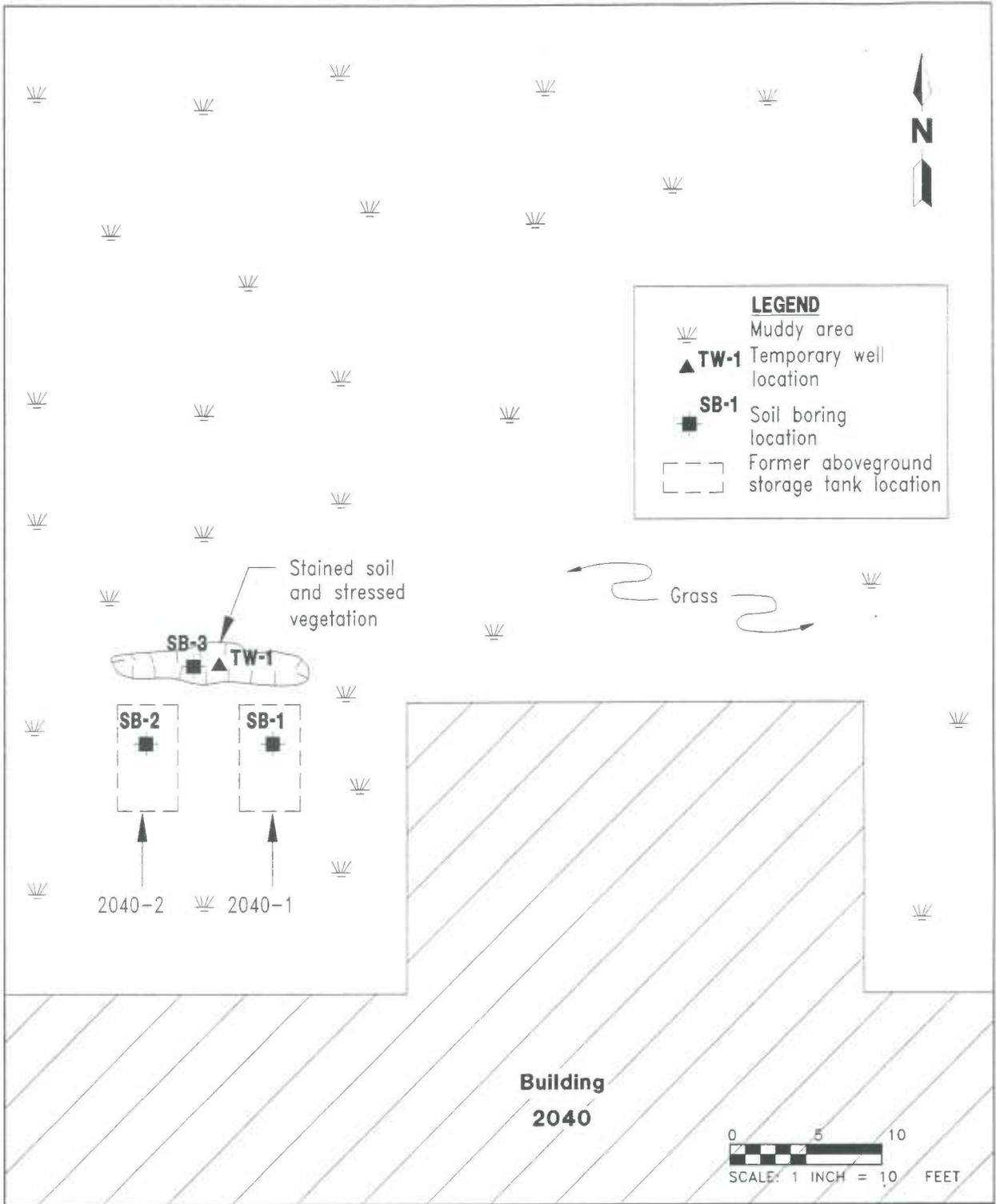


**FIGURE 1**  
**SITE VICINITY MAP**



**TANK CLOSURE ASSESSMENT  
REPORT, BASE REALIGNMENT AND  
CLOSURE, TANK MANAGEMENT  
PLAN, BUILDING 2040-1  
NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

H:\OLD\TANK-NTC\NAB-GLC\05-06-96



**FIGURE 2  
SITE PLAN**



**TANK CLOSURE ASSESSMENT  
REPORT, BASE REALIGNMENT  
AND CLOSURE, TANK MANAGEMENT  
PLAN, BUILDING 2040-1  
NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

H:\OLD\BRAC\TCAR\BDG2040\PS-GLC\05-06-96

## 9.0 Soil Screening

- Screening of the soil samples collected from three soil borings was performed by visual inspection of the soil and by organic vapor analyzer (OVA). The soil samples collected were SB-1, directly underneath the AST (2040-1); SB-2, directly underneath the AST (2040-2); and SB-3, north of the tank area (Figure 2). Soil samples were collected at discrete intervals until reaching 2.0 feet below land surface (bls). Groundwater was encountered at 1.5 feet bls. Figure 2 shows the location where the soil samples were collected.
- Soil screening was conducted following criteria for headspace method in Chapter 62-770, FAC, and ABB Environmental Services, Inc.'s (ABB-ES's), Comprehensive Quality Assurance Plan. The OVA data have been summarized in Table 1.

## 10.0 Groundwater Analysis

A temporary well (TW-1) was placed north of the tank area within an area of stained soil and stressed vegetation. A groundwater sample was collected January 11, 1996, for analysis using U.S. Environmental Protection Agency (USEPA) Method 602 and 610. On January 11, 1996, groundwater samples were transported to Quality Analytical Laboratories, Inc., in Montgomery, Alabama. The laboratory's analytical results indicated that a petroleum discharge had impacted the groundwater. Total volatile organic aromatics (VOA) (the sum of benzene, toluene, ethylbenzene, and xylenes) were found at 209.2 micrograms per liter ( $\mu\text{g}/\ell$ ), which is above the State of Florida's target cleanup level of 50  $\mu\text{g}/\ell$  for total VOA. The benzene component of BTEX was reported at 5.2  $\mu\text{g}/\ell$ . Due to the dilution factor of 100 for the USEPA Method 610 analysis, the laboratory was unable to quantify the results. Elevated levels of 2-Methylnaphthalene and 1-Methylnaphalene were found at 800  $\mu\text{g}/\ell$ . The water table was encountered at approximately 2.00 feet bls during the sampling of TW-1; free product was identified during sampling of TW-1. Copies of the laboratory analytical report and chain-of-custody records are included in Attachment D.

## 11.0 Conclusions

ABB-ES has screened the soil from the AST area and found signs of petroleum-impacted soil. Laboratory analytical results show evidence of petroleum impact to the groundwater. Total VOAs and total naphthalenes were above the State of Florida's target cleanup levels. Therefore, in lieu of the State's guidelines, the soil and groundwater contamination must be assessed.

## 12.0 Recommendations

Based on the results of this investigation, ABB-ES recommends that a contamination assessment be conducted to determine the petroleum impact on the soil and groundwater.

## 13.0 Closure Assessment

Closure assessment was performed by ABB-ES.

**Table 1**  
**Summary of Organic Vapor Analyses, January 5, 1996**

Tank Closure Assessment Report  
 Building 2040-1  
 Naval Training Center  
 Orlando, Florida

Hand Auger Sample No.	Depth (feet)	Unfiltered (ppm)	Filtered (ppm)	Total Hydrocarbons (ppm)	Soil Description and Comments
SB-1	0-2	<1	<1	<1	Very fine-grained, highly organic black-gray sand; no odor, under center of AST (2040-1).
SB-2	0-2	360	250	110	Very fine-grained, highly organic black-gray sand; moderate petroleum odor, under center of AST (2040-2).
SB-3	0-2	700	60	640	Very fine-grained, highly organic black-gray sand; weak petroleum odor, north-west of AST (2040-1).  Water table found at 1.5 feet bls.
<p>Notes: Readings for unfiltered samples are total hydrocarbon readings including methane; readings for filtered samples are methane only.</p> <p>ppm = parts per million.                      &lt;1 = nondetectable limit for organic vapor analyzer.                      AST = aboveground storage tank.                      bls = below land surface.</p>					

14.0 Project Manager

John Kaiser

15.0 Project Number

08519

16.0 Report Date

May 9, 1996

**ATTACHMENT A**  
**PHOTOGRAPHS**



Photograph 1: View of AST 2040-1 (east) and 2040-2 (west), prior to removal, facing southeast.



Photograph 2: Removal of AST 2040-2 (west) with respect to AST 2040-1 (east), facing southeast.



Photograph 3: Removal of AST 2040-1 (east), facing southeast.



Photograph 4: View of former AST locations at Building 2040-1, facing east.

**ATTACHMENT B**

**TANK DECONTAMINATION AND RECYCLING CERTIFICATION**

DECONTAMINATION CERTIFICATE

12-14-95

444 825  
444 826

1. Seller hereby sells or otherwise conveys to Commercial Metals Company the following material in return for valuable consideration, the receipt and sufficiency of which is hereby acknowledged:

- 1- 650 Gallon Tank 4' x 7' T-2040 West
- 1- 650 Gallon Tank 4' x 7' T-2040 East
- 1- 500 Gallon Tank 4' x 6' T-2516-1
- 1- 500 Gallon Tank 4' x 6' T-2516-2

*Hauled from Navy Base*

2. Notwithstanding any other warranty or limitation of warranty herein or otherwise, Seller warrants and represents to Commercial Metals Company that the materials delivered hereunder do not contain any "hazardous substance" (which shall be defined as those substances included in Sec. 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C., Sec. 9601(14), and those substances that are toxic, ignitable, corrosive, and/or reactive, as those terms are defined at 40 CFR 261, Subpart C), except those "hazardous substances" which are integral constituents of the metallic fraction of the scrap metal or which are contained in the electrolytic fluid in a spent lead-acid battery. Seller will indemnify, defend, and hold Commercial Metals Company harmless from any and all claims, demands and liabilities, including reasonable attorney's fees, resulting in whole or in part from a breach of the foregoing warranty. "Seller" shall be defined herein as any person, corporation, partnership or other entity that sells, transfers, gives, or otherwise conveys materials to Commercial Metals Company.

SELLER:

Fla. Petroleum Serv. Inc.  
2078 S. 441 Apopka.  
 Name: Tom's Trucking  
 Title: \_\_\_\_\_

COMMERCIAL METALS COMPANY

\_\_\_\_\_  
 Name: Susan Brown  
 Title: Scale person

No. 444826

DATE 12-14-95

**Aaron Scrap Metals**  
A Division of  
**Commercial Metals Company**

P.O. Box 607066  
Orlando, FL 32860-7066  
Phone: 407-293-6584  
FAX: 407-295-4908

3000 Gamson Road  
Orange County Industrial Park  
Apopka, FL 32703

CUSTOMER Iron Petroleum  
ADDRESS \_\_\_\_\_  
MATERIAL \_\_\_\_\_

VERIFIED BY	REFERENCE	DRIVER	
		ON	OFF
	7611		
WEIGHER	CHECK NO.	PAID BY	
		CHECK	CASH
CASHIER	REMARKS		

CUSTOMER

LOOP # 1:29PM12-14-95 26020 lb  
LOOP # 1:30PM12-14-95 13140 lb

Gross Tare

Net @ \_\_\_\_\_ Per \_\_\_\_\_

SIGNATURE	VEHICLE LIC.#	STATE
<u>[Signature]</u>	<u>1A5071076</u>	<u>FL</u>

\$ 49

Vendor warrants full title to or authority to sell listed materials; represents that listed materials are not, and are free from all, hazardous wastes (as defined in Federal or state regulations); and acknowledges receipt of stated funds.

No. 444825

DATE 12-14-95

**Aaron Scrap Metals**  
A Division of  
**Commercial Metals Company**

P.O. Box 607066  
Orlando, FL 32860-7066  
Phone: 407-293-6584  
FAX: 407-295-4908

3000 Gamson Road  
Orange County Industrial Park  
Apopka, FL 32703

CUSTOMER Iron Petroleum  
ADDRESS \_\_\_\_\_  
MATERIAL ILU

VERIFIED BY	REFERENCE	DRIVER	
		ON	OFF
	7611		
WEIGHER	CHECK NO.	PAID BY	
		CHECK	CASH
CASHIER	REMARKS		
	<u>TRUCK</u>		

CUSTOMER

LOOP # 1:18PM12-14-95 28100 lb  
LOOP # 1:18PM12-14-95 14520 lb

Gross Tare

Net @ 1.25 Per 600

SIGNATURE	VEHICLE LIC.#	STATE
<u>[Signature]</u>	<u>1A5071076</u>	<u>FL</u>

\$ 430

Vendor warrants full title to or authority to sell listed materials; represents that listed materials are not, and are free from all, hazardous wastes (as defined in Federal or state regulations); and acknowledges receipt of stated funds.

Items # 56  
2040-0  
2040-E  
2516-1  
2516-2

**ATTACHMENT C**  
**AST INSTALLATION AND REMOVAL FORM**

# Florida Department of Environmental Regulation

Twin Towers Office Bldg. \* 2600 Blair Stone Road \* Tallahassee, Florida 32399-2400

DER Form #	17-761.900(5)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application #	(Filled in by DER)

## 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

- DER Facility Identification No.: \_\_\_\_\_
- Facility Name: NAVAL TRAINING CENTER ( CODE 010E ) Telephone : 407-646-4663
- Street Address (physical location): NAVAL TRAINING CENTER ORLANDO , FLA  
SITE #2040W,2040E ( 2 ea 650 U/G ) SITE #2516-1,2516-2 ( 2 ea 500 gal U/G)
- Owner Name: Commanding Officer, Naval Training Center(Code 010E) Telephone : 407-646-4663
- Owner Address: 1350 Grace Hopper Ave.
- Number of Tanks: a: Installed at this time \_\_\_\_\_ b: Removed at this time FOUR
- Tank(s) Manufactured by: UNKNOWN
- Date Work Initiated: 11/1/95 9. Dated Work Completed: 12/14/95

### Underground Pollutant Tank Installation Checklist

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

- The Tanks and piping are corrosion resistant and approved for use by State and Federal Laws
- 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.
- Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the Manufacturers' specifications.
- 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.
- Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87.
- Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.)
- Spill and overfill protection devices installed in accordance with Section 17-761.500, F.A.C.
- 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

- 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.

DER Form #	17-761.900(5)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application #	 (Filled in by DER)

## Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Regulation; that to the best of my knowledge and belief, the tank installation, replacement or removal at this facility was conducted in accordance with Chapter 489 and Section 376.303, Florida Statutes and Chapter 17-761, Florida Administrative Code and its adopted reference sources from publications and standards of the National Fire Protection Association (NFPA), the American Petroleum Institute (API), the National Association of Corrosion Engineers (NACE), American society of Testing and Materials (ASTM); Petroleum Equipment Institute (PEI); Steel Tank Institute (STI); Underwriters Laboratory (UL); and the tank and integral piping manufacturers' specifications; and that the operations on the checklist were performed accordingly.

**Florida Petroleum Services, Inc.**  
**2078 S Orange Blossom Tr.**  
**Apopka, Fla. 32703**

**PC - C045046**

(Type or Print)

PSSSC Number

Certified Pollutant Tank Contractor Name  
Pollutant Storage System Specialty Contractor License Number (PSSSC)

*Kenneth J. Lavelle*

*12-14-95*

Certified Tank Contractor Signature

Date

*John Thompson*

*12-14-95*

(Type or Print)

Field Supervisor Name

Date

*John Thompson*

Field Supervisor Signature

Date

The owner or operator of the facility must register the tanks with the Department at least 10 days before the installation. The installer must submit this form no more than 30 days after the completion of installation to the department of Environmental Regulation at the address printed at the top of page one.

**ATTACHMENT D**

**GROUNDWATER LABORATORY ANALYTICAL REPORTS**

Client: QAL, Inc./LMG  
Project: NTC Orlando  
Client Sample ID: 042GT101  
Sample Matrix: Water  
Dilution Factor: 1.0

Lab Sample ID: M9937005  
Date Sampled: 01/11/96  
Date Received: 01/13/96  
Date Extracted: N/A  
Date Analyzed: 01/17/96

<u>Compound</u>	<u>Reporting Limit</u>	<u>Sample Result</u>	<u>Units</u>
tert-Butyl methyl ether	1.0	U	ug/L
Benzene	1.0	5.2	ug/L
Toluene	1.0	36	ug/L
Chlorobenzene	1.0	U	ug/L
Ethylbenzene	1.0	18	ug/L
Xylenes (total)	1.0	150	ug/L
1,3-Dichlorobenzene	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	ug/L
Fluorobenzene-SS		83	% rec.

U = Not detected above the reporting limit.  
SS = Surrogate Standard reported as percent recovery.

Comments:

Approved by: Brian Goer

FORM I

Bldg. No. 2040

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: OAL MONTGOMERY  
Sample ID: M9937005  
Client Sample ID: 042GT101

Concentration: LOW  
Sample Matrix: WATER  
Percent Moisture: \_\_\_\_\_

Date Extracted: 01/15/96  
Date Analyzed: 01/18/96  
Dilution Factor: 100

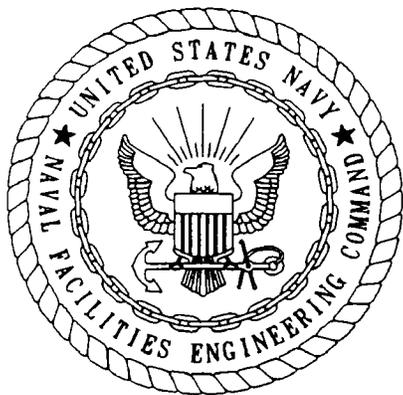
PNA COMPOUNDS

<u>CAS Number</u>		<u>ug/L</u>	
91-20-3	Naphthalene . . . . .	200	U
91-57-6	2-Methylnaphthalene . . .	800	UI
90-12-0	1-Methylnaphthalene . . .	800	UI
208-96-8	Acenaphthylene . . . . .	200	U
83-32-9	Acenaphthene . . . . .	200	U
86-73-7	Fluorene. . . . .	200	U
85-01-8	Phenanthrene. . . . .	200	U
120-12-7	Anthracene. . . . .	200	U
206-44-0	Fluoranthene. . . . .	200	U
129-00-0	Pyrene. . . . .	200	U
56-55-3	Benzo (a) anthracene. . . .	200	U
218-01-9	Chrysene. . . . .	200	U
205-99-2	Benzo (b) fluoranthene . .	200	U
207-08-9	Benzo (k) fluoranthene . .	200	U
50-32-8	Benzo (a) pyrene. . . . .	200	U
193-39-5	Indeno (1,2,3-cd) pyrene. .	200	U
53-70-3	Dibenzo (a,h) anthracene. .	200	U
191-24-2	Benzo (g,h,i) perylene. . .	200	U
	Terphenyl-d14 - SS	00	D

- U - Analyzed for but not detected.
- B - Detected in QC blank.
- J - Detected, concentration estimated.
- SS - Surrogate Standard reported as percent recovery.

Comments: D - Surrogate recovery not determined due to dilution requirements.



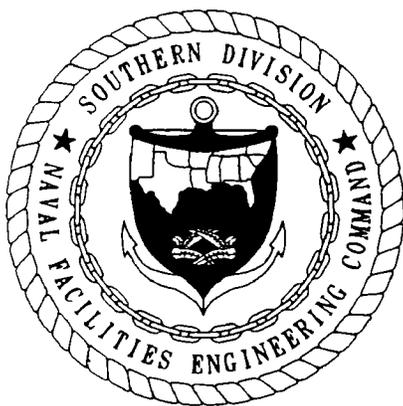


**TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-2  
MAIN BASE**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**UNIT IDENTIFICATION CODE: N65928  
CONTRACT NO.: N62467-89-D-0317/107**

**MAY 1996**



**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORTH CHARLESTON, SOUTH CAROLINA  
29419-9010**

**TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-2  
MAIN BASE**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**Unit Identification Code: N65928**

**Contract No. N62467-89-D-0317/107**

**Prepared by:**

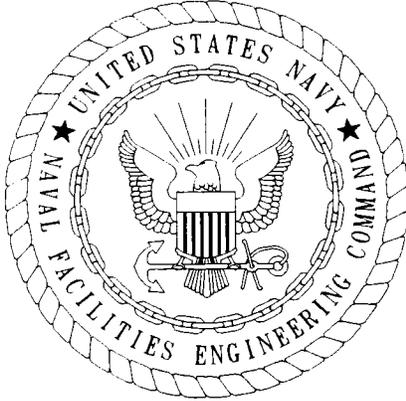
**ABB Environmental Services, Inc.  
2590 Executive Center Circle, East  
Tallahassee, Florida 32301**

**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**

**May 1996**



CERTIFICATION OF TECHNICAL  
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: May 9, 1996

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

NAME AND TITLE OF CERTIFYING OFFICIAL: Manuel Alonso  
Project Technical Lead

(DFAR 252.227-7036)

**TABLE OF CONTENTS**

Tank Closure Assessment Report  
Building 2040-2  
Naval Training Center  
Orlando, Florida

<b><u>Chapter</u></b>	<b><u>Title</u></b>	<b><u>Page No.</u></b>
1.0	Facility . . . . .	1
2.0	Operator . . . . .	1
3.0	Site Location . . . . .	1
4.0	Date of Closure . . . . .	1
5.0	Tank Type and Status . . . . .	1
6.0	Tank Content . . . . .	1
7.0	Tank Condition . . . . .	1
8.0	Tank Area . . . . .	1
9.0	Soil Screening . . . . .	4
10.0	Groundwater Analysis . . . . .	4
11.0	Conclusions . . . . .	4
12.0	Recommendations . . . . .	4
13.0	Closure Assessment . . . . .	4
14.0	Project Manager . . . . .	6
15.0	Project Number . . . . .	6
16.0	Report Date . . . . .	6

REFERENCES

- Attachment A: Photographs
- Attachment B: Tank Decontamination and Recycling Certification
- Attachment C: AST Installation and Removal Form
- Attachment D: Groundwater Laboratory Analytical Reports

LIST OF FIGURES

Tank Closure Assessment Report  
Building 2040-2  
Naval Training Center  
Orlando, Florida

<u>Figure</u>	<u>Title</u>	<u>Page No.</u>
1	Site Vicinity Map . . . . .	2
2	Site Plan . . . . .	3

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page No.</u>
1	Summary of Organic Vapor Analyses, January 5, 1996 . . . . .	5

## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
FAC	Florida Administrative Code
$\mu\text{g}/\ell$	micrograms per liter
OVA	organic vapor analyzer
USEPA	U.S. Environmental Protection Agency
VOA	volatile organic aromatics

TANK CLOSURE ASSESSMENT REPORT  
BUILDING 2040-2

1.0 Facility

Building 2040-2  
Naval Training Center, Orlando  
Orlando, Orange County, Florida

2.0 Operator

Naval Training Center, Orlando  
1350 Grace Hopper Avenue  
Suite 010E  
Orlando, FL 32813-8405

3.0 Site Location

See Figure 1.

4.0 Date of Closure

December 11, 1995

5.0 Tank Type and Status

A 650-gallon aboveground storage tank (AST) was removed by Florida Petroleum Services, Inc. (State Certificate #PCC045046). The AST was removed from the north side of the building as depicted on Figure 2. Photographs of the excavation are provided in Attachment A. The AST was cleaned by Florida Petroleum Services, Inc., and transported to Aaron Scrap Metals for disposal. The pipes associated with the AST were abandoned in place and capped. Copies of both the Decontamination Certificate and the Certificate of Recycling for the AST are included in Attachment B. The AST Installation and Removal Form is included in Attachment C.

6.0 Tank Content

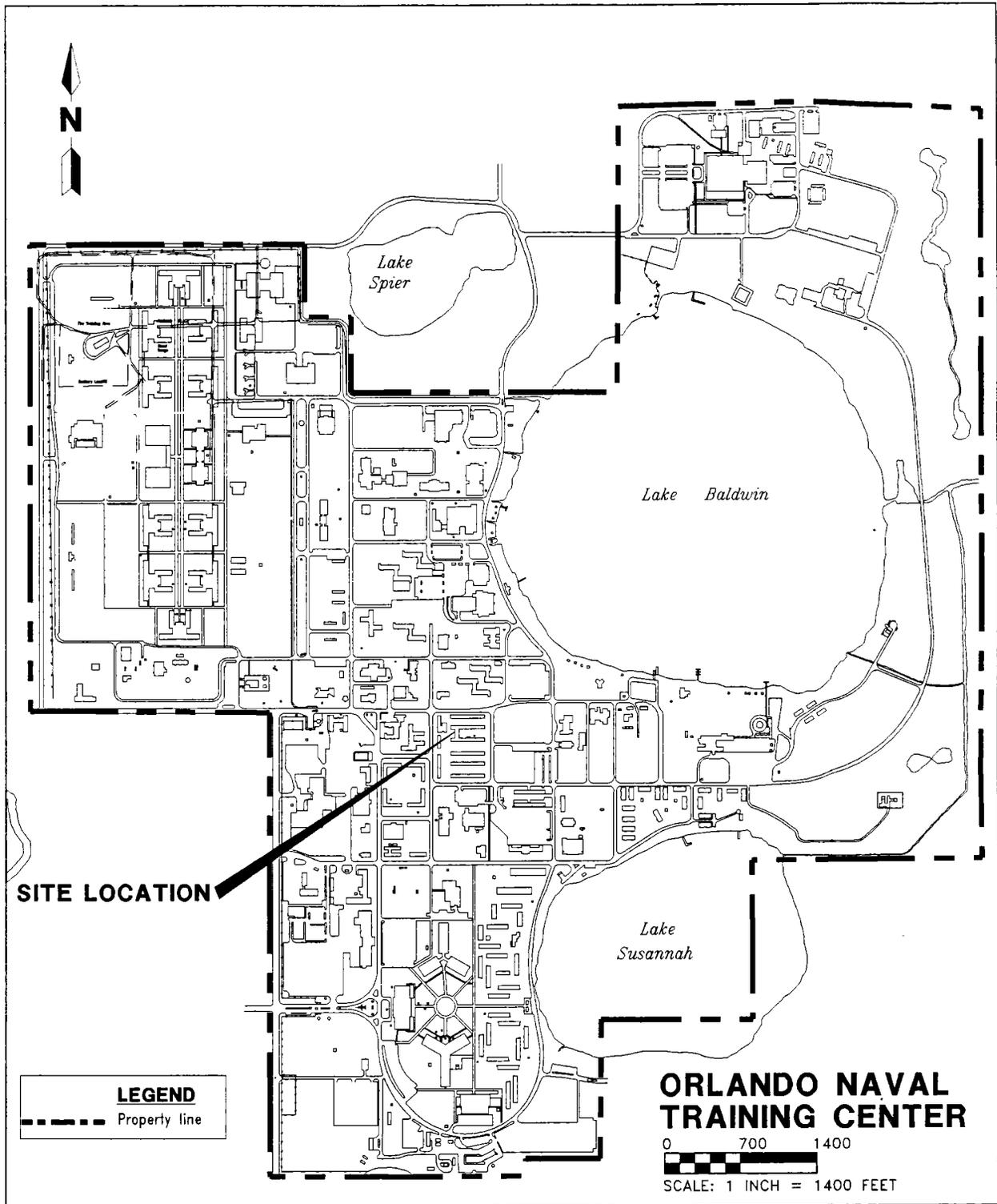
The AST contained heating fuel used for heating on the premises (non-regulated per Chapter 62-762, Florida Administrative Code [FAC]).

7.0 Tank Condition

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

8.0 Tank Area

The tank area is approximately 4 feet wide by 7 feet long (Figure 2).

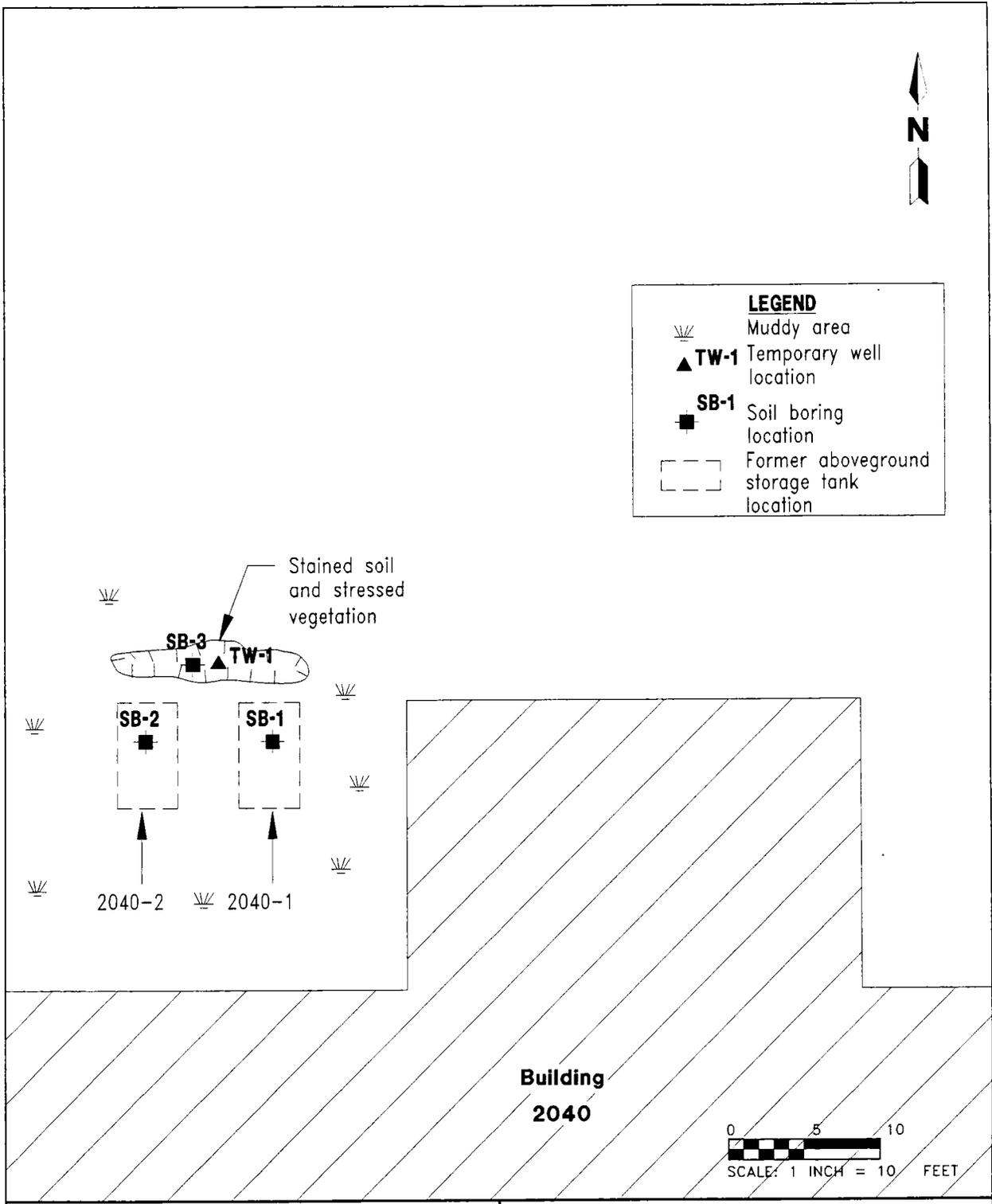


**FIGURE 1**  
**SITE VICINITY MAP**



**TANK CLOSURE ASSESSMENT  
REPORT, BASE REALIGNMENT AND  
CLOSURE, TANK MANAGEMENT  
PLAN, BUILDING 2040-2  
NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

H:\OLD\TANK-NTC\NAB-GLC-PS\05-03-96



**FIGURE 2  
SITE PLAN**



**TANK CLOSURE ASSESSMENT  
REPORT, BASE REALIGNMENT  
AND CLOSURE, TANK MANAGEMENT  
PLAN, BUILDING 2040-2  
NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

H:\OLD\BRAC\TCAR\BDC2040\PS\05-03-96

## 9.0 Soil Screening

- Screening of the soil samples collected from three soil borings was performed by visual inspection of the soil and by organic vapor analyzer (OVA). The soil samples collected were SB-1, directly underneath the AST (2040-1); SB-2, directly underneath the AST (2040-2); and SB-3, north of the tank area (Figure 2). Soil samples were collected at discrete intervals until reaching 2.0 feet below land surface (bls). Groundwater was encountered at 1.5 feet bls. (Figure 2 shows the location where the soil samples were collected).
- Soil screening was conducted following criteria for headspace method in Chapter 62-770, FAC, and ABB Environmental Services, Inc.'s (ABB-ES's), Comprehensive Quality Assurance Plan. The OVA data have been summarized in Table 1.

## 10.0 Groundwater Analysis

A temporary well (TW-1) was placed north of the tank area within an area of stained soil and stressed vegetation. A groundwater sample was collected January 11, 1996, for analysis using U.S. Environmental Protection Agency (USEPA) Method 602 and 610. On January 11, 1996, groundwater samples were transported to Quality Analytical Laboratories, Inc., in Montgomery, Alabama. The laboratory's analytical results indicated that a petroleum discharge had impacted the groundwater. Total volatile organic aromatics (VOA) (the sum of benzene, toluene, ethylbenzene, and xylenes) were found at 209.2 micrograms per liter ( $\mu\text{g}/\ell$ ), which is above the State of Florida's target cleanup level of 50  $\mu\text{g}/\ell$  for total VOA. Benzene was reported at 5.2  $\mu\text{g}/\ell$ . Due to the dilution factor of 100 for the USEPA Method 610 analysis, the laboratory was unable to quantify the results. Elevated levels of 2-Methylnaphthalene and 1-Methylnaphthalene were found at 800  $\mu\text{g}/\ell$ . The water table was encountered at approximately 2.00 feet bls during the sampling of TW-1; free product was also identified during sampling of TW-1. Copies of both the laboratory analytical reports and chain-of-custody records are included in Attachment D.

## 11.0 Conclusions

ABB-ES has screened the soil from the AST area and found signs of petroleum-impacted soil. Laboratory analytical results show evidence of petroleum impact to the groundwater. Total VOAs and total naphthalenes were above the State of Florida's target cleanup levels. Therefore, in lieu of the State's guidelines, the soil and groundwater contamination must be assessed.

## 12.0 Recommendations

Based on the results of this investigation, ABB-ES recommends that a contamination assessment be conducted to determine the petroleum impact on the soil and groundwater.

## 13.0 Closure Assessment

Closure assessment was performed by ABB-ES.

**Table 1  
Summary of Organic Vapor Analyses, January 5, 1996**

Tank Closure Assessment Report  
Building 2040-2  
Naval Training Center  
Orlando, Florida

Hand Auger Sample No.	Depth (feet)	Unfiltered (ppm)	Filtered (ppm)	Total Hydrocarbons (ppm)	Soil Description and Comments
SB-1	0-2	< 1	< 1	< 1	Very fine-grained, highly organic black-gray sand; no odor, under center of AST (2040-1).
SB-2	0-2	360	250	110	Very fine-grained, highly organic black-gray sand; moderate petroleum odor, under center of AST (2040-2).
SB-3	0-2	700	60	640	Very fine-grained, highly organic black-gray sand; weak petroleum odor, north-west of AST (2040-1).
Water table found at 1.5 feet bls.					

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

ppm = parts per million.

< 1 = nondetectable limit for organic vapor analyzer.

AST = aboveground storage tank.

bls = below land surface.

14.0 Project Manager

John Kaiser

15.0 Project Number

08519

16.0 Report Date

May 9, 1996

**ATTACHMENT A**  
**PHOTOGRAPHS**



Photograph 1: View of AST 2040-1 (east) and 2040-2 (west), prior to removal, facing southeast.



Photograph 2: Removal of AST 2040-2 (west) with respect to AST 2040-1 (east), facing southeast.



Photograph 3: Removal of AST 2040-1 (east), facing southeast.



Photograph 4: View of former AST locations at Building 2040-1, facing east.

**ATTACHMENT B**

**TANK DECONTAMINATION AND RECYCLING CERTIFICATION**

DECONTAMINATION CERTIFICATE

12-14-95

444 825  
444 826

1. Seller hereby sells or otherwise conveys to Commercial Metals Company the following material in return for valuable consideration, the receipt and sufficiency of which is hereby acknowledged:

- 1- 650 Gallon Tank 4' x 7' T-2040 West
- 1- 650 Gallon Tank 4' x 7' T-2040 East
- 1- 500 Gallon Tank 4' x 6' T-2516-1
- 1- 500 Gallon Tank 4' x 6' T-2516-2

*Hauled from Navy Base*

2. Notwithstanding any other warranty or limitation of warranty herein or otherwise, Seller warrants and represents to Commercial Metals Company that the materials delivered hereunder do not contain any "hazardous substance" (which shall be defined as those substances included in Sec. 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act, 42, U.S.C., Sec. 9601(14), and those substances that are toxic, ignitable, corrosive, and/or reactive, as those terms are defined at 40 CFR 261, Subpart C), except those "hazardous substances" which are integral constituents of the metallic fraction of the scrap metal or which are contained in the electrolytic fluid in a spent lead-acid battery. Seller will indemnify, defend, and hold Commercial Metals Company harmless from any and all claims, demands and liabilities, including reasonable attorney's fees, resulting in whole or in part from a breach of the foregoing warranty. "Seller" shall be defined herein as any person, corporation, partnership or other entity that sells, transfers, gives, or otherwise conveys materials to Commercial Metals Company.

SELLER:

Fla. Petroleum Serv. Inc.  
2078 S. 441 Apopka.  
 Name: Tom's Trucking  
 Title \_\_\_\_\_

COMMERCIAL METALS COMPANY

\_\_\_\_\_  
 Name Susan Brown  
 Title Scrap person

No. 444826

DATE 12-14-95



Aaron Scrap Metals

A Division of Commercial Metals Company

P.O. Box 607066  
Orlando, FL 32860-7066  
Phone: 407-293-6584  
FAX: 407-295-4908

3000 Gamson Road  
Orange County Industrial Park  
Apopka, FL 32703

CUSTOMER Eric Robinson

ADDRESS \_\_\_\_\_

MATERIAL \_\_\_\_\_

VERIFIED BY	REFERENCE	DRIVER	
		ON	OFF
	7614		
WEIGHER	CHECK NO.	PAID BY	
		CHECK	CASH
CASHIER	REMARKS		

CUSTOMER

LOOP # 1:29PM12-14-95 26020 lb  
LOOP # 1:30PM12-14-95 13140 lb

Gross Tare

Net @ \_\_\_\_\_ Per \_\_\_\_\_

SIGNATURE	VEHICLE LIC.#	STATE
<u>[Signature]</u>		

\$ 47

Vendor warrants full title to or authority to sell listed materials; represents that listed materials are not, and are free from all, hazardous wastes (as defined in Federal or state regulations); and acknowledges receipt of stated funds.

No. 444825

DATE 12-14-95



Aaron Scrap Metals

A Division of Commercial Metals Company

P.O. Box 607066  
Orlando, FL 32860-7066  
Phone: 407-293-6584  
FAX: 407-295-4908

3000 Gamson Road  
Orange County Industrial Park  
Apopka, FL 32703

CUSTOMER Eric Robinson

ADDRESS \_\_\_\_\_

MATERIAL 11.0

VERIFIED BY	REFERENCE	DRIVER	
		ON	OFF
	7614		
WEIGHER	CHECK NO.	PAID BY	
		CHECK	CASH
CASHIER	REMARKS		
	T-11-11K		

CUSTOMER

LOOP # 1:16PM12-14-95 26100 lb  
LOOP # 1:18PM12-14-95 14520 lb

Gross Tare

Net @ 1.35 Per 400

SIGNATURE	VEHICLE LIC.#	STATE
<u>[Signature]</u>		

\$ 4301

Vendor warrants full title to or authority to sell listed materials; represents that listed materials are not, and are free from all, hazardous wastes (as defined in Federal or state regulations); and acknowledges receipt of stated funds.

Trans. # 56  
2040-W  
2040-E  
2516-1  
2516-2

**ATTACHMENT C**

**AST INSTALLATION AND REMOVAL FORM**

# Florida Department of Environmental Regulation

Twin Towers Office Bldg. \* 2600 Blair Stone Road \* Tallahassee, Florida 32399-2400

DER Form #	17-761.900(5)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application #	(Filled in by DER)

## 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

- DER Facility Identification No.: \_\_\_\_\_
- Facility Name: NAVAL TRAINING CENTER ( CODE 010E ) Telephone: 407-646-4663
- Street Address (physical location): NAVAL TRAINING CENTER ORLANDO , FLA  
SITE #2040W,2040E ( 2 ea 650 U/G ) SITE #2516-1,2516-2 ( 2 ea 500 gal U/G )
- Owner Name: Commanding Officer, Naval Training Center(Code 010E) Telephone: 407-646-4663
- Owner Address: 1350 Grace Hopper Ave.
- Number of Tanks: a: Installed at this time \_\_\_\_\_ b: Removed at this time FOUR
- Tank(s) Manufactured by: UNKNOWN
- Date Work Initiated: 11/1/95 9. Dated Work Completed: 12/14/95

### Underground Pollutant Tank Installation Checklist

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

- The Tanks and piping are corrosion resistant and approved for use by State and Federal Laws
- 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.
- Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the Manufacturers' specifications.
- 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.
- Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87.
- Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.)
- Spill and overflow protection devices installed in accordance with Section 17-761.500, F.A.C.
- 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

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.

DER Form #	17-761.900(S)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application #	(Filled in by DER)

## Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Regulation; that to the best of my knowledge and belief, the tank installation, replacement or removal at this facility was conducted in accordance with Chapter 489 and Section 376.303, Florida Statutes and Chapter 17-761, Florida Administrative Code and its adopted reference sources from publications and standards of the National Fire Protection Association (NFPA), the American Petroleum Institute (API), the National Association of Corrosion Engineers (NACE), American society of Testing and Materials (ASTM); Petroleum Equipment Institute (PEI); Steel Tank Institute (STI); Underwriters Laboratory (UL); and the tank and integral piping manufacturers' specifications; and that the operations on the checklist were performed accordingly.

**Florida Petroleum Services, Inc.**  
**2078 S Orange Blossom Tr.**  
**Apopka, Fla. 32703**

(Type or Print)

Certified Pollutant Tank Contractor Name

Pollutant Storage System Specialty Contractor License Number (PSSSC)

**PC - C045046**

PSSSC Number



Certified Tank Contractor Signature

12-14-95

Date

JOHN THOMPSON

(Type or Print)

Field Supervisor Name

12-14-95

Date



Field Supervisor Signature

Date

The owner or operator of the facility must register the tanks with the Department at least 10 days before the installation. The installer must submit this form no more than 30 days after the completion of installation to the department of Environmental Regulation at the address printed at the top of page one.

**ATTACHMENT D**  
**GROUNDWATER LABORATORY ANALYTICAL REPORTS**

METHOD: 602 (MOD)  
PURGEABLE AROMATICS

Client: QAL, Inc./LMG  
Project: NTC Orlando  
Client Sample ID: 042GT101  
Sample Matrix: Water  
Dilution Factor: 1.0

Lab Sample ID: M9937005  
Date Sampled: 01/11/96  
Date Received: 01/13/96  
Date Extracted: N/A  
Date Analyzed: 01/17/96

<u>Compound</u>	<u>Reporting Limit</u>	<u>Sample Result</u>	<u>Units</u>
tert-Butyl methyl ether	1.0	U	ug/L
Benzene	1.0	5.2	ug/L
Toluene	1.0	36	ug/L
Chlorobenzene	1.0	U	ug/L
Ethylbenzene	1.0	18	ug/L
Xylenes (total)	1.0	150	ug/L
1,3-Dichlorobenzene	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	ug/L
Fluorobenzene-SS		83	% rec.

U = Not detected above the reporting limit.  
SS = Surrogate Standard reported as percent recovery.

Comments:

Approved by: Brian Green

FORM I

kdl.036

Quality Analytical  
Laboratories Inc.

5090 Caterpillar Road,  
Redding, CA 96003-1412

916 244-5227  
Fax No. 916 244-4109

000008

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: QAL MONTGOMERY  
 Sample ID: M9937005  
 Client Sample ID: 042GT101

Concentration: LOW  
 Sample Matrix: WATER  
 Percent Moisture: \_\_\_\_\_

Date Extracted: 01/15/96  
 Date Analyzed: 01/18/96  
 Dilution Factor: 100

PNA COMPOUNDS

CAS Number		ug/L	
91-20-3	Naphthalene . . . . .	200	U
91-57-6	2-Methylnaphthalene . . .	800	UI
90-12-0	1-Methylnaphthalene . . .	800	UI
208-96-8	Acenaphthylene . . . . .	200	U
83-32-9	Acenaphthene . . . . .	200	U
86-73-7	Fluorene. . . . .	200	U
85-01-8	Phenanthrene. . . . .	200	U
120-12-7	Anthracene. . . . .	200	U
206-44-0	Fluoranthene. . . . .	200	U
129-00-0	Pyrene. . . . .	200	U
56-55-3	Benzo(a)anthracene. . . .	200	U
218-01-9	Chrysene. . . . .	200	U
205-99-2	Benzo(b)fluoranthene . .	200	U
207-08-9	Benzo(k)fluoranthene . .	200	U
50-32-8	Benzo(a)pyrene. . . . .	200	U
193-39-5	Indeno(1,2,3-cd)pyrene. .	200	U
53-70-3	Dibenzo(a,h)anthracene. .	200	U
191-24-2	Benzo(g,h,i)perylene. . .	200	U
Terphenyl-d14 - SS		00	D

- U - Analyzed for but not detected.
- B - Detected in QC blank.
- J - Detected, concentration estimated.
- SS - Surrogate Standard reported as percent recovery.

Comments: D - Surrogate recovery not detected due to dilution requirements.





**APPENDIX C**  
**LITHOLOGIC LOGS**

TITLE: NTC Orlando, Building 2040			LOG of WELL: NA		BORING NO. HA-1			
CLIENT: SOUTHDIVNAVFACENCOM				PROJECT NO: 8519.51				
CONTRACTOR: NA			DATE STARTED: 8-21-96		COMPLTD: 8-21-96			
METHOD: Hand auger		CASE SIZE: NA		SCREEN INT.: NA		PROTECTION LEVEL: D		
TOC ELEV.: NA FEET.		MONITOR INST.: OVA		TOT DPTH: 5 FEET.		DPTH TO $\nabla$ 1.0 FEET.		
LOGGED BY: Scott Donelick		WELL DEVELOPMENT DATE: NA			SITE: Building 2040			
DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
10				SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		$\nabla$
5			4					
			21					

TITLE: NTC Orlando, Building 2040		LOG of WELL: NA	BORING NO. HA-2
CLIENT: SOUTH DIV NAV FAC ENG COM		PROJECT NO: 8519.51	
CONTRACTOR: NA		DATE STARTED: 8-21-96	COMPLTD: 8-21-96
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: 5 FEET.	DPTH TO $\nabla$ 1.0 FEET.
LOGGED BY: Scott Donelick	WELL DEVELOPMENT DATE: NA		SITE: Building 2040

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			4	SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
			4	SAND, FINE GRAINED, WELL SORTED, GREY TO BROWN		SP		$\nabla$
5								
10								

TITLE: NTC Orlando, Building 2040		LOG of WELL: NA	BORING NO. HA-3
CLIENT: SOUTHDIVNAVFACENGCOM		PROJECT NO: 8519.51	
CONTRACTOR: NA		DATE STARTED: 8-21-96	COMPLTD: 8-21-96
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: 5 FEET.	DPTH TO $\nabla$ 1.0 FEET.
LOGGED BY: Scott Donelick	WELL DEVELOPMENT DATE: NA		SITE: Building 2040

DEPTH F.T.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1					SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		$\nabla$
2									
5									
10									

TITLE: NTC Orlando, Building <i>2040</i>		LOG of WELL: NA	BORING NO. <i>HA-4</i>
CLIENT: SOUTHDIIVNAVFACENCOM		PROJECT NO: 8519.51	
CONTRACTOR: NA		DATE STARTED: <i>8-21-96</i>	COMPLTD: <i>8-21-96</i>
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: <i>5</i> FEET.	DPTH TO $\nabla$ FEET.
LOGGED BY: Scott Donelick	WELL DEVELOPMENT DATE: NA		SITE: Building <i>2040</i>

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				52	<i>SAND, FINE GRAINED, WELL SORTED, DARK BROWN</i>		SP		<i>14</i>
			7						
10									

TITLE: NTC Orlando, Building		LOG of WELL: NA	BORING NO. HA-5
CLIENT: SOUTH DIV NAV FAC ENG COM		PROJECT NO: 8519.51	
CONTRACTOR: NA		DATE STARTED: 9-10-96	COMPLTD: 9-10-96
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: 3 FEET.	DPTH TO $\nabla$ 2.0 FEET.
LOGGED BY: Scott Donelick	WELL DEVELOPMENT DATE: NA		SITE: Building

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			2	SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
			<1	SAND, FINE GRAINED, WELL SORTED, BROWN TO GREY		SP		$\nabla$
5								
10								

TITLE: NTC Orlando, Building		LOG of WELL: NA		BORING NO. HA-6	
CLIENT: SOUTHDIVNAVFACENCOM				PROJECT NO: 8519.51	
CONTRACTOR: NA			DATE STARTED: 9-10-96		COMPLTD: 9-10-96
METHOD: Hand auger		CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D	
TOC ELEV.: NA FEET.		MONITOR INST.: OVA	TOT DPTH: 3 FEET.	DPTH TO $\nabla$ 2.0 FEET.	
LOGGED BY: Scott Donelick		WELL DEVELOPMENT DATE: NA			SITE: Building

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				3	SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
				9	SAND, FINE GRAINED, WELL SORTED, BROWN TO GREY		SP		$\nabla$
5									
10									

TITLE: NTC Orlando, Building		LOG of WELL: NA	BORING NO. HA-7
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: 8519.51
CONTRACTOR: NA		DATE STARTED: 9-10-96	COMPLTD: 9-10-96
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: 3 FEET.	DPTH TO $\nabla$ 2.0 FEET.
LOGGED BY: Scott Donelick	WELL DEVELOPMENT DATE: NA		SITE: Building

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
			<1	SAND, FINE GRAINED, WELL SORTED, BROWN TO GREY		SP		
			<1					
5								
10								

TITLE: NTC Orlando, Building		LOG of WELL: NA	BORING NO. HA-8
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: 8519.51
CONTRACTOR: NA		DATE STARTED: 9-10-96	COMPLTD: 9-10-96
METHOD: Hand auger	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FEET.	MONITOR INST.: OVA	TOT DPTH: 3 FEET.	DPTH TO $\nabla$ 2.0 FEET.
LOGGED BY: Scott Doneick	WELL DEVELOPMENT DATE: NA		SITE: Building

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
			<1	SAND, FINE GRAINED, WELL SORTED, BROWN TO GREY		SP		
5			<1					
10								

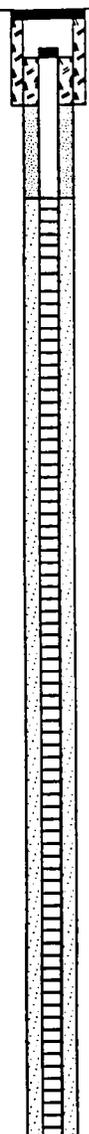
TITLE: NTC, ORLANDO, BUILDING		LOG of WELL: MW- 1	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 8519.51	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-10-96	COMPLTD: 7-10-96
METHOD: 4.25-INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2 - 12 FEET	PROTECTION LEVEL: D
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO $\nabla$ 2 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-10-96		SITE: BUILDING

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			20	SAND, FINE GRAINED, WELL SORTED, DARK BROWN, STRONG PETROLEUM ODOR		SP		
				SAND, FINE GRAINED, WELL SORTED, TAN TO BROWN, MODERATE PETROLEUM ODOR		SP		
5								
10								
15			21					

TITLE: NTC, ORLANDO, BUILDING		LOG of WELL: MW- 2	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 8519.51	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-10-96	COMPLTD: 7-10-96
METHOD: 4.25-INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2 -12 FEET	PROTECTION LEVEL: D
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO ∇ 2 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-10-96		SITE: BUILDING

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
				SAND, FINE GRAINED, WELL SORTED, TAN TO BROWN		SP		
5								
10								
15								

TITLE: NTC, ORLANDO, BUILDING		LOG of WELL: MW- 3	BORING NO. NA
CLIENT: U.S. NAVY, SOUTHNAVFACENGCOM		PROJECT NO: 8519.51	
CONTRACTOR: GROUNDWATER PROTECTION, INC.		DATE STARTED: 7-10-96	COMPLTD: 7-10-96
METHOD: 4.25-INCH ID HSA	CASE SIZE: 2-INCH	SCREEN INT.: 2 -12 FEET	PROTECTION LEVEL: D
TOC ELEV.: NM FEET.	MONITOR INST.: OVA	TOT DPTH: 12 FEET.	DPTH TO $\nabla$ 2 FEET.
LOGGED BY: S. DONELICK	WELL DEVELOPMENT DATE: 7-10-96		SITE: BUILDING

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				SAND, FINE GRAINED, WELL SORTED, DARK BROWN		SP		
			<1	SAND, FINE GRAINED, WELL SORTED, TAN TO BROWN		SP		
5								
10								
20								
15								



**APPENDIX D**  
**WELL CONSTRUCTION DETAILS**

## WELL COMPLETION LOG

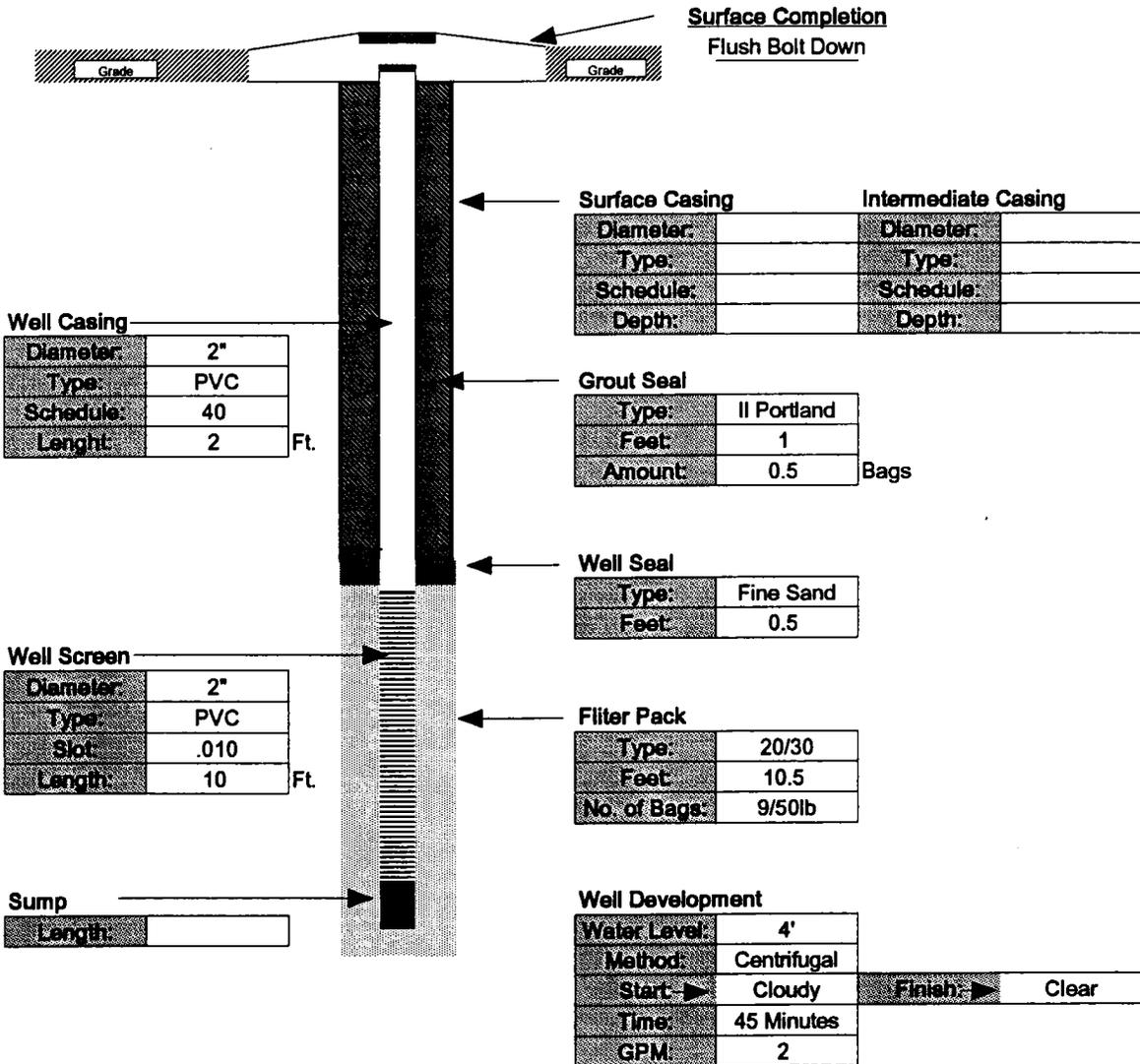
Water Mgmt. Dist.: St. Johns  
 Permit Number:

**Site Information:**  
 Name: NTC  
 Address: Main Base  
 C,S,Z: Orlando, Florida  
 S/T/R:

Work Order: 6042  
 Type of Well: Monitor  
 Well Number: 2040 MW1  
 Method Used: 6 1/4 HSA  
 Borehole Dia. 10"

**Client / Consultant Information**  
 Consultant: ABB Environmental Services  
 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	9/50lb	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		1	← Feet →	10.5	0.5



**Contractor Information**

Contractor #:	2633
Completion:	07/11/96
Driller:	Todd Flick
Lead Hand:	Robert Detweiler
3rd Man:	Brian Burgess
Drill Rig:	CME-55

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: Main Base

C.S.Z: Orlando, Florida

S/T/R:

**Client / Consultant Information**

Consultant: ABB Environmental Services

Field Rep: Scott Donelick

Work Order: 6042

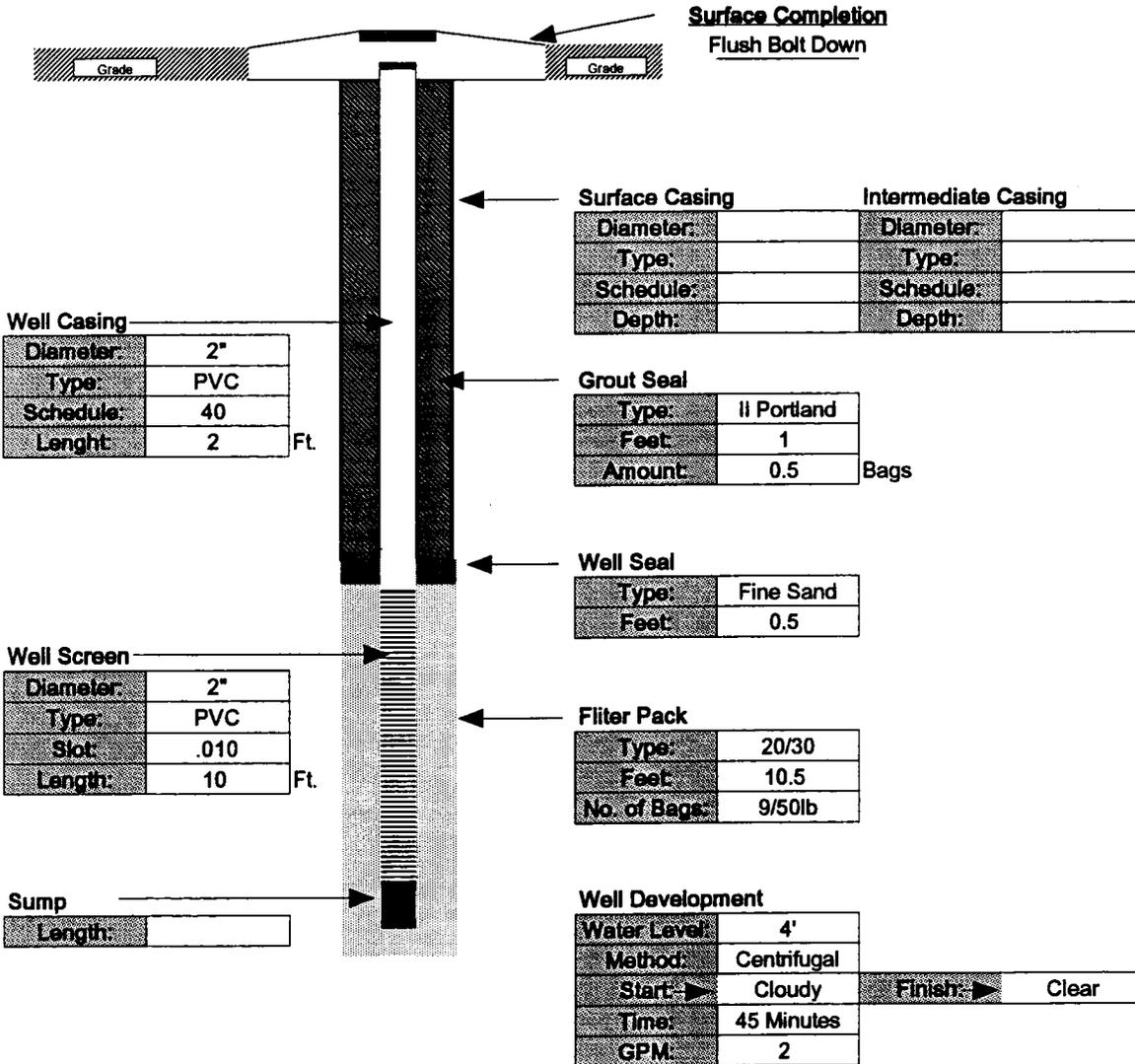
Type of Well: Monitor

Well Number: 2040 MW2

Method Used: 6 1/4 HSA

Borehole Dia. 10"

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	9/50lb	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		1	← Feet →	10.5	0.5



**Contractor Information**

Contractor #:	2633
Completion:	07/11/96
Driller:	Todd Flick
Lead Hand:	Robert Detweiler
3rd Man:	Brian Burgess
Drill Rig:	CME-55

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: Main Base

C,S,Z: Orlando, Florida

S/T/R:

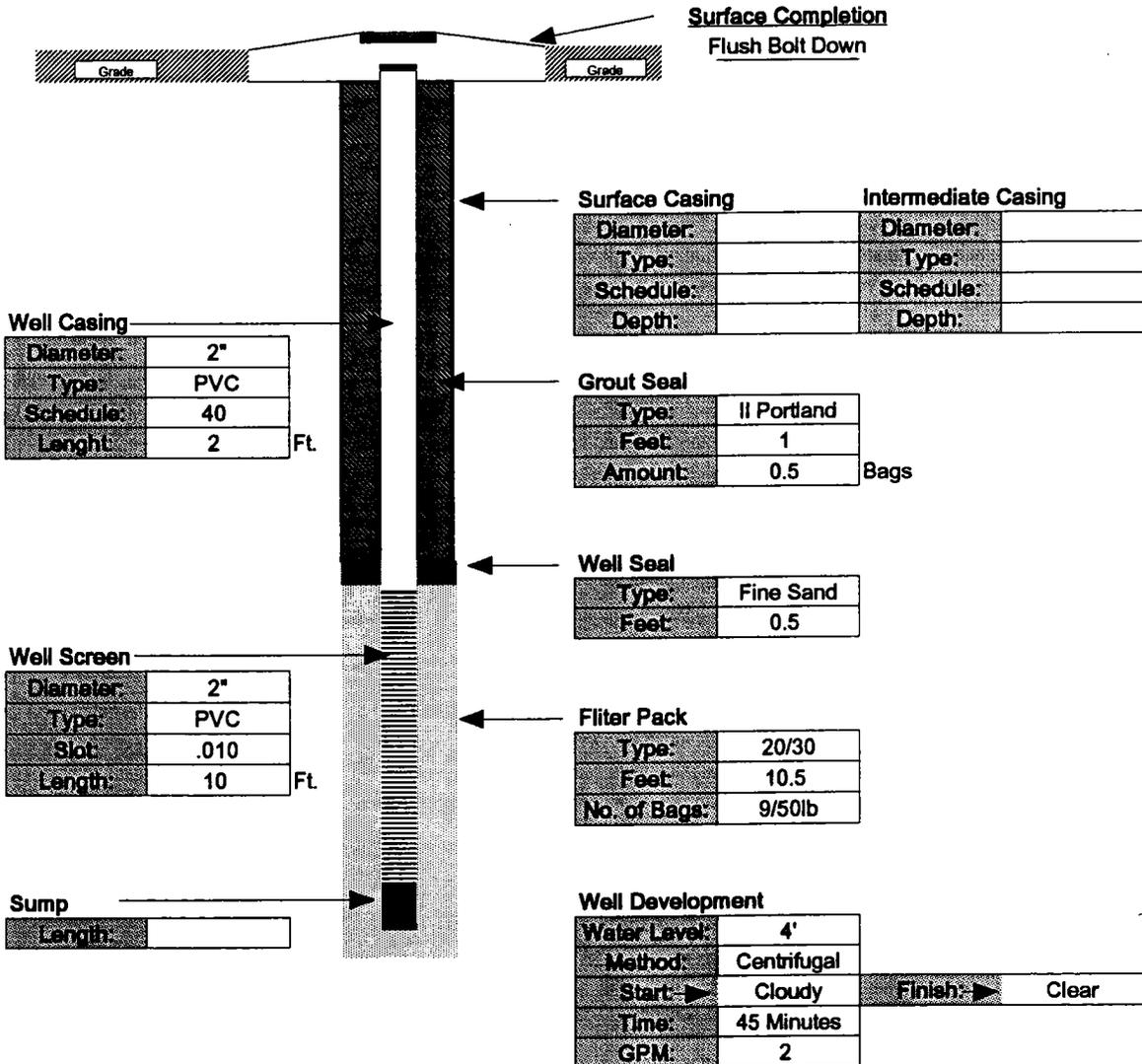
Work Order: 6042  
 Type of Well: Monitor  
 Well Number: 2040 MW3  
 Method Used: 6 1/4 HSA  
 Borehole Dia. 10"

**Client / Consultant Information**

Consultant: ABB Environmental Services

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	9/50lb	20/30	Fine Sand
40	← Schedule	Slot Size: →	.010		1	← Feet →	10.5	0.5



**Contractor Information**

Contractor #:	2633
Completion:	07/11/96
Driller:	Todd Flick
Lead Hand:	Robert Detweiler
3rd Man:	Brian Burgess
Drill Rig:	CME-55

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 E**

**GROUNDWATER LABORATORY ANALYTICAL REPORTS**

----- BUILDING NUMBER 2040 -----  
 NTC ORLANDO FLORIDA MAIN BASE

Lab Sample Number:	MB420007	MB420005	MB420006
Site	2040	2040	2040
Locator	042GM101/2040 MW-1	042GM201/2040 MW-2	042GM301/2040 MW-3
Collect Date:	18-JUL-96	18-JUL-96	18-JUL-96

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Phenanthrene	4	U ug/l	4	2	U ug/l	2	2	U ug/l	2
Anthracene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Fluoranthene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Pyrene	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
Chrysene	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
Benzo (k) fluoranthene	4	U ug/l	4	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
Indeno (1,2,3-cd) pyrene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Dibenzo (a,h) anthracene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Benzo (g,h,i) perylene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
TOTAL PETROLEUM HYDROCARBON									
Total petroleum hydrocarbon	.96	mg/l	.05	.76	mg/l	.05	.05	U mg/l	.05

----- BUILDING NUMBER 2040 -----  
 NTC ORLANDO FLORIDA MAIN BASE

Lab Sample Number:	MB420007	MB420005	MB420006
Site	2040	2040	2040
Locator	042GM101/2040 MW-1	042GM201/2040 MW-2	042GM301/2040 MW-3
Collect Date:	18-JUL-96	18-JUL-96	18-JUL-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
EDB									
Ethylene dibromide	.02	U ug/l	.02	.02	U ug/l	.02	.02	U ug/l	.02
EPA 601/602									
Chloromethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Bromomethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Dichlorodifluoromethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Vinyl chloride	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Chloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Methylene chloride	5	U ug/l	5	5	U ug/l	5	5	U ug/l	5
Trichlorofluoromethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,1-Dichloroethene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,1-Dichloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
trans-1,2-Dichloroethene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Chloroform	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,2-Dichloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,1,1-Trichloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Carbon tetrachloride	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Bromodichloromethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,2-Dichloropropane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
cis-1,3-Dichloropropene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Trichloroethene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Dibromochloromethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,1,2-Trichloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
trans-1,3-Dichloropropene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Bromoform	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,1,2,2-Tetrachloroethane	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Tetrachloroethene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Chlorobenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,3-Dichlorobenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,2-Dichlorobenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
1,4-Dichlorobenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Methyl tert-butyl ether	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Benzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Toluene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Chlorobenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Ethylbenzene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
Xylenes (total)	-		-	-		-	-		-
o-Xylene	1	U ug/l	1	1	U ug/l	1	1	U ug/l	1
m,p-Xylene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
LEAD									
Lead	17.9	ug/l	3	20.3	ug/l	3	19.8	ug/l	3
PNA COMPDS									
Naphthalene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
2-Methylnaphthalene	2	U ug/l	2	4	ug/l	2	2	U ug/l	2
1-Methylnaphthalene	2	U ug/l	2	2	ug/l	2	2	U ug/l	2
Acenaphthylene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Acenaphthene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2
Fluorene	2	U ug/l	2	2	U ug/l	2	2	U ug/l	2

----- BUILDING NUMBER 2040 -----  
 NTC ORLANDO FLORIDA MAIN BASE ----- Hits Table-----

Lab Sample Number:	MB420007			MB420005				MB420006		
Site	2040			2040				2040		
Locator	042GM101/2040 MW-1			042GM201/2040 MW-2				042GM301/2040 MW-3		
Collect Date:	18-JUL-96			18-JUL-96				18-JUL-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	

LEAD										
Lead	17.9	ug/l	3	20.3	ug/l	3	19.8	ug/l	3	
PNA COMPS										
2-Methylnaphthalene	- U	ug/l	2	4	ug/l	2	- U	ug/l	2	
1-Methylnaphthalene	- U	ug/l	2	2	ug/l	2	- U	ug/l	2	
Phenanthrene	4 UI	ug/l	4	- U	ug/l	2	- U	ug/l	2	
Benzo (k) fluoranthene	4 UI	ug/l	4	- U	ug/l	2	- U	ug/l	2	
TOTAL PETROLEUM HYDROCARBON										
Total petroleum hydrocarbon	.96	mg/l	.05	.76	mg/l	.05	- U	mg/l	.05	



QUALITY ANALYTICAL  
LABORATORIES, INC.

**CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES**

Project # <b>8519-51</b>		Purchase Order #		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input type="checkbox"/> LRD 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		THIS AREA FOR LAB USE ONLY			
Project Name <b>NTC ORLANDO</b>				<input checked="" type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (205) 271-2440 FAX (205) 271-3428		<input type="checkbox"/> LKW Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>MB420</b>		Page of	
Company Name <b>ABB Environmental Services</b>				Report Copy to: <b>Manuel Alonso</b>		Client Service		Price Source <b>A P Q S</b>		Test Group	
Project Manager or Contact & Phone # <b>J. Kaiser 407-895-5845</b>		Site ID <b>NTC Orlando</b>		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		Acct Code <b>ABB</b>		Project Code <b>ABB WT</b>		Ack. Gen. <b>527</b>	
Requested Completion Date: <b>8-3-96</b>		CLIENT SAMPLE ID (9 CHARACTERS)		QC ID (3 CHAR)		ANALYSES REQUESTED		LIMS Ver		Login	
								COC Review <b>BS</b>		Mult.	
SAMPLING		Type Matrix				# OF CONTAINERS		SAMPLE REMARKS		LAB 1 ID	
										LAB 2 ID	
Date Time		COMP GRAB WATER SOIL				EPA 602 + MBE		RB-1		01	
7-18 1040		XX		000 RB 1 01		EPA 601		200 MW-1		02	
1117				064 GM 1 01		EPA 610		109 MW-1		03	
1152				021 GM 1 01		EPA 239.2 (Pb)		109 MW-2		04	
1212				021 GM 2 01		EPA 418.1 (TPH)		2040 MW-2		05	
1240				042 GM 2 01		504 (EDB)		2040 MW-3		06	
1301				042 GM 3 01				2040 MW-1		07	
1348				042 GM 1 01				TRIP BLANK		08	
- -		XX		TRIP BLANK							

000066