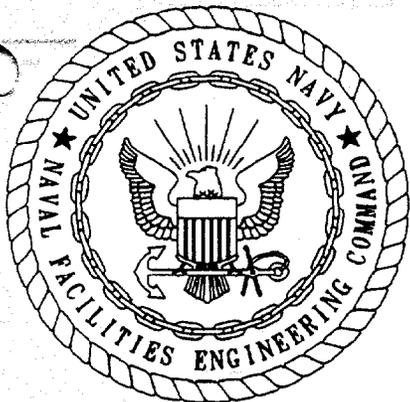


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NTC ORLANDO  
5090.3a

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT FOR  
STUDY AREA 49 NTC ORLANDO FL  
6/1/1997  
ABB ENVIRONMENTAL

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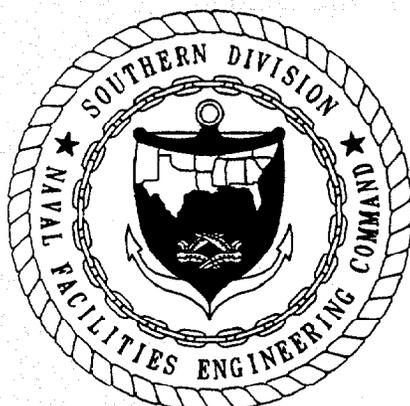
**BASE REALIGNMENT AND CLOSURE  
ENVIRONMENTAL SITE SCREENING REPORT**

**STUDY AREA 49**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

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

**JUNE 1997**



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

**BASE REALIGNMENT AND CLOSURE  
ENVIRONMENTAL SITE SCREENING REPORT**

**STUDY AREA 49**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**Unit Identification Code: N65928**

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

**Prepared by:**

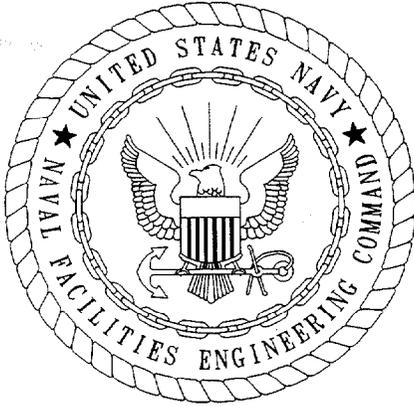
**ABB Environmental Services, Inc.  
2590 Executive Center Circle, East  
Tallahassee, Florida 32301**

**Prepared for:**

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

**Barbara Nwokike, Code 1873, Engineer-in-Charge**

**June 1997**



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: June 5, 1997

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

NAME AND TITLE OF CERTIFYING OFFICIAL: Richard Allen  
Project Technical Lead

(DFAR 252.227-7036)

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Naval Training Center  
Orlando, Florida

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Study Area 46  
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## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
CLP	Contract Laboratory program
DQO	data quality objective
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
$\mu\text{g}/\ell$	micrograms per liter
QC	quality control
RBC	risk-based concentration
SA	study area
SCG	soil cleanup goals
TAL	target analyte list
TC	terrain conductivity
TCL	target compound list
TSS	total suspended solids
USEPA	U.S. Environmental Protection Agency

1.0 STUDY AREA (SA) 49, MCCOY ANNEX - FORMER DISPOSAL AREA NEAR  
UNNUMBERED FACILITY-5

Site screening investigations at SA 49 began on March 22, 1996, and were completed on June 20, 1996. Proposed field activities were presented in the Site Screening Plan, Air Force Sites, Addendum 2 (ABB Environmental Services, Inc. [ABB-ES] 1995). The focus of the site screening investigation at SA 49 was to evaluate potential impact on environmental media from alleged use of this area for general waste disposal purposes.

1.1 SA 49, BACKGROUND AND CONDITIONS. SA 49 is located in the east-central portion of McCoy Annex of Naval Training Center, Orlando (Figure 1). The site occupies approximately 10 acres north of Eighth Street (Figure 2). The majority of the site is presently planted with pines. The area bordering the west side of the pines is a grassy field, and a grass perimeter strip borders the north and east sides of the site.

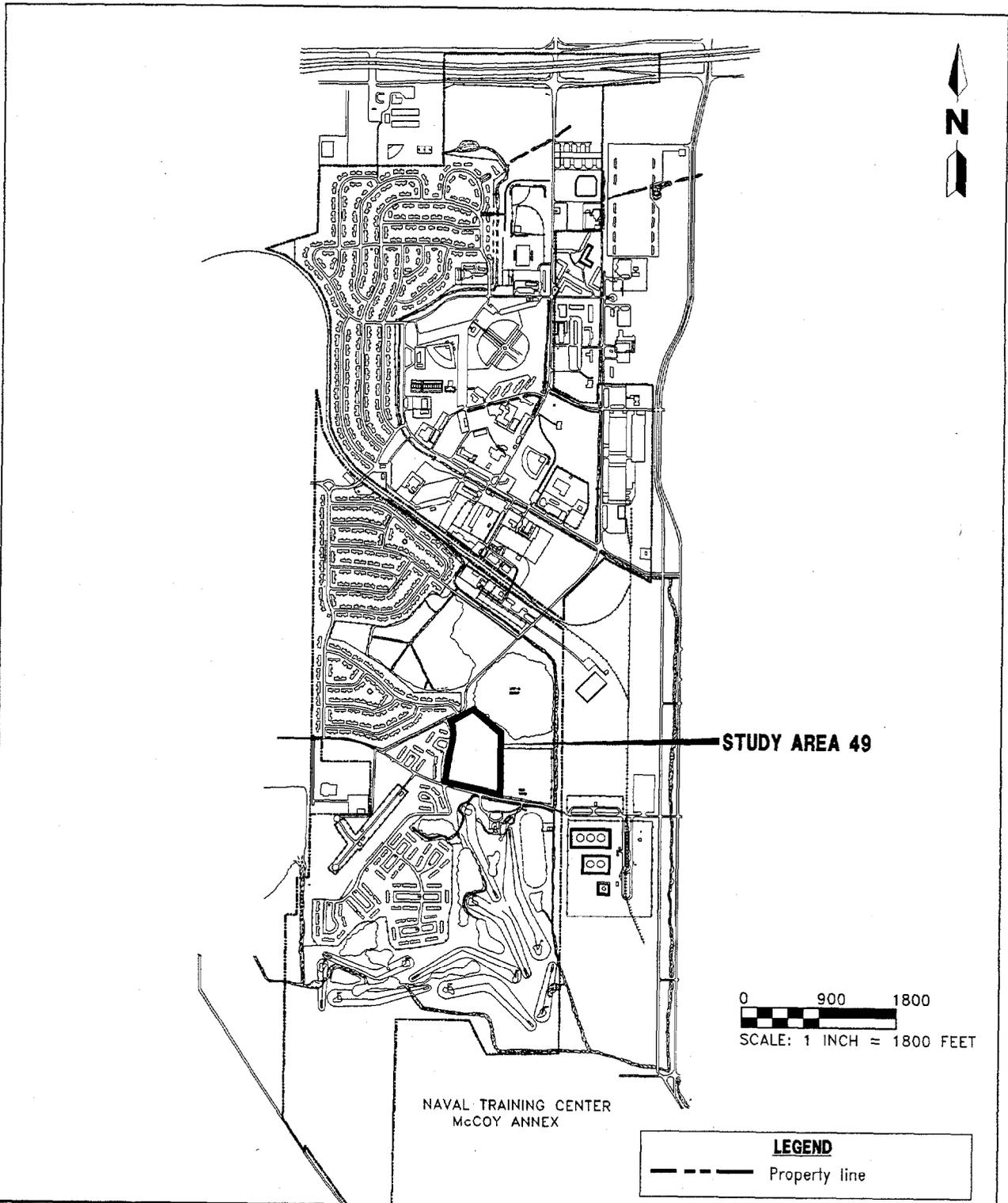
1.2 SA 49, INVESTIGATION SUMMARY. The objective of the site screening activities was to evaluate the nature and extent of alleged disposal activities in the area and to determine whether or not environmental media may have been affected during past uses of the site. To accomplish these objectives, the following field activities were completed:

- geophysical survey (magnetometer and terrain conductivity [TC])
- surface soil sampling
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

1.2.1 Geophysical Survey A geophysical survey was conducted over the alleged disposal area and soil and groundwater samples were collected from locations within the potentially affected area and analyzed for various analytical parameters. Prior to the start of the field program, ABB-ES established an arbitrary grid coordinate system at SAs 46, 47, and 49. The grid system was oriented roughly to magnetic north and parallel to Eighth Street to the south of the SA. The grid consisted of a series of stakes located on 100 square-foot nodes established over the survey area with a cloth measuring tape and level. Interim grid locations were marked with pin flags.

Magnetometry and TC techniques were used at SA 46, 47 and 49 to evaluate potential subsurface debris disposal. More than 1,000 data points were acquired at 20-foot by 20-foot spacings with both types of geophysical instruments. Details of the survey and these two techniques are included in Appendix A.

1.2.2 Surface Soil Investigation Three surface soil samples (49S00101, 49S00201, and 49B00101) were collected from SA 49. One sample, 49S00101, was collected in the northeast corner of the site in the vicinity of surface debris. Sample 49S00201 was collected in the southeast corner of the site where soil mounds and depressions were observed. The third sample, 49B00101, was located in the approximate center of the study area. No flame ionization detector (FID)



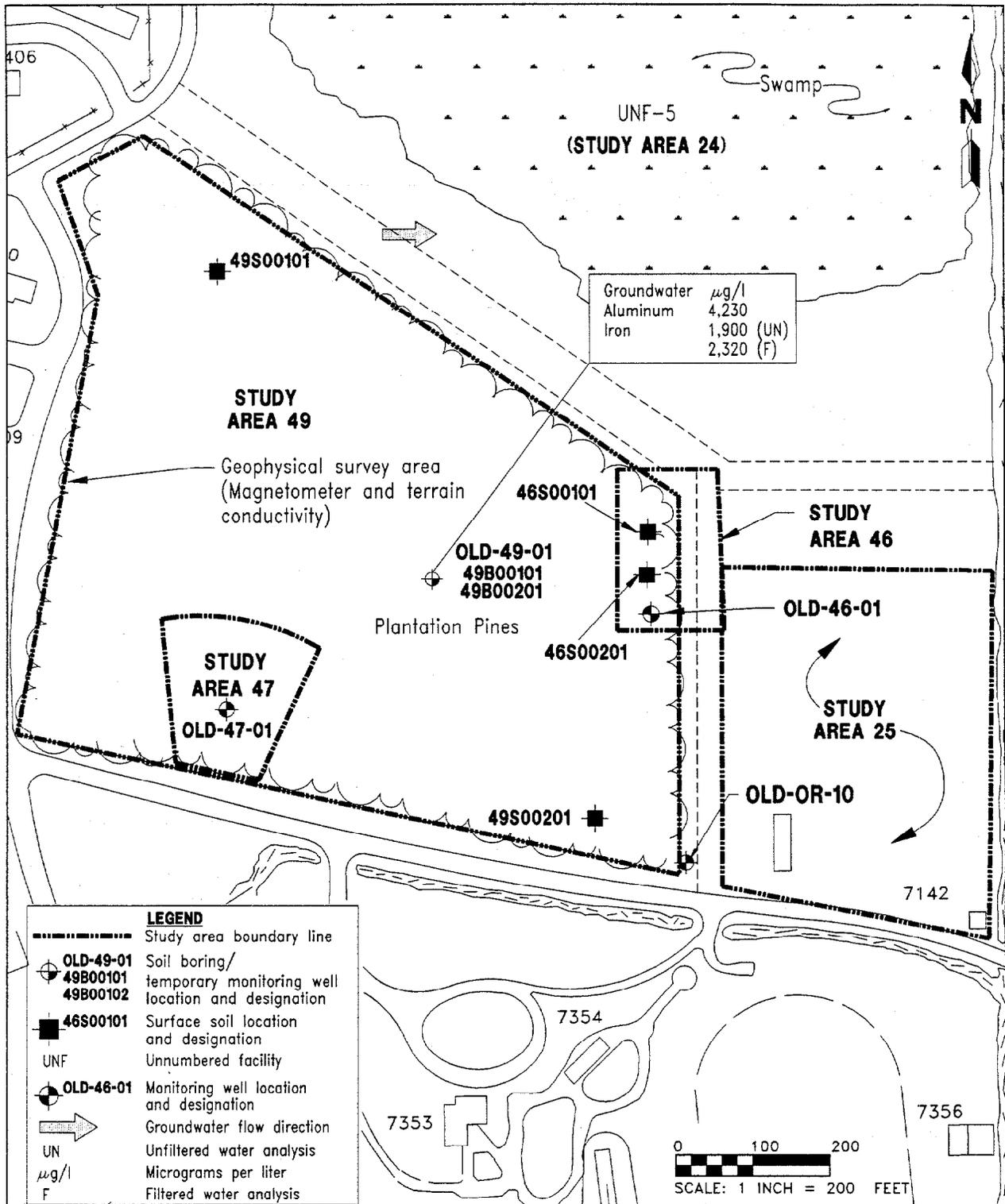
**FIGURE 1  
STUDY AREA LOCATION**



**BASE REALIGNMENT AND CLOSURE  
ENVIRONMENTAL SITE SCREENING  
REPORT, STUDY AREA 49**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

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**FIGURE 2**  
**SAMPLE LOCATIONS, MCCOY ANNEX,**  
**STUDY AREA 49, ALLEGED DISPOSAL**  
**AREA NEAR UNF-5, AIR FORCE SITES**



**BASE REALIGNMENT AND CLOSURE**  
**ENVIRONMENTAL SITE SCREENING**  
**REPORT, STUDY AREA 49**

**NAVAL TRAINING CENTER**  
**ORLANDO, FLORIDA**

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response was noted at any of the surface soil sample locations. The samples were all collected with a hand auger from the interval 0 to 1 foot below land surface.

Soil samples were submitted for Contract Laboratory program (CLP) target compound list (TCL) volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides and polychlorinated biphenyls, and target analyte list (TAL) metals. Soil samples submitted for laboratory analysis were analyzed in accordance with U.S. Environmental Protection Agency (USEPA) Level IV data quality objectives (DQOs). Appropriate quality control (QC) samples were collected and submitted for laboratory analysis.

**1.2.3 Subsurface Soil Investigation** One soil boring was completed at SA 49. The soil boring was located in the approximate center of the study area. One subsurface soil sample (49B00201) was collected from the interval directly above the water table. No FID response was noted during soil boring completion activities. Analytical procedures for the subsurface soil sample are identical with those for the surface soil samples.

**1.2.4 Monitoring Well Installation and Groundwater Sampling** A temporary monitoring well, OLD-49-01, was installed in the soil boring, where surface and subsurface samples were collected (49B00101 and 49B00201). The boring was advanced to approximately 4 feet below the water table. A .01-inch slotted, 2-inch diameter polyvinyl chloride well screen was lowered into the boring, and the annular space was filled with filter sand. Following equilibrium and purging, both unfiltered and filtered groundwater samples were collected using the low-flow technique. Sample identifiers are 49G00101 and 49H00101 ("G" designates the unfiltered sample and "H" designates the filtered sample). After sampling, the well screen was withdrawn and the boring backfilled with granular bentonite. Appropriate QC samples were collected and submitted for laboratory analysis. Appendix B contains the soil boring log for monitoring well OLD-49-01.

Groundwater samples were analyzed in accordance with USEPA Level IV DQOs. The unfiltered groundwater sample was analyzed for CLP TCL volatile organic compounds, TCL semivolatile organic compounds, TCL pesticides and polychlorinated biphenyls, TAL metals and total suspended solids (TSS). The filtered sample was submitted for laboratory analysis for TAL metals only. The TSS analysis was completed in accordance with USEPA Level III DQOs.

**1.3 SA 49, RESULTS.** The results of the site screening investigation activities at SA 49 are discussed below. Details of the geophysical survey are included as Appendix A. The soil boring log for monitoring well OLD-49-01 is included as Appendix B. A summary of positive detections in soil and groundwater analytical results is presented in Appendix C, which includes C-1, Summary of Positive Detections in Surface Soil Analytical Results; C-2, Summary of Positive Detections in Subsurface Soil Analytical Results; and C-3, Summary of Positive Detections in Groundwater Analytical Results. A complete set of soil and groundwater analytical results is presented in Appendix D, which includes D-1, Summary of Surface Soil Analytical Results; D-2, Summary of Subsurface Soil Analytical Results; and D-3, Summary of Groundwater Analytical Results.

The soil analytical results were evaluated by comparing their respective concentrations with (1) basewide soil background concentrations (for inorganic

analytes only); (2) Florida Department of Environmental Protection's (FDEP's) soil cleanup goals (SCGs) for residential soil or (if applicable) leaching to groundwater; and (3) USEPA Region III risk-based concentrations (RBCs). Groundwater analytical results were compared to (1) basewide groundwater background concentrations (for inorganic analytes only); (2) FDEP's groundwater guidance concentrations; (3) USEPA Maximum Contaminant Levels; and (4) USEPA Region III RBCs. Following are the significant findings from this evaluation.

**1.3.1 Geophysical Surveys** The geophysical data indicate the presence of a number of small, isolated magnetic and TC anomalies (Appendix A). Some of the magnetic and conductive anomalies can be attributed to surface debris observed in the field at the time of the survey. Items such as a car seat, a discarded sofa, and a steel pipe were noted. Also, in the southeast portion of the study area, there is evidence of reworking or dumping (mounds and depressions) such as might occur with minor excavation or dumptruck loads of discarded earth materials.

**1.3.2 Surface Soil** Volatile organics detected in surface soil samples include ethylbenzene, methylene chloride, and xylenes. All volatile organic compound detections are below their corresponding screening criteria. Leachability-based SCG values do not apply, as no organic compounds were present in groundwater above FDEP groundwater guidance concentrations (see below).

**1.3.3 Subsurface Soil** Volatile organics detected in the subsurface soil sample (49B00201) include ethylbenzene, methylene chloride, and xylenes. All volatile organic compound detections are below their corresponding screening criteria. Leachability-based SCG values do not apply, as no organic compounds were present in groundwater above FDEP groundwater guidance concentrations (see below).

Analytical results for this sample indicate concentrations of aluminum, antimony, chromium, copper, iron, mercury, nickel, vanadium and zinc exceeding their respective background screening concentrations. However, none of the analytes detected exceeded their corresponding residential RBC or SCG values.

**1.3.4 Groundwater** Detections of inorganics above background screening values in the unfiltered groundwater sample include aluminum, arsenic, mercury, nickel, and sodium. Of these detections, aluminum and iron exceeded their corresponding FDEP Secondary Standards.

Secondary standards have been established for Class G-I and G-II aquifers by the State of Florida, largely along Federal guidelines, to ensure that groundwater meets at least minimum criteria for taste, odor, and color, and does not pose a health risk.

Based on records reviews and interviews, there have been no known site activities that may have contributed to the observed exceedances of secondary standards for aluminum and iron. Well OLD-49-01 had aluminum and iron concentrations of 4,230 and 1,900 micrograms per liter ( $\mu\text{g}/\ell$ ), respectively, slightly exceeding background screening concentrations of 4,067 and 1,227  $\mu\text{g}/\ell$  for those analytes. The filtered sample does not provide insight into the relationship between suspended solids and secondary standards exceedances because the concentration for aluminum was 17 percent lower for the filtered sample, but the iron concentration increased 22 percent. Surface and subsurface soil concentrations

of these analytes did not exceed screening concentrations (residential RBCs or SCGs).

Analytes exceeding Florida secondary standards should also be compared with risk-based concentrations (RBCs) for tapwater published by the USEPA, Region III. The tapwater guidance concentrations for aluminum and iron are 37,000 and 11,000  $\mu\text{g}/\ell$ , respectively. There were no other TAL metals exceedances, and groundwater parameters measured during sampling were within normal limits: pH was 4.85, temperature was 72.5 degrees Fahrenheit, conductivity was 260 micromhos per centimeter, and turbidity was 31.6 nephelometric turbidity units. ABB-ES concludes that the aluminum and iron exceeding secondary standards are naturally occurring, are not related to past site activities, and do not pose a risk to human health or the environment.

Bis(2-ethylhexyl)phthalate was detected at 1 part per billion in the unfiltered groundwater sample but is interpreted to be a laboratory artifact. A pesticide, 4,4-dichlorodiphenyltrichloroethane, was detected at 0.08  $\mu\text{g}/\ell$ , slightly below the FDEP groundwater guidance of 0.1  $\mu\text{g}/\ell$ . It is unlikely, however, that this detection represents a significant environmental concern because this compound has very low solubility and mobility characteristics and was not detected in the corresponding surface and subsurface soil samples from this location.

**1.4 SA 49, CONCLUSIONS AND RECOMMENDATIONS.** The geophysical investigation and site walkover indicate that limited surface disposal of common household debris has occurred at the study area, but that the area is not characterized by systematic disposal and burial of large amounts of debris. Limited surface dumping has taken place along the northern, eastern and southern boundaries where vehicular access is possible.

Surface and subsurface soil samples collected at SA 49 did not contain concentrations of analytes greater than screening criteria.

Concentrations of iron and aluminum exceeded screening criteria in unfiltered samples from OLD-49-01. The filtered groundwater sample contained iron at a greater concentration (2,320  $\mu\text{g}/\ell$ ) than its screening criteria (background concentration of 1,227  $\mu\text{g}/\ell$  and FDEP groundwater guidance concentration of 300  $\mu\text{g}/\ell$ ). The isolated nature of this iron exceedance (groundwater samples from nearby wells OLD-46-01 and OLD-47-01 were below background screening values), coupled with the ubiquitous presence of iron in groundwater across Florida, indicates that the presence of iron in the groundwater at OLD-49-01 does not represent a significant environmental concern. However, due to the aluminum and iron concentrations, future users of this property should be aware that the presence of these analytes at the measured concentrations may render the groundwater from the surficial aquifer objectionable as a potable or irrigation water source.

ABB-ES recommends that SA 49 be made eligible for transfer, with no further requirement for evaluation, and that it be reclassified from 7/Gray to 1/White.

The undersigned members of the Base Realignment and Closure Cleanup team (BCT) concur with the findings of the preceding investigation.

STUDY AREA 49

Nancy Rodriguez 7/17/97  
U.S. Environmental Protection Agency, Region IV Date

John Mitchell 7/17/97  
Florida Department of Environmental Protection Date

Wesley J. Head 7/17/97  
U.S. Department of the Navy Date

REFERENCE

ABB Environmental Services, Inc. 1995. *Site Screening Plan, Former Air Force Sites, Addendum 2, Naval Training Center, Orlando, Orlando, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina (December).

**APPENDIX A**  
**GEOPHYSICS RESULTS**

TECHNICAL MEMORANDUM  
GEOPHYSICAL SURVEYS  
STUDY AREA 49

NAVAL TRAINING CENTER  
ORLANDO, FLORIDA

**INTRODUCTION.** The following is a summary of the significant findings of the geophysical surveys that took place at Study Area (SA) 49, Naval Training Center, Orlando. Initial surveys took place in SA 49 between January 11 and 17, 1996. Because most of SA 46 and all of SA 47 are contained within the boundary of SA 49, all three areas were surveyed together. The geophysical surveys were conducted to evaluate potential subsurface debris disposal that may have taken place. The techniques used were magnetometry and terrain conductivity (TC). Ground penetrating radar (GPR) was to be used to investigate magnetometer and TC anomalies, if appropriate.

**GEOPHYSICAL TECHNIQUES.** The magnetic method is a versatile geophysical technique used for evaluating shallow geologic structures and for locating buried manmade objects and buried debris by mapping local distortions in the earth's magnetic field produced by buried magnetic objects (steel and other magnetic materials). Vertical gradient measurements of the earth's magnetic field are often taken during environmental magnetic surveys because they are more sensitive to the presence of near-surface metal objects than total field values alone. A GSM-19 magnetometer with gradiometer capability was used during this survey.

TC surveys, also referred to as EMI (electro-magnetic induction) surveys, have traditionally been used in mineral exploration for tracing conductive ore bodies (i.e., massive sulfides). More recently, conductivity surveys have been used in environmental studies for mapping buried debris and former structures, and for tracing conductive contaminant plumes in groundwater. TC instruments record two parameters: the quadrature phase and the in-phase components of an induced magnetic field. The quadrature-phase component is a measure of the ground conductivity value expressed in millimhos per meter. The in-phase component is significantly more sensitive to metallic objects and is useful for looking for buried tanks and drums and other manmade objects. The TC instrument used during this work was a Geonics EM-31DL with digital data logger.

The GPR technique uses high frequency radio waves to determine the presence of subsurface objects and structures. The radio wave energy is reflected from surfaces where there is a contrast in the electrical properties of subsurface materials, such as naturally-occurring geologic horizons or manmade objects (e.g., buried utilities, tanks, drums). Typical applications for GPR include mapping buried utilities, and delineating the boundaries of buried materials and abandoned landfills. No GPR profiling was completed during the investigation because it was not deemed to be necessary.

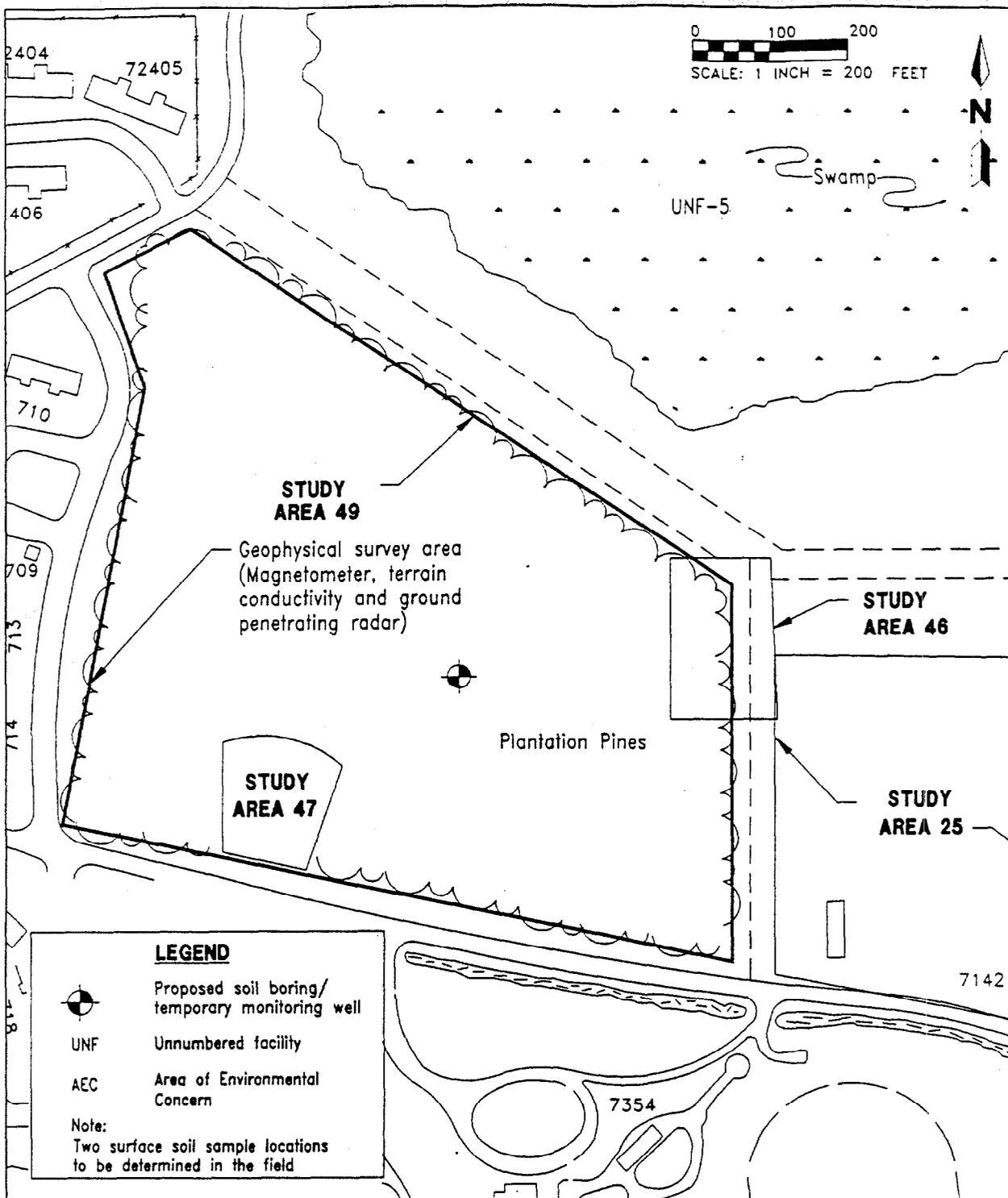
Following is a discussion of the results of this investigation.

**RESULTS - SA 49, ALLEGED DISPOSAL AREA.** A geophysical survey was completed in SA 49, which is 650 feet wide (east to west) by 800 feet long (north to south). A geophysical survey grid with an arbitrary origin and oriented perpendicular to Eighth Street was established. Subsequently, a magnetometer and TC survey were completed in the area shown on Figure 1, a total area of approximately 9.6 acres.

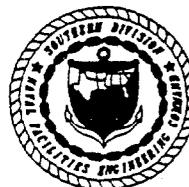
Figure 2 presents a map generated in the field showing the location of all magnetometer and TC traverses. More than 1,000 data points were acquired on a 20-foot by 20-foot measurement grid with each instrument. Contour data are presented as Figures 3 through 5. Figure 3 presents the vertical magnetic gradient contours, and Figures 4 and 5 present the quadrature (conductivity) and inphase (equivalent to a metal detector) contours of the magnetic field induced by the transmitter of the TC instrument.

The data indicate the presence of a number of small magnetic and TC anomalies. Some of the magnetic and conductivity anomalies can be attributed to surface debris observed in the field at the time of the survey. Items such as a car seat, a discarded sofa, and a steel pipe were noted. Also, in the southeast portion of the study area, there is evidence of reworking or dumping (mounds and depressions) such as might occur with dumptruck loads of discarded earth materials.

ABB Environmental Services, Inc., concludes that the survey area has limited surface disposal of household debris, but that the area is not characterized by systematic disposal and burial of large amounts of debris. Limited surface dumping has taken place along the northern, eastern, and southern boundaries where vehicular access is possible.



**FIGURE 1**  
**GEOPHYSICAL SURVEY**  
**MCCOY ANNEX, STUDY AREA 49**  
**ALLEGED DISPOSAL AREA NEAR UNF-5**  
**AIR FORCE SITES**



**NAVAL TRAINING CENTER**  
**ORLANDO, FLORIDA**

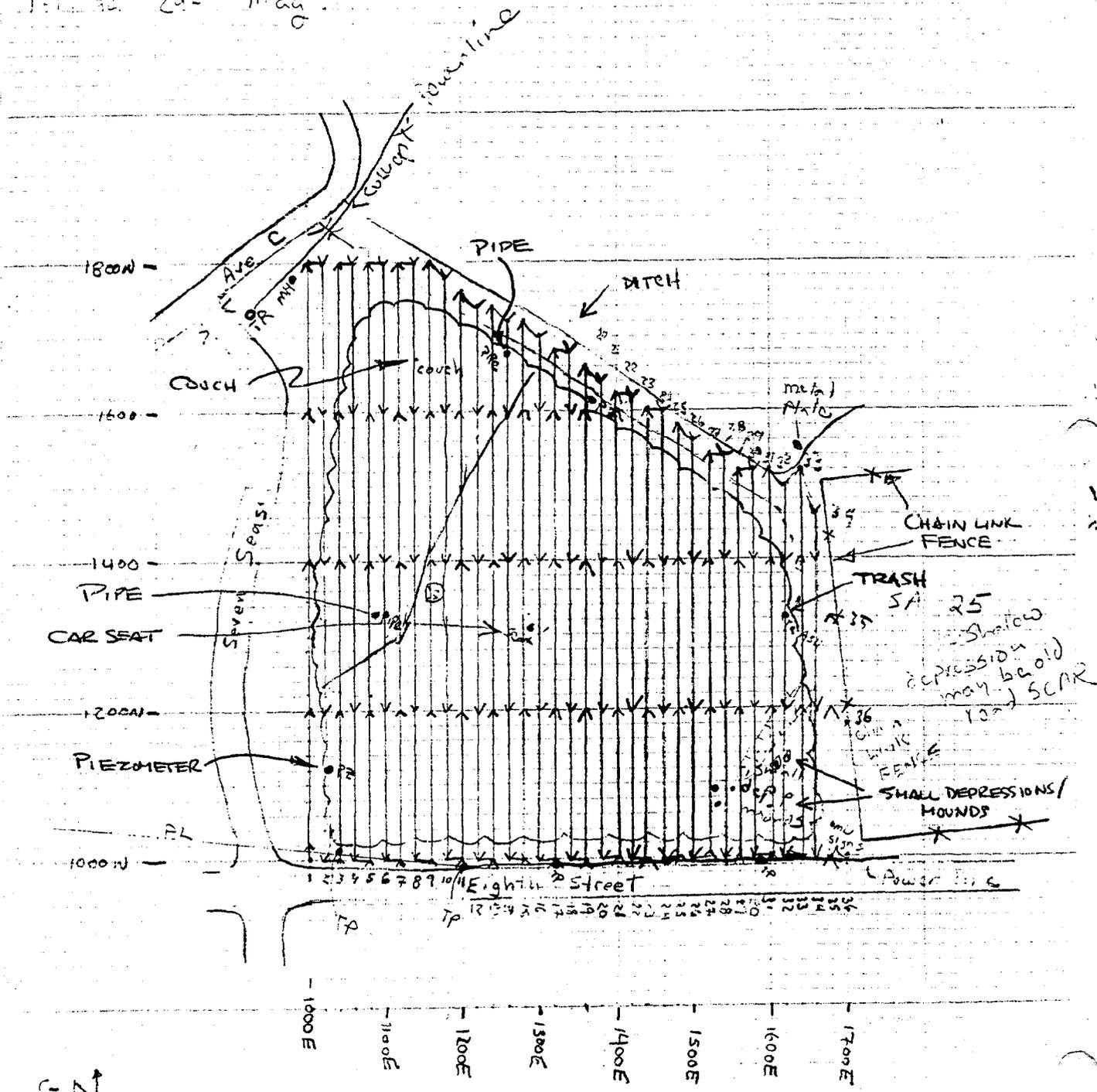
**STUDY AREAS 46, 47 AND 49  
MAGNETOMETER/TERRAIN CONDUCTIVITY TRAVERSES**

COMP. BY  
JMN  
CHK. BY

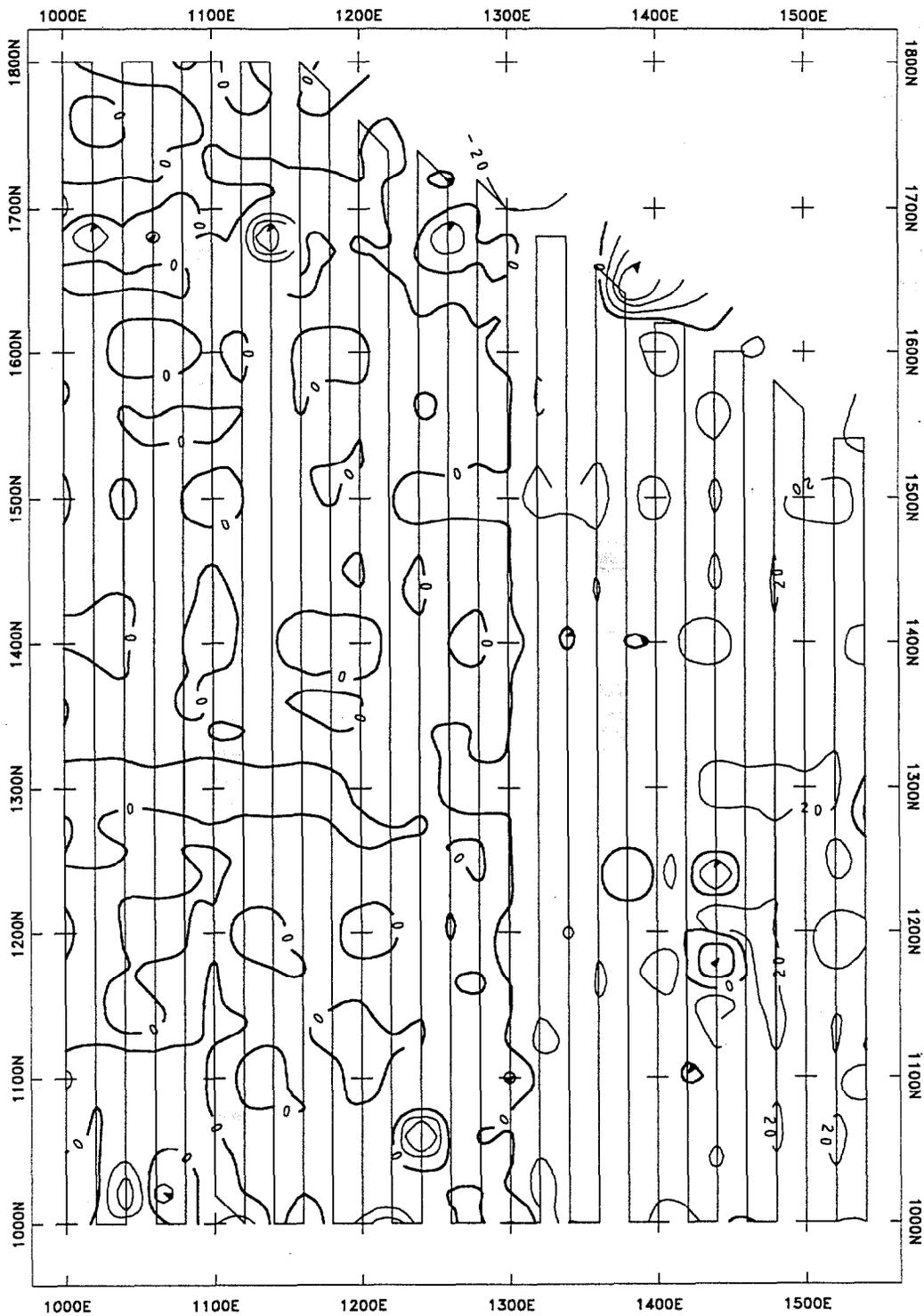
JOB NO.  
08519, 10  
DATE  
1/11/96

1-16/95 1-28 mag. All TC  
Em. 31 - 26x20'  
GEM-19

1-17-95 29- mag.



**FIGURE 2  
FIELD MAP OF GEOPHYSICAL SURVEY  
ABB Environmental Services, Inc.**



CONTOUR INTERVAL = 20 GAMMAS/METER

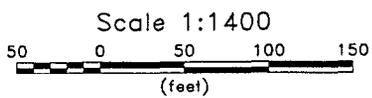
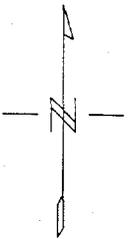
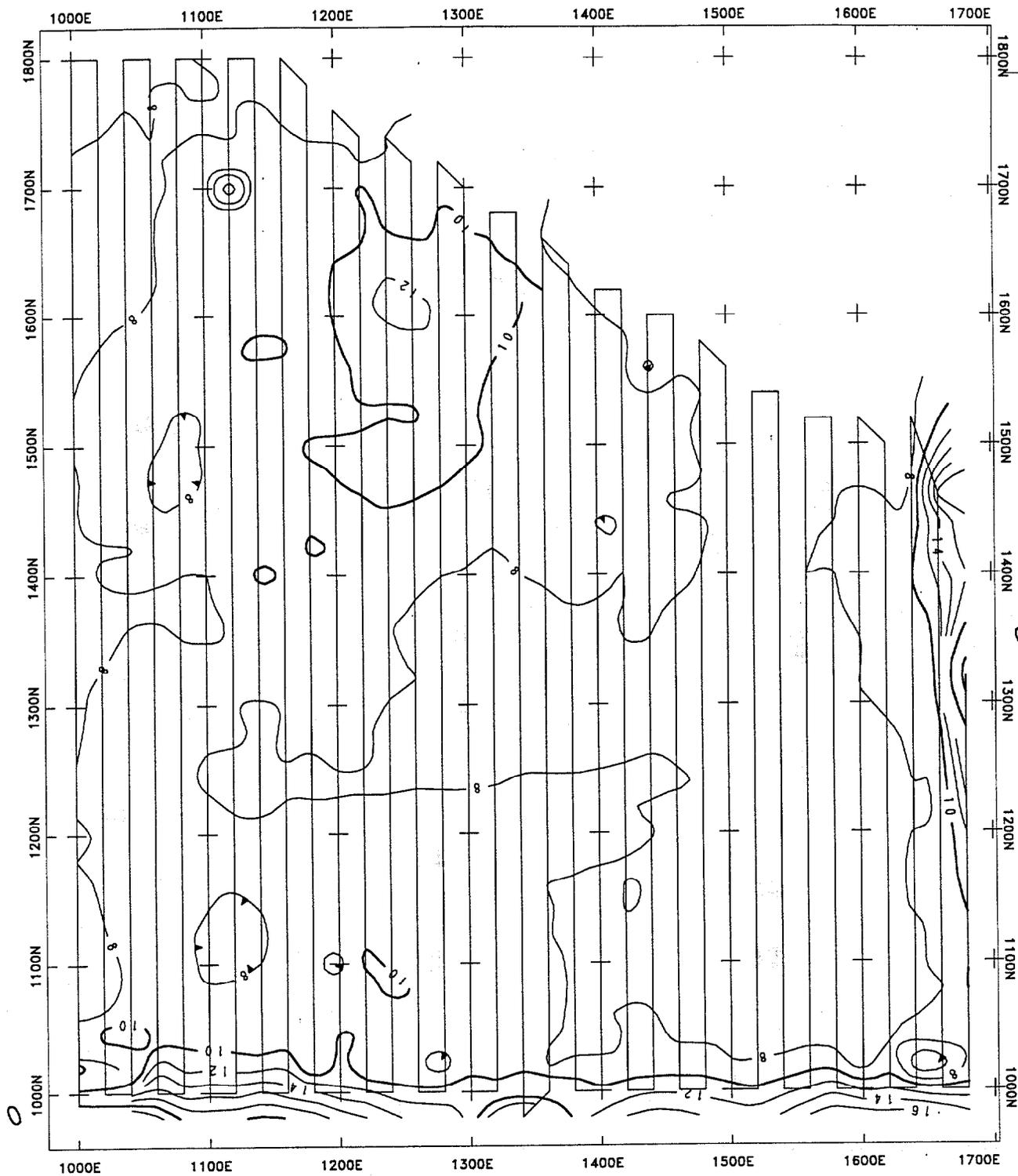


FIGURE 3
SOUTHERN DIVISION
VERTICAL GRADIENT CONTOURS
STUDY AREA 49
ABB ENVIRONMENTAL SERVICES, INC.





CONTOUR INTERVAL = 2/10 MILLIMHOS/METER

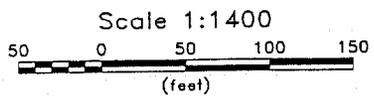
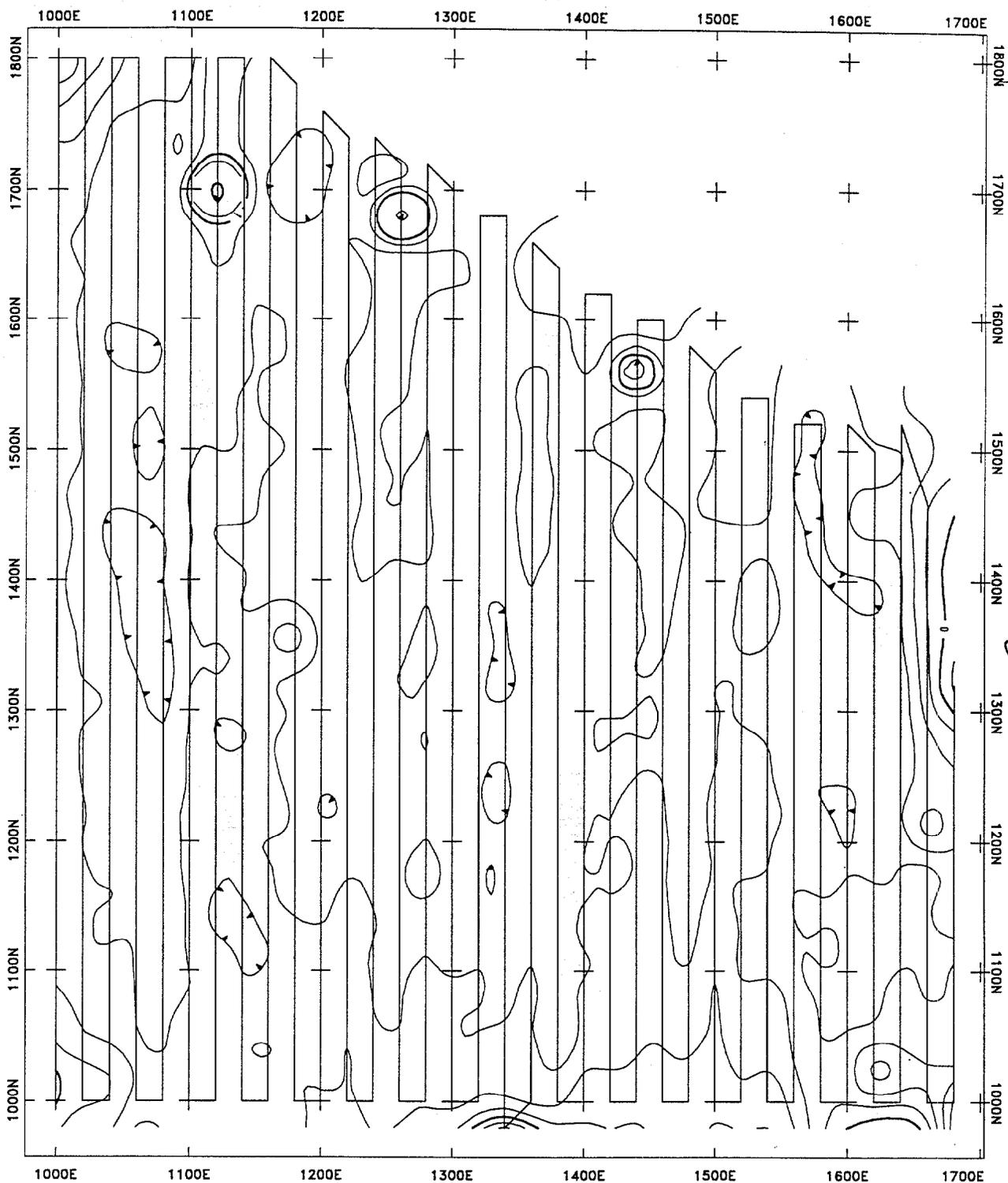


FIGURE 4  
 SOUTHERN DIVISION  
 QUADRATURE CONTOURS  
 TERRAIN CONDUCTIVITY SURVEY  
 STUDY AREA 49  
 ABB ENVIRONMENTAL SERVICES, INC.



CONTOUR INTERVAL = 0.2/1

FIGURE 5

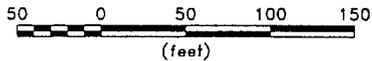
SOUTHERN DIVISION

INPHASE CONTOURS  
TERRAIN CONDUCTIVITY SURVEY

STUDY AREA 49

ABB ENVIRONMENTAL SERVICES, INC.

Scale 1:1400



(feet)

**APPENDIX B**

**SOIL BORING LOG FOR MONITORING WELL OLD-49-01**

<b>Project:</b> BRAC NTC		<b>Well ID:</b> S.A. 49		<b>Boring ID:</b> OLD-49-01	
<b>Client:</b> SOUTH DIV NAV FAC ENG COM		<b>Contractor:</b> ABB-ES		<b>Job No.:</b> 8519.10	
<b>Method:</b> Hand Auger		<b>Easting:</b>		<b>Date started:</b> 06/19/98	
<b>TOC elev.:</b> Ft.		<b>Casing dia.:</b> 3-1/2" ID		<b>Completed:</b> 06/19/98	
<b>ABB Rep.:</b> WDO		<b>Type of OVM:</b> Porta FID II		<b>Screened int.:</b> 5 ft.	
		<b>Well development date:</b> PVC		<b>Protection level:</b> D	
				<b>Total dpth:</b> 7 Ft.	
				<b>Dpth to <math>\nabla</math> Ft.:</b>	
				<b>Site:</b>	

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
	49B00101 0-1' CLP			0	Gray silty SAND		SM		
5	49B00102 4-5' CLP				Brown clayey silt with SAND		ML		
10					Boring terminated at 7 feet bgs				

## **APPENDIX C**

### **SUMMARY OF POSITIVE DETECTIONS IN SOIL AND GROUNDWATER ANALYTICAL RESULTS**

- C-1 Summary of Positive Detections in Surface Soil Analytical Results
- C-2 Summary of Positive Detections in Subsurface Soil Analytical Results
- C-3 Summary of Positive Detections in Groundwater Analytical Results

**TABLE C-1**

**SUMMARY OF POSITIVE DETECTIONS IN SURFACE SOIL  
ANALYTICAL RESULTS**

Appendix C

Table C-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Identifier	Background Screening <sup>1</sup>	SCG <sup>2</sup>	RBC <sup>3</sup> for Residential Soil	RBC <sup>3</sup> for Industrial Soil	49B00101	49S00101	49S00201
Sampling Date					6/19/96	6/19/96	6/19/96
Feet bls					0-1	0-1	0-1
<b>Volatile Organics, ug/kg</b>							
Ethylbenzene		1,400,000	7,800,000 n	200,000,000 n		1 J	
Methylene chloride		16,000	85,000 c	760,000 c	1 J	1 J	2 J
Xylene (total)		13,000,000	160,000,000 n	1,000,000,000 n	3 J	6 J	4 J
<b>Semivolatile Organics, ug/kg</b>							
Di-n-butylphthalate		7,300,000	7,800,000 n	200,000,000 n			
<b>Inorganics, mg/kg</b>							
Aluminum	4,870	75,000	78,000 n	1,000,000 n	817 J	57.4 J	646 J
Antimony		26	31 n	820 n	3.6 B		4.8 B
Arsenic	1.9	0.8	0.43 /23 c/n	3.8 /610 c/n	0.62 B		
Barium	21.6	5,200	5,500 n	140,000 n	1.8 B	0.91 B	2.2 B
Beryllium	0.46	0.2	0.15 c	1.3 c			
Calcium	33,568	ND	1,000,000	1,000,000	26.4 BJ	87.5 J	62.6 BJ
Chromium	7.7	290	390 n	10,000 n	1.4 B	0.72 B	1.6 B
Copper	2.6	ND	3,100 n	82,000 n			
Iron	843	ND	23,000 n	610,000 n	78.1	59	88.4
Lead	21.3	500	400	400		3.1	
Magnesium	381	ND	460,468	460,468	14.2 B	15.4 B	15.1 B
Manganese	10.8	370	1800 n	47,000 n	0.41 B		
Mercury	0.05	23	23 n	610 n	0.05 B	0.06 B	0.05 B
Nickel		1,500	1,600 n	41,000 n			1.7 B
Selenium	1.1	390	390 n	10,000 n			
Sodium		ND	1,000,000	1,000,000	39 B	35.3 B	
Vanadium	4.9	490	550 n	14,000 n			
Zinc	4.6	23,000	23,000 n	610,000 n		5.7	

Appendix C  
Table C-1. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 49

Naval Training Center, Orlando  
Orlando, FL

**NOTES:**

<sup>1</sup> The background screening value is twice the average of detected concentrations for inorganic analytes.

<sup>2</sup> SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996). Values indicated are from a residential scenario.

Chromium values are for Chromium VI.

<sup>3</sup> 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, and sodium) screening values were derived based on recommended daily allowances (RDAs).

n = noncarcinogenic pathway

c = carcinogenic pathway

ND = Not determined.

bls = below land surface

mg/kg = milligrams per kilogram.

ug/kg = micrograms per kilogram.

OSWER = Office of Solid Waste and Emergency Response.

USEPA = U.S. Environmental Protection Agency.

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

J = Reported concentration is an estimated quantity.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight.

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

**TABLE C-2**

**SUMMARY OF POSITIVE DETECTIONS IN SUBSURFACE SOIL  
ANALYTICAL RESULTS**

Appendix C

Table C-2. Summary of Positive Detections in Subsurface Soil Analytical Results, Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Identifier	Background Screening <sup>1</sup>	SCG <sup>2</sup>	RBC <sup>3</sup> for Residential Soil	RBC <sup>3</sup> for Industrial Soil	49B00102
Sampling Date					6/19/96
Feet bls					4-5
<b>Volatile Organics, ug/kg</b>					
Ethylbenzene		NA	7800000 n	200000000 n	
Methylene chloride		NA	85000 c	760000 c	2 J
Xylene (total)		NA	160000000 n	1000000000 n	3 J
<b>Semivolatile Organics, ug/kg</b>					
Di-n-butylphthalate		NA	7800000 n	200000000 n	48 J
<b>Inorganics, mg/kg</b>					
Aluminum	11,130	NA	78,000 n	1,000,000 n	15500 J
Antimony		NA	31 n	820 n	4.4 B
Arsenic	2	NA	0.43 /23 c/n	3.8 /610 c/n	1.6 BJ
Barium	11.3	NA	5,500 n	140,000 n	4.6 B
Beryllium	0.18	NA	0.15 c	1.3 c	0.13 B
Calcium	321	NA	1,000,000	1,000,000	175 BJ
Chromium	11.3	NA	390 n	10,000 n	12.9
Copper	2.8	NA	3,100 n	82,000 n	6.5
Iron	829	NA	23,000 n	610,000 n	3790
Lead	7	NA	400	400	8.1
Magnesium	38.9	NA	460,468	460,468	103 B
Manganese	0.69	NA	1800 n	47,000 n	0.7 B
Mercury	0.12	NA	23 n	610 n	0.17
Nickel	11.3	NA	1,600 n	41,000 n	3.8 B
Selenium	1.4	NA	390 n	10,000 n	0.4 BJ
Sodium		NA	1,000,000	1,000,000	41.3 B
Vanadium	5.9	NA	550 n	14,000 n	25.5
Zinc	0.66	NA	23,000 n	610,000 n	5.6

## Appendix C

Table C-2. Summary of Positive Detections in Surface Soil Analytical Results, Study Area 49

Naval Training Center, Orlando  
Orlando, FL

### NOTES:

<sup>1</sup> The background screening value is twice the average of detected concentrations for inorganic analytes.

<sup>2</sup> SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996). Values indicated are from a residential scenario.

Chromium values are for Chromium VI.

<sup>3</sup> 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, and sodium) screening values were derived based on recommended daily allowances (RDAs).

n = noncarcinogenic pathway

c = carcinogenic pathway

ND = Not determined.

bls = below land surface

mg/kg = milligrams per kilogram.

ug/kg = micrograms per kilogram.

OSWER = Office of Solid Waste and Emergency Response.

USEPA = U.S. Environmental Protection Agency.

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

J = Reported concentration is an estimated quantity.

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight.

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

**TABLE C-3**

**SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER  
ANALYTICAL RESULTS**

Appendix C

Table C-3. Summary of Positive Detections in Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	Background <sup>1</sup>	FDEPG	FEDMCL	RBC <sup>2</sup> for Tap Water	49G00101	49H00101
Sampling Date					20-Jun-96	20-Jun-96
<b>Semivolatile Organics, ug/L</b>						
bis(2-Ethylhexyl)phthalate		6 <sup>5</sup>	6	4.8 c	1 J	NA
<b>Pesticides, ug/L</b>						
4,4'-DDT		0.1 <sup>7</sup>			0.08 J	NA
<b>Inorganics, ug/L</b>						
Aluminum	4,067	200 <sup>3</sup>	ND	37,000 n	4230 J	3530 J
Arsenic	5	50 <sup>4</sup>	50	0.045/ 11 c/n	6.1 BJ	3.9 BJ
Barium	31.4	2,000 <sup>5</sup>	2,000	2,600 n	27 BJ	23.2 BJ
Calcium	36,830	ND	ND	1,000,000	1200 BJ	1220 BJ
Iron	1,227	300 <sup>3</sup>	ND	11,000 n	1900	2320
Lead	4	15 <sup>5</sup>	15	15	1.2 B	9
Magnesium	4,560	ND	ND	118,807	3610 B	3700 B
Mercury	0.12	2 <sup>5</sup>	2	11 c	0.16 B	0.16 B
Nickel		100 <sup>5</sup>	100	730 n	7.6 B	5.8 B
Sodium	18,222	160,000 <sup>5</sup>	ND	396,022	24800 J	25300 J
Vanadium	21	49 <sup>4</sup>	ND	260 n		1.8 B
Zinc	4	5,000 <sup>3</sup>	ND	11,000 n		9.5 B
<b>General Chemistry, mg/L</b>						
Total Suspended Solids	ND	ND	ND	ND	5	NA

Appendix C

Table C-3. Summary of Positive Detections in Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

**NOTES:**

<sup>1</sup> Groundwater background screening value is twice the average of detected concentrations for inorganic analytes. For organic compounds, values are the mean of detected concentration, presented for comparison purposes only.

<sup>2</sup> RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. 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, and sodium) screening values were derived based on recommended daily allowances (RDAs).

<sup>3</sup> Secondary Standard.

<sup>4</sup> Systemic Toxicant

<sup>5</sup> Primary Standard

<sup>6</sup> Organoleptic

<sup>7</sup> Carcinogen

n = noncarcinogenic pathway

c = carcinogenic pathway

ND = Not determined.

NA = Not analyzed.

ID = identifier

USEPA = U.S. Environmental Protection Agency.

FDEPG = Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994.

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

B = Reported concentration is between the instrument detection limit (IDL) and the contract required detection limit (CRDL).

J = Reported concentration is an estimated quantity.

ug/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.

## **APPENDIX D**

### **SUMMARY OF ANALYTICAL RESULTS**

- D-1 Summary of Surface Soil Analytical Results**
- D-2 Summary of Subsurface Analytical Results**
- D-3 Summary of Groundwater Analytical Results**

**TABLE D-1**

**SUMMARY OF SURFACE SOIL ANALYTICAL RESULTS**

## Appendix D

Table D-1. Summary of Surface Soil Analytical Results  
Study Area 49Naval Training Center, Orlando  
Orlando, FL

Sample ID	49B00101	49S00101	49S00201
Lab ID	MB186009	MB186007	MB186008
Sampling Date	19-Jun-96	19-Jun-96	19-Jun-96
<b>Volatile organics, ug/kg</b>			
1,1,1-Trichloroethane	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	11 U	11 U	11 U
1,1,2-Trichloroethane	11 U	11 U	11 U
1,1-Dichloroethane	11 U	11 U	11 U
1,1-Dichloroethene	11 U	11 U	11 U
1,2-Dichloroethane	11 U	11 U	11 U
1,2-Dichloroethene (total)	11 U	11 U	11 U
1,2-Dichloropropane	11 U	11 U	11 U
2-Butanone	11 U	11 U	11 U
2-Hexanone	11 U	11 U	11 U
4-Methyl-2-pentanone	11 U	11 U	11 U
Acetone	11 U	11 U	11 U
Benzene	11 U	11 U	11 U
Bromodichloromethane	11 U	11 U	11 U
Bromoform	11 U	11 U	11 U
Bromomethane	11 U	11 U	11 U
Carbon disulfide	11 U	11 U	11 U
Carbon tetrachloride	11 U	11 U	11 U
Chlorobenzene	11 U	11 U	11 U
Chloroethane	11 U	11 U	11 U
Chloroform	11 U	11 U	11 U
Chloromethane	11 U	11 U	11 U
cis-1,3-Dichloropropene	11 U	11 U	11 U
Dibromochloromethane	11 U	11 U	11 U
Ethylbenzene	11 U	1 J	11 U
Methylene chloride	1 J	1 J	2 J
Styrene	11 U	11 U	11 U
Tetrachloroethene	11 U	11 U	11 U
Toluene	11 U	11 U	11 U
trans-1,3-Dichloropropene	11 U	11 U	11 U
Trichloroethene	11 U	11 U	11 U
Vinyl chloride	11 U	11 U	11 U
Xylene (total)	3 J	6 J	4 J
<b>Semivolatile organics, ug/kg</b>			
1,2,4-Trichlorobenzene	370 U	360 U	370 U
1,2-Dichlorobenzene	370 U	360 U	370 U
1,3-Dichlorobenzene	370 U	360 U	370 U
1,4-Dichlorobenzene	370 U	360 U	370 U
2,2'-oxybis(1-Chloropropane)	370 U	360 U	370 U
2,4,5-Trichlorophenol	920 U	900 U	920 U
2,4,6-Trichlorophenol	370 U	360 U	370 U
2,4-Dichlorophenol	370 U	360 U	370 U
2,4-Dimethylphenol	370 U	360 U	370 U
2,4-Dinitrophenol	920 U	900 U	920 U
2,4-Dinitrotoluene	370 U	360 U	370 U
2,6-Dinitrotoluene	370 U	360 U	370 U
2-Chloronaphthalene	370 U	360 U	370 U
2-Chlorophenol	370 U	360 U	370 U
2-Methylnaphthalene	370 U	360 U	370 U
2-Methylphenol	370 U	360 U	370 U
2-Nitroaniline	920 U	900 U	920 U

Appendix D

Table D-1. Summary of Surface Soil Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49B00101	49S00101	49S00201
Lab ID	MB186009	MB186007	MB186008
Sampling Date	19-Jun-96	19-Jun-96	19-Jun-96
2-Nitrophenol	370 U	360 U	370 U
3,3'-Dichlorobenzidine	370 U	360 U	370 U
3-Nitroaniline	920 U	900 U	920 U
4,6-Dinitro-2-methylphenol	920 U	900 U	920 U
4-Bromophenyl-phenylether	370 U	360 U	370 U
4-Chloro-3-methylphenol	370 U	360 U	370 U
4-Chloroaniline	370 U	360 U	370 U
4-Chlorophenyl-phenylether	370 U	360 U	370 U
4-Methylphenol	370 U	360 U	370 U
4-Nitroaniline	920 U	900 U	920 U
4-Nitrophenol	920 U	900 U	920 U
Acenaphthene	370 U	360 U	370 U
Acenaphthylene	370 U	360 U	370 U
Anthracene	370 U	360 U	370 U
Benzo(a)anthracene	370 U	360 U	370 U
Benzo(a)pyrene	370 U	360 U	370 U
Benzo(b)fluoranthene	370 U	360 U	370 U
Benzo(g,h,i)perylene	370 U	360 U	370 U
Benzo(k)fluoranthene	370 U	360 U	370 U
bis(2-Chloroethoxy)methane	370 U	360 U	370 U
bis(2-Chloroethyl)ether	370 U	360 U	370 U
bis(2-Ethylhexyl)phthalate	370 U	360 U	370 U
Butylbenzylphthalate	370 U	360 U	370 U
Carbazole	370 U	360 U	370 U
Chrysene	370 U	360 U	370 U
Di-n-butylphthalate	370 U	360 U	370 U
Di-n-octylphthalate	370 U	360 U	370 U
Dibenz(a,h)anthracene	370 U	360 U	370 U
Dibenzofuran	370 U	360 U	370 U
Diethylphthalate	370 U	360 U	370 U
Dimethylphthalate	370 U	360 U	370 U
Fluoranthene	370 U	360 U	370 U
Fluorene	370 U	360 U	370 U
Hexachlorobenzene	370 U	360 U	370 U
Hexachlorobutadiene	370 U	360 U	370 U
Hexachlorocyclopentadiene	370 U	360 U	370 U
Hexachloroethane	370 U	360 U	370 U
Indeno(1,2,3-cd)pyrene	370 U	360 U	370 U
Isophorone	370 U	360 U	370 U
N-Nitroso-di-n-propylamine	370 U	360 U	370 U
N-Nitrosodiphenylamine	370 U	360 U	370 U
Naphthalene	370 U	360 U	370 U
Nitrobenzene	370 U	360 U	370 U
Pentachlorophenol	920 U	900 U	920 U
Phenanthrene	370 U	360 U	370 U
Phenol	370 U	360 U	370 U
Pyrene	370 U	360 U	370 U
<b>Pesticides/PCBs, ug/kg</b>			
4,4'-DDD	3.6 U	3.5 U	3.6 U
4,4'-DDE	3.6 U	3.5 U	3.6 U
4,4'-DDT	3.6 U	3.5 U	3.6 U
Aldrin	1.9 U	1.8 U	1.9 U

Appendix D

Table D-1. Summary of Surface Soil Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49B00101	49S00101	49S00201
Lab ID	MB186009	MB186007	MB186008
Sampling Date	19-Jun-96	19-Jun-96	19-Jun-96
alpha-BHC	1.9 UJ	1.8 UJ	1.9 UJ
alpha-Chlordane	1.9 U	1.8 U	1.9 U
Aroclor-1016	36 U	35 U	36 U
Aroclor-1221	74 U	72 U	74 U
Aroclor-1232	36 U	35 U	36 U
Aroclor-1242	36 U	35 U	36 U
Aroclor-1248	36 U	35 U	36 U
Aroclor-1254	36 U	35 U	36 U
Aroclor-1260	36 U	35 U	36 U
beta-BHC	1.9 U	1.8 U	1.9 U
delta-BHC	1.9 UJ	1.8 UJ	1.9 UJ
Dieldrin	3.6 U	3.5 U	3.6 U
Endosulfan I	1.9 U	1.8 U	1.9 U
Endosulfan II	3.6 U	3.5 U	3.6 U
Endosulfan sulfate	3.6 U	3.5 U	3.6 U
Endrin	3.6 U	3.5 U	3.6 U
Endrin aldehyde	3.6 U	3.5 U	3.6 U
Endrin ketone	3.6 U	3.5 U	3.6 U
gamma-BHC (Lindane)	1.9 U	1.8 U	1.9 U
gamma-Chlordane	1.9 U	1.8 U	1.9 U
Heptachlor	1.9 U	1.8 U	1.9 U
Heptachlor epoxide	1.9 U	1.8 U	1.9 U
Methoxychlor	19 U	18 U	19 U
Toxaphene	190 U	180 U	190 U
<b>Inorganics, mg/kg</b>			
Aluminum	817 J	57.4 J	646 J
Antimony	3.6 B	3.2 U	4.8 B
Arsenic	0.62 B	0.28 U	0.29 U
Barium	1.8 B	0.91 B	2.2 B
Beryllium	0.03 U	0.03 U	0.03 U
Cadmium	0.73 U	0.71 U	0.72 U
Calcium	26.4 BJ	87.5 J	62.6 BJ
Chromium	1.4 B	0.72 B	1.6 B
Cobalt	0.55 U	0.54 U	0.55 U
Copper	0.26 U	0.26 U	0.26 U
Iron	78.1	59	88.4
Lead	1.6 U	3.1	1.4 U
Magnesium	14.2 B	15.4 B	15.1 B
Manganese	0.41 B	0.34 U	0.32 U
Mercury	0.05 B	0.06 B	0.05 B
Nickel	1.2 U	1.2 U	1.7 B
Potassium	164 U	160 U	163 U
Selenium	0.29 U	0.28 U	0.29 U
Silver	0.48 UJ	0.47 UJ	0.48 UJ
Sodium	39 B	35.3 B	26 U
Thallium	0.19 U	0.18 U	0.19 U
Vanadium	0.37 U	0.37 U	0.37 U
Zinc	4.6 U	5.7	4.8 U

**TABLE D-2**

**SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS**

Appendix D

Table D-2. Summary of Subsurface Soil Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

<b>Sample ID</b>	49B00102
<b>Lab ID</b>	MB186010
<b>Sampling Date</b>	19-Jun-96
<b>Volatile organics, ug/kg</b>	
1,1,1-Trichloroethane	12 U
1,1,2,2-Tetrachloroethane	12 U
1,1,2-Trichloroethane	12 U
1,1-Dichloroethane	12 U
1,1-Dichloroethene	12 U
1,2-Dichloroethane	12 U
1,2-Dichloroethene (total)	12 U
1,2-Dichloropropane	12 U
2-Butanone	12 U
2-Hexanone	12 U
4-Methyl-2-pentanone	12 U
Acetone	12 U
Benzene	12 U
Bromodichloromethane	12 U
Bromoform	12 U
Bromomethane	12 U
Carbon disulfide	12 U
Carbon tetrachloride	12 U
Chlorobenzene	12 U
Chloroethane	12 U
Chloroform	12 U
Chloromethane	12 U
cis-1,3-Dichloropropene	12 U
Dibromochloromethane	12 U
Ethylbenzene	12 U
Methylene chloride	2 J
Styrene	12 U
Tetrachloroethene	12 U
Toluene	12 U
trans-1,3-Dichloropropene	12 U
Trichloroethene	12 U
Vinyl chloride	12 U
Xylene (total)	3 J
<b>Semivolatile organics, ug/kg</b>	
1,2,4-Trichlorobenzene	410 U
1,2-Dichlorobenzene	410 U
1,3-Dichlorobenzene	410 U
1,4-Dichlorobenzene	410 U
2,2'-oxybis(1-Chloropropane)	410 U
2,4,5-Trichlorophenol	1000 U
2,4,6-Trichlorophenol	410 U
2,4-Dichlorophenol	410 U
2,4-Dimethylphenol	410 U
2,4-Dinitrophenol	1000 U
2,4-Dinitrotoluene	410 U
2,6-Dinitrotoluene	410 U
2-Chloronaphthalene	410 U
2-Chlorophenol	410 U
2-Methylnaphthalene	410 U
2-Methylphenol	410 U

## Appendix D

Table D-2. Summary of Subsurface Soil Analytical Results  
Study Area 49Naval Training Center, Orlando  
Orlando, FL

<b>Sample ID</b>	49B00102
<b>Lab ID</b>	MB186010
<b>Sampling Date</b>	19-Jun-96
2-Nitroaniline	1000 U
2-Nitrophenol	410 U
3,3'-Dichlorobenzidine	410 U
3-Nitroaniline	1000 U
4,6-Dinitro-2-methylphenol	1000 U
4-Bromophenyl-phenylether	410 U
4-Chloro-3-methylphenol	410 U
4-Chloroaniline	410 U
4-Chlorophenyl-phenylether	410 U
4-Methylphenol	410 U
4-Nitroaniline	1000 U
4-Nitrophenol	1000 U
Acenaphthene	410 U
Acenaphthylene	410 U
Anthracene	410 U
Benzo(a)anthracene	410 U
Benzo(a)pyrene	410 U
Benzo(b)fluoranthene	410 U
Benzo(g,h,i)perylene	410 U
Benzo(k)fluoranthene	410 U
bis(2-Chloroethoxy)methane	410 U
bis(2-Chloroethyl)ether	410 U
bis(2-Ethylhexyl)phthalate	410 U
Butylbenzylphthalate	410 U
Carbazole	410 U
Chrysene	410 U
Di-n-butylphthalate	48 J
Di-n-octylphthalate	410 U
Dibenz(a,h)anthracene	410 U
Dibenzofuran	410 U
Diethylphthalate	410 U
Dimethylphthalate	410 U
Fluoranthene	410 U
Fluorene	410 U
Hexachlorobenzene	410 U
Hexachlorobutadiene	410 U
Hexachlorocyclopentadiene	410 U
Hexachloroethane	410 U
Indeno(1,2,3-cd)pyrene	410 U
Isophorone	410 U
N-Nitroso-di-n-propylamine	410 U
N-Nitrosodiphenylamine	410 U
Naphthalene	410 U
Nitrobenzene	410 U
Pentachlorophenol	1000 U
Phenanthrene	410 U
Phenol	410 U
Pyrene	410 U
<b>Pesticides/PCBs, ug/kg</b>	
4,4'-DDD	4.1 U
4,4'-DDE	4.1 U

Appendix D

Table D-2. Summary of Subsurface Soil Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

<b>Sample ID</b>	49B00102
<b>Lab ID</b>	MB186010
<b>Sampling Date</b>	19-Jun-96
4,4'-DDT	4.1 U
Aldrin	2.1 U
alpha-BHC	2.1 UJ
alpha-Chlordane	2.1 U
Aroclor-1016	41 U
Aroclor-1221	83 U
Aroclor-1232	41 U
Aroclor-1242	41 U
Aroclor-1248	41 U
Aroclor-1254	41 U
Aroclor-1260	41 U
beta-BHC	2.1 U
delta-BHC	2.1 UJ
Dieldrin	4.1 U
Endosulfan I	2.1 U
Endosulfan II	4.1 U
Endosulfan sulfate	4.1 U
Endrin	4.1 U
Endrin aldehyde	4.1 U
Endrin ketone	4.1 U
gamma-BHC (Lindane)	2.1 U
gamma-Chlordane	2.1 U
Heptachlor	2.1 U
Heptachlor epoxide	2.1 U
Methoxychlor	21 U
Toxaphene	210 U
<b>Inorganics, mg/kg</b>	
Aluminum	15500 J
Antimony	4.4 B
Arsenic	1.6 BJ
Barium	4.6 B
Beryllium	0.13 B
Cadmium	0.81 U
Calcium	175 BJ
Chromium	12.9
Cobalt	0.62 U
Copper	6.5
Iron	3790
Lead	8.1
Magnesium	103 B
Manganese	0.7 B
Mercury	0.17
Nickel	3.8 B
Potassium	184 U
Selenium	0.4 BJ
Silver	0.54 UJ
Sodium	41.3 B
Thallium	0.21 U
Vanadium	25.5
Zinc	5.6

**TABLE D-3**

**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

Appendix D

Table D-3. Summary of Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49G00101	49H00101
Lab ID	MB201004	MB201005
Sampling Date	20-Jun-96	20-Jun-96
<b>Volatile organics, ug/L</b>		
1,1,1-Trichloroethane	1 U	NA
1,1,2,2-Tetrachloroethane	1 U	NA
1,1,2-Trichloroethane	1 U	NA
1,1-Dichloroethane	1 U	NA
1,1-Dichloroethene	1 U	NA
1,2-Dibromo-3-chloropropane	1 U	NA
1,2-Dibromoethane	1 U	NA
1,2-Dichlorobenzene	1 U	NA
1,2-Dichloroethane	1 U	NA
1,2-Dichloropropane	1 U	NA
1,3-Dichlorobenzene	1 U	NA
1,4-Dichlorobenzene	1 U	NA
2-Butanone	5 UR	NA
2-Hexanone	5 U	NA
4-Methyl-2-pentanone	5 U	NA
Acetone	5 UR	NA
Benzene	1 U	NA
Bromochloromethane	1 U	NA
Bromodichloromethane	1 U	NA
Bromoform	1 U	NA
Bromomethane	1 U	NA
Carbon disulfide	1 U	NA
Carbon tetrachloride	1 U	NA
Chlorobenzene	1 U	NA
Chloroethane	1 U	NA
Chloroform	1 U	NA
Chloromethane	1 U	NA
cis-1,2-Dichloroethene	1 U	NA
cis-1,3-Dichloropropene	1 U	NA
Dibromochloromethane	1 U	NA
Ethylbenzene	1 U	NA
Methylene chloride	2 U	NA
Styrene	1 U	NA
Tetrachloroethene	1 U	NA
Toluene	1 U	NA
trans-1,2-Dichloroethene	1 U	NA
trans-1,3-Dichloropropene	1 U	NA
Trichloroethene	1 U	NA
Vinyl chloride	1 U	NA
Xylene (total)	1 U	NA
<b>Semivolatile organics, ug/L</b>		
1,2,4-Trichlorobenzene	10 U	NA
1,2-Dichlorobenzene	10 U	NA
1,3-Dichlorobenzene	10 U	NA
1,4-Dichlorobenzene	10 U	NA
2,2'-oxybis(1-Chloropropane)	10 U	NA
2,4,5-Trichlorophenol	25 U	NA
2,4,6-Trichlorophenol	10 U	NA
2,4-Dichlorophenol	10 U	NA

Appendix D

Table D-3. Summary of Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49G00101	49H00101
Lab ID	MB201004	MB201005
Sampling Date	20-Jun-96	20-Jun-96
2,4-Dimethylphenol	10 U	NA
2,4-Dinitrophenol	25 U	NA
2,4-Dinitrotoluene	10 U	NA
2,6-Dinitrotoluene	10 U	NA
2-Chloronaphthalene	10 U	NA
2-Chlorophenol	10 U	NA
2-Methylnaphthalene	10 U	NA
2-Methylphenol	10 U	NA
2-Nitroaniline	25 U	NA
2-Nitrophenol	10 U	NA
3,3'-Dichlorobenzidine	10 U	NA
3-Nitroaniline	25 U	NA
4,6-Dinitro-2-methylphenol	25 U	NA
4-Bromophenyl-phenylether	10 U	NA
4-Chloro-3-methylphenol	10 U	NA
4-Chloroaniline	10 U	NA
4-Chlorophenyl-phenylether	10 U	NA
4-Methylphenol	10 U	NA
4-Nitroaniline	25 U	NA
4-Nitrophenol	25 U	NA
Acenaphthene	10 U	NA
Acenaphthylene	10 U	NA
Anthracene	10 U	NA
Benzo(a)anthracene	10 U	NA
Benzo(a)pyrene	10 U	NA
Benzo(b)fluoranthene	10 U	NA
Benzo(g,h,i)perylene	10 U	NA
Benzo(k)fluoranthene	10 U	NA
bis(2-Chloroethoxy)methane	10 U	NA
bis(2-Chloroethyl)ether	10 U	NA
bis(2-Ethylhexyl)phthalate	1 J	NA
Butylbenzylphthalate	10 U	NA
Carbazole	10 U	NA
Chrysene	10 U	NA
Di-n-butylphthalate	10 U	NA
Di-n-octylphthalate	10 U	NA
Dibenz(a,h)anthracene	10 U	NA
Dibenzofuran	10 U	NA
Diethylphthalate	10 U	NA
Dimethylphthalate	10 U	NA
Fluoranthene	10 U	NA
Fluorene	10 U	NA
Hexachlorobenzene	10 U	NA
Hexachlorobutadiene	10 U	NA
Hexachlorocyclopentadiene	10 U	NA
Hexachloroethane	10 U	NA
Indeno(1,2,3-cd)pyrene	10 U	NA
Isophorone	10 U	NA
N-Nitroso-di-n-propylamine	10 U	NA
N-Nitrosodiphenylamine	10 U	NA

Appendix D

Table D-3. Summary of Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49G00101	49H00101
Lab ID	MB201004	MB201005
Sampling Date	20-Jun-96	20-Jun-96
Naphthalene	10 U	NA
Nitrobenzene	10 U	NA
Pentachlorophenol	25 U	NA
Phenanthrene	10 U	NA
Phenol	10 U	NA
Pyrene	10 U	NA
<b>Pesticides/PCBs, ug/L</b>		
4,4'-DDD	0.1 UJ	NA
4,4'-DDE	0.1 UJ	NA
4,4'-DDT	0.08 J	NA
Aldrin	0.05 UJ	NA
alpha-BHC	0.05 UJ	NA
alpha-Chlordane	0.05 UJ	NA
Aroclor-1016	0.5 UJ	NA
Aroclor-1221	0.5 UJ	NA
Aroclor-1232	0.5 UJ	NA
Aroclor-1242	0.5 UJ	NA
Aroclor-1248	0.5 UJ	NA
Aroclor-1254	0.5 UJ	NA
Aroclor-1260	0.5 UJ	NA
beta-BHC	0.05 UJ	NA
delta-BHC	0.05 UJ	NA
Dieldrin	0.1 UJ	NA
Endosulfan I	0.05 UJ	NA
Endosulfan II	0.1 UJ	NA
Endosulfan sulfate	0.1 UJ	NA
Endrin	0.1 UJ	NA
Endrin aldehyde	0.1 UJ	NA
Endrin ketone	0.1 UJ	NA
gamma-BHC (Lindane)	0.05 UJ	NA
gamma-Chlordane	0.05 UJ	NA
Heptachlor	0.05 UJ	NA
Heptachlor epoxide	0.05 UJ	NA
Methoxychlor	0.5 UJ	NA
Toxaphene	5 UJ	NA
<b>Inorganics, ug/L</b>		
Aluminum	4230 J	3530 J
Antimony	2.6 U	2.6 U
Arsenic	6.1 BJ	3.9 BJ
Barium	27 BJ	23.2 BJ
Beryllium	0.13 U	0.13 U
Cadmium	3.3 U	3.3 U
Calcium	1200 BJ	1220 BJ
Chromium	4.4 U	3.3 U
Cobalt	2.5 U	2.5 U
Copper	1.2 U	1.2 U
Iron	1900	2320
Lead	1.2 B	9
Magnesium	3610 B	3700 B
Manganese	4.2 U	4.5 U

Appendix D

Table D-3. Summary of Groundwater Analytical Results  
Study Area 49

Naval Training Center, Orlando  
Orlando, FL

Sample ID	49G00101	49H00101
Lab ID	MB201004	MB201005
Sampling Date	20-Jun-96	20-Jun-96
Mercury	0.16 B	0.16 B
Nickel	7.6 B	5.8 B
Potassium	745 U	745 U
Selenium	1.3 U	1.3 U
Silver	2.2 U	2.2 U
Sodium	24800 J	25300 J
Thallium	5.2 UR	0.86 UR
Vanadium	1.7 U	1.8 B
Zinc	6.8 U	9.5 B
<b>General Chemistry, mg/L</b>		
Total Suspended Solids	5	NA

Notes for Analytical Results Tables  
Study Area 49

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

ug/kg microgram per kilogram

mg/L milligram per liter

ug/L microgram per liter

The following standard validation 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.
- B The inorganic analyte was positively identified and the associated numerical value is an estimated concentration because the detection was below the contract required detection limit (CRDL) and above the instrument detection limit.
- 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.