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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS REPORT FOR FACILITY 18LS BASE REALIGNMENT AND CLOSURE ZONE D INDUSTRIAL AND FLIGHT LINE AREA NAS CECIL FIELD FL

9/1/1998

HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT

FACILITY 18LS

BASE REALIGNMENT AND CLOSURE

ZONE D, INDUSTRIAL AND FLIGHT LINE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc
BCT	Base Realignment and Closure cleanup team
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
GCTL	groundwater cleanup target level
$\mu g/\ell$	micrograms per liter
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
TAL	target analyte list
TCL	target compound list
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 18LS at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

Facility 18LS is a lift station located on 2nd Street, between "B" and "C" Avenues. The Base Realignment and Closure cleanup team (BCT) regards lift stations as potential pathways for wastewater contaminants to enter the groundwater. A sampling and analysis outline (SAO) for the assessment of groundwater in the vicinity of Lift Station 18LS was prepared by HLA (then ABB Environmental Services, Inc. [ABB-ES]) and approved by the BCT (ABB-ES, 1995b).

2.0 PHASE II INVESTIGATION

This Phase II investigation included the installation of one shallow groundwater monitoring well and collection and analysis of one groundwater sample. Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994a).

The groundwater monitoring well was installed southeast and downgradient of Facility 18LS, to a depth of 14 feet below land surface. The downgradient location was identified based on the groundwater model prepared by the U.S. Geological Survey. One groundwater sample was collected and analyzed for the full Contract Laboratory Program suite of target compound list (TCL) organics and target analyte list (TAL) inorganics. A site plan indicating the location of the monitoring well is presented on Figure 1. The soil boring log is included in Appendix A.

3.0 PRELIMINARY RISK EVALUATION

A Preliminary Risk Evaluation (PRE) was conducted to assess potential risks to human and ecological receptors posed by contaminants in groundwater. Primary exposure pathways were evaluated to determine those pathways that potentially contribute to human health and ecological risks. The evaluation was conducted in general conformance with methodology provided in the U.S. Environmental Protection Agency (USEPA) Region IV memorandum entitled "Amended Guidance on PREs for the Purpose of Reaching a Finding of Suitability to Lease (FOSL)" (USEPA, 1994), USEPA Region IV bulletins on ecological risk assessment (USEPA, 1995), and minutes of meetings with the USEPA and the Florida Department of Environmental Protection (FDEP) concerning PREs (ABB-ES, 1995a). Site background information and rationale for sample collection and analysis are detailed in the Environmental Baseline Survey Report (ABB-ES, 1994b) and the SAO (ABB-ES, 1995b).

Inorganic analytes were compared to NAS Cecil Field screening criteria for inorganics established by the NAS Cecil Field partnering team. The NAS Cecil

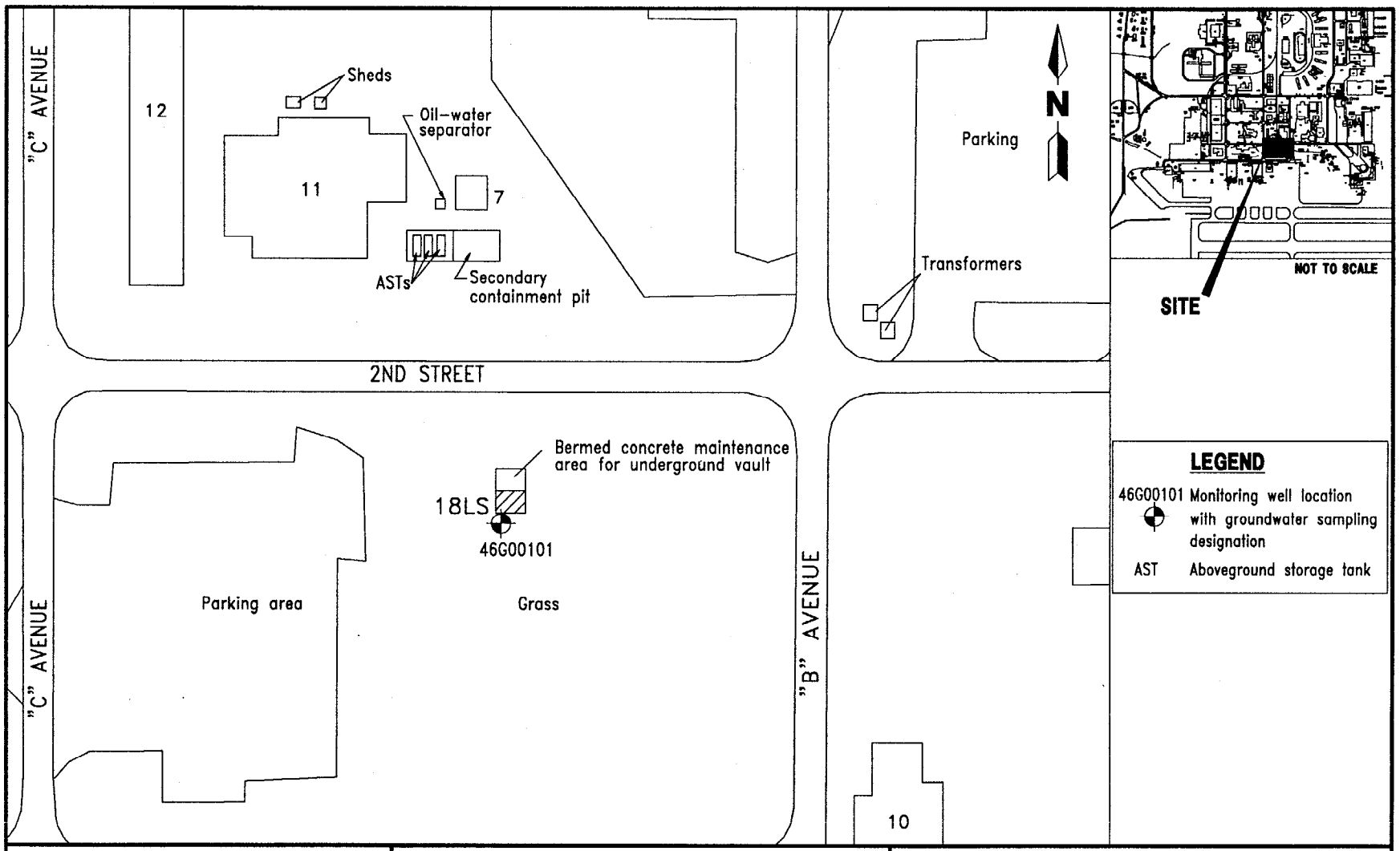

FIGURE 1
FACILITY 18 LS
LIFT STATION

SAMPLING AND ANALYSIS REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Field screening criteria were determined by using the nonparametric upper-outside value cutoffs as described in *Understanding Robust and Exploratory Data Analysis* (Hoaglin et al., 1983). These screening values were developed from data collected throughout NAS Cecil Field. No risk evaluation is conducted for inorganic analytes detected below NAS Cecil Field screening criteria for inorganics.

3.1 PUBLIC HEALTH PRELIMINARY RISK EVALUATION. All detected analytes were compared to readily available risk-based screening values to assess the likelihood of adverse human health effects associated with potential exposure to groundwater. Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (RBCs) (USEPA, 1998) and FDEP Groundwater Cleanup Target Levels (GCTLs) (Florida Administrative Code, 1998).

Most screening values published in the references listed above are based on toxicity constants and standard human exposure scenarios and correspond to fixed levels of risk. The designated level of risk for noncarcinogenic chemicals is based on a hazard quotient (HQ) of 1. The level of risk for carcinogenic chemicals is based on an excess lifetime cancer risk (ELCR) of 1×10^{-6}. Cancer and noncancer risks associated with industrial and residential land use are estimated by dividing the maximum detected analyte concentration by the corresponding USEPA Region III RBC value at the designated level of risk (HQ of 1 or ELCR of 1×10^{-6}). For noncarcinogens, the HQs are summed to determine the cumulative noncancer risk or hazard index (HI).

Eighteen inorganic analytes and one semivolatile organic compound (acenaphthene) were detected in the groundwater sample collected in the study area. Acenaphthene was detected at a concentration below the GCTL and RBC values. No inorganic analytes were detected at concentrations in excess of NAS Cecil Field inorganic background data set values. Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and FDEP GCTLs and, where applicable, with NAS Cecil Field Inorganic Background Data Set (see Appendix A).

Because no contaminants were detected at concentrations in excess of NAS Cecil Field inorganic background data set values or GCTLs, no hazard index (HI) or excess lifetime cancer risk (ELCR) was calculated and no further human health risk evaluation is required.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Facility 18LS were characterized by HLA ecological risk assessors in June 1996. Facility 18LS is surrounded by mowed grass. No complete exposure pathways to groundwater were identified within the study area. Therefore, no further ecological risk evaluation was conducted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

One groundwater sample from the shallow surficial aquifer was collected at Facility 18LS and analyzed to determine the concentrations of TCL organic and TAL inorganic compounds. Concentrations of detected compounds were compared to human health screening criteria. No inorganic analytes were detected above NAS Cecil Field inorganic data set levels.

There is no potable water supply associated with Facility 18LS; therefore, a groundwater-to-receptor pathway does not currently exist. No complete exposure pathways to ecological receptors were identified for groundwater in the study area. Therefore, no further ecological risk evaluation was conducted.

Based upon the information obtained for this assessment, the concentrations of analytes detected in groundwater at Facility 18LS do not represent a hazard to human health or the environment. Therefore, the color classification for Facility 18LS should be changed from Gray to Light Green. No further action is recommended for this site.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994a. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (December).

ABB-ES. 1994b. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station, Cecil Field, Jacksonville, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (November).

ABB-ES. 1995a. Minutes of September 25, 1995, conference call to discuss preliminary risk evaluations.

ABB-ES. 1995b. *Sampling and Analysis Outline, Building 18LS, Base Realignment and Closure, Zone D, Industrial and Flightline Area, Group V, Naval Air Station, Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (July).

Florida Administrative Code. 1998. *Brownfield's Cleanup Criteria Rule*: Chapter 62-785. Tallahassee, Florida.

Hoaglin, D.C., F. Mosteller, and J.W. Tukey. 1983. *Understanding Robust and Exploratory Data Analysis*. New York: John Wiley and Sons, Inc.

U.S. Environmental Protection Agency (USEPA). 1994. Memorandum from USEPA Region IV. Subject: "Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease (FOSL)." Atlanta, Georgia, (December 20).

USEPA. 1995. *Supplemental Guidance to RAGS*. Region IV bulletins. USEPA Region IV Waste Management Division. Atlanta, Georgia.

USEPA. 1998. *Risk-Based Concentration Table*. Region III. Philadelphia, Pennsylvania.

APPENDIX A

SOIL BORING LOGS AND TABLE

TITLE: NAS Cecil Field BRAC	**LOG of WELL:** CEF-18LS-1S	**BORING NO.** CEF-18LS-1S
CLIENT: SOUTHDIVNAVFACENGCOM		**PROJECT NO:** 08520-85
CONTRACTOR: Alliance Environmental, Inc.	**DATE STARTED:** 12-1-95	**COMPLTD:** 12-1-95
METHOD: Auger	**CASE SIZE:** 2 in.	**SCREEN INT.:** 3 - 13 ft.	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** PID	**TOT DPTH:** 14.0FT.	**DPTH TO ▽** 4.5 FT.
LOGGED BY: R. Holloway	**WELL DEVELOPMENT DATE:**	**SITE:** 46 - 18LS Lift Station

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				0	SILTY SAND (SM): 100%, very dark gray, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2									
3				0				posthole	
4									▽
5				0				1,1,1,1	
6									
7				0				1,1,1,1	
8									
9									
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 ABB ENVIRONMENTAL SERVICES, INC.

BRAC Preliminary Risk Evaluation Table for Analytes Detected in Groundwater
Facility 18LS, Naval Air Station Cecil Field

	Sample		Screening Values			Calculated Risk Values[2]	
Analyte[1]	46G00101	46G00101F	BKGRD	GCTL	RBC(T)	ELCR	HQ
Semi-Volatile Organic							
Acenaphthene	1			20 t	2200 n		0.0
Inorganic Analytes							
Aluminum	4150	1740	13100	200 s *	37000 n		
Antimony		4.8	44.5	6 p	15 n		
Arsenic	5	4.6	7.1	50 p	0.045 c		
Barium	10.3	8.6	88.2	2000 p	2600 n		
Calcium	18400	18900	81100				
Chromium	8.2	4.9	18	100 e	180 n		
Cobalt	1.6	1.3	12.8		2200 n		
Copper	3	2.2	12.5	1000 s	1500 n		
Iron	877	771	7760	300 s *	11000 n		
Magnesium	8040	8400	10000				
Manganese	39.8	50.7	96.2	50 s *	840 n		
Nickel	2.3		24.5	100 p	730 n		
Potassium	1390	1350	4330				
Sodium	5240	4900	16500	160000 p			
Thallium	3.3	2.1	13.25	2 p *	2.9 n		
Vanadium	7.8	5.5	20.2	49 st	260 n		
Zinc	15.1	5.9	76.8	5000 s	11000 n		
Cyanide			22	200 p			
					Sum=		**0.0**

Notes:

[1] All detected analytes have been reported. All analytes are reported in ug/l.

[2] ELCR and HQ are only calculated for analytes detected at concentrations in excess of BKGRD and GCTL.

Sample Suffixes indicate the following: F=filtered sample, DL= laboratory diluted sample, RE= laboratory re-extracted, D=field duplicate

*= values that exceed GCTL.
p= primary standard (maximum contaminant limit).
st= systemic toxicant.
t= organoleptic standard.
s= secondary standard (related to taste, odor, color, or other non-aesthetic effects).

BKGRD = Naval Air Station Cecil Field Inorganic Background Data Set.
GCTL = Groundwater Cleanup Target Levels, Chapter 62-785, Florida Administrative Code.
RBC(T)= Risk-Based Concentration (tap water), USEPA Region III, May 1996.
c=carcinogenic risk
n=noncarcinogenic risk
ELCR = calculated excess lifetime cancer risk, based on RBC(T) values. (ELCR = detected concentration/RBC(T) * 10E-06)