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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS REPORT FOR FACILITY 47 BASE REALIGNMENT AND
CLOSURE ZONE D INDUSTRIAL AND FLIGHT LINE AREA NAS CECIL FIELD FL
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HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT
FACILITY 47
BASE REALIGNMENT AND CLOSURE
ZONE D, INDUSTRIAL AND FLIGHT LINE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BRAC	Base Realignment and Closure
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
GCTL	groundwater cleanup target level
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 47 at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

Facility 47 is an air terminal building, as described in the Base Realignment and Closure (BRAC) NAS Cecil Field Environmental Baseline Survey (EBS) (ABB Environmental Services, Inc. [ABB-ES], 1994a). Facility 47 is located along the east-west flightline, south of 1st Street, approximately 200 feet east of Hangar 14. Initial environmental concerns detailed in the EBS for Facility 47 were associated with the presence of friable asbestos-containing material in the building.

A sampling and analysis outline (SAO) was prepared by HLA (then ABB-ES) and approved by the BRAC cleanup team (ABB-ES, 1997). Documents reviewed in preparation of the SAO indicate Facility 47 was formerly used as a paint storage building. The potential for release of contaminants from paints or solvents was identified as a potential environmental concern. The SAO outlines a plan for assessment of groundwater downgradient of Facility 47.

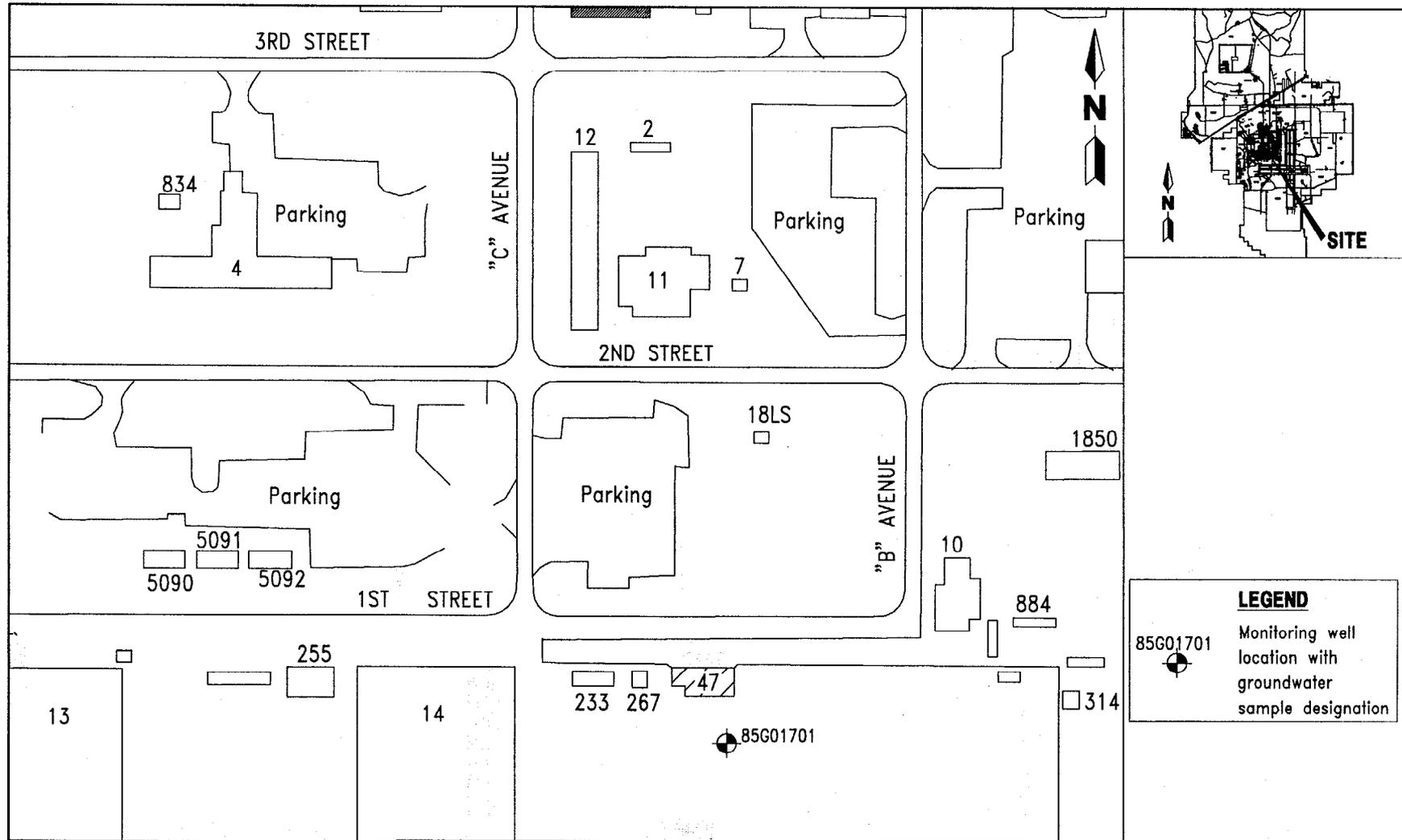
2.0 PHASE II INVESTIGATION

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, 1994b). The groundwater monitoring well was installed near the southeast corner of Facility 47. The location selected is downgradient of the former paint storage area. The groundwater flow direction in this area is likely to be south-southeast, based on the groundwater flow model produced for NAS Cecil Field by the U.S. Geological Survey. The well was completed at a depth of 13 feet below land surface.

One groundwater sample was collected and analyzed for the full Contract Laboratory Program suite of target compound list organics and target analyte list inorganics. A site plan indicating the location of the monitoring well is presented on Figure 1.

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 Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of



0 100 200

 SCALE: 1 INCH = 200 FEET

FIGURE 1
FACILITY 47 - AIR TERMINAL BUILDING
SAMPLE LOCATION PLAN



SAMPLING AND ANALYSIS REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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, 1995). Site background information and rationale for sample collection and analysis are detailed in the EBS Report (ABB-ES, 1994a) and the SAO (ABB-ES, 1997).

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

Six inorganic analytes and one volatile organic compound (VOC) were detected in the groundwater sample collected in the study area. No inorganic analytes were detected at concentrations in excess of the NAS Cecil Field screening criteria for inorganics. The detected concentration of the VOC, acetone, did not exceed the FDEP GCTL. Acetone is frequently encountered as an artifact of the laboratory environment and is not likely to be site-related.

Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and GCTLs (see Appendix A). No compounds or analytes were detected at concentrations in excess of NAS Cecil Field screening criteria for inorganics and GCTLs. Therefore, no HI or ELCR was calculated in association with a potential groundwater exposure scenario.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Facility 47 were characterized by HLA ecological risk assessors in June 1996. Facility 47 is located in a developed flightline area and is surrounded by pavement. 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

Analytes detected in groundwater collected downgradient of Facility 47 do not represent a hazard to human health or the environment at the detected concentrations. No other environmental concerns have been identified for this facility.

Based upon the findings of this evaluation, the color-code for Facility 47 should be reclassified to 1/White. No remedial action or further evaluation is recommended.

REFERENCES

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APPENDIX A

PRELIMINARY RISK EVALUATION TABLE

**Preliminary Human Health Risk Evaluation Table for Analytes Detected in Groundwater
Facility 47, Naval Air Station Cecil Field**

Analyte ¹	Screening Values			Calculated Risk Values ²	
	85G01701 BKGRD	GCTL	RBC(T)	ELCR	HQ
<u>Volatile Organic Compounds</u>					
Acetone	2.9		700	3700	n
<u>Inorganic Analytes</u>					
Aluminum	0.5	13100	200	37000	n
Calcium	87	81100			
Magnesium	0.8	10000			
Manganese	0.055	96.2	50	840	n
Potassium	4.3	4330			
Sodium	11	16500	160000		

Notes:

¹ All detected analytes are reported. Concentrations and screening values are expressed in ug/l.

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

* = background screening criteria or GCTLs have been exceeded.

BKGRD = NAS Cecil Field Inorganic Background Data Set.

GCTL = Groundwater Cleanup Target Level, Florida Department of Environmental Protection, Chapter 62-785, Florida Administrative Code.

RBC(T) = Risk-based Concentration (Tap Water), USEPA Region III, April 1998.

n = noncarcinogenic risk.

ELCR = calculated excess lifetime cancer risk, based on RBC(T) values.

(ELCR = maximum detected concentration/RBC(T) * 1E-06)

HQ = calculated hazard quotient for noncarcinogenic analytes.

(HQ = maximum detected concentration/RBC(T))

APPENDIX B

LABORATORY ANALYTICAL DATA

NAS CECIL FIELD -- FACILITY 47
 GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10174

Lab Sample Number: JR98771
 Site: HANG13&14
 Locator: 85G00701
 Collect Date: 08-APR-98

VALUE QUAL UNITS DL

CLP VOLATILES 90-SOW

Chloromethane	1 U	ug/l	1
Bromomethane	2 U	ug/l	2
Vinyl chloride	1 U	ug/l	1
Chloroethane	2 U	ug/l	2
Methylene chloride	3 U	ug/l	3
Acetone	-		
Carbon disulfide	-		
1,1-Dichloroethene	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,2-Dichloroethene (total)	-		
Chloroform	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
2-Butanone	-		
1,1,1-Trichloroethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
Trichloroethene	1 U	ug/l	1
Dibromochloromethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
Benzene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1
Bromoform	1 U	ug/l	1
4-Methyl-2-pentanone	-		
2-Hexanone	-		
Tetrachloroethene	2 U	ug/l	2
Toluene	2.6	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Ethylbenzene	2.1	ug/l	1
Styrene	1 U	ug/l	1
Xylenes (total)	-		

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

NAS CECIL FIELD -- FACILITY 47
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10175

Lab Sample Number: JR98771
Site: HANG13&14
Locator: 85G00701
Collect Date: 08-APR-98

VALUE QUAL UNITS DL

CLP SEMIVOLATILES 90-SOW

Phenol	5 U	ug/l	5
bis(2-Chloroethyl) ether	5 U	ug/l	5
2-Chlorophenol	5 U	ug/l	5
1,3-Dichlorobenzene	1 U	ug/l	1
1,4-Dichlorobenzene	1 U	ug/l	1
1,2-Dichlorobenzene	1 U	ug/l	1
2-Methylphenol	-		
2,2-oxybis(1-Chloropropane)	-		
4-Methylphenol	-		
N-Nitroso-di-n-propylamine	5 U	ug/l	5
Hexachloroethane	5 U	ug/l	5
Nitrobenzene	5 U	ug/l	5
Isophorone	5 U	ug/l	5
2-Nitrophenol	5 U	ug/l	5
2,4-Dimethylphenol	5 U	ug/l	5
bis(2-Chloroethoxy) methane	5 U	ug/l	5
2,4-Dichlorophenol	5 U	ug/l	5
1,2,4-Trichlorobenzene	5 U	ug/l	5
Naphthalene	5 U	ug/l	5
4-Chloroaniline	-		
Hexachlorobutadiene	5 U	ug/l	5
4-Chloro-3-methylphenol	5 U	ug/l	5
2-Methylnaphthalene	5 U	ug/l	5
Hexachlorocyclopentadiene	5 U	ug/l	5
2,4,6-Trichlorophenol	5 U	ug/l	5
2,4,5-Trichlorophenol	-		
2-Chloronaphthalene	5 U	ug/l	5
2-Nitroaniline	-		
Dimethylphthalate	5 U	ug/l	5
Acenaphthylene	5 U	ug/l	5
2,6-Dinitrotoluene	5 U	ug/l	5
3-Nitroaniline	-		
Acenaphthene	5 U	ug/l	5
2,4-Dinitrophenol	5 U	ug/l	5
4-Nitrophenol	5 U	ug/l	5
Dibenzofuran	-		
2,4-Dinitrotoluene	5 U	ug/l	5
Diethylphthalate	5 U	ug/l	5
4-Chlorophenyl-phenylether	5 U	ug/l	5
Fluorene	5 U	ug/l	5
4-Nitroaniline	-		
4,6-Dinitro-2-methylphenol	5 U	ug/l	5
N-Nitrosodiphenylamine	5 U	ug/l	5
4-Bromophenyl-phenylether	5 U	ug/l	5
Hexachlorobenzene	5 U	ug/l	5
Pentachlorophenol	5 U	ug/l	5
Phenanthrene	5 U	ug/l	5
Anthracene	5 U	ug/l	5
Carbazole	-		
Di-n-butylphthalate	5 U	ug/l	5

NAS CECIL FIELD -- FACILITY 47
 GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10175

Lab Sample Number: JR98771
 Site: HANG13&14
 Locator: 85G00701
 Collect Date: 08-APR-98

VALUE QUAL UNITS DL

	VALUE	QUAL	UNITS	DL
Fluoranthene	5	U	ug/l	5
Pyrene	5	U	ug/l	5
Butylbenzylphthalate	-			
3,3-Dichlorobenzidine	16	U	ug/l	16
Benzo (a) anthracene	5	U	ug/l	5
Chrysene	5	U	ug/l	5
bis(2-Ethylhexyl) phthalate	5	U	ug/l	5
Di-n-octylphthalate	5	U	ug/l	5
Benzo (b) fluoranthene	5	U	ug/l	5
Benzo (k) fluoranthene	5	U	ug/l	5
Benzo (a) pyrene	5	U	ug/l	5
Indeno (1,2,3-cd) pyrene	5	U	ug/l	5
Dibenzo (a,h) anthracene	5	U	ug/l	5
Benzo (g,h,i) perylene	5	U	ug/l	5

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