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NAS CECIL FIELD
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SAMPLING AND ANALYSIS REPORT FOR HANGAR 815 NAS CECIL FIELD FL
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HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT
HANGAR 815
BASE REALIGNMENT AND CLOSURE
ZONE D, INDUSTRIAL AND FLIGHT LINE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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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.
ACM	asbestos-containing material
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
HLA	Harding Lawson Associates
HI	hazard index
HQ	hazard quotient
$\mu\text{g}/\ell$	micrograms per liter
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

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 Hangar 815 at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations.

Hangar 815 is an aircraft maintenance hangar, as described in the Base Realignment and Closure (BRAC) NAS Cecil Field Environmental Baseline Survey (EBS) (ABB Environmental Services, Inc. [ABB-ES], 1994a). Hangar 815 is located along the north-south flightline, south of Hangar 1845 and north of Hangar 825. Hangar 815 houses administrative offices and a large aircraft maintenance area.

An aircraft washrack is located on the concrete apron north of Hangar 815 (Figure 1). The washrack is a concrete-paved area, approximately 80 feet by 90 feet, and is sloped to drain rinsewater to a catch basin (Figure 1). Facility plans indicate that the catch basin in the washrack is currently connected to the sanitary sewage system. However, a gate valve in the washrack piping system may be used to divert runoff to the storm water drainage system when the washrack is not in use.

Friable asbestos-containing materials (ACMs) in pipe insulation and joint packing, and floor and ceiling tiles suspected of being ACM, have been identified in Hangar 815. The Asbestos Management Plan (Kemron, 1995a) indicates that all observed friable ACM and suspect ACM is in fair condition and can be maintained under an Operations and Maintenance plan until further damage occurs or until renovation impacts the material. It is likely that Facility 815 has been painted with lead-based paint. However, Department of Defense policy does not require remedial action at non-residential facilities.

Building 815 was color-coded Red in the EBS only because it is within the area of investigation for the Installation Restoration Program Site 16 groundwater contamination plume. The potential for release of contaminated rinsewater from the washrack to the storm water drainage system and the potential for infiltration of contaminants to shallow groundwater have subsequently been identified as potential environmental concerns.

A sampling and analysis outline (SAO) for the assessment of groundwater in the vicinity of Hangar 815 was prepared by HLA (then ABB-ES) and approved by the BRAC cleanup team (ABB-ES, 1995a). Potential environmental impacts associated with releases to the storm sewer system in the vicinity of the flightline industrial area are being evaluated separately.

2.0 PHASE II INVESTIGATION

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

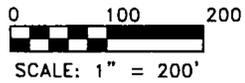
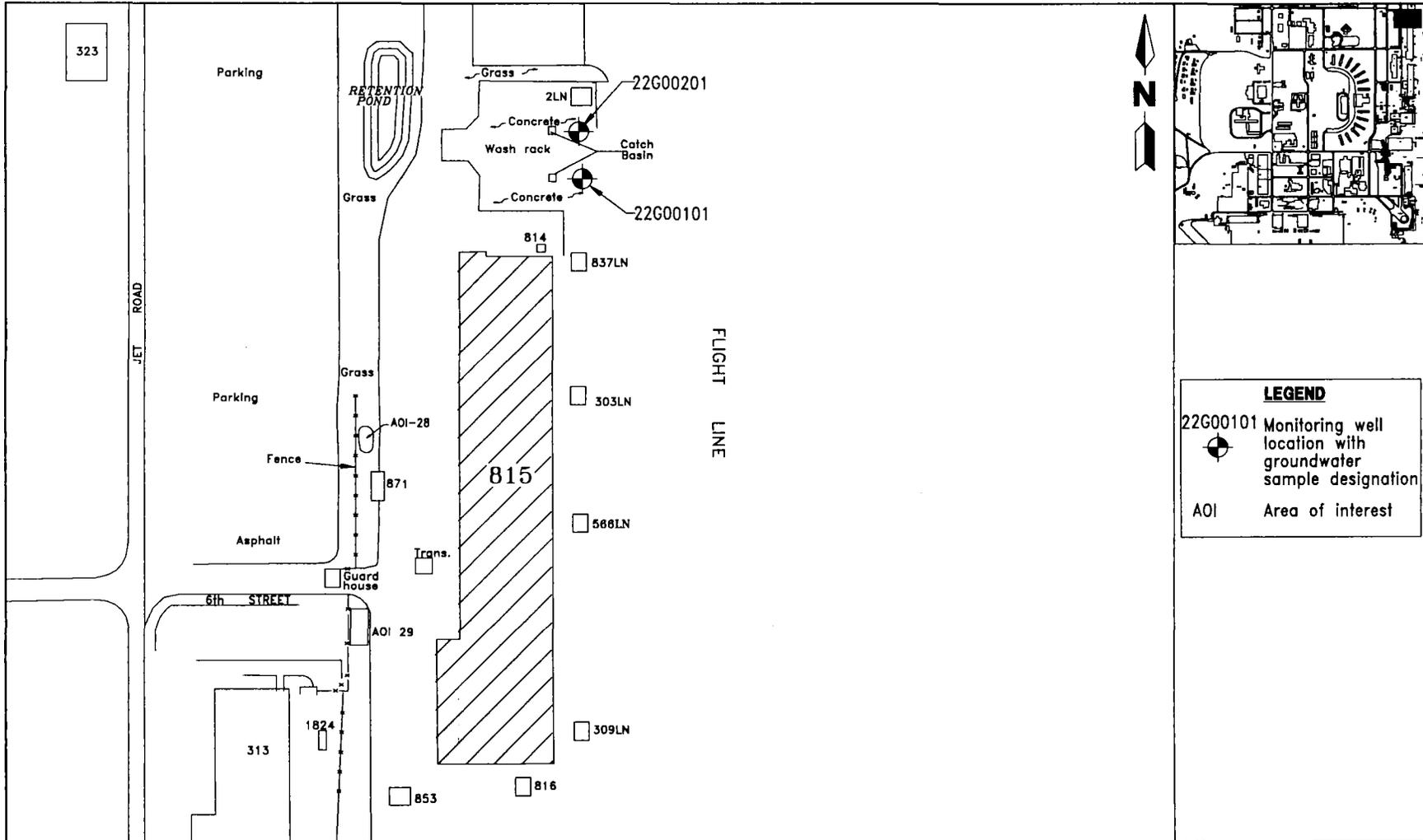


FIGURE 1
FACILITY 815
HANGAR
SAMPLE LOCATION PLAN



SAMPLING AND ANALYSIS REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

One groundwater monitoring well was installed adjacent to the east of each of the two catch basins in the washrack area north of Hangar 815. The groundwater flow direction was inferred to be to the east-southeast, on the basis of the groundwater flow model developed for NAS Cecil Field by the United States Geological Survey (USGS) (USGS, 1998). The wells were completed to a depth of 13 to 14 feet below land surface. One groundwater sample was collected from each of the wells and analyzed for the full Contract Laboratory Program suite of target compound list organics and target analyte list inorganics. A site plan indicating the locations of the monitoring wells is presented on Figure 1. Soil boring logs are 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, 1995b). Site background information and rationale for sample collection and analysis are detailed in the EBS Report (ABB-ES, 1994a) and the SAO (ABB-ES, 1995a).

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).

Thirteen inorganic analytes, two volatile organic compounds, two semivolatile organic compounds, and two pesticide compounds were detected in the groundwater sample collected in the study area. Manganese and potassium were the only inorganic analytes detected at concentrations in excess of the NAS Cecil Field screening criteria for inorganics. The maximum detected concentration of manganese in groundwater at this facility was 237 micrograms per liter ($\mu\text{g}/\text{l}$), which exceeds the GCTL of 50 $\mu\text{g}/\text{l}$. Groundwater from this monitoring well was resampled for manganese in October 1998. Filtered and unfiltered samples were collected. Manganese concentrations detected in these samples were 26 $\mu\text{g}/\text{l}$ and 24 $\mu\text{g}/\text{l}$, respectively. Potassium is a naturally occurring element in groundwater at NAS Cecil Field, and is also an essential nutrient. Naphthalene was detected at a concentration of 200 $\mu\text{g}/\text{l}$, which is in excess of the GCTL of 20 $\mu\text{g}/\text{l}$. No other volatile, semivolatile, or pesticide compounds were detected at concentrations in excess of GCTLs.

Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and GCTLs and, when applicable, with NAS Cecil Field Inorganic Background Data Set (see Appendix A). A cumulative noncancer risk or HI of 0.4 was calculated based upon RBCs for tap water, for manganese (840 $\mu\text{g}/\text{l}$) and naphthalene (1,500 $\mu\text{g}/\text{l}$). There are no GCTL or RBC values associated with potassium in groundwater; therefore, no risk calculation was completed for this analyte. No carcinogenic compounds were detected in either of the two groundwater samples collected. Therefore, no ELCR was calculated.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Hangar 815 were characterized by HLA ecological risk assessors in June 1996. Hangar 815 is located in a developed flightline industrial area and is surrounded by pavement. No complete exposure pathways to groundwater were confirmed within the immediate study area. Therefore, no further ecological risk evaluation was conducted. The potential for environmental impact to surface water and sediment, associated with release or infiltration of contaminated rinsewater into the storm sewer system in the vicinity of the flightline industrial area, is being evaluated separately.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Two groundwater samples from the shallow surficial aquifer were collected at Hangar 815. Manganese and naphthalene were detected at concentrations in excess of FDEP GCTLs. Naphthalene is a component of aviation fuel and may have infiltrated the shallow groundwater by seeping through joints in the washrack catch basin or pipes. The elevated concentration of manganese in the initial sample collected from the southern monitoring well is likely to be a result of suspended solids in the formation water.

The Site 16 groundwater contaminant plume may extend beneath the southern portion of Hangar 815. Assessment of the Site 16 plume is in progress, but remedial action has not been completed. Therefore, the color classification for Hangar 815 should be changed to 5/Yellow. Further assessment of the naphthalene detected is recommended for Hangar 815. Groundwater usage restrictions should be developed to prevent human exposure to contaminants, and to avoid influencing the spatial extent of the Site 16 contaminant plume.

Asbestos and lead-based paint in the hangar do not currently represent a human health hazard. However, recommendations detailed in the Asbestos and Lead-Based Paint Management (Kemron, 1995a; 1995b) plans should be followed to prevent human exposure to these substances. Appropriate site operation and management procedures should also be undertaken in order to ensure that other current and future site activities do not result in release of hazardous substances to the environment.

REFERENCES

- ABB Environmental Services, Inc. (ABB-ES). 1994a. *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. 1994b. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (December).
- ABB-ES. 1995a. *Sampling and Analysis Outline, Hangar 815, Base Realignment and Closure, Zone D, Industrial and Flightline Area, Group III, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (February).
- ABB-ES. 1995b. Minutes of September 25, 1995, conference call to discuss preliminary risk evaluations.
- Florida Administrative Code. 1998. *Brownfields 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.
- Kemron. 1995a. *Asbestos Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for ABB-ES, Orange Park, Florida (October).
- Kemron. 1995b. *Lead-Based Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for ABB-ES, Orange Park, Florida (October).
- 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.
- U.S. Geological Survey. 1998. *Ground-Water Flow in the Surficial Aquifer System and Potential Movement of Contaminants from Selected Water-Disposal Sites at Cecil Field Naval Air Station, Jacksonville, Florida*. USGS Water-Resources Investigations Report 97-4278. Tallahassee, Florida.

APPENDIX A

SOIL BORING LOG AND PRELIMINARY RISK EVALUATION TABLE

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-815-1S	BORING NO. CEF-815-1S
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 12-15-95	COMPLTD: 12-15-95
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 4 - 14 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: PID	TOT DPTH: 15.0FT.	DPTH TO ∇ 5.5 FT.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE:		SITE: 22 - 815 Hangar

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				66	SILTY SAND (SM): 100%, dark grayish brown to black, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2			19	posthole					
3			17	12,12,16,28					
4			23	33,39,41,43					
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-815-2S	BORING NO. CEF-815-2S
CLIENT: SOUTHDIVNAVFACENCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 12-15-95	COMPLTD: 12-15-95
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 ∇ 5.0 FT.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE:		SITE: 22 - 815 Hangar

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				24	SILTY SAND (SM): 100%, light brownish gray, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2				51				posthole	
3									
4									
5				0				1,5,4	
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

**Preliminary Human Health Risk Evaluation Table for Analytes Detected in Groundwater
Facility 815, Naval Air Station Cecil Field**

Analyte ¹	22G00101	22G00201	Screening Values			Calculated Risk Values ²	
			BKGRD	GCTL	RBC(T)	ELCR	HQ
<u>Volatile Organic Compounds</u>							
4-Methyl-2-pentanone	32	7		560	2900	n	
Acetone	61	80		700	3700	n	
<u>Semivolatile Organic Compounds</u>							
2-Methylnaphthalene	14			20	1500	n	
*Naphthalene	200	6.2		20	1500	n	0.1
<u>Pesticides/PCBs</u>							
Endrin ketone	0.024			2	11	n	
Methoxychlor	0.015			40	180	n	
<u>Inorganic Analytes</u>							
*Aluminum	204	415	13100	200	37000	n	
Barium	18.2	11.6	88.2	2000	2600	n	
Calcium	76700	60900	81100				
Copper	2.1		12.5	1000	1500	n	
*Iron	4620	2250	7760	300	11000	n	
Magnesium	5190	3280	10000				
*Manganese	237	73.7	96.2	50	840	n	0.3
*Potassium	9140	1120	4330				
Selenium	3.3		7	50	180	n	
Sodium	13300	7840	16500	160000			
Vanadium	2.6	2.3	20.2	49	260	n	
Zinc	51.1	21.5	76.8	5000	11000	n	
Cyanide	3.3	4	22	200	730	n	
<u>General Chemistry</u>							
Total petroleum hydrocarbons	2.1			5000			
Sum=							0.4

Notes:

- ¹ All detected analytes are reported. Concentrations and screening values are expressed in ug/l
- ²ELCR 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 Levels, FDEP, Chapter 62-785, Florida Administrative Code
- RBC(T) = Risk-based Concentration (Tap Water), USEPA Region III, April 1998
- n = non-carcinogenic 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 non-carcinogenic analytes
(HQ = maximum detected concentration/RBC(T))

APPENDIX B

LABORATORY ANALYTICAL DATA

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10154

Lab Sample Number:	C32WD	C32WQ			
Site	CECILBRAC2	CECILBRAC2			
Locator	22G00101	22G00201			
Collect Date:	21-FEB-96	21-FEB-96			
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

Chloromethane	3 U	ug/l	3	5 U	ug/l	5
Bromomethane	3 U	ug/l	3	5 U	ug/l	5
Vinyl chloride	3 U	ug/l	3	5 U	ug/l	5
Chloroethane	3 U	ug/l	3	5 U	ug/l	5
Methylene chloride	2 U	ug/l	2	2 U	ug/l	2
Acetone	61	ug/l	3	80	ug/l	5
Carbon disulfide	2 U	ug/l	2	2 U	ug/l	2
1,1-Dichloroethene	2 U	ug/l	2	2 U	ug/l	2
1,1-Dichloroethane	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloroethene (total)	2 U	ug/l	2	2 U	ug/l	2
Chloroform	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloroethane	2 U	ug/l	2	2 U	ug/l	2
2-Butanone	3 U	ug/l	3	5 U	ug/l	5
1,1,1-Trichloroethane	2 U	ug/l	2	2 U	ug/l	2
Carbon tetrachloride	2 U	ug/l	2	2 U	ug/l	2
Bromodichloromethane	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloropropane	2 U	ug/l	2	2 U	ug/l	2
cis-1,3-Dichloropropene	2 U	ug/l	2	2 U	ug/l	2
Trichloroethene	2 U	ug/l	2	2 U	ug/l	2
Dibromochloromethane	2 U	ug/l	2	2 U	ug/l	2
1,1,2-Trichloroethane	2 U	ug/l	2	2 U	ug/l	2
Benzene	2 U	ug/l	2	2 U	ug/l	2
trans-1,3-Dichloropropene	2 U	ug/l	2	2 U	ug/l	2
Bromoform	2 U	ug/l	2	2 U	ug/l	2
4-Methyl-2-pentanone	32	ug/l	3	7	ug/l	5
2-Hexanone	3 U	ug/l	3	5 U	ug/l	5
Tetrachloroethene	2 U	ug/l	2	2 U	ug/l	2
Toluene	2 U	ug/l	2	2 U	ug/l	2
1,1,2,2-Tetrachloroethane	2 U	ug/l	2	2 U	ug/l	2
Chlorobenzene	2 U	ug/l	2	2 U	ug/l	2
Ethylbenzene	2 U	ug/l	2	2 U	ug/l	2
Styrene	2 U	ug/l	2	2 U	ug/l	2
Xylenes (total)	2 U	ug/l	2	2 U	ug/l	2

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

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10155

Lab Sample Number:	C32WD	C32WQ
Site	CECILBRAC2	CECILBRAC2
Locator	22G00101	22G00201
Collect Date:	21-FEB-96	21-FEB-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

CLP SEMIVOLATILES 90-SOW

Phenol	200 U	ug/l	200	100 U	ug/l	100
bis(2-Chloroethyl) ether	200 U	ug/l	200	100 U	ug/l	100
2-Chlorophenol	200 U	ug/l	200	100 U	ug/l	100
1,3-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
1,4-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
1,2-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
2-Methylphenol	200 U	ug/l	200	100 U	ug/l	100
2,2-oxybis(1-Chloropropane)	200 U	ug/l	200	100 U	ug/l	100
4-Methylphenol	200 U	ug/l	200	100 U	ug/l	100
N-Nitroso-di-n-propylamine	200 U	ug/l	200	100 U	ug/l	100
Hexachloroethane	200 U	ug/l	200	100 U	ug/l	100
Nitrobenzene	200 U	ug/l	200	100 U	ug/l	100
Isophorone	200 U	ug/l	200	100 U	ug/l	100
2-Nitrophenol	200 U	ug/l	200	100 U	ug/l	100
2,4-Dimethylphenol	200 U	ug/l	200	100 U	ug/l	100
bis(2-Chloroethoxy) methane	200 U	ug/l	200	100 U	ug/l	100
2,4-Dichlorophenol	200 U	ug/l	200	100 U	ug/l	100
1,2,4-Trichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
Naphthalene	200	ug/l	200	6.2 J	ug/l	100
4-Chloroaniline	200 U	ug/l	200	100 U	ug/l	100
Hexachlorobutadiene	200 U	ug/l	200	100 U	ug/l	100
4-Chloro-3-methylphenol	200 U	ug/l	200	100 U	ug/l	100
2-Methylnaphthalene	14 J	ug/l	200	100 U	ug/l	100
Hexachlorocyclopentadiene	200 U	ug/l	200	100 U	ug/l	100
2,4,6-Trichlorophenol	200 U	ug/l	200	100 U	ug/l	100
2,4,5-Trichlorophenol	500 U	ug/l	500	250 U	ug/l	250
2-Chloronaphthalene	200 U	ug/l	200	100 U	ug/l	100
2-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
Dimethylphthalate	200 U	ug/l	200	100 U	ug/l	100
Acenaphthylene	200 U	ug/l	200	100 U	ug/l	100
2,6-Dinitrotoluene	200 U	ug/l	200	100 U	ug/l	100
3-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
Acenaphthene	200 U	ug/l	200	100 U	ug/l	100
2,4-Dinitrophenol	500 U	ug/l	500	250 U	ug/l	250
4-Nitrophenol	500 U	ug/l	500	250 U	ug/l	250
Dibenzofuran	200 U	ug/l	200	100 U	ug/l	100
2,4-Dinitrotoluene	200 U	ug/l	200	100 U	ug/l	100
Diethylphthalate	200 U	ug/l	200	100 U	ug/l	100
4-Chlorophenyl-phenylether	200 U	ug/l	200	100 U	ug/l	100
Fluorene	200 U	ug/l	200	100 U	ug/l	100
4-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
4,6-Dinitro-2-methylphenol	500 U	ug/l	500	250 U	ug/l	250
N-Nitrosodiphenylamine	200 U	ug/l	200	100 U	ug/l	100
4-Bromophenyl-phenylether	200 U	ug/l	200	100 U	ug/l	100
Hexachlorobenzene	200 U	ug/l	200	100 U	ug/l	100
Pentachlorophenol	500 U	ug/l	500	250 U	ug/l	250
Phenanthrene	200 U	ug/l	200	100 U	ug/l	100
Anthracene	200 U	ug/l	200	100 U	ug/l	100
Carbazole	200 U	ug/l	200	100 U	ug/l	100
Di-n-butylphthalate	200 U	ug/l	200	100 U	ug/l	100

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10155

Lab Sample Number:	C32WD	C32WQ
Site	CECILBRAC2	CECILBRAC2
Locator	22600101	22600201
Collect Date:	21-FEB-96	21-FEB-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

Fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Pyrene	200 U	ug/l	200	100 U	ug/l	100
Butylbenzylphthalate	200 U	ug/l	200	100 U	ug/l	100
3,3-Dichlorobenzidine	200 U	ug/l	200	100 U	ug/l	100
Benzo (a) anthracene	200 U	ug/l	200	100 U	ug/l	100
Chrysene	200 U	ug/l	200	100 U	ug/l	100
bis(2-Ethylhexyl) phthalate	200 U	ug/l	200	100 U	ug/l	100
Di-n-octylphthalate	200 U	ug/l	200	100 U	ug/l	100
Benzo (b) fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Benzo (k) fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Benzo (a) pyrene	200 U	ug/l	200	100 U	ug/l	100
Indeno (1,2,3-cd) pyrene	200 U	ug/l	200	100 U	ug/l	100
Dibenzo (a,h) anthracene	200 U	ug/l	200	100 U	ug/l	100
Benzo (g,h,i) perylene	200 U	ug/l	200	100 U	ug/l	100

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

NAS CECIL FIELD -- FACILITY 815
 GROUNDWATER -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10156

Lab Sample Number:	C32WD	C32WQ
Site	CECILBRAC2	CECILBRAC2
Locator	22G00101	22G00201
Collect Date:	21-FEB-96	21-FEB-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

CLP PESTICIDES/PCBS 90-50W

alpha-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
beta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
delta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
gamma-BHC (Lindane)	.05 U	ug/l	.05	.05 U	ug/l	.05
Heptachlor	.05 U	ug/l	.05	.05 U	ug/l	.05
Aldrin	.05 U	ug/l	.05	.05 U	ug/l	.05
Heptachlor epoxide	.05 U	ug/l	.05	.05 U	ug/l	.05
Endosulfan I	.05 U	ug/l	.05	.05 U	ug/l	.05
Dieldrin	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDE	.1 U	ug/l	.1	.1 U	ug/l	.1
Endrin	.1 U	ug/l	.1	.1 U	ug/l	.1
Endosulfan II	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDD	.1 U	ug/l	.1	.1 U	ug/l	.1
Endosulfan sulfate	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDT	.1 U	ug/l	.1	.1 U	ug/l	.1
Methoxychlor	.015 J	ug/l	.5	.5 U	ug/l	.5
Endrin ketone	.024 J	ug/l	.1	.1 U	ug/l	.1
Endrin aldehyde	.1 U	ug/l	.1	.1 U	ug/l	.1
alpha-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05
gamma-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05
Toxaphene	5 U	ug/l	5	5 U	ug/l	5
Aroclor-1016	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1221	2 U	ug/l	2	2 U	ug/l	2
Aroclor-1232	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1242	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1248	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1254	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1260	1 U	ug/l	1	1 U	ug/l	1

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

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- INORGANICS -- REPORT REQUEST NO. 10157

Lab Sample Number:	C32WD	C32WQ			
Site	CECILBRAC2	CECILBRAC2			
Locator	22G00101	22G00201			
Collect Date:	21-FEB-96	21-FEB-96			
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP METALS AND CYANIDE

Aluminum	204 J	ug/l	40	415 J	ug/l	40
Antimony	2 U	ug/l	12	2 U	ug/l	12
Arsenic	3 U	ug/l	2	3 U	ug/l	2
Barium	18.2 J	ug/l	40	11.6 J	ug/l	40
Beryllium	1 U	ug/l	1	1 U	ug/l	1
Cadmium	1 U	ug/l	1	1 U	ug/l	1
Calcium	76700	ug/l	1000	60900	ug/l	1000
Chromium	2 U	ug/l	2	2 U	ug/l	2
Cobalt	2 U	ug/l	10	2 U	ug/l	10
Copper	2.1 J	ug/l	5	2 U	ug/l	55
Iron	4620 J	ug/l	20	2250 J	ug/l	20
Lead	2 U	ug/l	.6	2 U	ug/l	.6
Magnesium	5190	ug/l	1000	3280 J	ug/l	1000
Manganese	237	ug/l	3	73.7	ug/l	3
Mercury	.2 U	ug/l	.1	.2 U	ug/l	.1
Nickel	2 U	ug/l	8	2 U	ug/l	8
Potassium	9140	ug/l	1000	1120 J	ug/l	1000
Selenium	3.3 J	ug/l	1	3 U	ug/l	1
Silver	1 U	ug/l	2	1 U	ug/l	2
Sodium	13300	ug/l	1000	7840	ug/l	1000
Thallium	4 U	ug/l	2	4 U	ug/l	2
Vanadium	2.6 J	ug/l	10	2.3 J	ug/l	10
Zinc	51.1 J	ug/l	4	21.5 J	ug/l	4
Cyanide	3.3 J	ug/l	.5	4 J	ug/l	.5

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

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- TRPH -- REPORT REQUEST NO. 10158

Lab Sample Number:	A6B2201220	A6B2201220
Site	CECILBRAC2	CECILBRAC2
Locator	22G00101	22G00201
Collect Date:	21-FEB-96	21-FEB-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

TPH						
Total petroleum hydrocarbons	2.1	mg/l	.5	.5 U	mg/l	.5

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

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- MANGANESE -- REQUEST NO. 10624

Lab Sample Number: JR38615
Site BRAC
Locator 22G00102
Collect Date: 28-OCT-98

VALUE QUAL UNITS DL

Manganese	.024	mg/l	.01
Manganese-DISS	.026	mg/l	.01

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

SAMPLING AND ANALYSIS REPORT
HANGAR 815
BASE REALIGNMENT AND CLOSURE
ZONE D, INDUSTRIAL AND FLIGHT LINE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/090

Prepared by:

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Prepared for:

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David Porter, Code 18B2, BRAC Environmental Coordinator

September 1998

Revision 0.0

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ACM	asbestos-containing material
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
HLA	Harding Lawson Associates
HI	hazard index
HQ	hazard quotient
$\mu\text{g}/\ell$	micrograms per liter
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

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 Hangar 815 at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations.

Hangar 815 is an aircraft maintenance hangar, as described in the Base Realignment and Closure (BRAC) NAS Cecil Field Environmental Baseline Survey (EBS) (ABB Environmental Services, Inc. [ABB-ES], 1994a). Hangar 815 is located along the north-south flightline, south of Hangar 1845 and north of Hangar 825. Hangar 815 houses administrative offices and a large aircraft maintenance area.

An aircraft washrack is located on the concrete apron north of Hangar 815 (Figure 1). The washrack is a concrete-paved area, approximately 80 feet by 90 feet, and is sloped to drain rinsewater to a catch basin (Figure 1). Facility plans indicate that the catch basin in the washrack is currently connected to the sanitary sewage system. However, a gate valve in the washrack piping system may be used to divert runoff to the storm water drainage system when the washrack is not in use.

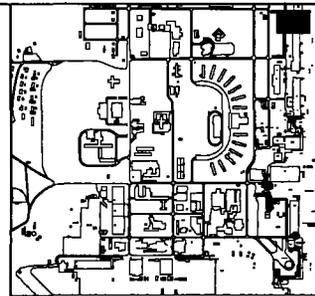
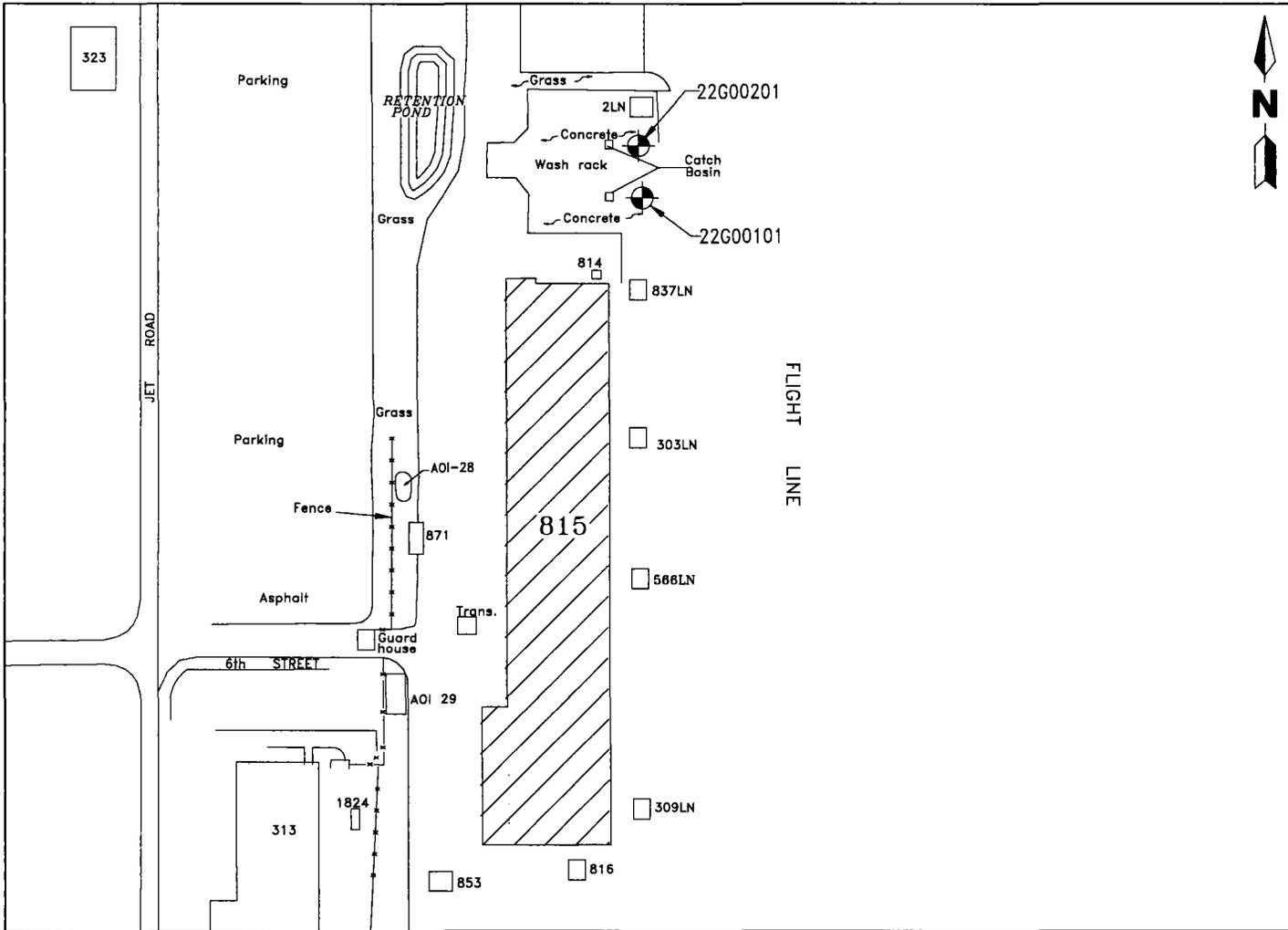
Friable asbestos-containing materials (ACMs) in pipe insulation and joint packing, and floor and ceiling tiles suspected of being ACM, have been identified in Hangar 815. The Asbestos Management Plan (Kemron, 1995a) indicates that all observed friable ACM and suspect ACM is in fair condition and can be maintained under an Operations and Maintenance plan until further damage occurs or until renovation impacts the material. It is likely that Facility 815 has been painted with lead-based paint. However, Department of Defense policy does not require remedial action at non-residential facilities.

Building 815 was color-coded Red in the EBS only because it is within the area of investigation for the Installation Restoration Program Site 16 groundwater contamination plume. The potential for release of contaminated rinsewater from the washrack to the storm water drainage system and the potential for infiltration of contaminants to shallow groundwater have subsequently been identified as potential environmental concerns.

A sampling and analysis outline (SAO) for the assessment of groundwater in the vicinity of Hangar 815 was prepared by HLA (then ABB-ES) and approved by the BRAC cleanup team (ABB-ES, 1995a). Potential environmental impacts associated with releases to the storm sewer system in the vicinity of the flightline industrial area are being evaluated separately.

2.0 PHASE II INVESTIGATION

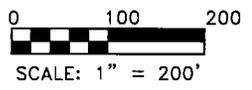
This Phase II investigation included the installation of two shallow groundwater monitoring wells and collection and analysis of one groundwater sample from each well. Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994b).



LEGEND

22G00101  Monitoring well location with groundwater sample designation

AOI  Area of interest



**FIGURE 1
FACILITY 815
HANGAR
SAMPLE LOCATION PLAN**



SAMPLING AND ANALYSIS REPORT

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

One groundwater monitoring well was installed adjacent to the east of each of the two catch basins in the washrack area north of Hangar 815. The groundwater flow direction was inferred to be to the east-southeast, on the basis of the groundwater flow model developed for NAS Cecil Field by the United States Geological Survey (USGS) (USGS, 1998). The wells were completed to a depth of 13 to 14 feet below land surface. One groundwater sample was collected from each of the wells and analyzed for the full Contract Laboratory Program suite of target compound list organics and target analyte list inorganics. A site plan indicating the locations of the monitoring wells is presented on Figure 1. Soil boring logs are 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, 1995b). Site background information and rationale for sample collection and analysis are detailed in the EBS Report (ABB-ES, 1994a) and the SAO (ABB-ES, 1995a).

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).

Thirteen inorganic analytes, two volatile organic compounds, two semivolatile organic compounds, and two pesticide compounds were detected in the groundwater sample collected in the study area. Manganese and potassium were the only inorganic analytes detected at concentrations in excess of the NAS Cecil Field screening criteria for inorganics. The maximum detected concentration of manganese in groundwater at this facility was 237 micrograms per liter ($\mu\text{g}/\text{l}$), which exceeds the GCTL of 50 $\mu\text{g}/\text{l}$. Potassium is a naturally occurring element in groundwater at NAS Cecil Field, and is also an essential nutrient. Naphthalene was detected at a concentration of 200 $\mu\text{g}/\text{l}$, which is in excess of the GCTL of 20 $\mu\text{g}/\text{l}$. No other volatile, semivolatile, or pesticide compounds were detected at concentrations in excess of GCTLs.

Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and GCTLs and, when applicable, with NAS Cecil Field Inorganic Background Data Set (see Appendix A). A cumulative noncancer risk or HI of 0.4 was calculated based upon RBCs for tap water, for manganese (840 $\mu\text{g}/\text{l}$) and naphthalene (1,500 $\mu\text{g}/\text{l}$). There are no GCTL or RBC values associated with potassium in groundwater; therefore, no risk calculation was completed for this analyte. No carcinogenic compounds were detected in either of the two groundwater samples collected. Therefore, no ELCR was calculated.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Hangar 815 were characterized by HLA ecological risk assessors in June 1996. Hangar 815 is located in a developed flightline industrial area and is surrounded by pavement. No complete exposure pathways to groundwater were confirmed within the immediate study area. Therefore, no further ecological risk evaluation was conducted. The potential for environmental impact to surface water and sediment, associated with release or infiltration of contaminated rinsewater into the storm sewer system in the vicinity of the flightline industrial area, is being evaluated separately.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Two groundwater samples from the shallow surficial aquifer were collected at Hangar 815. Manganese and naphthalene were detected at concentrations in excess of FDEP GCTLs. Naphthalene is a component of aviation fuel and may have infiltrated the shallow groundwater by seeping through joints in the washrack catch basin or pipes. The source for the elevated concentration of manganese is not known. The contaminants detected at the washrack do not represent a hazard to human health or the environment at the detected concentrations.

The Site 16 groundwater contaminant plume may extend beneath the southern portion of Hangar 815. Assessment of the Site 16 plume is in progress, but remedial action has not been completed. Therefore, the color classification for Hangar 815 should be changed to 5/Yellow. No further assessment is proposed for Hangar 815. Groundwater usage restrictions should be developed to prevent human exposure to contaminants, and to avoid influencing the spatial extent of the contaminant plume.

Asbestos and lead-based paint in the hangar do not currently represent a human health hazard. However, recommendations detailed in the Asbestos and Lead-Based

Paint Management (Kemron, 1995a; 1995b) plans should be followed to prevent human exposure to these substances. Appropriate site operation and management procedures should also be undertaken in order to ensure that other current and future site activities do not result in release of hazardous substances to the environment.

REFERENCES

- ABB Environmental Services, Inc. (ABB-ES). 1994a. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOC, North Charleston, South Carolina (November).
- ABB-ES. 1994b. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for SOUTHNAVFACENGCOC, North Charleston, South Carolina (December).
- ABB-ES. 1995a. *Sampling and Analysis Outline, Hangar 815, Base Realignment and Closure, Zone D, Industrial and Flightline Area, Group III, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOC, North Charleston, South Carolina (February).
- ABB-ES. 1995b. Minutes of September 25, 1995, conference call to discuss preliminary risk evaluations.
- Florida Administrative Code. 1998. *Brownfields 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.
- Kemron. 1995a. *Asbestos Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for ABB-ES, Orange Park, Florida (October).
- Kemron. 1995b. *Lead-Based Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for ABB-ES, Orange Park, Florida (October).
- 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.
- U.S. Geological Survey. 1998. *Ground-Water Flow in the Surficial Aquifer System and Potential Movement of Contaminants from Selected Water-Disposal Sites at Cecil Field Naval Air Station, Jacksonville, Florida*. USGS Water-Resources Investigations Report 97-4278. Tallahassee, Florida.

APPENDIX A

SOIL BORING LOG AND PRELIMINARY RISK EVALUATION TABLE

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-815-1S	BORING NO. CEF-815-1S
CLIENT: SOUTH DIV NAV FAC ENG COM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 12-15-95	COMPLTD: 12-15-95
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 4 - 14 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: PID	TOT DPTH: 15.0 FT.	DPTH TO ∇ 5.5 FT.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE:		SITE: 22 - 815 Hangar

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA		
1				66	SILTY SAND (SM): 100%, dark grayish brown to black, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole			
2				19				posthole			
3				17				12,12,16,28			
4				23				33,39,41,43			
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-815-2S	BORING NO. CEF-815-2S
CLIENT: SOUTH DIV NAVFACENCOM		PROJECT NO: 08520-85	
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 12-15-95	COMPLTD: 12-15-95
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 3 - 13 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: PID	TOT DPTH: 14.0 FT.	DPTH TO ∇ 5.0 FT.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE:		SITE: 22 - 815 Hangar

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				24	SILTY SAND (SM): 100%, light brownish gray, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2			51	posthole					
3			0	1,5,4					
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

**Preliminary Human Health Risk Evaluation Table for Analytes Detected in Groundwater
Facility 815, Naval Air Station Cecil Field**

Analyte ¹	22G00101	22G00201	Screening Values			Calculated Risk Values ²	
			BKGRD	GCTL	RBC(T)	ELCR	HQ
<u>Volatiles Organic Compounds</u>							
4-Methyl-2-pentanone	32	7		560	2900 n		
Acetone	61	80		700	3700 n		
<u>Semivolatile Organic Compounds</u>							
2-Methylnaphthalene	14			20	1500 n		
*Naphthalene	200	6.2		20	1500 n		0.1
<u>Pesticides/PCBs</u>							
Endrin ketone	0.024			2	11 n		
Methoxychlor	0.015			40	180 n		
<u>Inorganic Analytes</u>							
*Aluminum	204	415	13100	200	37000 n		
Barium	18.2	11.6	88.2	2000	2600 n		
Calcium	76700	60900	81100				
Copper	2.1		12.5	1000	1500 n		
*Iron	4620	2250	7760	300	11000 n		
Magnesium	5190	3280	10000				
*Manganese	237	73.7	96.2	50	840 n		0.3
*Potassium	9140	1120	4330				
Selenium	3.3		7	50	180 n		
Sodium	13300	7840	16500	160000			
Vanadium	2.6	2.3	20.2	49	260 n		
Zinc	51.1	21.5	76.8	5000	11000 n		
Cyanide	3.3	4	22	200	730 n		
<u>General Chemistry</u>							
Total petroleum hydrocarbons	2.1			5000			
Sum=							0.4

Notes:

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

²ELCR 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 Levels, FDEP, Chapter 62-785, Florida Administrative Code

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

n = non-carcinogenic 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 non-carcinogenic analytes

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

APPENDIX B

LABORATORY ANALYTICAL DATA

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10154

Lab Sample Number:	C32WD		C32WQ		
Site	CECILBRAC2		CECILBRAC2		
Locator	22G00101		22G00201		
Collect Date:	21-FEB-96		21-FEB-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS
			DL		

CLP VOLATILES 90-SQW

Chloromethane	3 U	ug/l	3	5 U	ug/l	5
Bromomethane	3 U	ug/l	3	5 U	ug/l	5
Vinyl chloride	3 U	ug/l	3	5 U	ug/l	5
Chloroethane	3 U	ug/l	3	5 U	ug/l	5
Methylene chloride	2 U	ug/l	2	2 U	ug/l	2
Acetone	61	ug/l	3	80	ug/l	5
Carbon disulfide	2 U	ug/l	2	2 U	ug/l	2
1,1-Dichloroethene	2 U	ug/l	2	2 U	ug/l	2
1,1-Dichloroethane	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloroethene (total)	2 U	ug/l	2	2 U	ug/l	2
Chloroform	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloroethane	2 U	ug/l	2	2 U	ug/l	2
2-Butanone	3 U	ug/l	3	5 U	ug/l	5
1,1,1-Trichloroethane	2 U	ug/l	2	2 U	ug/l	2
Carbon tetrachloride	2 U	ug/l	2	2 U	ug/l	2
Bromodichloromethane	2 U	ug/l	2	2 U	ug/l	2
1,2-Dichloropropane	2 U	ug/l	2	2 U	ug/l	2
cis-1,3-Dichloropropene	2 U	ug/l	2	2 U	ug/l	2
Trichloroethene	2 U	ug/l	2	2 U	ug/l	2
Dibromochloromethane	2 U	ug/l	2	2 U	ug/l	2
1,1,2-Trichloroethane	2 U	ug/l	2	2 U	ug/l	2
Benzene	2 U	ug/l	2	2 U	ug/l	2
trans-1,3-Dichloropropene	2 U	ug/l	2	2 U	ug/l	2
Bromoform	2 U	ug/l	2	2 U	ug/l	2
4-Methyl-2-pentanone	32	ug/l	3	7	ug/l	5
2-Hexanone	3 U	ug/l	3	5 U	ug/l	5
Tetrachloroethene	2 U	ug/l	2	2 U	ug/l	2
Toluene	2 U	ug/l	2	2 U	ug/l	2
1,1,2,2-Tetrachloroethane	2 U	ug/l	2	2 U	ug/l	2
Chlorobenzene	2 U	ug/l	2	2 U	ug/l	2
Ethylbenzene	2 U	ug/l	2	2 U	ug/l	2
Styrene	2 U	ug/l	2	2 U	ug/l	2
Xylenes (total)	2 U	ug/l	2	2 U	ug/l	2

U = NOT DETECTED J = ESTIMATED VALUE
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NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10155

Lab Sample Number:	C32WD	C32WQ	
Site	CECILBRAC2	CECILBRAC2	
Locator	22G00101	22G00201	
Collect Date:	21-FEB-96	21-FEB-96	
	VALUE	QUAL UNITS	DL
	VALUE	QUAL UNITS	DL

CLP SEMIVOLATILES 90-SOW

Phenol	200 U	ug/l	200	100 U	ug/l	100
bis(2-Chloroethyl) ether	200 U	ug/l	200	100 U	ug/l	100
2-Chlorophenol	200 U	ug/l	200	100 U	ug/l	100
1,3-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
1,4-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
1,2-Dichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
2-Methylphenol	200 U	ug/l	200	100 U	ug/l	100
2,2-oxybis(1-Chloropropane)	200 U	ug/l	200	100 U	ug/l	100
4-Methylphenol	200 U	ug/l	200	100 U	ug/l	100
N-Nitroso-di-n-propylamine	200 U	ug/l	200	100 U	ug/l	100
Hexachloroethane	200 U	ug/l	200	100 U	ug/l	100
Nitrobenzene	200 U	ug/l	200	100 U	ug/l	100
Isophorone	200 U	ug/l	200	100 U	ug/l	100
2-Nitrophenol	200 U	ug/l	200	100 U	ug/l	100
2,4-Dimethylphenol	200 U	ug/l	200	100 U	ug/l	100
bis(2-Chloroethoxy) methane	200 U	ug/l	200	100 U	ug/l	100
2,4-Dichlorophenol	200 U	ug/l	200	100 U	ug/l	100
1,2,4-Trichlorobenzene	200 U	ug/l	200	100 U	ug/l	100
Naphthalene	200	ug/l	200	6.2 J	ug/l	100
4-Chloroaniline	200 U	ug/l	200	100 U	ug/l	100
Hexachlorobutadiene	200 U	ug/l	200	100 U	ug/l	100
4-Chloro-3-methylphenol	200 U	ug/l	200	100 U	ug/l	100
2-Methylnaphthalene	14 J	ug/l	200	100 U	ug/l	100
Hexachlorocyclopentadiene	200 U	ug/l	200	100 U	ug/l	100
2,4,6-Trichlorophenol	200 U	ug/l	200	100 U	ug/l	100
2,4,5-Trichlorophenol	500 U	ug/l	500	250 U	ug/l	250
2-Chloronaphthalene	200 U	ug/l	200	100 U	ug/l	100
2-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
Dimethylphthalate	200 U	ug/l	200	100 U	ug/l	100
Acenaphthylene	200 U	ug/l	200	100 U	ug/l	100
2,6-Dinitrotoluene	200 U	ug/l	200	100 U	ug/l	100
3-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
Acenaphthene	200 U	ug/l	200	100 U	ug/l	100
2,4-Dinitrophenol	500 U	ug/l	500	250 U	ug/l	250
4-Nitrophenol	500 U	ug/l	500	250 U	ug/l	250
Dibenzofuran	200 U	ug/l	200	100 U	ug/l	100
2,4-Dinitrotoluene	200 U	ug/l	200	100 U	ug/l	100
Diethylphthalate	200 U	ug/l	200	100 U	ug/l	100
4-Chlorophenyl-phenylether	200 U	ug/l	200	100 U	ug/l	100
Fluorene	200 U	ug/l	200	100 U	ug/l	100
4-Nitroaniline	500 U	ug/l	500	250 U	ug/l	250
4,6-Dinitro-2-methylphenol	500 U	ug/l	500	250 U	ug/l	250
N-Nitrosodiphenylamine	200 U	ug/l	200	100 U	ug/l	100
4-Bromophenyl-phenylether	200 U	ug/l	200	100 U	ug/l	100
Hexachlorobenzene	200 U	ug/l	200	100 U	ug/l	100
Pentachlorophenol	500 U	ug/l	500	250 U	ug/l	250
Phenanthrene	200 U	ug/l	200	100 U	ug/l	100
Anthracene	200 U	ug/l	200	100 U	ug/l	100
Carbazole	200 U	ug/l	200	100 U	ug/l	100
Di-n-butylphthalate	200 U	ug/l	200	100 U	ug/l	100

NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10155

Lab Sample Number:	C32WD	C32WQ				
Site	CECILBRAC2	CECILBRAC2				
Locator	22G00101	22G00201				
Collect Date:	21-FEB-96	21-FEB-96				
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Pyrene	200 U	ug/l	200	100 U	ug/l	100
Butylbenzylphthalate	200 U	ug/l	200	100 U	ug/l	100
3,3-Dichlorobenzidine	200 U	ug/l	200	100 U	ug/l	100
Benzo (a) anthracene	200 U	ug/l	200	100 U	ug/l	100
Chrysene	200 U	ug/l	200	100 U	ug/l	100
bis(2-Ethylhexyl) phthalate	200 U	ug/l	200	100 U	ug/l	100
Di-n-octylphthalate	200 U	ug/l	200	100 U	ug/l	100
Benzo (b) fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Benzo (k) fluoranthene	200 U	ug/l	200	100 U	ug/l	100
Benzo (a) pyrene	200 U	ug/l	200	100 U	ug/l	100
Indeno (1,2,3-cd) pyrene	200 U	ug/l	200	100 U	ug/l	100
Dibenzo (a,h) anthracene	200 U	ug/l	200	100 U	ug/l	100
Benzo (g,h,i) perylene	200 U	ug/l	200	100 U	ug/l	100

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NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10156

Lab Sample Number:	C32WD	C32WQ			
Site	CECILBRAC2	CECILBRAC2			
Locator	22G00101	22G00201			
Collect Date:	21-FEB-96	21-FEB-96			
	VALUE	DL	VALUE	QUAL UNITS	DL

CLP PESTICIDES/PCBS 90-SOW

alpha-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
beta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
delta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05
gamma-BHC (Lindane)	.05 U	ug/l	.05	.05 U	ug/l	.05
Heptachlor	.05 U	ug/l	.05	.05 U	ug/l	.05
Aldrin	.05 U	ug/l	.05	.05 U	ug/l	.05
Heptachlor epoxide	.05 U	ug/l	.05	.05 U	ug/l	.05
Endosulfan I	.05 U	ug/l	.05	.05 U	ug/l	.05
Dieldrin	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDE	.1 U	ug/l	.1	.1 U	ug/l	.1
Endrin	.1 U	ug/l	.1	.1 U	ug/l	.1
Endosulfan II	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDD	.1 U	ug/l	.1	.1 U	ug/l	.1
Endosulfan sulfate	.1 U	ug/l	.1	.1 U	ug/l	.1
4,4-DDT	.1 U	ug/l	.1	.1 U	ug/l	.1
Methoxychlor	.015 J	ug/l	.5	.5 U	ug/l	.5
Endrin ketone	.024 J	ug/l	.1	.1 U	ug/l	.1
Endrin aldehyde	.1 U	ug/l	.1	.1 U	ug/l	.1
alpha-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05
gamma-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05
Toxaphene	5 U	ug/l	5	5 U	ug/l	5
Aroclor-1016	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1221	2 U	ug/l	2	2 U	ug/l	2
Aroclor-1232	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1242	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1248	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1254	1 U	ug/l	1	1 U	ug/l	1
Aroclor-1260	1 U	ug/l	1	1 U	ug/l	1

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NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- INORGANICS -- REPORT REQUEST NO. 10157

Lab Sample Number:	C32WD	C32WQ
Site	CECILBRAC2	CECILBRAC2
Locator	22G00101	22G00201
Collect Date:	21-FEB-96	21-FEB-96
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

CLP METALS AND CYANIDE

Aluminum	204 J	ug/l	40	415 J	ug/l	40
Antimony	2 U	ug/l	12	2 U	ug/l	12
Arsenic	3 U	ug/l	2	3 U	ug/l	2
Barium	18.2 J	ug/l	40	11.6 J	ug/l	40
Beryllium	1 U	ug/l	1	1 U	ug/l	1
Cadmium	1 U	ug/l	1	1 U	ug/l	1
Calcium	76700	ug/l	1000	60900	ug/l	1000
Chromium	2 U	ug/l	2	2 U	ug/l	2
Cobalt	2 U	ug/l	10	2 U	ug/l	10
Copper	2.1 J	ug/l	5	2 U	ug/l	55
Iron	4620 J	ug/l	20	2250 J	ug/l	20
Lead	2 U	ug/l	.6	2 U	ug/l	.6
Magnesium	5190	ug/l	1000	3280 J	ug/l	1000
Manganese	237	ug/l	3	73.7	ug/l	3
Mercury	.2 U	ug/l	.1	.2 U	ug/l	.1
Nickel	2 U	ug/l	8	2 U	ug/l	8
Potassium	9140	ug/l	1000	1120 J	ug/l	1000
Selenium	3.3 J	ug/l	1	3 U	ug/l	1
Silver	1 U	ug/l	2	1 U	ug/l	2
Sodium	13300	ug/l	1000	7840	ug/l	1000
Thallium	4 U	ug/l	2	4 U	ug/l	2
Vanadium	2.6 J	ug/l	10	2.3 J	ug/l	10
Zinc	51.1 J	ug/l	4	21.5 J	ug/l	4
Cyanide	3.3 J	ug/l	.5	4 J	ug/l	.5

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NAS CECIL FIELD -- FACILITY 815
GROUNDWATER -- TRPH -- REPORT REQUEST NO. 10158

Lab Sample Number:	A6B2201220		A6B2201220		
Site	CECILBRAC2		CECILBRAC2		
Locator	22G00101		22G00201		
Collect Date:	21-FEB-96		21-FEB-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS
			DL		DL

TPH						
Total petroleum hydrocarbons	2.1	mg/l	.5	.5 U	mg/l	.5

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SAMPLING AND ANALYSIS OUTLINE

**BUILDING 815
BASE REALIGNMENT AND CLOSURE
ZONE D, INDUSTRIAL AND FLIGHTLINE AREA
GROUP III**

**NAVAL AIR STATION, NAS CECIL FIELD
JACKSONVILLE, FLORIDA**

Unit Identification No. N60200

Contract No. N62467-89-D-0317

Prepared by:

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

Prepared For:

**Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29419**

Steve Wilson, Code 18B9, BRAC Environmental Coordinator

February 1995

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Sampling and Analysis Outline
Naval Air Station, Cecil Field
Jacksonville, Florida

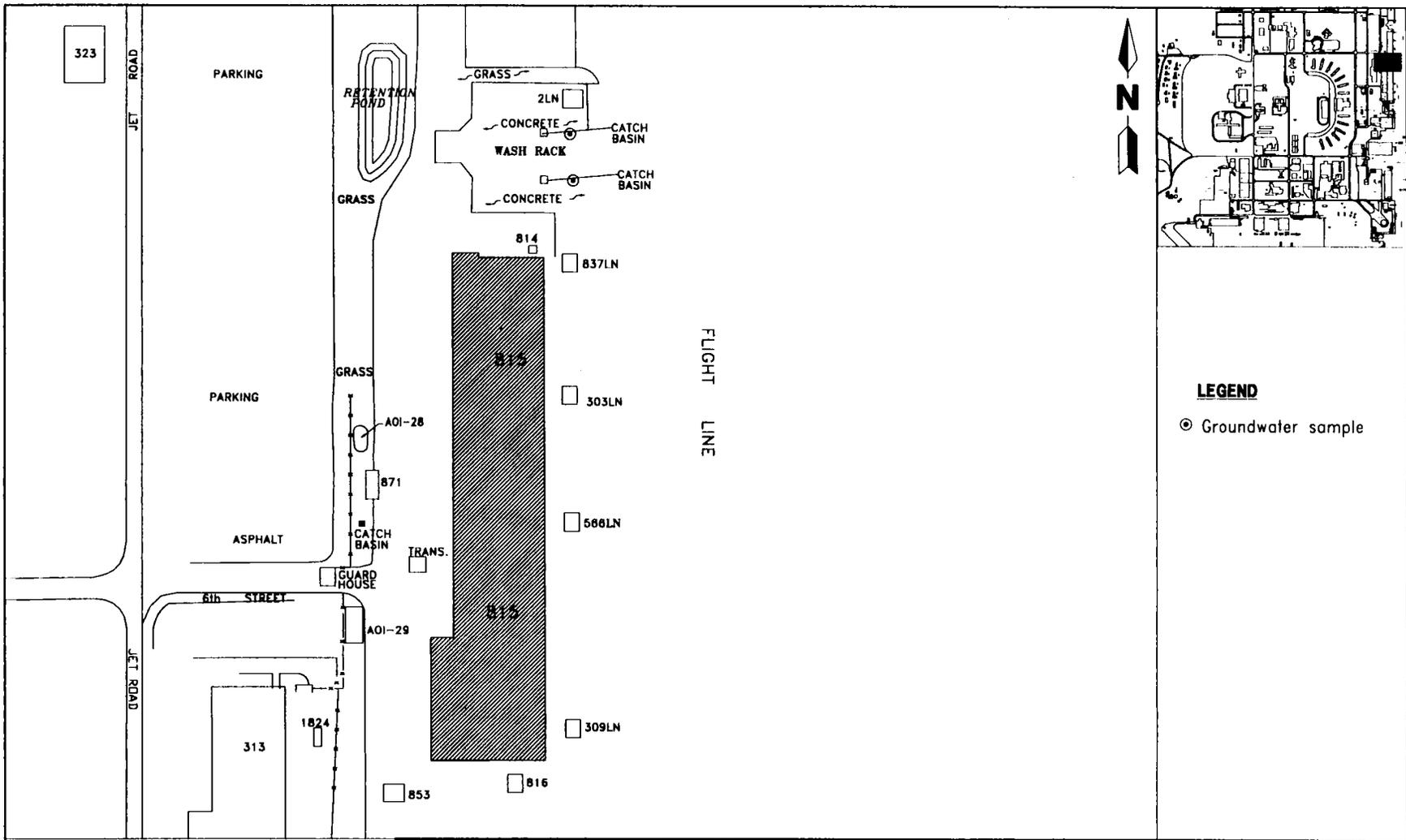
<u>Chapter</u>	<u>Title</u>	<u>Page No.</u>
1.0	SITE DESCRIPTION	-1-
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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BRAC	Base Realignment and Closure
CLP	Contract Laboratory Program
EBS	Environmental Baseline Survey
IR	Installation Restoration
NAS	Naval Air Station
PRE	Preliminary Risk Evaluation
SAO	Sampling and Analysis Outline
TAL	target analyte list
TCL	target compound list
UST	underground storage tank

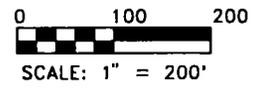


**FIGURE 1
BUILDING 815
HANGAR**



**PHASE II SAMPLING AND ANALYSIS
OUTLINES, GREY SITES**

**NAS CECIL FIELD
JACKSONVILLE, FLORIDA**



washrack outflow is located. Observers posted at potential outflow/discharge points will record actual discharge conditions. The washrack water nozzles will be used to pump water directly to the catch basins during the test.

3.2 Groundwater Sampling To assess the presence or absence of residual contamination in shallow groundwater from historical aircraft washing operations at the wash rack catch basins, completion of the following program is recommended. Contract Laboratory Program (CLP) analysis of target compound list (TCL) organics and target analyte list (TAL) inorganics is recommended.

To meet a potential need for input to a Preliminary Risk Evaluation (PRE), the recommended analytical level to meet the data quality objective for this site is Level IV with CLP deliverables.

Two shallow groundwater samples will be obtained by installing and sampling two shallow monitoring wells near the wash rack catch basins. Both wells will be screened across the water table. The samples will be analyzed for TCL organics and TAL inorganics. Applicable sample collection techniques, quality assurance objectives, quality control requirements, and sample handling and shipping procedures are outlined in the BRAC NAS Cecil Field *Project Operations Plan* (ABB-ES, 1994b). Proposed sampling locations are shown on Figure 1.

The results of analysis, a contamination assessment, and recommendations for reclassification of the property will be reported in a draft Site Summary report for Building 815. The project team will seek concurrence from the BRAC Cleanup Team before completing a PRE and submitting a final Site Summary report.

3.3 Comprehensive Flightline Groundwater and Stormwater Drainage Approach Prior to redesignation of the color code for the building, the pathways of concern for the materials stored at the line shacks, buildings, storage areas, and used during operations related to aircraft maintenance along the flightlines will be addressed. Two comprehensive SAOs will be developed to evaluate (1) the stormwater drainage system and (2) groundwater in the runway areas.¹ Building 815 is within the investigation areas of these two SAOs, and it is recommended that re-evaluation of the color code for Building 815 be postponed until the investigations are completed.

In addition, because Building 815 is in the IR Site 16 groundwater plume, it is recommended that reclassification of the color code be postponed until the groundwater plume remedial approach is determined.

¹ The SAO for the stormwater drainage system will outline a program to collect samples of sediment and surface water at the outfalls and sediment within the stormwater system at primary intersection points. The SAO for the runway apron areas will outline a technical approach to evaluate the groundwater leaving the flightline areas for the north to south and east to west runways.

4.0 SELECTED REFERENCES

- ABB-ES, 1992a. Contamination Assessment Report, North Fuel Farm, Facility 76, Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, May/June 1992.
- ABB-ES, 1992b. Contamination Assessment Report, Day Tank 1, Facility 293, Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, July 1992.
- ABB-ES, 1993. Contamination Assessment Report Addendum, Day Tank 1, Facility 293, Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, December 1993.
- ABB-ES, 1994a. Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, November 1994.
- ABB-ES, 1994ba. Project Operations Plan for Cecil Field and Health and Safety Plan: prepared for Southern Division, Naval Facilities Engineering Command, December 1994.
- ABB-ES, in press. Base Realignment and Closure Tank Management Plan for Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, in progress.
- ABB-ES, in press. Site 16 Aircraft Intermediate Maintenance Department (AIMD) Seepage Pit Remedial Investigation, Operable Unit 7, Naval Air Station, Cecil Field, Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command, in progress.
- Naval Air Station, 1993. Public Works Department Oil-filled Electrical Distribution Inventory Data Forms, Cecil Field, Jacksonville, Florida: May 1993.
- Naval Air Station, 1993. Tank Inventory and Management System (TIMS) Database, Cecil Field, Jacksonville, Florida: November 1993.



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

March 8, 1999

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commanding Officer
Mr. Mark Davidson, Code 1879
SOUTHNAVFACENGCOM
Post Office Box 190010
North Charleston, SC 29419-9010

RE: Sampling and Analysis Report, Revision 1, Facility 815,
Hangar 815, Naval Air Station Cecil Field, Florida.

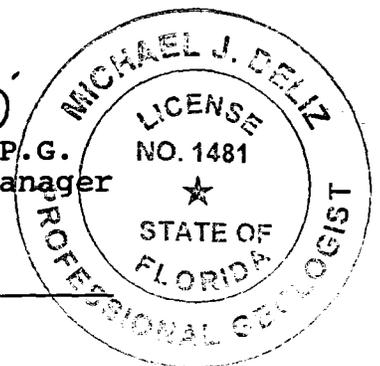
Dear Mr. Davidson:

I have completed the technical review of the Confirmation Sampling Report, dated January 1999 (received February 2, 1999) submitted for the above-referenced facility. FDEP concurs with the recommendation that a Site Assessment is warranted under Chapter 62-770, Florida Administrative Code.

If you have any concerns regarding this letter, please contact me at (850) 921-9991.

Sincerely,

Michael J. Deliz, P.G.
Remedial Project Manager



8-MARCH-99

Date

CC: Debbie Vaughn-Wright, USEPA - Atlanta
John Flowe, City of Jacksonville
David Porter, SOUTHNAVFACENGCOM
Dave Kruzicki, NAS Cecil Field
Eric Blomberg, HLA
Mark Speranza, TtNUS - Pittsburgh

"Protect, Conserve and Manage Florida's Environment and Natural Resources"



Department of Environmental Protection

Jeb Bush
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2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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March 8, 1999

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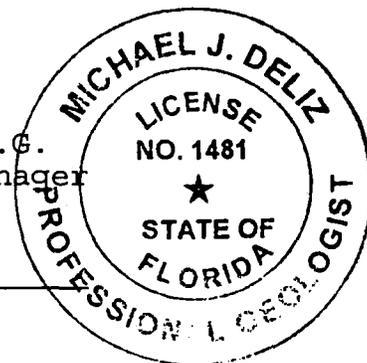
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