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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS OUTLINE AND REPORT FOR MAIN BASE AREA 6 BASE REALIGNMENT AND CLOSURE NAS CECIL FIELD FL

1/1/1999

HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS OUTLINE AND REPORT

MAIN BASE AREA 6

BASE REALIGNMENT AND CLOSURE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification No. N60200

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

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BCT	BRAC cleanup team
BRAC	Base Realignment and Closure
EBS	environmental baseline survey
FDEP	Florida Department of Environmental Protection
MB6	Main Base Area 6
NAS	Naval Air Station
PRE	preliminary risk evaluation
PSC	Potential Source of Contamination
SCTL	soil cleanup target level
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Main Base Area 6 (MB6) is the site designation assigned to an area of undeveloped land in the northeastern quadrant of the Main Base at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. The perimeter of MB6 is formed by the facility boundary to the east 103rd Street to the north and arbitrary borders to the west and south as shown on Figure 1. Several buildings, ammunition magazines, a pistol range, and Installation Restoration Potential Source of Contamination (PSC) 18 are located within the area and have been evaluated separately.

The Environmental Baseline Survey (EBS) Report (ABB Environmental Services, Inc. [ABB-ES], 1994a) documents the presence of a junkyard adjacent to the property and off of base property, unidentified earthen mounds with construction debris, and associated impacts from PSC 18 as environmental concerns within MB6. The junkyard runs along the east fence approximately 1/4 mile and primarily contains junk automobiles. The earthen mounds are located in the center of MB6 and no hazardous materials were visually identified. An estimated 35 cubic yards of construction debris is present in the mounds. PSC 18, a former ammunition disposal area, is located in the south-central part of MB6. An environmental investigation was conducted at PSC 18 and no risks to human health or the environment were identified and no further action was recommended for the site.

The EBS Report recommended that the mound area be classified as Gray and the remaining area of MB6 be classified as White.

Harding Lawson Associates conducted an additional site walkover of MB6 in 1996. With the exception of two shallow excavations observed near the west central area of MB6, no additional concerns were identified. The excavations were approximately 6 feet in diameter and 2 feet in depth, with no visible or olfactory indications of a release of hazardous substances.

2.0 SAMPLING AND ANALYSIS OUTLINE

The Base Realignment and Closure (BRAC) cleanup team (BCT) reviewed the available data and discussed the strategy for Phase II Sampling and Analysis of MB6 during the BCT meeting on July 16, 1997. The BCT's consensus on the strategy for assessment reached at this meeting involved collection and analysis of one surface soil sample from the center of one of the shallow excavations.

Sample collection techniques, quality assurance objectives, quality control requirements, and sample handling and shipping procedures are outlined in the BRAC Project Operations Plan (ABB-ES, 1994b).

3.0 PHASE II INVESTIGATION AND PRELIMINARY RISK EVALUATION

One surface soil sample was collected from the 0 to 1 foot interval below land surface and was submitted to Environmental Conservation Laboratories for full target compound list and target analyte list analysis. A preliminary risk

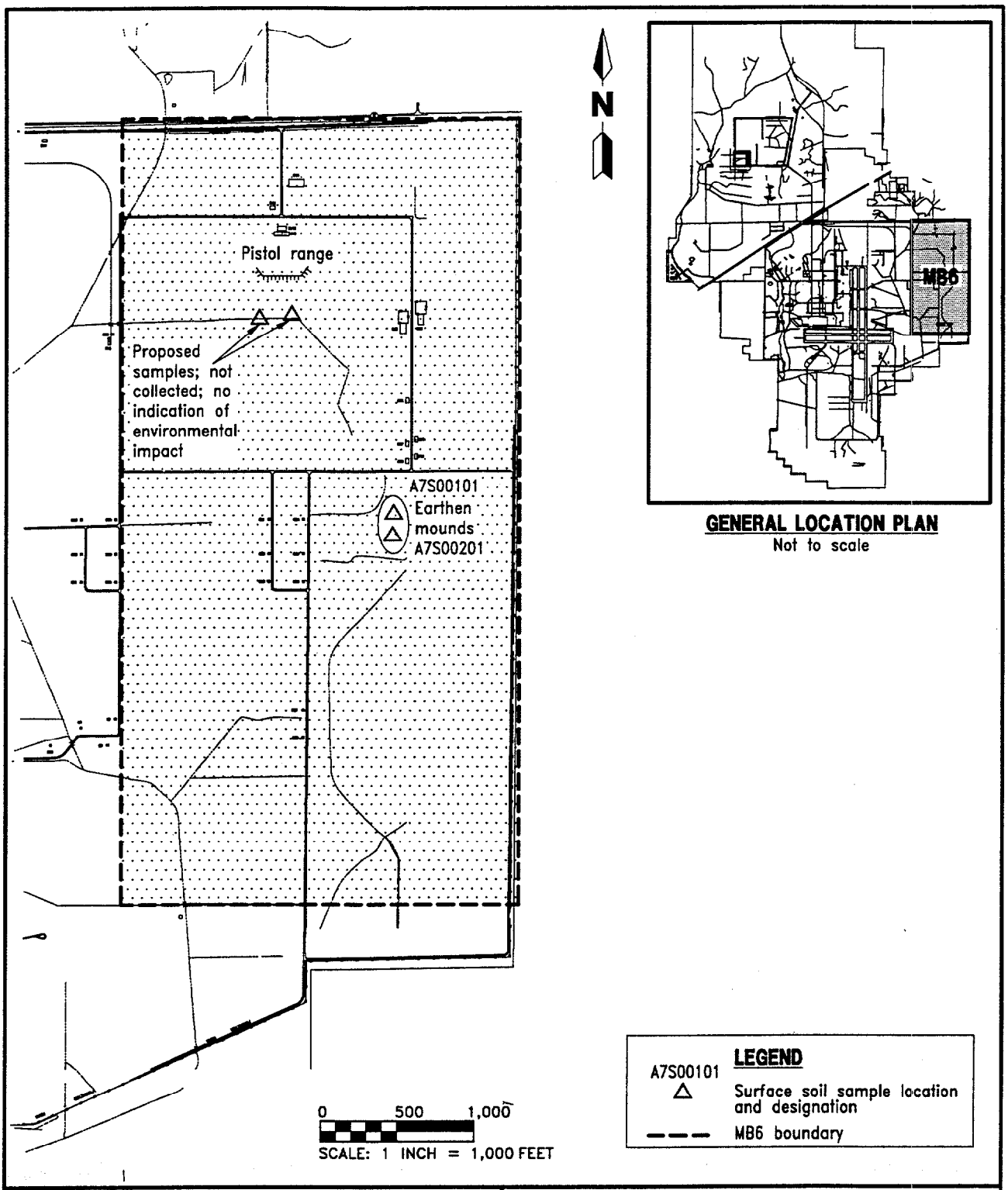

FIGURE 1
MAIN BASE OPEN AREA 6 (MB6)
SAMPLE LOCATION PLAN

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SAMPLING AND ANALYSIS OUTLINE AND REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

evaluation (PRE), based on the analytical results, was conducted to assess potential risks to human and ecological receptors posed by contaminants in surface soil (Table 1). 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), a USEPA Region IV bulletin 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).

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 noparametric 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 was conducted for inorganic analytes detected at concentrations below NAS Cecil Field screening criteria for inorganics.

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 or surface soil (Appendix A). Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (USEPA, 1998) and FDEP soil cleanup target levels (SCTLs) (FDEP, 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.

Table 1
Preliminary Risk Evaluation for Analytes Detected in Surface Soil

Sampling and Analysis Outline and Report
Main Base Area 6
Base Realignment and Closure
Naval Air Station Cecil Field
Jacksonville, Florida

Analyte	A0S00101	BKGRD[1]	SCTL	RBC(R)
4,4'-DDE	0.009		3.2	1.9
4,4'-DDT	0.013		3.2	1.9
Aluminum	1,300	4,432.5	72,000	78,000
Chromium	1	7.75	290	390
Iron	160	1,486	23,000	23,000
Lead	4	196.9	500	
Manganese	1	21.95	1,600	1,600
Mercury	0	0.16	3.7	23
Vanadium	1	6.3	15	550

[1] Naval Air Station Cecil Field screening criteria for inorganics.

Notes: All detected analytes are reported.
Concentrations are expressed in milligrams per kilogram.

BKGRD = background.
SCTL = soil cleanup target level.
RBC = risk-based concentration (residential).
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.

Seven inorganic analytes and two pesticide compounds were detected in the surface soil sample. No inorganic analytes were detected at concentrations in excess of NAS Cecil Field inorganic background data set values, and the two pesticide compounds were detected at concentrations below SCTLs. Therefore, no excess lifetime cancer risk or hazard index have been calculated for this site. The most conservative NAS Cecil Field ecological screening criteria for 4,4'-dichlorodiphenyldichloroethene and 4,4'-dichlorodiphenyltrichloroethane are 1.5 and 3.9 milligrams per kilogram (ABB-ES, 1994b), respectively, and apply to potential invertebrate (earthworm) exposure. No ecological screening criteria were exceeded; therefore, no further ecological risk evaluation is required.

4.0 CONCLUSIONS AND RECOMMENDATIONS

No evidence of release or disposal of hazardous materials was observed or documented within MB6. Two pesticide compounds were detected in a surface soil sample collected during a Phase II evaluation of an unidentified shallow excavation. The detected concentrations are more than two orders of magnitude below the most conservative human health and ecological screening criteria used in the evaluation and do not represent a hazard to human health or the environment. Therefore, the color classification for MB6 should be changed from 7/Gray to 1/White, with the exception of PSC 18 and the earthen mounds within MB6.

5.0 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 Southern Division, Naval Facilities Engineering Command (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).

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Florida Department of Environmental Protection. 1998. *Brownfields Cleanup Criteria Rule*: Chapter 62-785, Florida Administrative Code. 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.

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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

LABORATORY ANALYTICAL DATA

BRAC Preliminary Risk Evaluation Table for Analytes Detected in Surface Soil
Main Base Open Area 6
Naval Air Station Cecil Field

	Samples					Calculated Risk Values[2]	
Analyte[1]	A7S00101	A7S00201	BKGRD	SCTL	RBC(R)	ELCR	HQ
Acetone	0.0074	0.007		770	7800 n		
Methylene chloride	0.0048			16	85 c		
Tetrachloroethene	0.012	0.01		10	12 c		
Toluene	0.001			300	16000 n		
Methoxychlor	0.006	0.005		380	390 n		
Aluminum	1300	980	4432.5	72000	78000 n		
*Calcium	37	32	9.44				
Chromium	1.1	1	7.75	290	390 n		
*Copper	20	6	5.965	390	3100 n		
Iron	800	580	1486	23000	23000 n		
Lead	8.4	3.5	196.9	500			
Magnesium	28		328.65				
Manganese	8	9.9	21.95	1600	1600 n		
Mercury		0.011	0.16	3.7	23 n		
Vanadium	1.6	1.5	6.3	15	550 n		
Zinc	16	7	36.5	23000	23000 n		

Notes:

[1] All detected analytes are reported. Concentrations and screening values are expressed in mg/kg

[2] ELCR and HI are only calculated for analytes detected at concentrations in excess of BKGRD and SCTL

*= Background screening criteria or SCTLs have been exeeded

BKGRD=NAS Cecil Field Inorganic Background Data Set

SCTL = Soil Cleanup Target Level, Chapter 62-785, Florida Administrative Code

RBC(R)= Risk-based Concentration (Residential), USEPA Region III, April 1998

c=carcinogenic risk

n=non-carcinogenic risk

ELCR = calculated excess lifetime cancer risk, based on RBC(R) values. (ELCR = detected concentration/RBC(R) * 1 E-06)

HQ = calculated Hazard Quotient for non-carcinogenic analytes (HQ=detected concentration/RBC(R))

NAS CECIL FIELD -- MAIN BASE OPEN AREA 6
SURFACE SOIL -- ANALYTICAL DATA -- REQUEST NO. 10619

Lab Sample Number:	JR384610				JR384611			
Site	BRAC				BRAC			
Locator	A7S00101				A7S00201			
Collect Date:	27-OCT-98				27-OCT-98			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
BRAC VOLATILES								
1,1,1-Trichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1,2,2-Tetrachloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1,2-Trichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1-Dichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1-Dichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
1,2-Dichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,2-Dichloropropane	1	U	ug/kg	1	1	U	ug/kg	1
Benzene	1	U	ug/kg	1	1	U	ug/kg	1
Bromodichloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Bromoform	1	U	ug/kg	1	1	U	ug/kg	1
Bromomethane	1	U	ug/kg	1	1	U	ug/kg	1
Carbon tetrachloride	1	U	ug/kg	1	1	U	ug/kg	1
Chlorobenzene	1	U	ug/kg	1	1	U	ug/kg	1
Chloroethane	1	U	ug/kg	1	1	U	ug/kg	1
Chloroform	1	U	ug/kg	1	1	U	ug/kg	1
Chloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Dibromochloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Ethyl benzene	1	U	ug/kg	1	1	U	ug/kg	1
Methyl chloride	1	U	ug/kg	1	1	U	ug/kg	1
Tetrachloroethene	12		ug/kg	1	10		ug/kg	1
Toluene	1	J	ug/kg	1	1	U	ug/kg	1
Trichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
Vinyl chloride	1	U	ug/kg	1	1	U	ug/kg	1
cis-1,3-Dichloropropene	1	U	ug/kg	1	1	U	ug/kg	1
m,p-Xylene	1	U	ug/kg	1	1	U	ug/kg	1
o-Xylene	1	U	ug/kg	1	1	U	ug/kg	1
trans-1,2-Dichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
trans-1,3-Dichloropropene	1	U	ug/kg	1	1	U	ug/kg	1
BRAC SEMIVOLATILES								
Phenol	170	U	ug/kg	170	170	U	ug/kg	170
bis(2-Chloroethyl)ether	170	U	ug/kg	170	170	U	ug/kg	170
1,3-Dichlorobenzene	170	U	ug/kg	170	170	U	ug/kg	170
1,4-Dichlorobenzene	170	U	ug/kg	170	170	U	ug/kg	170
1,2-Dichlorobenzene	170	U	ug/kg	170	170	U	ug/kg	170
N-Nitroso-di-n-propylamine	170	U	ug/kg	170	170	U	ug/kg	170
Nitrobenzene	170	U	ug/kg	170	170	U	ug/kg	170
Isophorone	170	U	ug/kg	170	170	U	ug/kg	170
2-Methylphenol	170	U	ug/kg	170	170	U	ug/kg	170
2-Nitrophenol	170	U	ug/kg	170	170	U	ug/kg	170
2,4-Dimethylphenol	170	U	ug/kg	170	170	U	ug/kg	170
bis(2-Chloroethoxy) methane	170	U	ug/kg	170	170	U	ug/kg	170
2,4-Dichlorophenol	170	U	ug/kg	170	170	U	ug/kg	170
1,2,4-Trichlorobenzene	170	U	ug/kg	170	170	U	ug/kg	170
Naphthalene	170	U	ug/kg	170	170	U	ug/kg	170
Hexachlorobutadiene	170	U	ug/kg	170	170	U	ug/kg	170
Hexachlorocyclopentadiene	170	U	ug/kg	170	170	U	ug/kg	170
Hexachloroethane	170	U	ug/kg	170	170	U	ug/kg	170
4-Chloro-3-methylphenol	170	U	ug/kg	170	170	U	ug/kg	170
2-Methylnaphthalene	170	U	ug/kg	170	170	U	ug/kg	170

NAS CECIL FIELD -- MAIN BASE OPEN AREA 6
SURFACE SOIL -- ANALYTICAL DATA -- REQUEST NO. 10619

Lab Sample Number:	JR384610				JR384611			
Site	BRAC				BRAC			
Locator	A7S00101				A7S00201			
Collect Date:	27-OCT-98				27-OCT-98			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
2,4,6-Trichlorophenol	170	U	ug/kg	170	170	U	ug/kg	170
2-Chloronaphthalene	170	U	ug/kg	170	170	U	ug/kg	170
Dimethylphthalate	170	U	ug/kg	170	170	U	ug/kg	170
Acenaphthylene	170	U	ug/kg	170	170	U	ug/kg	170
2,4-Dinitrophenol	170	U	ug/kg	170	170	U	ug/kg	170
3- & 4-Methylphenol (2)	170	U	ug/kg	170	170	U	ug/kg	170
4-Nitrophenol	170	U	ug/kg	170	170	U	ug/kg	170
2,4-Dinitrotoluene	170	U	ug/kg	170	170	U	ug/kg	170
Diethylphthalate	170	U	ug/kg	170	170	U	ug/kg	170
4-Chlorophenyl-phenylether	170	U	ug/kg	170	170	U	ug/kg	170
Fluorene	170	U	ug/kg	170	170	U	ug/kg	170
4,6-Dinitro-2-methylphenol	170	U	ug/kg	170	170	U	ug/kg	170
4-Bromophenyl-phenylether	170	U	ug/kg	170	170	U	ug/kg	170
Hexachlorobenzene	170	U	ug/kg	170	170	U	ug/kg	170
Pentachlorophenol	170	U	ug/kg	170	170	U	ug/kg	170
Phenanthrene	170	U	ug/kg	170	170	U	ug/kg	170
Pyrene	170	U	ug/kg	170	170	U	ug/kg	170
Anthracene	170	U	ug/kg	170	170	U	ug/kg	170
Acenaphthene	170	U	ug/kg	170	170	U	ug/kg	170
Di-n-butylphthalate	170	U	ug/kg	170	170	U	ug/kg	170
Fluoranthene	170	U	ug/kg	170	170	U	ug/kg	170
3,3-Dichlorobenzidine	680	U	ug/kg	680	690	U	ug/kg	690
Benzo (a) anthracene	170	U	ug/kg	170	170	U	ug/kg	170
Carbazole	170	U	ug/kg	170	170	U	ug/kg	170
Chrysene	170	U	ug/kg	170	170	U	ug/kg	170
bis(2-Ethylhexyl) phthalate	170	U	ug/kg	170	170	U	ug/kg	170
Di-n-octylphthalate	170	U	ug/kg	170	170	U	ug/kg	170
Benzo (b) fluoranthene	170	U	ug/kg	170	170	U	ug/kg	170
Benzo (k) fluoranthene	170	U	ug/kg	170	170	U	ug/kg	170
Benzo (a) pyrene	170	U	ug/kg	170	170	U	ug/kg	170
Indeno (1,2,3-cd) pyrene	170	U	ug/kg	170	170	U	ug/kg	170
Dibenzo (a,h) anthracene	170	U	ug/kg	170	170	U	ug/kg	170
Benzo (g,h,i) perylene	170	U	ug/kg	170	170	U	ug/kg	170
2,6-Dinitrotoluene	170	U	ug/kg	170	170	U	ug/kg	170
4-Chloroaniline	170	U	ug/kg	170	170	U	ug/kg	170
2-Nitroaniline	170	U	ug/kg	170	170	U	ug/kg	170
3-Nitroaniline	170	U	ug/kg	170	170	U	ug/kg	170
4-Nitroaniline	170	U	ug/kg	170	170	U	ug/kg	170
BRAC PESTICIDES/PCBS								
alpha-BHC	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
beta-BHC	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
gamma-BHC (Lindane)	1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
Heptachlor	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Aldrin	1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
Heptachlor epoxide	1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
Endosulfan I	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Dieldrin	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
4,4-DDE	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Endrin	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Endosulfan II	1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
4,4-DDD	1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7

NAS CECIL FIELD -- MAIN BASE OPEN AREA 6
SURFACE SOIL -- ANALYTICAL DATA -- REQUEST NO. 10619

	Lab Sample Number:	JR384610				JR384611			
	Site	BRAC				BRAC			
	Locator	A7S00101				A7S00201			
	Collect Date:	27-OCT-98				27-OCT-98			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Endosulfan sulfate		1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
4,4-DDT		1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Methoxychlor		6	J	ug/kg	3	5	J	ug/kg	3
Endrin ketone		1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
Endrin aldehyde		1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
alpha-Chlordane		1.7	U	ug/kg	1.7	1.7	U	ug/kg	1.7
gamma-Chlordane		1.7	U	ug/kg	1.7	1.8	U	ug/kg	1.8
Toxaphene		68	U	ug/kg	68	69	U	ug/kg	69
Aroclor-1221		34	U	ug/kg	34	34	U	ug/kg	34
Aroclor-1232		34	U	ug/kg	34	34	U	ug/kg	34
Aroclor-1248		34	U	ug/kg	34	34	U	ug/kg	34
Aroclor-1254		34	U	ug/kg	34	34	U	ug/kg	34
Aroclor-1260		34	U	ug/kg	34	34	U	ug/kg	34
Aroclor-1016/1242		34	U	ug/kg	34	34	U	ug/kg	34
CLP METALS AND CYANIDE									
Aluminum		1300		mg/kg	20	980		mg/kg	21
Antimony		2	U	mg/kg	2	2	U	mg/kg	2
Arsenic		.5	U	mg/kg	.5	.5	U	mg/kg	.5
Barium		20	U	mg/kg	20	21	U	mg/kg	21
Beryllium		1	U	mg/kg	1	1	U	mg/kg	1
Cadmium		1	U	mg/kg	1	1	U	mg/kg	1
Calcium		37		mg/kg	26	32		mg/kg	26
Chromium		1.1		mg/kg	1	1		mg/kg	1
Cobalt		5	U	mg/kg	5	5	U	mg/kg	5
Copper		20		mg/kg	5	6		mg/kg	5
Iron		800		mg/kg	10	580		mg/kg	10
Lead		8.4		mg/kg	1	3.5		mg/kg	1
Magnesium		28		mg/kg	26	26	U	mg/kg	26
Manganese		8		mg/kg	1	9.9		mg/kg	1
Mercury		.01	U	mg/kg	.01	.011	J	mg/kg	.01
Nickel		5	U	mg/kg	5	5	U	mg/kg	5
Potassium		26	U	mg/kg	26	26	U	mg/kg	26
Selenium		2	U	mg/kg	2	2	U	mg/kg	2
Silver		2	U	mg/kg	2	2	U	mg/kg	2
Sodium		26	U	mg/kg	26	26	U	mg/kg	26
Thallium		1	U	mg/kg	1	1	U	mg/kg	1
Vanadium		1.6		mg/kg	1	1.5		mg/kg	1
Zinc		16		mg/kg	5	7		mg/kg	5
Cyanide		-				-			

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