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TECHNICAL MEMORANDUM REGARDING MILCON CONSTRUCTION SITE ASSESSMENT
PROJECT P-745NCBC GULFPORT MS
10/1/1993
ABB ENVIRONMENTAL SERVICES, INC

Naval Facilities Engineering Command

ADMINISTRATIVE RECORD	39501 ASSOCIATED AO 02.02.00.0001

MILCON CONSTRUCTION SITE ASSESSMENT
PROJECT P-745
TECHNICAL MEMORANDUM

01-OCT-93

NAVAL CONSTRUCTION BATTALION CENTER (NCBC)
GULFPORT, MISSISSIPPI 39501

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA 29418

MILCON CONSTRUCTION SITE ASSESSMENT
PROJECT P-745
TECHNICAL MEMORANDUM

CONTRACT TASK ORDER NO. 0024
MODIFICATION NO. 4
NAVY CLEAN - DISTRICT 1
CONTRACT NO. N62467-89-D-0317

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

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October 1993

EXECUTIVE SUMMARY

On April 10, 1991, Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) authorized ABB Environmental Services, Inc. (ABB-ES), under Contract N62467-89-D-0317, Contract Task Order No. 0024, to conduct a Surface Soil, Surface Water, and Sediment Investigation at the Herbicide Orange (HO) Site on the Naval Construction Battalion Center in Gulfport, Mississippi. The investigation excluded groundwater and deeper soil borings because the contaminants were transported via surface water, and are therefore expected to only reside near the surface. SOUTHNAVFACENGCOM issued a Statement of Work for modification (Modification No. 4) of Task Order No. 0024 on January 13, 1993, to request characterization of the surface soil in the area of a construction site known as the Military Construction (MILCON) Project P-745, which lies adjacent to the HO Site Area C.

The objective of this assessment is to screen for the presence of dioxins and other contaminants that may pose a risk to human health during the construction of the MILCON warehouse. This screening effort focuses on surface soil, but sediment and surface water are also addressed. Evaluation of groundwater is not included in this assessment. The area evaluated is located next to and southeast of Area C of the HO Site and northwest of Lee Avenue. The former auto storage and former oil storage areas were also within the area investigated.

The work was implemented in accordance with the requirements of the U.S. Environmental Protection Agency, Region IV and the Mississippi Department of Environmental Quality, and the provisions of SOUTHNAVFACENGCOM contract # N62467-89-D0317 to include all referenced Federal Acquisition Regulations and Defense Federal Acquisition Regulations.

While contaminants were detected in the soil and sediments at the MILCON (P-745) Site, concentrations were not sufficient to cause a health threat to construction workers at the site, provided that no exposures are greater than those described in the Screening Risk Evaluation (SRE). There are always, however, uncertainties inherent with this type of analysis, especially when 2,3,7,8-TCDD is one of the contaminants. 2,3,7,8,-TCDD has the highest toxicity factor yet developed by the USEPA and it may be advisable to limit worker exposure. Limiting the potential for dermal absorption can be accomplished by wearing disposable Tyvek[R] suits and rubber gloves whenever working in areas of potential exposure. This is especially true during the soil excavation portion of the construction. Inhalation and incidental ingestion exposure can also be reduced by the use of dust filters whenever possible.

Because low levels of contaminants were detected in the surface soils and sediment at this site, it is recommended that a Health and Safety Plan (HASP) be written to address limiting worker exposure to the contaminants. Additionally, construction and excavation workers should attend a 40 hour OSHA course consistent with 29 CFR1910.120, Hazardous Waste Operations and Emergency Response.

Milcon Construction Site Assessment
Project P-745
Technical Memorandum

Naval Construction Battalion Center
Gulfport, Mississippi

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GLOSSARY OF ACRONYMS

ABB-ES	ABB Environmental Services, Inc.
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CLP	USEPA Contract Laboratory Program
CRDL	contract required detection limit
CRQL	contract required quantitation limit
CTO	Contract Task Order
2,4'-D	2,4-Dichlorophenoxyacetic acid
4,4'-DDD	Dichlorophenyl dichloroethane
4,4'-DDE	Dichlorophenyl dichloroethylene
4,4'-DDT	Dichlorophenyl trichloroethane
D/F	dioxin/furan compound
DL	detection limit
DOD	Department of Defense
FID	flame ionization detector
ft	foot
GC/MS	gas chromatography/mass spectroscopy
GTGS	Geotechnical Graphics Software™
HAZWOPER	Hazardous Waste Operations and Emergency Response
HO	Herbicide Orange
MILCON	military construction
MPC	maximum permissible concentration
µg/ℓ	micrograms per liter
µg/kg	micrograms per kilogram
mg/kg	milligram per kilogram
MS/MSD	matrix spike/matrix spike duplicate
MSDEQ	Mississippi Department of Environmental Quality
NCBC	Naval Construction Battalion Center
ND	not detected
NDE	dichlorodiphenyl ether
NEESA	Naval Energy and Environmental Support Activity
ng/kg	nanograms per kilogram
%R	percent recovery
PAH	polynuclear aromatic hydrocarbons
PARCC	precision, accuracy, reproducibility, comparability, and completeness
PCB	polychlorinated biphenyls
PCDD	polychlorinated dibenzo-p-dioxin
1,2,3,7,8-PCDD	1,2,3,7,8-pentachloridebenzo-p-dioxin
PCDF	polychlorinated dibenzofuran
pg/l	picograms per liter
ppt	parts per trillion
ppq	parts per quatrillion
PQL	practical quantitation limit
PVC	polyvinyl chloride

GLOSSARY OF ACRONYMS (continued)

QA	Quality Assurance
QC	Quality Control
RPD	Relative Percent Difference
SDG	sample delivery group
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SRE	Screening Risk Evaluation
SOW	statement of work
SSC	soil screening concentrations
SVOC	semivolatile organic compound
2,4,5-T	2,4,5-Trichlorophenoxyacetic acid
TAL	Target Analyte List
2,3,7,8-TCDD	2,3,7,8-Tetrachloridibenzene-p-dioxin
TCL	Target Compound List
TCX	Tetrachloro-m-xylene
TDS	total dissolved solids
TEF	toxicity equivalency factor
TIC	Tentativey Idenified Compound
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TSS	total suspended solids
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

1.1 PURPOSE. ABB Environmental Services, Inc. (ABB-ES), under contract to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), conducted site investigation activities at the military construction (MILCON) site at the Naval Construction Battalion Center (NCBC) in Gulfport, Mississippi. SOUTHNAVFACENGCOM issued a Statement of Work (SOW) modifying (Modification No. 4) of CTO No. 0024 on January 13, 1993, to request characterization of surface soil and surface water at the MILCON Project P-745 site, which is adjacent to the Herbicide Orange (HO) site area C.

This site investigation included sampling activities designed to document the potential surface soil contamination from the former HO storage area C and from the former auto storage area.

This Technical Memorandum presents discussions of the field program and summarizes findings, results, and recommendations based on information and data collected as a result of the May 1993 field effort.

1.2 SITE BACKGROUND.

1.2.1 NCBC Location and Description NCBC is located in the western part of Gulfport, Mississippi, in the southeastern part of the State in Harrison County, about 2 miles north of the Gulf of Mexico (Figures 1-1 and 1-2). NCBC occupies approximately 1,100 acres and has an elevation averaging approximately 30 feet above sea level. Surface soils are primarily sand to sandy loam with minor clays. The water table at the former HO storage area ranges from approximately 3 to 10 feet below land surface (Dames and Moore, 1990).

The former HO storage areas A, B, and C, where approximately 850,000 gallons of HO were stored, comprises approximately 12 acres of flat land at NCBC (Figure 1-3). The storage site surface was stabilized with a soil/Portland cement mixture approximately 30 years ago to provide a hardened surface for heavy equipment operation and storage. Over the years, additional fill material (shell, rock, and soil) was added to some portions of the former storage area providing a cover over the cement stabilized soil. This cover ranges from zero to 6 inches in thickness (Dames and Moore, 1990).

1.2.2 History HO was stored at NCBC from 1968 to 1977. In April 1970, the Secretaries of Agriculture; Health, Education, and Welfare; and the Interior jointly announced the suspension of certain uses of 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). This suspension resulted from published studies indicating that 2,4,5-T was a teratogen. Subsequent studies revealed that the teratogenic effects resulted from a toxic contaminant in the 2,4,5-T, identified as 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). Subsequently, the U.S. Department of Defense (DOD) suspended the use of HO, which contained 2,4,5-T. At the time of the suspension, the U.S. Air Force (USAF) had an inventory of 1.37 million gallons of HO in South Vietnam and 850,000 gallons at NCBC. In September 1971, the DOD directed that the HO in South Vietnam be returned to the United States and that the entire 2.22 million gallons be disposed of in an environmentally safe and efficient manner (Channell and Stoddart, 1984). The 1.37 million gallons were moved to Johnston Island in the Pacific Ocean during April 1972 (Dames and Moore, 1990).

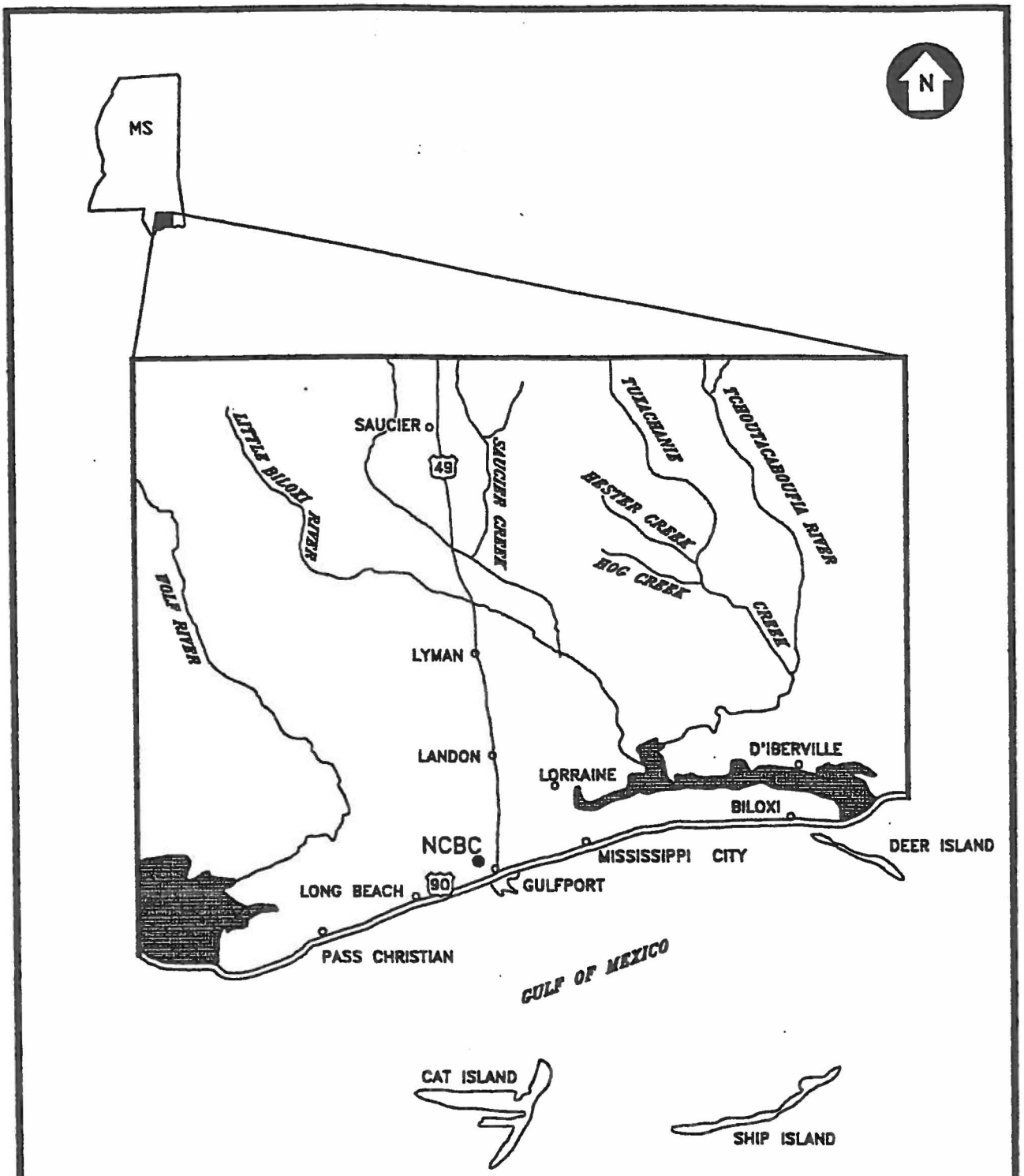

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FIGURE 1-1

FACILITY LOCATION

MILCON CONSTRUCTION SITE
TECHNICAL MEMORANDUM

NAVAL CONSTRUCTION
BATTALION CENTER
GULFPORT, MISSISSIPPI

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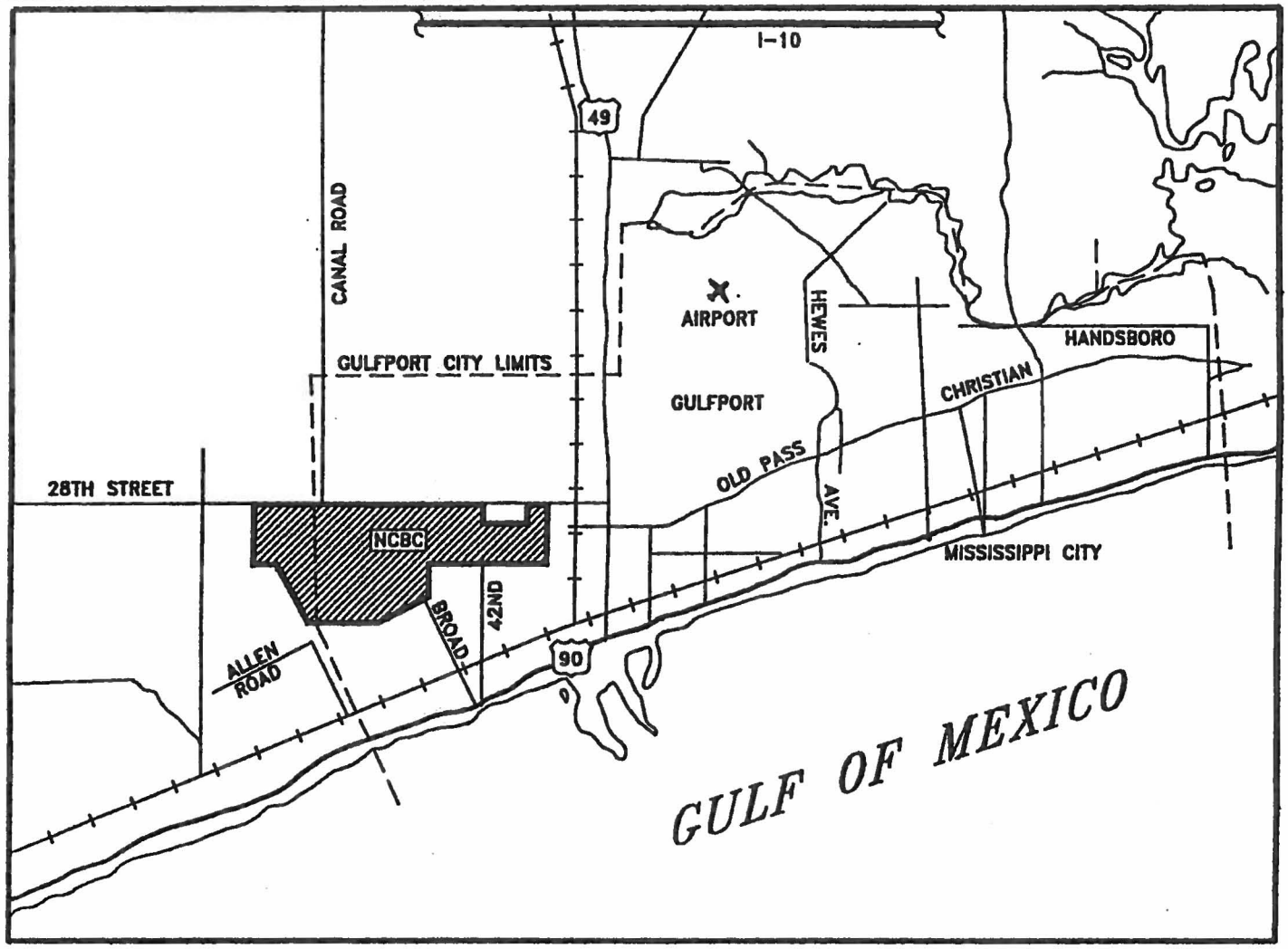

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FIGURE 1-2

VICINITY MAP

MILCON CONSTRUCTION SITE
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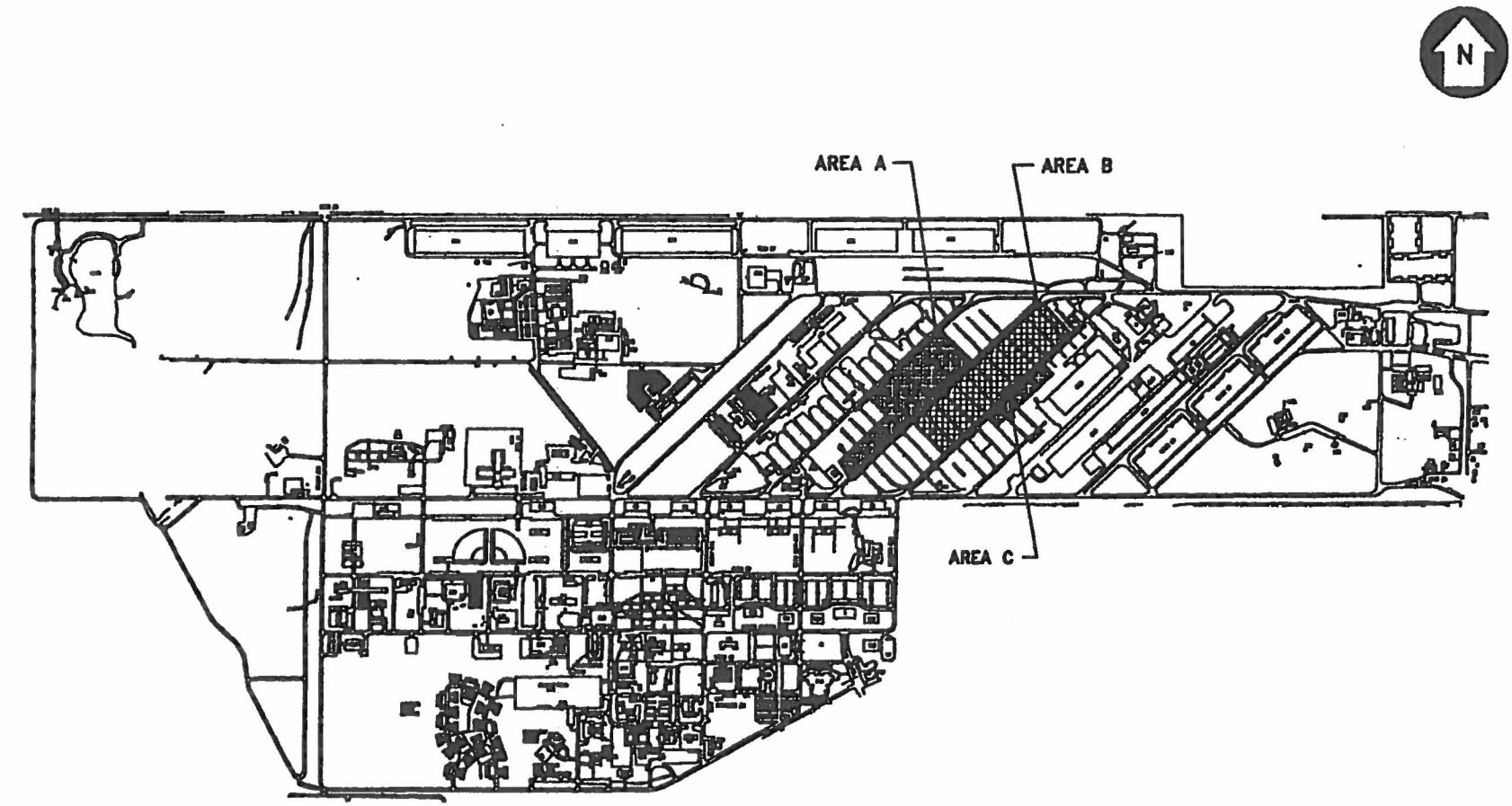

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FIGURE 1-3
LOCATION OF FORMER HO
STORAGE AREAS

MILCON CONSTRUCTION SITE
TECHNICAL MEMORANDUM

NAVAL CONSTRUCTION
BATTALION CENTER
GULFPORT, MISSISSIPPI

After various HO disposal techniques were evaluated, the USAF disposed of the HO at NCBC, plus the 1.37 million gallons of HO from Johnston Island, by high-temperature incineration at sea during the summer of 1977 (Miller et al., 1980).

After incineration of the herbicide in 1977, the USAF instituted a storage site monitoring program (Channell and Stoddart, 1984) to establish the extent and magnitude of contamination due to drum leakage during storage and of contamination degradation rates, the potential for migration of residues, and the managerial techniques of minimizing impacts. These include direct soil contamination at the storage site and surrounding areas; contamination of surface water, sediments, and aquatic organisms as a result of contaminant runoff from the storage area into the NCBC drainage system; and the potential for groundwater contamination (Dames and Moore, 1990). Currently, the former HO Area A is restricted with fencing and Areas B and C are posted. The areas are not in use.

1.3 SCOPE. The objective of this site assessment is to screen for the presence of dioxins and other contaminants that may pose a risk to human health during the construction of a warehouse (MILCON Project P-745). This screening effort focuses on surface soil, but sediment and surface water are also addressed. Evaluation of groundwater is not included in this assessment. The construction area to be evaluated (which includes the former auto storage and oil storage areas) is located adjacent to and southeast of Area C of the HO site (Figure 1-4).

The work was implemented in accordance with the U.S. Environmental Protection Agency (USEPA), Region IV, and the Mississippi Department of Environmental Quality (MSDEQ) requirements and the provisions of SOUTHNAVFACENGCOM Contract No. N62467-89-D-0317 to include all referenced Federal Acquisition Regulations and Defense Federal Acquisition Regulations.

The field program consisted of: (1) collection and chemical analysis of three surface water samples, (2) collection and chemical analysis of three sediment samples, (3) collection and chemical analysis of nine surface soil samples, and (4) a location and elevation survey of the sample locations. Site maps were developed from the survey data.

The specific scope of explorations and environmental measurements conducted during the sampling program are discussed in Section 2.0. Section 3.0 discusses the analytical program and data quality for the environmental samples collected during the field effort. Section 4.0 presents analytical results and interpretation of the data collected to date. Section 5.0 contains Screening Risk Evaluations. Section 6.0 presents limitations and uncertainties associated with the data. Section 7.0 is conclusions and recommendations for future activities at the site.

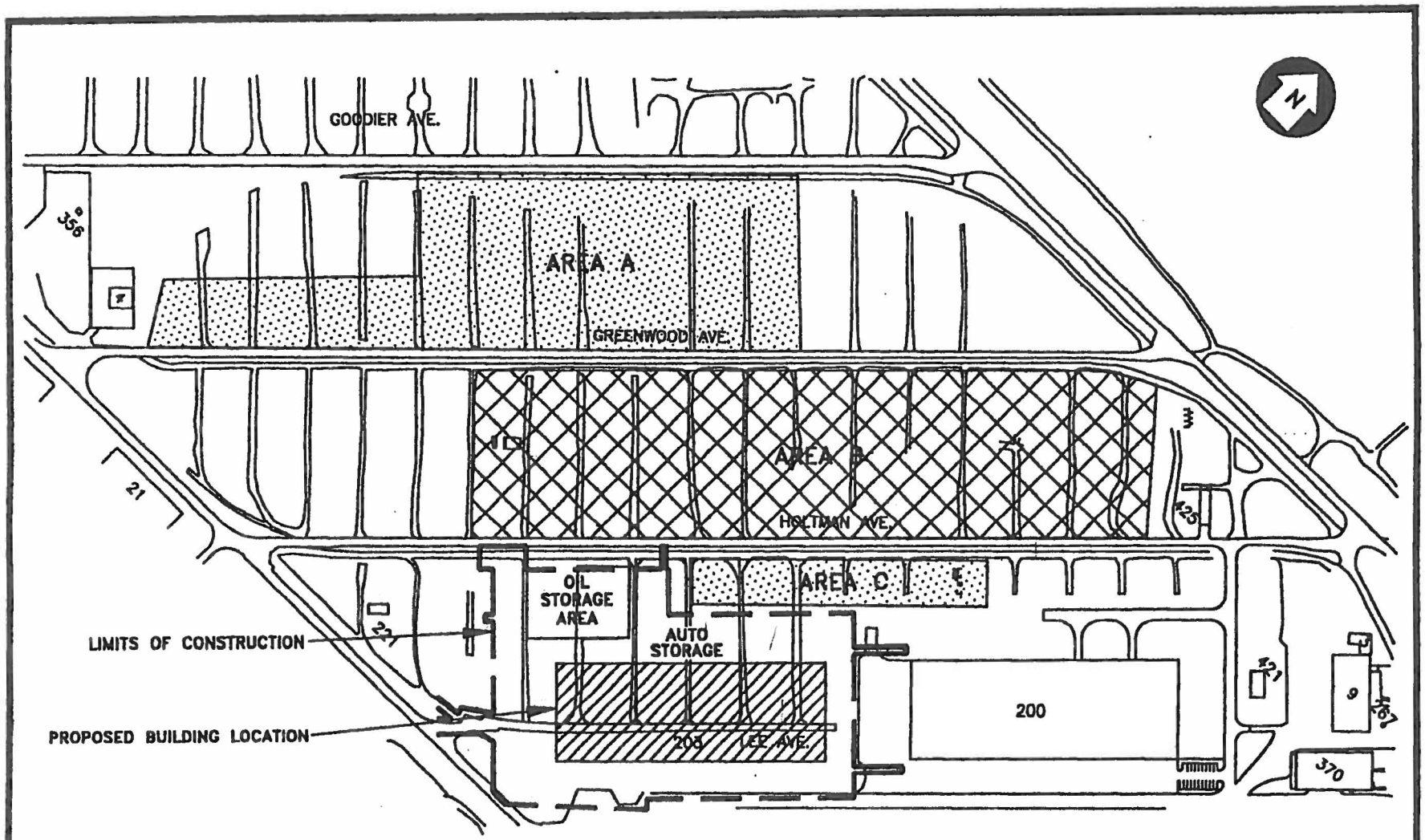

FIGURE 1-4

PROPOSED MILCON CONSTRUCTION SITE

MILCON CONSTRUCTION SITE
TECHNICAL MEMORANDUM

NAVAL CONSTRUCTION
BATTALION CENTER
GULFPORT, MISSISSIPPI

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2.0 FIELD PROGRAM

The intent of the assessment conducted at NCBC MILCON Site P-745 during May 1993 was to evaluate the risk to human health using an occupational scenario. The field effort included the following activities:

- collection of surface water samples;
- collection of sediment samples;
- collection of surface soil samples; and
- survey of sample locations.

The following subsections summarize the methods and scope of each of the above activities associated with the assessment.

2.1 SURFACE WATER SAMPLING. Two surface water samples were collected from the drainage ditch on the site (MS1SW01 and MS1SW02) on May 5, 1993. The sample locations are shown on Figure 2-1. One surface water sample was collected from a background location (MS1SW03) topographically upgradient on the southwest part of the site, outside but within 100 feet of the limits of construction (Figure 2-2). Its precise location was determined after observations by the Field Operation Leader (See Figure 2-2).

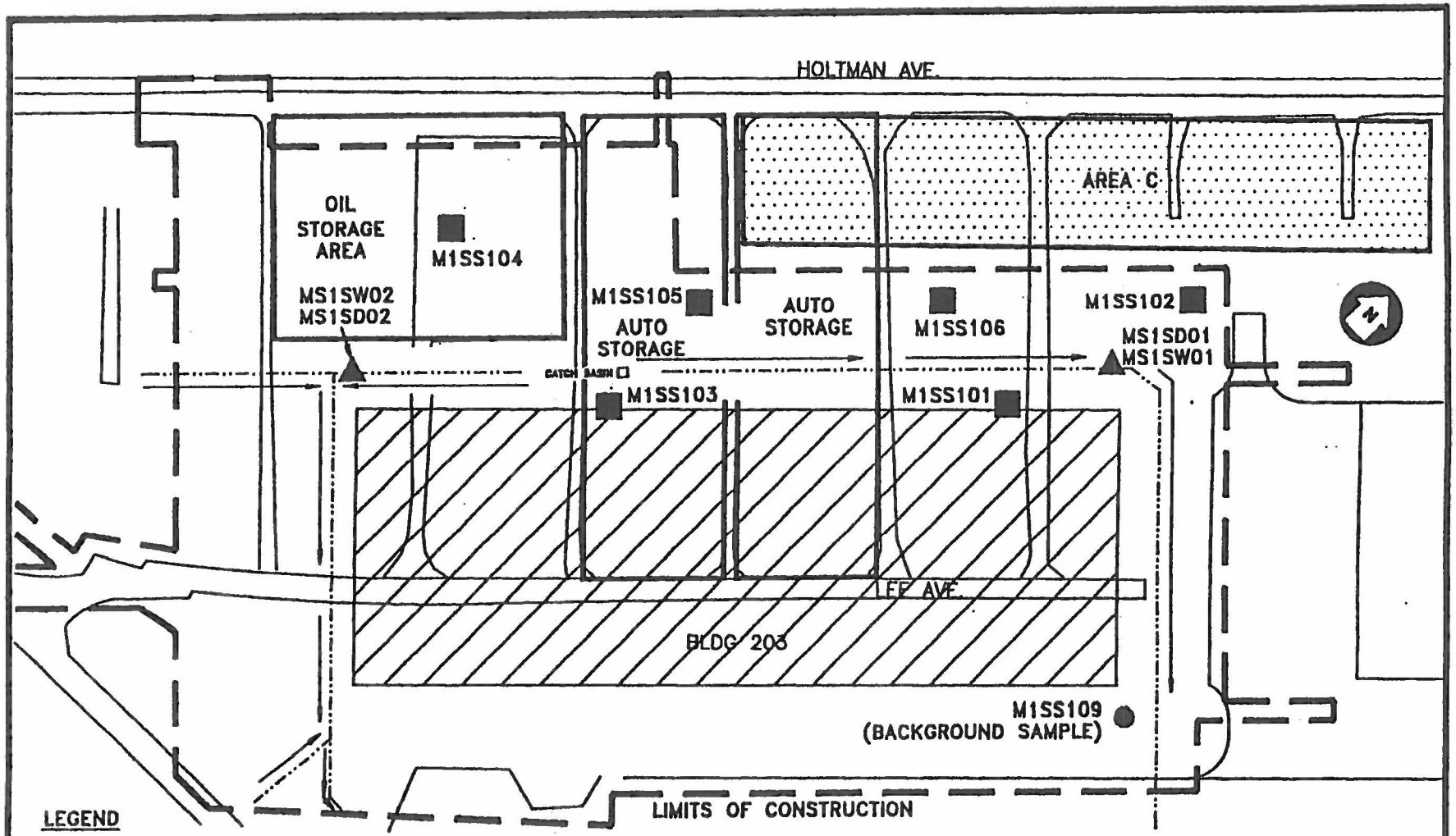
Surface water samples were collected by direct immersion of sample bottles. Care was taken to avoid agitating sediments that would contaminate the water sample. Field measurements of surface water pH, temperature, and conductivity were recorded for each sampling location. ABB-ES personnel placed the filled sample containers on ice in coolers immediately after collection and preservation. Chain of custody was initiated in the field at the time of sample collection. Samples were shipped via overnight courier service to CH2M Hill Laboratories, Inc., Redding, California, for analytical testing. Level C data quality objectives and deliverables were specified for the analytical program.

2.2 SEDIMENT SAMPLING. Sediment sampling was performed on May 4 and 5, 1993. All three locations (MS1SD01, MS1SD02, and MS1SD03) of sediment samples correspond directly to the surface water sample locations (Figure 2-1) including background (Figure 2-2).

Sediment samples were collected using decontaminated stainless steel trowels and glass bowls. Sediments were transferred from the trowels to the bowls for mixing. Volatile organic compound (VOC) samples were transferred directly from the trowels to the sample jars to limit loss of any VOCs. Other than samples for VOCs, sediments were transferred directly from the glass bowls into labeled sample jars. ABB-ES personnel placed the filled jars on ice in coolers immediately following collection.

2.3 SURFACE SOIL SAMPLING. Surface soil sampling was conducted May 4 through May 6, 1993. Six composite surface soil samples (M1SS101 through M1SS106) were collected from locations within the boundaries of the limits of proposed construction as identified in the work plan. Three samples (M1SS107, M1SS108, and M1SS109) from locations designated as background were collected (Figure 2-2).

Surface soil composite samples were collected using decontaminated stainless steel hand augers, stainless-steel spoons, and glass bowls. The composite samples were collected from nine, 20 feet-square areas. At each of the nine



LEGEND

- ▲ SURFACE WATER/SEDIMENT SAMPLE
- ■ COMPOSITE SOIL SAMPLE PLOT
- APPROXIMATE DITCH LOCATION
- DRAINAGE FLOW DIRECTION

0 125 250
SCALE FEET

FIGURE 2-1

SAMPLE LOCATION MAP

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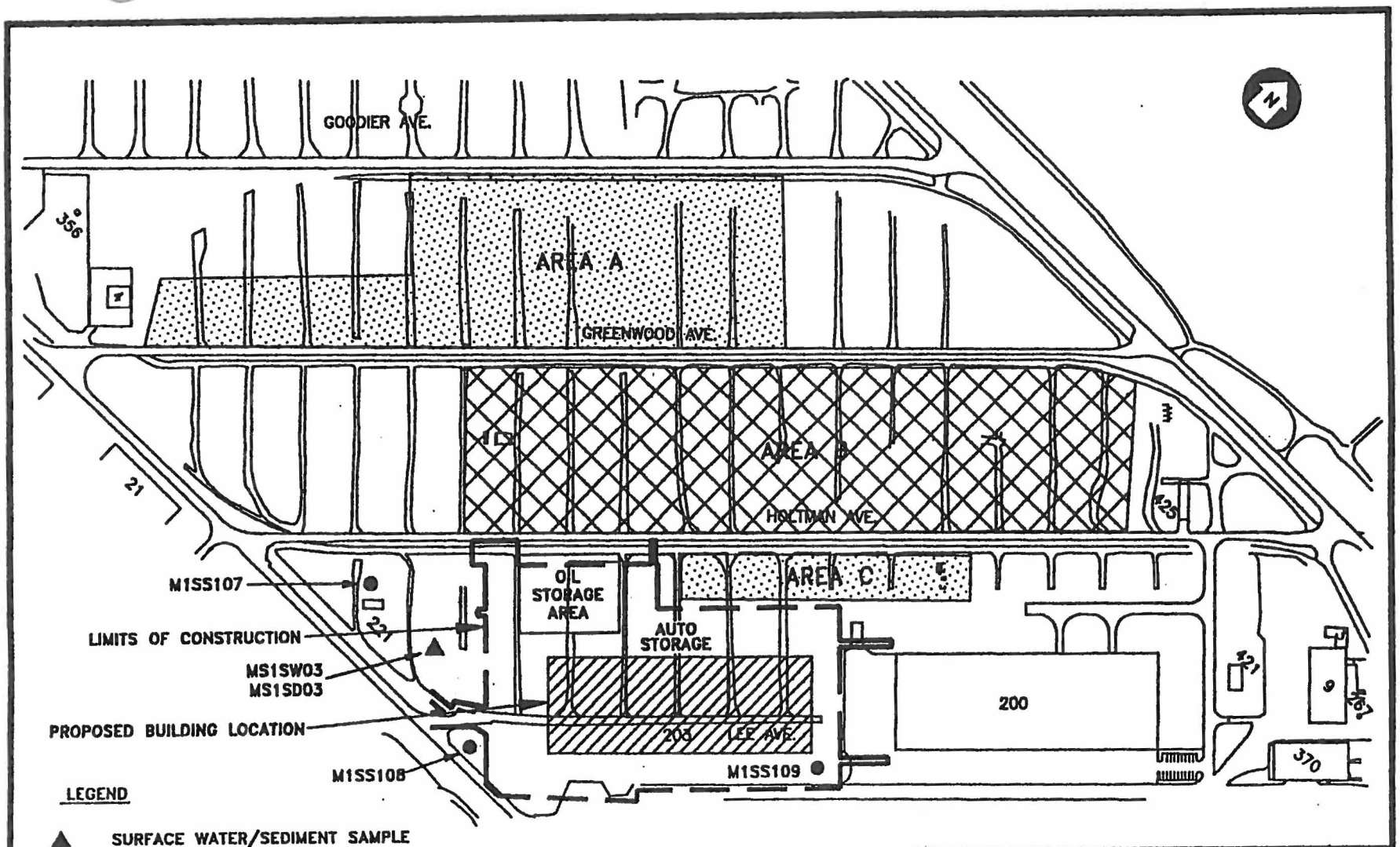

FIGURE 2-2

BACKGROUND SAMPLE LOCATIONS

MILCON CONSTRUCTION SITE
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GULFPORT, MISSISSIPPI

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sampling locations, a composite sample was obtained composed of five subsamples: one subsample was collected from the center and one inside each corner of the area, each from the zero to 2 feet depth interval. The 0 to 2 feet depth was selected because possible contaminants arrived off-site via surface water and airborne particles. All soil samples were screened with a portable flame ionizing detector (FID) to establish the relative VOC concentrations in the soil. For volatile organic constituents (VOC) analysis ABB-ES personnel retained the subsample that exhibited the highest FID reading before compositing. If no FID reading was observed from any of the five subsamples, the sampling crew retained the subsample from the center location for VOC analysis. The soil samples were logged using the Unified Soil Classification System.

The subsamples were composited in a single glass bowl, then transferred directly into labeled sample jars. ABB-ES personnel placed the filled jars on ice in coolers immediately after collection.

The sample locations (M1SS102 and 104-106) were selected to document potential surface contaminant migration from the former HO storage area and from the former auto storage area.

Two sample locations (M1SS101 and 103) are on the proposed building outline where closer contact to the soils may occur during the footing wall excavation.

2.4 SURVEY OF SAMPLE LOCATIONS. A closed-loop horizontal and vertical survey was performed at the MILCON Project P-745 site by J.R. Clark and Associates, (Mississippi licensed land surveyors) of Gulfport, Mississippi. Horizontal and vertical location survey points included nine surface soils, and three surface water and sediment locations with horizontal accuracy of 0.1 foot and vertical accuracy of 0.01 foot (Table 2-1). Horizontal locations were surveyed to a second order Class II Survey within 1 foot in 5,000 feet precision. The 0.00, 0.00 baseline coordinate point is located 120 feet east of the southern edge of building 200, and was used as a horizontal control point from which all sample locations and proposed positioning of Building 203 were tied. No other points, except for necessary baselines, benchmarks, and other positioning locations, were established. Adjacent structures and physical features, including power poles, contour lines, building corners, and other such points were not included in the survey. The survey utilized the same coordinate system as used by NCBC.

Table 2-1 Survey Location Coordinates and Elevation Survey, Gulfport MILCON Sampling Sites

Sample Locations[A]	South (feet)	West (feet)	Elevation
Surface Soil			
M1SS101	281.8	360.1	29.3
M1SS102	142.1	459.1	29.9
M1SS103	627.6	356.7	29.9
M1SS104	717.8	511.5	29.9
M1SS105	519.9	454.3	30.1
M1SS106	318.8	456.7	29.6
M1SS107	1387.3	538.9	30.4
M1SS108	868.7	EAST 6.9	30.3
M1SS109	132.7	44.6	31.8
Surface Water/Sediment			
MS1SW01/SD01	183.3	391.8	27.4
MS1SW02/SD02	765.6	388.8	26.6
MS1SW03/SD03	1083.0	389.9	26.7

Note:

A 0.00,0.00 baseline coordinate point is located 120 feet east of southern edge of Building 200.

3.0 ANALYTICAL PROGRAM

This section summarizes the analytical program for surface water, sediment, and surface soil samples collected during field activities at NCBC Gulfport. In addition, it presents an assessment of data quality and an evaluation of field quality control (QC) samples.

3.1 CHEMICAL ANALYSES. Sampling activities at NCBC Gulfport included the collection of surface water, sediment, and surface soils. All samples were collected in accordance with the procedures outlined in the MILCON Site Assessment Work Plan, Project P-745 (ABB-ES, 1993). Samples were submitted to CH2M Hill Laboratories in Redding, California, for chemical analyses. Table 3-1 summarizes the sampling and analysis program for samples collected from the site during the May 1993 field effort. Samples were analyzed in accordance with the Contract Laboratory Program (CLP) SOW for organic and inorganic analyses (USEPA, 1991a; 1991b) for target compound list (TCL) VOCs, semivolatile organic compounds (SVOCs), organochlorine pesticides and polychlorinated biphenyls (PCBs), and target analyte list (TAL) inorganics (including cyanide). Samples were also analyzed for chlorinated herbicides, total organic carbon, and polychlorinated dibenzo-furans and dioxins according to USEPA method 1613 (8290) (USEPA, 1983). Table 3-2 lists the TCL organic analytes and TAL inorganic analytes included in the analysis program and corresponding contract required quantitation limits (CRQLs). Table 3-3 lists the non-CLP analytes included in the analysis program and the corresponding practical quantitation limits (PQL). Table 3-4 provides a list of CLP and SW-846 compounds and corresponding USEPA analytical method numbers.

3.2 DATA QUALITY ASSESSMENT. All soil and groundwater samples collected during the field effort were properly preserved, placed in coolers, and packed with ice immediately after their collection. All samples remained in the custody of the field operations leader until delivery to the courier service providing overnight shipment to the laboratory. All samples were shipped, complete with chain-of-custody forms, to CH2M Hill Laboratories within 24 hours for analysis. Upon arrival at CH2M Hill, the chain-of-custody and preservation of the samples were checked with the contents of each cooler by CH2M Hill personnel. After verification, the chain-of-custody form was signed by CH2M Hill personnel and the samples accepted for analysis.

Review of the field notebook and chain-of-custody forms did not indicate any non-conformance relative to field instrument calibration or sample handling. All required field QC samples were collected in conformance with the requirements of the USEPA, Navy Energy and Environmental Support Activity (NEESA), and ABB-ES Quality Assurance Plans and the *"Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program"* (NEESA, 1988). These field QC samples included field duplicates, equipment rinsate blanks, field blanks, and VOC trip blanks for each VOC sample shipment.

The analytical results for environmental samples collected during the assessment were evaluated and validated according to NEESA Level C QC criteria in order to determine data quality and useability. The data tables included in Appendix A reflect validation according to Level C criteria (NEESA, 1988). The USEPA functional guidelines for evaluating organic and inorganic data (USEPA, 1991a and

Table 3-1 Summary of Sampling and Analysis Program

Location and Type of Sampling	Laboratory Analysis							
	A	B	C	D	E	F	G	H
MILCON Site P-745	Number of Samples							
Surface water	3	3	3	3	3	3	3	3
Sediment	3	3	3	3	3	3	3	3
Surface soil	9	9	9	9	9	9	9	9
Field Duplicates								
Surface water	1	1	1	1	1	1	1	1
Sediment	1	1	1	1	1	1	1	1
Surface soil	1	1	1	1	1	1	1	1
Quality Control Samples								
Trip blanks	3	0	0	0	0	0	0	0
Rinsate blanks (DI/PI/ER)	5	5	5	5	5	5	5	5
Matrix spike/ Matrix spike Duplicate	6	6	6	6	6	6	6	6

Notes:

A - TCL Volatile organic compounds
B - TCL Semivolatiles organic compounds
C - TCL Organochlorine pesticides and polychlorinated biphenyls
D - TCL Chlorinated herbicides
E - TCL Total organic carbon
F - TCL Polychlorinated dibenzo-furans and furans
G - TCL Total petroleum hydrocarbons
H - TAL Inorganics and cyanide

DI distilled water field blank
PI potable water field blank
ER equipment rinsate

Table 3-2 Target Compound List and Target Analyte List and Corresponding Contract Required Quantitation Limits (CRQLs)

Compound	CRQL[1] Soil (mg/kg)	CRQL[1] Water (µg/ℓ)
Volatile Organic Compounds		
Method: **Contract Laboratory Program Statement of Work for Organic Analysis, Multi-media, Multi-concentration, USEPA Document No. OLM02.1, August 1991, (USEPA, 1991a).**		
Chloromethane	10	10
Bromomethane	10	10
Chloroethane	10	10
Methylene chloride	10	10
Acetone	10	10
Carbon disulfide	10	10
2-Hexanone	10	10
1,1-Dichloroethene	10	10
1,1-Dichloroethane	10	10
1,2-Dichloroethene (total)	10	10
Chloroform	10	10
1,2-Dichloroethane	10	10
2-Butanone	10	10
1,1,1-Trichloroethane	10	10
Carbon tetrachloride	10	10
1,2-Dichloropropane	10	10
cis-1,3-Dichloropropene	10	10
Trichloroethene	10	10
Dibromochloromethane	10	10
1,1,2-Trichloroethane	10	10
Benzene	10	10
trans-1,3-Dichloropropene	10	10
Bromoform	10	10
Bromodichloromethane	10	10
4-Methyl-2-pentanone	10	10
Tetrachloroethene	10	10
1,1,2,2-Tetrachloroethane	10	10
Toluene	10	10
Chlorobenzene	10	10
Ethylbenzene	10	10
Styrene	10	10
Xylene (total)	10	10

See notes at end of table.

Table 3-2 (continued) Target Compound List and Target Analyte List and Corresponding CRQLs

Compound	CRQL[1] Soil (mg/kg)	CRQL[1] Water (µg/l)
Semivolatile Organic Compounds		
Method: Contract Laboratory Program Statement of Work for Organic Analysis, Multi-media, Multi-concentration, USEPA Document No. OLM02.1, August 1991, (USEPA, 1991a).		
Phenol	330	10
bis(2-Chloroethyl)ether	330	10
1,3-Dichlorobenzene	330	10
1,4-Dichlorobenzene	330	10
1,2-Dichlorobenzene	330	10
Dibenzofuran	330	10
2-Methylphenol	330	10
2,2'-oxybis(1-Chloropropane)	330	10
4-Methylphenol	330	10
N-Nitroso-di-n-propylamine	330	10
Hexachloroethane	330	10
Nitrobenzene	330	10
Isophorone	330	10
2-Nitrophenol	330	10
2,4-Dimethylphenol	330	10
bis(2-chloroethoxy)methane	330	10
2,4-Dichlorophenol	330	10
1,2,4-Trichlorobenzene	330	10
Naphthalene	330	10
4-Chloroaniline	330	10
Hexachlorobutadiene	330	10
4-Chloro-3-methylphenol	330	10
2-Methylnapthalene	330	10
Acenapthene	330	10
2,4-Dinitorphenol	800	25
4-Nitrophenol	800	25
Dibenzofuran	330	10
2,4-Dinitrotoluene	330	10
Diethylphehtalte	330	10
4-Chlorophenyl-penylether	330	10
Fluorene	330	10
4-Nitoraniline	800	25
4,6-Dinitro-2-methylphenol	800	25

See notes at end of table.

Table 3-2 (continued) Target Compound List and Target Analyte List and Corresponding CRQLs

Compound	CRQL[1] Soil (mg/kg)	CRQL[1] Water (µg/l)
N-Nitrosodiphenylamine	330	10
4-Bromophenyl-phenylether	330	10
Hexachlorobenzene	330	10
Pentachlorophenol	800	25
Phenanthrene	330	10
Anthracene	330	10
Carbazole	330	10
Di-n-butylphthalate	330	10
Fluoranthene	330	10
Pyrene	330	10
Butylbenzylphthalate	330	10
3,3'-Dichlorobenzidine	330	10
Benzo(a)anthracene	330	10
Hexachlorocyclopentadiene	330	10
Chrysene	330	10
2,4,6-Trichlorophenol	330	10
bis(2-Ethylhexyl)phthalate	330	10
2,4,5-Trichlorophenol	330	10
Di-n-Octyl phthalate	330	10
2-Chloronaphthalene	330	10
2-Nitroaniline	330	10
Dimethylphthalate	330	10
Acenaphthalene	330	10
2,6-Dinitrotoluene	330	10
3-Nitroaniline	330	10
Benzo(b)fluoroanthene	330	10
Benzo(b)fluoranthene	330	10
Benzo(k)fluoranthene	330	10
Benzo(a)pyrene	330	10
Ideno(1,2,3-cd)pyrene	330	10
Dibenz(a,h)anthracene	330	10

See notes at end of table.

Table 3-2 (continued) Target Compound List and Target Analyte List and Corresponding CRQLs

Compound	CRQL[1] Soil (mg/kg)	CRQL[1] Water (µg/l)
Parameter:	**Organochlorine Pesticides and Polychlorinated biphenyls**	
Method:	**Contract Laboratory Program Statement of Work for Organic Analysis, Multi-media, Multi-concentration, USEPA Document No. OLM01.8, August 1991, (USEPA, 1991a).**	
alpha-BHC	1.7	0.05
gamma-BHC	1.7	0.05
beta-BHC	1.7	0.05
delta-BHC	1.7	0.05
Endosulfan I	1.7	0.05
Dieldrin	3.3	0.10
4,4'-DDD	3.3	0.10
Methoxychlor	17	0.5
Aroclor-1016	33	1.0
Aroclor-1242	33	1.0
Heptachlor	1.7	0.05
Aldrin	1.7	0.05
Endrin	3.3	0.10
4,4'-DDE	3.3	0.10
4,4'-DDT	3.3	0.10
Toxaphene	170	5.0
Aroclor-1221	67	2.0
Aroclor-1248	33	1.0
Aroclor-1260	33	1.0
Heptachlor epoxide	1.7	0.05
Endosulfan II	3.3	0.10
Endosulfan sulfate	3.3	0.10
Endrin ketone	3.3	0.10
Endrin aldehyde	1.7	0.05
alpha-Chlordane	1.7	0.05
gamma-Chlordane	1.7	0.05
Aroclor-1232	33	1.0
Aroclor-1254	33	1.0

See notes at end of table.

Table 3-2 (continued) Target Compound List and Target Analyte List and Corresponding CRQLs

Compound	CRQL[1] Soil (mg/kg)	CRQL[1] Water (µg/ℓ)
Parameter:	**Inorganic Analytes**	
Method:	**Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-media, Multi-concentration, USEPA Document No. ILM02.1, August 1991 (USEPA, 1991b).**	
Aluminum	40	200
Antimony	12	60
Arsenic	2	10
Barium	40	200
Beryllium	1	5
Cadmium	1	5
Calcium	1000	5000
Chromium	2	10
Cobalt	10	50
Copper	5	25
Iron	20	100
Lead	1	3
Magnesium	1000	5000
Manganese	3	15
Mercury	0.1	0.2
Nickel	8	40
Potassium	1000	5000
Selenium	1	5
Silver	2	10
Sodium	1000	5000
Thallium	2	10
Vanadium	10	50
Zinc	4	20
Cyanide	1	10

Notes: µg/ℓ = micrograms per liter
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
CRQL = contract required quantitation limit

[1]CRQLs have been established for CLP methodology but values may vary based on instrument performance and moisture content.

Table 3-3 Target Compound List for SW-846 Methods 8150 and 8290 and Corresponding Practical Quantitation Limits (PQLs)[1]

	Soil (mg/kg)	Water (µg/ℓ)
Parameter: Chlorinated Herbicides		
Method: USEPA SW-846 Method 8150 (USEPA, 1986a)		
2,4-D	100	2.5
Silvex	20	0.5
2,4,5-T	20	0.5
Dinoseb	100	2.5
Parameter: Polychlorinated Dibenzofurans and dioxins		
Method: USEPA SW-846 Method 8290 (USEPA, 1986a)		
	ng/kg	pg/l
Tetrachlorodibenzo-p-dioxins (TCDDs)	1	10
Pentachlorodibenzo-p-dioxins (PeCDDs)	1	10
Hexachlorodibenzo-p-dioxins (HxCDDs)	1	10
Tetrachlorodibenzofurans (TCDFs)	1	10
Pentachlorodibenzofurans (PeCDFs)	1	10
Hexachlorodibenzofurans (HxCDFs)	1	10

Notes:

µg/ℓ = micrograms per liter (parts per billion)
mg/kg = milligrams per kilogram (parts per million)
ng/kg = nanograms per kilogram (parts per trillion)
pg/l = picograms per liter (parts per quadrillion)
2,4-D = 2,4-Dichlorophenoxyacetic acid
2,4,5-T = 2,4,5-Trichlorophenoxyacetic acid

Contract Laboratory Program Statement of Work for Organic Analysis (USEPA Document OLM01.8, August 1991 [USEPA, 1991a]) and Contract Laboratory Program Statement of Work for Inorganic Analysis (USEPA Document No. ILM02.1, August 1991 [USEPA, 1991b]).

[1]PQLs are established using SW-846 methodology and values may vary based on instrument performance and moisture content.

Table 3-4 CLP and SW Methods

Method Name	Source	Description	Deviations
CLP TCL Volatiles	US EPA CLP CLP SOW OLM01.8	GC/MS Volatiles	w/o TICs
CLP TCL Semivolatiles	US EPA CLP CLP SOW OLM01.8	GC/MS Semivolatiles	w/o TICs
CLP TCL Pesticide/PCB	US EPA CLP CLP SOW OLM01.8	GC Pesticides and PCBs	None
CLP TAL Metals	US EPA CLP CLP SOW ILM02.1	Metals	None
CLP Cyanide	US EPA CLP CLP SOW ILM02.1	Cyanide	None
TPH 418.1 (9071/3550 extraction for soils)	SW-846	Total Petroleum Hydrocarbons	None
TOC 9060	SW-846	Total Organic Carbon	Use of sample boat for delivery of soils into high temperature furnace.
Herbicides 8150	SW-846	GC Herbicides	None
Dioxins/Furans 8290	SW-846	High Resolution MS Dioxins/Furans	a)17 labeled compounds used similar to EPA 1613 b)MPC results based on sum of native ions rather than ratio to smallest ion c)DL Values include factor for actual measured signal to noise ratio.

Notes:

CLP	Contract laboratory procedure
TAL	Target analyte list
TCL	Target compound list
TIC	Tentatively Identified Compounds
TPH	Total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency
SOW	Statement of work
GC/MS	Gas chromatograph/Mass spectroscopy
PCB	Polychlorinated biphenyls
TOC	Total organic carbon
DL	Detection limit
MPC	Maximum possible concentration

b) were also used, where applicable, to validate the laboratory data. Data review and validation were performed under a subcontract to Heartland Environmental Services, Inc., of St. Peters, Missouri.

Data quality indicators of precision, accuracy, reproducibility, comparability, and completeness (PARCC) were evaluated for all data generated during this effort. Appendix B of this report contains a detailed evaluation of each PARCC parameter and data tables summarizing analytical results for matrix spike/matrix spike duplicate (MS/MSD) samples, initial and continuing calibration standards, field duplicate samples, and compounds detected in method blanks, trip blanks, rinsate blanks, source-water blanks.

3.3 PARCC RESULTS.

3.3.1 Precision Precision is a measure of the agreement or repeatability of a set of replicate results obtained from duplicate laboratory analyses of samples collected from the same location/depth interval. Precision was calculated from laboratory analytical data and cannot be measured directly. Precision is expressed as the Relative Percent Difference (RPD) between analytical values for two samples divided by the average of their analytical values. Precision is calculated using the expression:

$$RPD = (D1-D2) / (\tfrac{1}{2}(D1+D2)) \times 100$$

D1 and D2 are the reported values for the duplicate sample pair. Precision was evaluated using field duplicate samples and laboratory split samples (for example, MS/MSD samples).

Precision for environmental samples and their duplicates was assessed using a maximum RPD of 20 Percent for water matrices and 35 Percent for soil and sediment matrices. Precision for MS/MSD/MD samples was assessed by using the target analyte specific RPD criteria for the spiked compounds and the sample duplicates.

The following section describes the evaluation of precision for volatile organic compounds, semivolatile organic compounds, dioxin/furans, pesticides and polychlorinated biphenyls (PCBs), herbicides, inorganics and cyanide, and wet chemistry parameters total petroleum hydrocarbons (TPHs), and total organic carbon (TOC). Duplicate samples are evaluated for precision only when contaminants are detected in both the environmental sample and the sample's duplicate. Environmental samples and their respective duplicates may not exhibit positive results for all compounds found at or near the contract required quantitation limit (CRQL) or detection limit (CRDL) because of low levels of contamination found at a site. Duplicates with Relative Percent Differences (RPDs) within control limits indicate adequate sampling practices and/or good analytical precision. Duplicates with RPDs outside the control limits may result from inappropriate sampling procedures, matrix interferences, or non-homogeneity of the sample matrix. In addition, poor precision can be attributed to deviation(s) from the analytical methodology or to poor reproducibility of target analyte concentrations at or near the required quantitation or detection limits (CRQLs or CRDLs). The acceptance criteria for evaluating precision of field duplicates analytical results is a RPD of 20 for water matrices and a RPD of 35 for soil/sediment matrices.

The percent of duplicate samples collected for the analytical parameters and sample matrices was greater than ten percent for soil, sediment, and water

matrices as specified in the Work Plan for NCBC Gulfport, Mississippi (ABB-ES, 1993). The following Sections summarize the evaluation of analytical precision for the water matrix (surface water samples) and soil\sediment matrices (soil samples and sediment samples) for the following analytical groups:

- GC/MS volatile organic compounds (GC/MS VOCs);
- semivolatile organic compounds (SVOCs);
- dioxin/furan compounds (D/Fs);
- pesticides, PCBs, and herbicides; and
- inorganics, cyanide, TPHs and TOC.

Duplicate precision was assessed using both environmental sample and associated duplicates and matrix spike (MS) and matrix spike duplicates (MSDs).

Tabulation of the results of assessing duplicate precision and duplicate frequency are presented in Tables B-1 and B-2 for the surface water matrix, B-3 and B-4 for the soil matrix, and B-5 and B-6 for the sediment matrix. The results of the evaluation of precision for MS/MSD samples is provided in Tables B-7 through B-14 for the surface water matrix, Tables B-15 through B-22 for soil matrix and B-23 through B-30 for the sediment matrix.

To assess whether instrument calibration for volatile, semivolatile and pesticide and PCB analytical methods resulted in non-compliant duplicate precision, tables were made of continuing calibration for each sample delivery group (SDG) and are included in Table B-31. In addition, to assess whether dilution of the samples resulted in non-compliant precision for inorganic analytical methods, tables were made of serial dilutions that were provided for each sample delivery group and are included in Table B-32. It must be noted that the serial dilution for SDG 94001 is associated with SDG 94004.

<u>Water Matrix</u>

No target analytes were detected in either the water samples or associated duplicates for VOCs, SVOCs, pesticides/PCBs, or herbicides (Tables B-1 and B-2). Therefore, no precision assessment was conducted for those parameters.

Two (2) surface water samples, BS-01-ER and MS1SW01, exhibited non-compliant RPDs for dioxin/furan congeners (Table B-1). In sample BS-01-ER, the two (2) congeners reported were 1,2,3,7,8,9-H_6CDF and OCDD. The congener 1,2,3,7,8,9-H_6CDF was reported in the sample as an MPC (Maximum Possible Concentration), but was not detected in the field duplicate. A compound is reported as an MPC because of unsatisfied identification criteria (i.e. non compliant ion ratios). The RPD for 1,2,3,7,8,9-H_6CDF is considered "in-control" because the compound was detected in the water sample as a MPC and not as a "true" congener result, and not detected in the associated duplicate. The congener OCDD was also reported as an MPC in the original sample. The non compliant RPD for this compound is attributed to the presence of potential high bias in the sample result (MPC). The reported TEFs (Toxicity Equivalency Factors) for PCDD and PCDF also exhibited non-compliant RPDs. The non compliant RPDs are attributed to the MPCs noted with the specific congener results because the TEFs are calculated based on the reported results of dioxin/furan congeners. Eleven (11) of the fourteen (14) congeners detected in the sample/duplicate pair of MS1SW01 did not meet RPD limits. Six (6) of the eleven (11) non compliant RPDs are due to the presence of MPC values. The five (5) congeners that did not meet RPD limits, 2,3,7,8 substituted penta, hexa, hepta, and octa congeners, exhibit varying results that

could be attributed to sample nonhomogenity or field duplicate sampling techniques. The initial and continuing calibrations associated with these sample results do not indicate an analytical deficiency. Therefore, the sample results for these congeners with non compliant RPDs should be evaluated by their respective TEFs. The RPD for the TEFs for the 2,3,7,8-substituted PCDDs is within control limits. The RPD for the TEFs for the 2,3,7,8-substituted PCDFs is not within control limits, but this non compliance can be attributed to the higher concentrations of MPCs found for the PCDFs. All data is to be considered useable.

Four (4) inorganic target analytes exhibited non-compliant RPDs for sample MS1SW01 and its associated duplicate (Table B-2). The target analytes with non-compliant RPDs were aluminum, iron, lead, and zinc. The non-compliance for the analyte lead is attributed to the duplicate sample analytical result being less than the contract required detection limit (CRDLs). The non-compliant RPDs for the analytes aluminum, iron, and zinc could be attributed to potential field and/or laboratory inconsistencies which can bias the results high. The three (3) analytes were detected in all of the associated field blanks (Table B-46) and the rinsate blank (Table B-51) associated with this SDG. Assessment of serial dilution results for these target analytes indicate that they were within the RPD criteria for serial dilution (Table B-32).

The analysis of the field duplicate pair for TPH results exhibited a non-compliant RPD (Table B-2). This RPD was considered "in control" because the compound was detected at a level near or below the detection limit in the sample and/or duplicate. The field duplicate pair analyzed for TOC exhibited an acceptable RPD result. (Table B-2)

The evaluation of precision of the water matrix for the MS/MSD samples is provided in Tables B-7 through B-14. All MS/MSD sample pairs analyzed for GC/MS volatile organics, semi-volatile organics, dioxin/furans, pesticides/PCBs, and herbicides exhibited acceptable RPDs between spike compounds.

Two (2) MS/MD sample pairs analyzed for inorganic analytes exhibited two (2) compounds with non-compliant RPDs. The non-compliant target analytes were aluminum and iron in the matrix duplicate analysis of sample MS1SW01, and aluminum and potassium in the matrix duplicate analysis of sample BS-903-ERD (Table B-12). The results reported in sample BS-03-ER for the target analytes noted were not detected in the original sample but were detected near the CRDLs in the matrix duplicate. The target analytes exhibiting non-compliant RPDs in both samples were also reported in all associated field blanks as well as the rinsate blanks and method blanks. The non-compliance noted in the RPDs of aluminum and iron in MS1SW01 is attributed to field and laboratory contamination of varying concentration levels which could bias results high. The results reported in sample BS-03-ER for the target analytes noted were near or below the compound CRDLs. These target analytes, which were associated with SDGs 94001, 94004 and 94005 were "in-control" with serial dilution criteria (Table B-32). The water matrix duplicate sample for TPH analysis was not analyzed due to a lack of sample. The matrix duplicate analyses for TOC exhibited acceptable RPDs.

Based on assessment of duplicate precision evaluation criteria, the water matrix analytical data was acceptable for each SDG.

Soil Matrix

The assessment of soil matrix environmental and associated duplicate samples for precision is provided in Tables B-3 and B-4. No GC/MS volatile organic target analytes or herbicides were detected in the environmental sample or associated duplicate (Table B-3). Therefore, no assessment of precision was conducted.

One (1) soil sample, M1SS101, and its associated duplicate exhibited positive results for twelve (12) semivolatile compounds. All but two (2) of the compounds exhibited acceptable duplicate precision. Phenanthrene was detected below the CRQL in the associated duplicate, but not in the original sample. Benzo(a)pyrene was detected in both the sample and the associated duplicate at low levels (Table B-3). These two (2) compounds are non-compliant with the RPD criteria for precision. The non-compliance of the compound phenanthrene is attributed to the low concentration levels detected. The compound benzo(a)pyrene was detected at a level below the CRQL in the original sample and above the CRQL in the field duplicate. The non-compliance for this compound could be attributed to the difficulty in obtaining a "true" field duplicate. This conclusion is evidenced by the large difference in moisture levels noted in the sample and the field duplicate (31 percent in M1SS101, 8 percent in M1SS101D). Assessment of the initial and continuing calibration criteria samples for these two (2) compounds, analyzed in SDG 94003, indicate that they were "in-control" (Table A-31). Therefore, no further action is required and the data is considered to be useable.

Eight (8) dioxin/furan congeners were detected in the sample and its associated duplicate. All but three (3) congeners exhibited acceptable duplicate precision. 1,2,3,7,8-P_5CDD and 2,3,4,6,7,8-H_6CDF were detected in the original sample, but not in the associated duplicate. The congener 1,2,3,7,8-P_5CDF was reported as MPC in the sample and its associated duplicate (Table B-3). The reported TEF (Toxicity Equivalency Factor) for PCDD also exhibited a non-compliant RPD. This could be attributed to the MPCs noted with the specific congener results because the TEF is a calculated factor based on the reported results of dioxin/furan congeners. All initial and continuing calibration criteria for the analysis of these samples was in control. All data is considered to be useable.

Pesticides and PCBs detected in the soil sample and associated duplicate consisted of five (5) pesticides, 4,4'-DDT, 4,4-DDE, dieldrin, methoxychlor, and endrin ketone (Table B-3). Four (4) of the compounds, which were detected in both the soil sample and associated duplicate, were "in-compliance" with the precision evaluation criteria. The compound 4,4'-DDT exhibited a non-compliant RPD. The non-compliance is attributed to the low level reported in the duplicate sample, near the CRQL. Assessment of the initial and continuing calibration results for this analyte, analyzed in SDG 94003, indicates that it was "in-control". All data is considered to be useable.

Thirteen (13) of the sixteen (16 detected inorganic target analytes exhibited non-compliant RPDs for the soil field duplicate pair of sample M1SS101 [Table B-4]). The target analytes with non-compliant RPDs were aluminum, arsenic, barium, calcium chromium, cobalt, copper, iron, magnesium, manganese, mercury, sodium, and zinc. The analyte mercury was detected in the duplicate at the CRDL, but was not detected in the original sample. The non-compliance for mercury is attributed to the low concentration levels detected. The non-compliant RPDs for the analytes aluminum, barium, magnesium, sodium, iron and zinc are attributed to potential field and/or laboratory inconsistencies. The compounds were

detected in all associated field blanks (Table B-46). Aluminum, copper, iron, sodium, and zinc were also detected in the associated rinsate blank (Table B-51), and sodium and zinc were detected in the associated method blank (Table B-56). A large difference between the sample and the field duplicate was noted in the level of moisture detected in the sample aliquots (8 percent in M1SS101, 39.5 percent in M1SS101D). This difference could indicate the difficulty of obtaining a "true" field duplicate sample. Assessment of serial results for these target analytes associated with SDG 94003 indicate that they were within the RPD criteria for serial dilution for all analytes except barium and zinc (Table B-32). The possibility is present for bias high results for the analytes noted above (except mercury) based on non-compliant duplicate precision due to field and/or laboratory inconsistencies in the samples associated with this SDG. The end-user should view low level positive results for the analytes with caution. All positive results for the compounds barium and zinc should be viewed with caution due to the non-compliant duplicate precision coupled with unacceptable serial dilution results. Determination of data useability was based upon all of the factors mentioned above and was found to be acceptable.

The TPH analysis of the environmental sample M1SS101 and its duplicate exhibited a non-compliant RPD (Table B-4). The criteria was exceeded by a slight amount. The non-compliance can be attributed to the difficulty in obtaining a true field duplicate for a soil sample, evidenced by the 20 percent difference in reported moisture levels.

The TOC analysis of the environmental sample M1SS101 and its duplicate exhibited an acceptable RPD value.

The assessment of precision of the soil matrix for the MS/MSD samples is provided in Tables B-15 through B-22. All MS/MSD sample pairs analyzed for GC/MS volatile organics, semi-volatile organics, dioxin/furans, pesticides/PCBs, and herbicides exhibited acceptable RPDs between spike compounds (Tables B-15, B-16, B-17, B-18, and B-19).

Two (2) MS/MD sample pairs analyzed for inorganic analytes had non-compliant RPDs for one (1) target analyte each. The non-compliant target analytes were manganese in M1SS101D, and calcium in M1SS103D. (Table B-19). The non-compliant analyte calcium was detected in the method blank associated with the sample M1SS103 (Table B-56), and the non-compliant analyte manganese was detected in the associated rinsate blank (Table B-51). The non-compliance is attributed to field and/or laboratory inconsistencies. Each of these target analytes were "in-control" with serial dilution criteria (Table B-32).

Based on assessment of duplicate precision evaluation criteria, the soil matrix analytical data was acceptable for each SDG. The potential for bias high positive results is present for the analytes discussed above in the metals analysis of soil samples in SDG 94003.

<u>Sediment Matrix</u>

The assessment of sediment matrix environmental and associated duplicate samples for precision is provided in Tables B-5 through B-7. No GC/MS volatile organic target analytes or herbicides were detected in the environmental sample or associated duplicate (Table 2-5). Therefore, no assessment of precision was conducted.

The assessment of the sediment sample and associated duplicate for precision of semivolatile organic analysis indicates that ten (10) of the eleven (11) compounds reported in the original sample and/or its associated duplicate exhibited non-compliant RPDs (Table B-5). Four (4) of the non-compliant compounds were not detected in the original sample, but were detected in the associated duplicate. However, these RPDs were considered "in-control" because the compounds were detected at or below the compound CRQLs in all cases. These compounds, which were associated with SDG 94002, were "in-compliance" with initial and continuing calibration criteria (Table B-31), with the exception of benzo(g,h,i)pyrene, bis(2-ethylhexyl)phthalate, and indeno(1,2,3-CD)pyrene. The non-compliant calibration results do not impact the data because the detected results were at or below the compound CRQLs.

Of the fourteen (14) dioxin/furan congeners reported in the sediment matrix sample and associated duplicate, ten (10) congeners exhibited non-compliant RPDs (Table B-5). Four (4) of the non compliant RPDs were due to the detection of the congener in either the sample or the duplicate. The non-compliance can be attributed to the difficulty in obtaining a true field duplicate sample aliquot. All initial and continuing calibration criteria associated with SDG 94002 was in control. It should be noted that 2,3,7,8-TCDD did not duplicate very well. The laboratory performed a third confirmation analysis on this sample and duplicate and found the positive result for this congener to be present. The disparity of the results cannot be explained. The sample/duplicate pair may be nonhomogenous or the data validator is missing vital information due to the limited information supplied because of the level of the data package requested.

Six (6) target analytes were detected in both the sediment sample and its associated duplicate for pesticides/PCBs (Table B-5). Five (5) of the six (6) compounds exhibited compliant precision results. One (1) compound, 4,4'-DDT exhibited a non-compliant RPD. The non-compliance is slight and is attributed to the potential for analytical inconsistencies, i.e. sample aliquot size, extraction efficiency, moisture level, etc. All initial and continuing calibration criteria associated with the compound which was associated with SDG 94002, was met. All data is considered to be useable.

One (1) herbicide compound was detected at a level slightly above the reporting limit in the associated sediment duplicate sample, but was not detected in the original sample (Table B-5). The resulting RPD was non-compliant. The non-compliance is attributed to the low concentration level reported. This compound, which was associated with SDG 94002, was "in-compliance" with initial and continuing calibration criteria (Table B-31). All data is considered to be useable.

Of the fifteen (15) inorganic analytes reported in the sample and/or its associated duplicate, eight (8) analytes exhibited non-compliant RPDs (Table B-6). The target analytes with non-compliant RPDs were cadmium, chromium, copper, iron, magnesium, nickel, vanadium, and zinc. The analytes cadmium and copper were reported at levels below the analyte's CRDLs. The analytes nickel and vanadium were reported above the CRDL in the original sample and less than the CRDL in the field duplicate sample. The non-compliance is attributed to the low concentration levels reported. The analytes iron and zinc were detected in the associated rinsate blank sample (Table B-51) and iron, zinc, magnesium, and copper were detected in the associated field blank sample (Table B-46). The non-compliance in the field duplicate reproducibility could be attributed to potential field or laboratory inconsistencies introduced through blank sample

contamination. Assessment of serial dilution results for these target analytes associated with SDG 92002 indicate that they were within the RPD criteria for serial dilution (Table B-32). Therefore, all data is considered to be useable.

The field duplicate pair analyzed for both TPH and TOC analyses exhibited acceptable RPDs.

The evaluation of precision of the sediment matrix for the MS/MSD samples is provided in Tables B-23 through B-30. The MS/MSD sample pairs analyzed for GC/MS volatiles organics, semivolatile organics and herbicides were "in-compliance" with RPD precision criteria (Tables B-23, B-24 and B-27, respectively).

Two (2) dioxin/furan compounds exhibited non-compliant RPDs between spike compounds. The congener 1,2,3,4,6,7,8-H_7CDD exhibited a non-compliant because the congener was not detected in the MSD. The congener OCDD exhibited a non-compliant RPD because the MSD recovery was almost 200 percent. The target analytes were "in compliance" for all initial and continuing compliance criteria. Although the 2,3,7,8-substituted hepta congener was absent from the MSD and the recovery for OCDD was high, the data associated with the MS/MSD is considered useable due to other QA/QC analyzed with the samples.

Five (5) of the six (6) spike compounds in the sediment matrix MS/MSD for pesticides/PCBs exhibited non-compliant RPDs. The non-compliance could be attributed to laboratory inconsistencies, i.e., extraction efficiency, which is evidenced by the low surrogate recoveries in the MSD sample (Table B-39). The target analytes were "in-compliance" for all initial and continuing compliance criteria. All data is considered to be useable.

Two (2) target analytes in the MS/MD sample pair analyzed for sediment matrix had non-compliant RPDs. The non-compliant target analytes were calcium and zinc in sample MS1SD01D associated with SDG 94002. These analytes were detected in the associated field blank (Table B-46) and calcium was present in the associated method blank (Table B-56). The non-compliance could be attributed to field and/or laboratory inconsistencies introduced through blank sample contamination. Each of these target analytes were "in-control" with serial dilution criteria (Tables B-32). In addition, the RPD criteria for the matrix duplicates for the TOC and TPH analyses exhibited acceptable precision.

Based on assessment of duplicate precision evaluation criteria, the sediment matrix analytical data was acceptable for each SDG.

<u>3.3.2 Accuracy</u> Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. Accuracy can be calculated from the analytical data and was not measured directly. Accuracy is used to identify the bias in a given measurement system (i.e. laboratory conditions, sample matrix, and sampling conditions). Accuracy is assessed by reviewing the Percent Recovery (%R) between the true value of the spike analyte and the actual analytical value. Accuracy is calculated using the equation:

$$\%R = ((A-B)/C) \times 100$$

A = Measured concentration of the spiked analyte.

B = Measured concentration of the spiked compound in the unspiked sample.

C = True concentration of the spiked analyte.

For the organic analyses, each of the samples was spiked with a surrogate compound; and for inorganic analyses, each chosen matrix spike and matrix duplicate pair was spiked with a known reference material before digestion. Each of these approaches provides a measure of the matrix effects on the analytical accuracy.

The assessment of accuracy is evaluated by comparison of the %R computed from the known concentration of analyte spikes and their recovered concentration versus the analytical method acceptance criteria. Spike recoveries provide an indication of bias, where the reported data may either overestimate or underestimate the actual concentration of detected compounds and/or the detection limits. Recoveries outside acceptable criteria may be caused by factors such as matrix interference, poor analytical precision, or instrument calibration.

The following Sections summarize the evaluation of analytical accuracy for the water matrices (groundwater and surface water samples), soil\sediment matrices (soil samples and sediment samples) and sludge matrix for the following analytical groups:

- GC/MS volatile organic compounds (GC/MS VOCs);
- semivolatile organic compounds (SVOCs);
- dioxin/furans (D/Fs);
- pesticides, PCBs, and herbicides; and
- inorganics, cyanide, TPH and TOC.

Accuracy was assessed using MS and MSD samples for organic analyses and MS samples for inorganic analyses for each matrix, as well as surrogate compound recoveries for those analytical fraction which utilize them. The results of the evaluation of accuracy for the MS/MSD samples is provided in Tables B-7 through B-14 for water matrix, Tables B-15 through B-22 for soil matrix and B-23 through B-30 for the sediment matrix. The results of the evaluation of accuracy for the surrogates in the samples are provided in Table B-33 through B-36 for the water matrix, Tables B-37 through B-40 for the soil and sediment matrices.

<u>Water Matrix</u>

All MS/MSD sample pairs analyzed for GC/MS volatile organics, pesticides/PCBs, and dioxin/furans exhibited "in-control" recovery results (Tables B-7, B-9, B-10, respectively). All surrogate recovery results for GC/MS volatile organics, semivolatile organics, and herbicides were "in-control" (Tables B-33, B-34, and B-36, respectively).

One (1) MS/MSD sample pair analyzed for semivolatile organics had non-compliant %Rs for 4-nitrophenol (Table B-8). The %Rs for the compound exceeded the maximum criteria for accuracy, which indicates that the quantified values of detected target compounds with similar instrument performance, 2-nitrophenol, 4-nitrophenol, 2,4-dinitrophenol, and 4,6-dinitro-2-,methylphenol, in samples associated with SDGs 94004 and 94005 may be overestimated.

The surrogate compound decachlorobiphenyl (DCB) exhibited non-compliant recovery results in all water samples analyzed (Table B-35). All %R recovery results were below the minimum criteria for accuracy. However, the surrogate compound tetrachloro-m-xylene (TCX) exhibited compliant recovery results in all samples. Therefore, the non-compliance could be attributed to laboratory inconsistencies, i.e., spike solution error, spiking degradation, etc.

The MS/MSD sample pair of sample MS1SW01 analyzed for herbicides had non-compliant %Rs for one (1) compound, dinoseb (Table B-11). The recovery results were below the minimum criteria for accuracy, which indicates that the quantitated values for the positive and non-detect results for this compound associated with SDGs 94004 and 94005 may be underestimated. All positive results for dinoseb in samples associated with these QC spikes were qualified as estimated, J qualifier, and the detection limits for the non-detects were qualified as estimated, UJ qualifier. The analytical results for this compound in the associated samples are considered useable but may be possibly underestimated.

One (1) MS/MD sample pair analyzed for inorganic analytes had one (1) or more non-compliant %Rs. The non-compliant target analytes were aluminum and iron in the MS sample MS1SW01 (Table B-12). The %Rs for aluminum and iron were greater than the maximum criteria for accuracy, which indicates that the quantified values for these detected target analytes associated with SDG 94004 may be overestimated.

The MS recoveries for the TPH and TOC fractions exhibited compliant recoveries (Tables B-13 and B-14, respectively).

Based on assessment of MS/MSD and surrogate sample accuracy evaluation criteria, the water matrix analytical data was acceptable for each SDG.

Soil Matrix

The assessment of accuracy for soil matrix MS/MSD samples is provided in Tables B-15 through B-22. All MS/MSD sample pairs analyzed for GC/MS volatile organics, semivolatile organics, pesticides/PCBs, and dioxin/furans exhibited "in-control" recovery results (Tables B-15, B-16, B-17, and B-18, respectively). The assessment of accuracy for soil matrix surrogate recoveries is provided in Tables B-37 through B-40. All surrogate compound recovery results for GC/MS volatile organics, semivolatile organics, pesticides/PCBs, and herbicides were "in-control".

The MS/MSD sample pair of sample M1SS101 analyzed for herbicides had non-compliant %Rs for one (1) compound, dinoseb (Table B-19). The recovery results were below the minimum criteria for accuracy, which indicates that the quantified values for the positive and non-detect results for this compound associated with SDGs 94003 and 94005 may be underestimated. All positive results for dinoseb in samples associated with these QC spikes were qualified as estimated, J qualifier, and the detection limits for the non-detects were qualified as estimated, UJ qualifier. The analytical results for this compound in the associated samples are considered useable but, may be possibly underestimated.

Each of the inorganic soil MS samples had one (1) or more target analytes with non-compliant %Rs (Table B-20), lead, manganese and selenium. Analytical results for lead in sample M1SS101 and manganese in sample M1SS103 (SDGs 94003 and 94005, respectively) are possibly overestimated. Analytical results for selenium in sample number M1SS103 from SDG 94005 are possibly underestimated.

The recovery results for the MS samples analyzed for the TPH and TOC fractions exhibited "in-control" results for all samples (Tables B-21 and B-22).

Based on assessment of MS/MSD and surrogate sample accuracy evaluation criteria, the soil matrix analytical data was acceptable for each SDG.

Sediment Matrix

The MS/MSD sediment samples analyzed for GC/MS volatile and semivolatile organic compounds, and herbicides were "in-compliance" with the accuracy evaluation criteria (Tables B-23, B-24, and B-27, respectively. The surrogate compound recovery results for GC/MS volatile and semivolatile organics, and herbicides were "in-compliance" with the accuracy evaluation criteria (Tables B-37 through B-40).

The MS/MSD sample for dioxin/furans exhibited two (2) non-compliant recoveries in the MSD of the sample (Table B-25). The congener 1,2,3,4,6,7,8-H_7CDD was not recovered, indicating the potential for matrix interference, which could result in underestimation of the result in the sample. The congener OCDD was recovered at twice its spiked level in the MSD, indicating that results for this isomer in the sample, MS1SD01, may be overestimated.

The MS/MSD sample, MS1SD01, for pesticides and PCBs exhibited a non-compliant recovery of the compound lindane (γ-BHC) in the MSD (Table B-26). The %R result was below the minimum criteria for accuracy indicating that the sample result for this compound may be possibly underestimated.

The surrogate compound DCB exhibited non-compliant recovery results in three (3) sediment samples analyzed and the compound TCX exhibited non-compliant recovery results in one (1) sediment sample, an MSD, (Table B-39). All %R recovery results were below the minimum criteria for accuracy. Since the surrogate compound tetrachloro-m-xylene (TCX) exhibited compliant recovery results in all but one sample, which was a matrix QC spike, the non-compliance could be attributed to laboratory inconsistencies, i.e., spike solution error, spiking degradation, etc.

The MS recovery results for the metals, TPH and TOC fractions exhibited compliant recoveries (Tables B-28, B-29 and B-30, respectively).

Based on assessment of MS/MSD and surrogate sample accuracy evaluation criteria, the sediment matrix analytical data was acceptable for each SDG.

3.3.3 Representativeness Representativeness is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficacy of the sampling plan design. Representativeness was evaluated using the field and laboratory QC blank sample results. QC blank samples are equipment rinsate blanks, field blanks, trip blanks, laboratory method blanks for organic analysis and laboratory preparation blanks for inorganic analysis. Positive detection of target analytes in the QC blank samples identify contaminants that possibly were introduced to the associated environmental sample during sample collection, transport or laboratory analysis. The following is a summary of field and/or laboratory contaminants detected in surface water, sediment and soil samples.

Representativeness of the environmental sample analytical data was assessed using trip blanks, field blanks, equipment rinsate blanks, and laboratory method

blanks. The environmental samples and associated blanks were analyzed for the following target analyte groups:

- GC/MS volatile organic compounds (GC/MS VOCs);
- semivolatile organic compounds (SVOCs);
- dioxin/furan compounds (D/Fs);
- pesticides, PCBs, and herbicides; and
- inorganics, cyanide, TPH, and TOC.

The trip blank samples were analyzed for only GC/MS volatile organic target analytes. Field blanks, equipment rinsate blanks, and laboratory method blanks were analyzed for target analytes in each listed category. The assessment of representativeness is summarized in tabular form for each type of blank, trip blank results are summarized in Table B-41, field blank results are summarized in Tables B-42 through B-46, equipment blank results are summarized in Tables B-47 through B-51 and method blank results are summarized in Tables B-52 through B-56.

If contaminants were detected in a blank, corrective actions were made for the chemical analytical data during data validation by Heartland. The corrective action consisted of amending the laboratory reported results for organic and inorganic target analytes by the criteria. The following describes the Validation Qualifier code in the blank summary tables.

Organic Target Analytes

- CRQL Validation Qualifier. If a sample result for the blank contaminant was less than the CRQL and less than 10 times the blank value, the sample result was rejected and amended as non-detected at the CRQL for the target compound.

- U Validation Qualifier. If a sample result for the blank contaminant was greater than the sample CRQL and less than 10 times the blank value, the sample result for the blank contaminant was amended as non detect at the concentration reported in the sample results.

- No Action (NA). If a sample result for the blank contaminant was greater than the CRQL and 10 times the blank value, the result was not amended.

Inorganic Target Analytes

- U Validation Qualifier. If a sample result for the blank contaminant was less than the IDL and less than 5 times the blank value, the sample result was amended as non-detected.

- UJ Validation Qualifier. If a sample result for the blank contaminant was less than the sample IDL when the absolute value of the negative blank value was greater than the IDL, the sample result for the blank contaminant was amended as estimated non-detected.

- J Validation Qualifier. If a sample result for the blank contaminant was greater than the IDL and less than 10 times the blank value, when the absolute of the negative blank value id

greater than the IDL the result was amended as estimated at the laboratory value.

Trip Blanks

Trip blanks contained deionized water from the laboratory and consisted of samples bottles which were similar to the environmental sample containers. The trip blanks were prepared and packaged at the laboratory prior to the sampling event and traveled with the sample bottles to the site. The trip blank bottles were not opened at the site or anytime prior to laboratory analysis. No target compounds were detected in the trip blank samples (Table B-41).

Field Blanks

The field blank is a sample of deionized water from a field DI unit. The field blank was made at the site and placed in containers that were similar to those used for the environmental samples. Semivolatile organics, pesticides/PCBs, and herbicide target compounds were not detected in field blank samples (Tables B-53, B-54, and B-55). Target compounds and analytes detected in the field blank samples (Table B-52 and B-56) consisted of:

- GC/MS Volatiles (Table B-42)
  - methylene chloride
  - chloroform
  - dibromochloromethane

- Inorganics (Table B-46)

aluminum	magnesium
barium	manganese
calcium	sodium
copper	potassium
iron	lead
zinc	

The detected methylene chloride results could be attributed to random laboratory contamination. The inorganic analytes can be attributed to the water source, the water treatment system that was used to make the water or laboratory artifacts. Dibromochloromethane is a trihalomethane and can be formed when "free" chloride ions are present and may be an artifact from the water source or the laboratory.

Target analytes were detected in some of the field blanks. However, the analytical results were not qualified. Based on assessment of field blanks for representativeness, the analytical data was acceptable for each SDG.

Equipment Rinsate Blanks

The equipment rinsate blank was a piece of sampling equipment that which was decontaminated, then rinsed with deionized water from a field DI unit. A sample of this water was collected and placed in sample containers similar to those used for the environmental samples. Semivolatile organics, pesticides/PCBs and herbicide target compounds were not detected in equipment rinsate blank samples (Tables B-48, B-49, and B-50). Target analytes detected in the equipment rinsate blank samples consisted of:

- GC/MS Volatiles (Table B-47)
  - acetone
  - methylene chloride

- Inorganics (Table B-51)

aluminum	iron
copper	lead
potassium	manganese
sodium	zinc

The detected acetone and methylene chloride results can be attributed to random laboratory contamination. The inorganic analytes can be attributed to the water source, the water treatment system that was used to make the deionized water or laboratory artifacts.

Target analytes were detected in some of the equipment rinsate blanks; however, the analytical results were not qualified. Based on assessment of equipment rinsate blanks for representativeness, the analytical data was acceptable for each SDG.

<u>Method Blanks</u>

The method blanks were a sample of deionized water that is prepared by the laboratory at the time of analysis. Method blanks undergo the same analytical process as the corresponding environmental samples and associated field QA/QA samples. The purpose of the method blank is to assess the potential for target analytes to "contaminate" the sample during analysis. Pesticides/PCBs and Herbicides target compounds were not detected in method blank (Tables B-54, and B-55). Target analytes detected in the method blank consisted of:

- GC/MS Volatiles (Table B-52)
  - acetone
  - methylene chloride

- Semivolatile Organics (Table B-53)
  - bis(2-ethylhexyl)phthalate
  - di-n-butylphthalate

- Inorganics (Table B-56)

aluminum	iron	manganese
beryllium	lead	mercury
calcium	potassium	sodium
chromium	zinc	selenium

The detectable acetone and methylene chloride, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate results can be attributed to laboratory contamination. The inorganic analytes can be attributed to the water source, the water treatment system that was used to make the deionized water or laboratory artifacts.

Because target analytes were detected in some of the method blanks, some of the analytical results were qualified per the qualifications outlines on pages B-41 and B-58. Based on assessment of method blanks for representativeness the analytical data was acceptable for each SDG.

3.3.4 Comparability Comparability is qualitative measure designed to express the confidence with which one data set may be compared to another. Factors that affect comparability are: sample collection and handling techniques, sample matrix type, and analytical method. Comparability is limited by the other PARCC parameters because only when precision and accuracy are known can data sets be compared with confidence.

Comparability is qualitative measure designed to express the confidence with which one data set may be compared to another. The analytical samples were collected and transported to the chemical analytical laboratory in accordance with standard procedures and were analyzed in conformance with acceptable USEPA procedures. The analytical data are reported in standard units (micrograms per liter (µg/ℓ), micrograms per kilogram (µg/kg, nanograms per kilogram (ng/kg) etc.).

The methods used to collect the environmental samples and the methods used to analyze the samples should assure comparability of the analytical data.

3.3.5 Completeness Completeness is defined as the percentage of measurements that are judged to be valid compared to the total number of measurements made. Valid usable data are values that were not qualified as rejected (R qualifier) during data validation. A goal of 85 percent usable data was established in the Work Plan for Project P-745, NCBC, Gulfport, Mississippi, dated April 1993 (ABB-ES, 1993). Completeness equals the total number of analytes for each matrix minus the total number of rejected analytes divided by the total number of analytes multiplied by 100.

Completeness is the quantitative measure of the amount of data obtained from a measurement process compared with the amount expected to be obtained under the conditions of measurement. The completeness goal for laboratory analysis for this project was 85 percent useable data. Unusable analytical data are those results reported by the laboratory but rejected during the data validation process. The analytical data met the 85 percent completeness goal. None of the analytical groups contained rejected data. For detailed completeness goal tables, please refer to Table B-59. The narrative following describes any extenuating factors involved in the data resolution.

Pesticides/PCBs

The positive results reported for several of the target compounds in samples MS1SD02 from SDG 94002 and M1SS107 from SDG 94005 were "rejected" in favor of results reported from a dilution analysis of the samples because the results from the undiluted analysis were outside the linear range of the calibration curves. This action does not constitute a true rejection since viable results were obtained from the dilution analyses. Therefore, these "rejections" were not considered in the rejection tables and did not affect the completeness results.

The purpose of evaluating the quality of the analytical data using the PARCC criteria was to address the qualification of the data in regards to evaluation of the presence, magnitude and characteristics of hazardous substances at NCBC Gulfport. Overall, the chemical analytical data are acceptable and exceeded the completion goal of 85 percent. Tables B-59 through B-62 provides a tabulation of the assessment of PARCC criteria each SDG for water samples, soil samples, sediment samples and quality control samples, respectively.

4.0 ANALYTICAL RESULTS

4.1 DIOXIN AND FURAN ANALYSIS. Polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDDs/PCDFs) constitute a family of 210 structurally similar compounds. 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) is considered to be the most potent carcinogen in this family. Toxicologists believe that PCDDs/PCDFs with chlorine atoms at the 2, 3, 7, and 8 positions (2,3,7,8 substituted compounds) in their molecules can mimic the toxic properties of 2,3,7,8-TCDD. The USEPA developed Toxicity Equivalency Factors (TEFs) to rate the carcinogenicity of these compounds relative to 2,3,7,8-TCDD, and these TEFs are presented in Table 4-1. Those PCDDs and PCDFs which are not 2,3,7,8 substituted are considered to be much less toxic and are not evaluated here.

Concentrations of PCDDs/PCDFs in a sample are multiplied by TEFs to determine a 2,3,7,8-TCDD equivalent concentration. For example, a concentration of 120 micrograms of 1,2,3,7,8-pentachlorodibenzo-*p*-dioxin (1,2,3,7,8-PCDD) per kilogram of soil multiplied by a TEF of 0.5 for pentachlorodibenzo-*p*-dioxins is equivalent to 60 micrograms of 2,3,7,8-TCDD per kilogram. Sample results for PCDDs/PCDFs from the MILCON site have been multiplied by appropriate TEFs and summed to yield the 2,3,7,8-TCDD equivalent concentration at each sample location. These results are displayed in Tables 4-1 through 4-3.

In many of the samples, particular congeners are qualified as non-detectable due to an incorrect ratio of ions in the mass spectrum or the presence of a dichlorodiphenyl ether (NDE), which interferes with the identification of PCDD/PCDFs. In both cases, it is possible that the PCDD/PCDF congener is present. The laboratory has provided estimates of the maximum possible concentrations (MPC) of the PCDD/PCDF congeners that may be present. The MPCs and their associated 2,3,7,8-TCDD equivalents are presented in parentheses in the tables.

The results of the PCDD/PCDF analysis for surface soil and background surface soil are presented in Table 4-1. It is notable that total 2,3,7,8-TCDD equivalent concentrations detected in the three background samples range from 2.7 to 8.6 nanograms per kilograms (ng/kg) (parts per trillion). The 2,3,7,8-TCDD concentrations from five of the six surface soil areas sampled fall within the background range. Only M1SS103 at 69.2 ng/kg exceeds the background range.

Sediment and surface water samples both show levels of PCDD/PCDFs above background levels. Sediment concentrations range from 55.1 to 186.7 ng/kg 2,3,7,8-TCDD equivalents versus 6.94 ng/kg in the background sample. These results are presented in Table 4-2. Surface water PCDD/PCDF concentrations ranged from 20.1 to 74.1 picograms per liter (pg/l) (parts per quadtrillion) 2,3,7,8-TCDD equivalents versus 29.2 pg/l in the background sample. Surface water analyses are summarized in Table 4-3. These results suggest that most of the PCDD/PCDFs in runoff from the adjacent HO site are collected in the drainage ditch rather than being spread over the site.

4.2 OTHER ANALYSES. Results of VOC, SVOC, pesticide and PCB, and herbicide analyses of surface soil samples and surface soil background samples are summarized in Tables 4-4 and 4-5, respectively. Sediment and surface water results are summarized in Tables 4-6 and 4-7, respectively.

Table 4-1 2,3,7,8-TCDD Equivalents for Surface Soil Samples

Compounds	TEF	MS1SS101		MS1SS101D		MS1SS102		MS1SS103		MS1SS104	
		Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)
2,3,7,8-TCDD	1	ND	0	ND	0	ND	0	57.5	57.5	ND	0
2,3,7,8-TCDF	0.1	ND	0	ND	0	ND	0	2.33	0.233	ND	0
1,2,3,7,8-PeCDD	0.5	ND	0	NDR (6.57)	0 (3.28)	11.9	5.95	NDR (6.44)	0 (3.22)	6.2	3.1
1,2,3,7,8-PeCDF	0.05	NDP (10.4)	D (0.52)	NDP (7.01)	0 (0.35)	NDP (3.5)	0 (0.18)	NDP (16.2)	0 (0.81)	4.95	0.2475
2,3,4,7,8-PeCDF	0.5	ND	0	ND	0	ND		ND	0	ND	0
1,2,3,4,7,8-HxCDD	0.1	ND	D	ND	0	ND	D	NDR (8.31)	D (0.83)	ND	0
1,2,3,7,8,9-HxCDD	0.1	ND	0	ND	0	ND	0	6.19	0.62	ND	0
1,2,3,6,7,8-HxCDD	0.1	ND	0	ND	0	ND	D	NDR 9.76	(0.98)	ND	0
1,2,3,4,7,8-HxCDF	0.1	ND	0	ND	0	ND	0	ND	0	ND	0
1,2,3,6,7,8-HxCDF	0.1	33.5	3.35	34.1	3.41	ND	0	NDP (83.2)	0 (8.32)	8.65	0.865
1,2,3,7,8,9-HxCDF	0.1	ND	0	ND	0	ND	0	4.98	0.5	3.18	0.318
2,3,4,6,7,8-HxCDF	0.1	ND	0	11.2	1.12	12.7	1.27	14	1.4	13.4	1.34
1,2,3,4,6,7,8-HpCDD	0.01	170	1.7	166	1.66	25.7	0.257	518	5.18	17.7	0.177
1,2,3,4,6,7,8-HpCDF	0.01	93.9	0.939	88.1	0.881	14.5	0.145	65.3	0.653	9.67	0.0967
1,2,3,4,7,8,9-HpCDF	0.01	ND	0	ND	0	ND	0	4.31	0.043	ND	0
OCDD	0.001	1720	1.72	1330	1.33	202	0.202	3060	3.06	87.5	0.0875
OCDF	0.001	200	0.2	157	0.157	ND	0	172	0.17	5.7	0.0057
2,3,7,8-TCDD Equivalents Total			7.9 (8.4)		8.6 (12.2)		7.8 (8.0)		69.4 (83.5)		6.2

See Notes at end of Table.

Table 4-1 (Cont) 2,3,7,8-TCDD Equivalents for Surface Soil Samples

		MS1SS105		MS1SS106		MS1SS107 (background)		MS1SS108 (background)		MS1SS109 (background)	
Compounds	TEF	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)	Conc. (ng/kg)	TCDD Equiv. (ng/kg)
2,3,7,8-TCDD	1	ND	0	NDR	0	ND	0	1.84	1.84	ND	0
2,3,7,8-TCDF	0.1	ND	D	ND	0	ND	0	ND	0	ND	0
1,2,3,7,8-PeCDO	0.5	NOR	0	NDR	0	NDR	0	NDR	0	NDR	0
1,2,3,7,8-PeCDF	0.05	ND	0	NDP (5.3)	0 (0.27)	NDP (7.49)	0 (0.37)	NDP (14.5)	0 (0.73)	NDP (1.81)	0 (0.09)
2,3,4,7,8-PeCDF	0.5	ND	D	ND	0	ND	D	ND	0	ND	0
1,2,3,4,7,8-HxCDD	0.1	ND	0	NDR (2.46)	D (0.25)	ND	0	6.91	0.691	ND	0
1,2,3,7,8,9-HxCDD	D.1	ND	D	ND	D	ND	0	6.47	0.647	ND	0
1,2,3,6,7,8-HxCDD	0.1	ND	0	ND	0	ND	D	NDR (6.61)	0 (0.66)	ND	D
1,2,3,4,7,8-HxCDF	0.1	ND	0	ND	0	ND	0	ND	0	NDP (13.6)	0 (1.36)
1,2,3,6,7,8-HxCDF	0.1	5.3	0.53	10.7	1.07	NDP (21.3)	0 (2.13)	NDP (40.4)	0 (4.04)	NDR (38.8)	0 (3.88)
1,2,3,7,8,9-HxCDF	0.1	3.55	0.355	4.46	0.446	5.57	0.557	5.38	0.538	ND	0
2,3,4,6,7,8-HxCDF	0.1	15.1	1.51	15.2	1.52	15.8	1.58	12.9	1.29	12.5	1.25
1,2,3,4,6,7,8-HpCDD	0.01	12.5	0.125	34.9	0.349	64	0.64	174	1.74	56.9	0.569
1,2,3,4,6,7,8-HpCDF	0.01	6.05	0.0605	36.3	0.363	26.3	0.263	52.4	0.524	NDR (10.6)	0 (0.11)
1,2,3,4,7,8,9-HpCDF	0.01	ND	0	ND	0	ND	0	ND	0	ND	0
OCDD	0.001	155	0.155	297	0.297	467	0.467	1312	1.312	872	0.872
OCDF	0.001	ND	0	21.1	0.0211	27.8	0.0278	45.2	0.0452	44.6	0.0446
2,3,7,8-TCDD Equivalents Totals			2.7		4.1 (4.6)		3.5 (6.D)		8.6 (14.1)		2.7 (8.2)

NDR = Reported not detected due to incorrect ion ratio in mass spectrum.
NDP = Reported not detected due to interference from polychlorodiphenyl ether.
( ) = Estimated maximum possible concentration.
2,3,7,8-TCDD = 2,3,7,8-Tetrachlorodibenzo-p-dioxin.
TEF = Toxicity Equivalency Factor, unitless.
TCDD Equiv. = 2,3,7,8-TCDD equivalents.
TCDD = Tetrachlorodibenzodioxin.
TCDF = Tetrachlorodibenzofuran
PeCDD = Pentachlorodibenzodioxin.
PeCDF = Pentachlorodibenzofuran.
HxCDD = Hexachlorodibenzodioxin.

ng/kg = Nanograms per kilogram (parts per trillion).
Conc. = Concentration.
ND = Not detected.
HxCDF = Hexachlorodibenzofuran.
HpCDD = Heptachlorodibenzodioxin.
HpCDF = Heptachlorodibenzofuran.
OCDD = Octachlorodibenzodioxin.
OCDF = Octachlorodibenzofuran.

Table 4-2 2,3,7,8-TCDD Equivalents for Sediment Samples

Compounds	TEF	MS1SD01 Conc. (ng/kg)	MS1SD01 TCDD Equiv. (ng/kg)	MS1SD01D Conc. (ng/kg)	MS1SD01D TCDD Equiv. (ng/kg)	MS1SD02 Conc. (ng/kg)	MS1SD02 TCDD Equiv. (ng/kg)	MS1SD03 (background) Conc. (ng/kg)	MS1SD03 (background) TCDD Equiv. (ng/kg)
2,3,7,8-TCDD	1	95.7	95.7	15.7	15.7	138	138	ND	0
2,3,7,8-TCDF	0.1	ND	0	ND	0	ND	0	ND	0
1,2,3,7,8-PeCDD	0.5	NDR (15)	D (7.5)	NDR (14.8)	0 (7.4)	ND	D	ND	0
1,2,3,7,8-PeCDF	D.05	NDP (70.9)	0 (3.55)	NDP (49.3)	0 (2.5)	NDP (86)	D (4.3)	NDP (1D.1)	D (0.51)
2,3,4,7,8-PeCDF	D.5	ND	D	ND	0	ND	D	ND	0
1,2,3,4,7,8-HxCDD	0.1	50.9	5.09	NDR (21.6)	D (2.16)	ND	D	ND	0
1,2,3,7,8,9-HxCDD	0.1	53.6	5.36	33.4	3.34	ND	0	ND	0
1,2,3,6,7,8-HxCDD	0.1	67	6.7	46.9	4.69	1.D1	0.101	ND	0
1,2,3,4,7,8-HxCDF	0.1	ND	0	NDP (218)	0 (21.8)	NDP (744)	0 (74.4)	ND	0
1,2,3,6,7,8-HxCDF	0.1	NDP (354)	0 (35.4)	ND	0	ND	0	25.1	2.51
1,2,3,7,8,9-HxCDF	0.1	NDP (13.3)	D (1.33)	ND	0	ND	0	ND	0
2,3,4,6,7,8-HxCDF	0.1	ND	0	ND	0	ND	0	20.5	2.05
1,2,3,4,6,7,8-HpCDD	0.01	2,670	26.7	1,520	15.2	2,150	21.5	137	1.37
1,2,3,4,6,7,8-HpCDF	0.01	322	3.22	10.6	0.1D6	648	6.48	NDR (33.9)	0 (D.34)
1,2,3,4,7,8,9-HpCDF	0.01	ND	0	NDR (9.63)	D (D.096)	ND	0	ND	0
OCDD	D.001	26,800	26.8	14,900	14.9	18,90D	18.9	967	D.967
OCDF	0.001	1,980	1.98	1,210	1.21	1,727	1.727	41.2	0.0412
2,3,7,8-TCDD Equivalents Totals			171.6 (219.3)		55.1 (89.1)		186.7 (265.4)		6.94 (7.78)

See Table 4-1 for notes

Table 4-3 2,3,7,8-TCDD Equivalents for Surface Water Samples

		MS1SWD1		Duplicate MS1SW01D		MS1SW02		MS1SW03 (background)	
Compounds	TEF	Conc. (pg/l)	TCDD Equiv. (pg/l)	Conc. (pg/l)	TCDD Equiv. (pg/l)	Conc. (pg/l)	TCDD Equiv. (pg/l)	Conc. (pg/l)	TCDD Equiv. (pg/l)
2,3,7,8-TCDD	1	ND	0	NDR (12.7)	0 (12.7)	52.4	52.4	NDR (5.37)	0 (5.37)
2,3,7,8-TCDF	0.1	ND	0	ND	D	NDR (21.2)	D (2.12)	ND	D
1,2,3,7,8-PeCDD	0.5	NDR (34.8)	0 (17.4)	NDR (32.6)	D (16.3)	ND	D	27.3	13.7
1,2,3,7,8-PeCDF	0.D5	NDP (42.8)	D (2.14)	NDR (10.1)	0 (0.51)	ND	D	ND	D
2,3,4,7,8-PeCDF	0.5	ND	0	ND	0	ND	0	NDR (8.75)	0 (4.38)
1,2,3,4,7,8-HxCDD	0.1	30.8	3.08	NDR (61.5)	0 (6.15)	ND	0	37.7	3.77
1,2,3,7,8,9-HxCDD	0.1	(20.9)	0 (2.D9)	ND	0	ND	0	ND	0
1,2,3,6,7,8-HxCDD	0.1	NDR (32.6)	0 (3.26)	NDR (28.8)	D (2.88)	ND	D	ND	D
1,2,3,4,7,8-HxCDF	0.1	ND	0	ND	0	ND	0	35.2	3.52
1,2,3,6,7,8-HxCDF	D.1	NDP (200)	0 (20)	NDP (105)	0 (10.5)	NDP (264)	D (26.4)	ND	0
1,2,3,7,8,9-HxCDF	0.1	18.9	1.89	NDR (15.3)	0 (1.53)	ND	0	ND	0
2,3,4,6,7,8-HxCDF	0.1	64.2	6.42	63.3	6.33	67.4	6.74	67.8	6.78
1,2,3,4,6,7,8-HpCDD	0.01	1020	10.2	708	7.08	733	7.33	79.5	0.795
1,2,3,4,6,7,8-HpCDF	0.01	64.5	0.645	158	1.58	241	2.41	27.4	0.274
1,2,3,4,7,8,9-HpCDF	D.01	NDR (10.9)	D (0.11)	ND	0	ND	0	NO	0
OCDD	0.001	6,750	6.75	4,730	4.73	4,746	4.746	385	0.385
OCDF	0.001	562	0.562	373	0.373	439	0.439	NDR (18.4)	0 (D.018)
2,3,7,8-TCDD Equivalents Totals			29.5 (74.5)		20.1 (7D.7)		74.1 (1D2.6)		29.2 (39.0)

See Table 4-1 for notes

Table 4-4 Compounds Detected in Surface Soil

Analyte	M1SS101	M1SS101D	M1SS102	M1SS103	M1SS104	M1SS105	M1SS106
Volatile Organic Compounds	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Acetone	ND	ND	ND	81	ND	ND	ND
Toluene	ND	ND	3 J	ND	2 J	1 J	4J
Semivolatile Organic Compounds							
Fluoranthene	730	670	ND	ND	62 J	ND	ND
Pyrene	960	780	ND	ND	47 J	ND	ND
Benzo(a)anthracene	680	760	ND	ND	39 J	ND	ND
Chrysene	860	960	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	61 J	48 J	ND	ND	44 J	ND	ND
Benzo(b)fluoranthene	920	830	ND	ND	54 J	ND	ND
Benzo(k)fluoranthene	590	840	ND	ND	ND	ND	ND
Benzo(a)pyrene	230 J	800	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	390 J	390	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	200 J	220 J	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	310 J	270 J	ND	ND	ND	ND	ND
Pesticides							
Dieldrin	5.1	3.7 J	ND	4.2	ND	ND	ND
4,4'-DDE	36	34	14	8.2	2.4 J	3.4 J	ND
4,4'-DDD	ND	ND	ND	3.8	ND	ND	ND
4,4'-DDT	9.0	4.2 J	ND	5.5	12	2.3 J	ND
Methoxychlor	34	30	ND	ND	ND	ND	ND
Endrin ketone	6.3	4.5	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	5.4	ND	ND	ND
gamma-Chlordane	ND	ND	ND	4.7	ND	ND	ND
Total Organic Carbon	13,300,000	17,900,000	6,610,000	8,450,000	2,350,000	7,030,000	12,400,000
Total Petroleum Hydrocarbons	13,200	19,500	47,100	66,100	3,100	ND	ND

µg/kg = Micrograms per kilogram.
J = Estimated value.
ND = Not detected.

Table 4-5 Compounds Detected in Background Surface Soil

Analyte	M1SS107	M1SS108	M1SS109
	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds (none detected)			
Semivolatile Organic Compounds			
Fluoranthene	86 J	ND	ND
Pyrene	77 J	ND	ND
Benzo(a)anthracene	38 J	ND	ND
Chrysene	52 J	ND	ND
bis(2-Ethylhexyl)phthalate	ND	37 J	46 J
Benzo(b)fluoranthene	96 J	ND	ND
Benzo(k)fluoranthene	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND
Indeno(1,2,3-cd)pyrene	45 J	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND
Benzo(g,h,i)perylene	64 J	ND	ND
Pesticides			
Dieldrin	16 J	ND	ND
4,4'-DDE	91	9.9	ND
4,4'-DDD	24 J	ND	ND
4,4'-DDT	270	8.2	ND
Methoxychlor	ND	ND	ND
Endrin ketone	ND	ND	ND
alpha-Chlordane	ND	ND	65
gamma-Chlordane	ND	ND	57
Total Organic Carbon	14,700,000	12,600,000	10,200,000
Total Petroleum Hydrocarbons	27,300	18,000	29,600

Notes: µg/kg = Micrograms per kilogram.
J = Estimated value.
ND = Not detected.

Table 4-6 Compounds Detected in Sediment

Analyte	M1SD101	M1SD1010	M1SD102	M1SD103 (Background)
Volatile Organic Compounds	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Acetone	ND	ND	120 J	20 J
2-Butanone	ND	ND	37 J	5 J
Xylenes (total)	2 J	ND	ND	ND
Semivolatile Organic Compounds				
Acenaphthylene	ND	ND	150 J	ND
Phenanthrene	ND	140 J	440 J	ND
Anthracene	ND	ND	180 J	ND
Carbazole	ND	ND	210 J	ND
Fluoranthene	170 J	280 J	2,400	ND
Pyrene	130 J	270 J	2,200	ND
Benzo(a)anthracene	69 J	120 J	1,200	ND
Chrysene	160 J	210 J	2,600	ND
bis(2-Ethylhexyl)phthalate	ND	220 J	ND	ND
Benzo(b)fluoranthene	130 J	260 J	2,900	ND
Benzo(k)fluoranthene	120 J	180 J	1,600	ND
Benzo(a)pyrene	ND	110 J	1,500	ND
Indeno(1,2,3-cd)pyrene	54 J	87 J	1,300	ND
Dibenz(a,h)anthracene	ND	ND	600 J	ND
Benzo(g,h,i)perylene	ND	94 J	1,200	ND
Pesticides				
Dieldrin	3.4 J	4.5	ND	3.2 J
4,4'-DDE	31	44	2,200	8.3
4,4'-DDD	14	20	6,200	3.2 J
4,4'-DDT	30	45	2,100	ND
alpha-Chlordane	15	16	26	5.2
gamma-Chlordane	13	15	ND	3.7
Herbicides				
2,4,5-T	ND	58	ND	ND
Total Organic Carbon	16,500,000	19,700,000	58,700,000	31,600,000
Total Petroleum Hydrocarbons	76,700	105,000	70,600	21,000

Notes:
µg/kg = Micrograms per kilogram.
J = Estimated value.
ND = Not detected.

Table 4-7 Compounds Detected in Surface Water

Analyte	M1SW101	M1SW101D	M1SW102	M1SW103 (Background)
	(µg/ℓ)	(µg/ℓ)	(µg/ℓ)	(µg/ℓ)
Volatile Organic Compounds (none detected)				
Semivolatile Organic Compounds (none detected)				
Pesticides				
4,4'-DDE	ND	ND	0.094 J	ND
4,4'-DDD	ND	ND	0.33	ND
Total Organic Carbon	5,400	4,900	6,600	5,200
Total Petroleum Hydrocarbons	310	ND	ND	ND

Notes: µg/ℓ = Micrograms per liter.
J = Estimated value.
ND = Not detected

VOCs were detected at low concentrations in surface soil and sediment samples. Acetone was detected in one surface soil sample at 81 micrograms per kilogram (µg/kg), and toluene was detected in surface soil samples at estimated concentrations of 1 to 4 µg/kg. Because both compounds are common laboratory contaminants, their reported presence in these samples may be an artifact. Sediment samples contained estimated concentrations of 120 µg/kg acetone, 37 µg/kg 2-butanone, and 2 µg/kg xylenes. No VOCs were reported in surface water samples.

SVOC analyses showed a number of polynuclear aromatic hydrocarbons (PAHs) in both surface soil and sediment samples. In surface soil, PAHs above levels found in the background samples occurred only at sample location M1SS101. At this location, elevated concentrations of fluoranthene (730 µg/kg), pyrene (960 µg/kg), benzo(a)anthracene (680 µg/kg), chrysene (860 µg/kg), and benzo(b)fluoranthene (920 µg,kg) were found. Levels of PAHs similar to M1SS101 were found in the sediment sample M1SD101. Concentrations at the other sediment sample location M1SD102 were approximately ten times higher than M1SD101. No PAHs or other semivolatile organic chemicals were reported in surface water.

Trace levels of the pesticides chlordane, dieldrin, methoxychlor, and 4,4'-DDT and its congeners, 4,4'-DDE and 4,4'-DDD, were reported in most surface soil and sediment samples. These concentrations do not exceed background levels, except for 4,4'-DDT in sediment samples. At sediment location M1SD102 elevated concentrations of 4,4'-DDT (2,100 µg/kg), 4,4'-DDE (2,200 µg/kg), and 4,4'-DDD, (200 µg/kg) were found. The highest PCDD/PCDF and PAH concentrations were also found at this location. The surface water sample M1SW102 contained 0.33 micrograms per liter (µg/ℓ) 4,4'-DDT and an estimated 0.094 µg/ℓ 4,4'-DDE. Only one detection of the herbicide 2,4,5-T was reported in a sediment sample (M1SD101D) at 58 µg/kg. The herbicide was not detected in the duplicate sample from this location.

Unlike the organic analytes, the inorganic metals are natural constituents of soil and sediment. To determine whether concentrations detected should be attributed to natural background or contamination, metal sample results were compared to the maximum background concentrations detected in background surface soil, sediment, and surface water samples (Tables 4-8, 4-9, and 4-10). Concentrations higher than twice the maximum background are considered to be the result of contaminant release. By this criterion, aluminum, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, sodium, vanadium, and zinc all exceed background in surface soil. Arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, selenium, sodium, vanadium, and zinc exceed background in sediment. Most of these exceedances occur at sample locations M1SS101, M1SS102, and M1SD102. Low levels of cyanide were reported in surface soil (0.08 to 0.16 mg/kg) and sediment (0.17 mg/kg).

Table 4-8 Inorganics Detected in Surface Soil

Analyte	MISS101 (mg/kg)	MISS101D (mg/kg)	MISS102 (mg/kg)	MISS103 (mg/kg)	MISS104 (mg/kg)	MISS105 (mg/kg)	MISS106 (mg/kg)
Aluminum	5,840	3,670	7,610	3,850	1,610	1,960	4,080
Antimony	ND	ND	ND	ND	ND	ND	ND
Arsenic	4.9	1.9	0.83	3.3	0.26	2.2	0.44
Barium	31.6J	17.2	23.1J	20.9J	3.7J	7.9J	8.0J
Beryllium	ND	ND	ND	0.13J	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND	ND
Calcium	6,240	3,190	8,480	48,500	113	147	298
Chromium	15.0	10.3	7.5	8.2	ND	8.7	5.3
Cobalt	2.7	1.5	ND	ND	ND	ND	ND
Copper	4.8	2.7	2.0	4.5	0.45	2.3	2.0
Iron	11,600	7,350	1,750	7,330	617	7,320	1,800
Lead	10.9J	8.4J	4.5J	11.2	1.3J	5.2J	3.8
Magensium	263	141	353	378	55.8	42.5	82.7
Manganese	59.2	34.0	18.2	151	2.3J	25.8J	5.2J
Mercury	ND	ND	ND	ND	ND	ND	ND
Nickel	6.8	5.5	2.2	4.0	ND	3.3	2.2
Potassium	120	86.4	151	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND
Sodium	282	171	239	457	149	168	150
Thallium	ND	ND	ND	ND	ND	ND	ND
Vanadium	21.0	15.3	8.4	14.0	2.4	11.0	5.4
Zinc	22.0	15.3	13.4	14.7J	3.4J	7.4J	4.4J
Cyanide	ND	ND	ND	ND	0.08	0.16	ND

Notes: mg/kg = Milligrams per kilogram.
J = Estimated Value.
ND = Not detected.

Table 4-8 (continued) Inorganics Detected in Background Surface Soil

Analyte	M1SS107 (mg/kg)	M1SS108 (mg/kg)	M1SS109 (mg/kg)
Antimony	ND	ND	ND
Aluminum	1,730	2,100	3,350
Antimony	ND	ND	ND
Arsenic	1.58	1.4	2.6
Barium	7.5J	9.2J	10.1J
Beryllium	ND	ND	ND
Cadmium	ND	ND	ND
Calcium	396	969	1,060
Chromium	4.7	5.4	4.4
Cobalt	ND	ND	ND
Copper	1.9	2.1	1.7
Iron	3,830	4,460	3,210
Lead	4.5	4.1	4.6
Magensium	31.0	150	103
Manganese	10.9	29.0	10.7J
Mercury	ND	ND	ND
Nickel	ND	2.9	1.6
Potassium	95.6	97.2	ND
Selenium	ND	ND	ND
Silver	ND	ND	ND
Sodium	170	154	167
Thallium	ND	ND	ND
Vanadium	10.1	7.2	7.0
Zinc	6.5	6.3	6.9J
Cyanide	ND	ND	ND

Notes: mg/kg = Milligrams per kilogram.
J = Estimated Value.
ND = Not detected.

Table 4-9 Inorganics Detected in Sediment

Analyte	M1SD101 (mg/kg)	M1SD101D (mg/kg)	M1SD102 (mg/kg)	Background M1SD103 (mg/kg)
Aluminum	4,470	3,550	8,500	3,170
Arsenic	17.6J	14.5J	34.3J	7.7
Barium	28.3	29.3	35.5	16.7J
Cadmium	0.42	ND	1.1	ND
Calcium	4,150J	5,140J	1,440J	476
Chromium	10.8	6.6	27.3	7.3
Cobalt	ND	ND	3.5	1.7
Copper	5.0	3.0	18.4	3.8
Iron	5,530	3,520	13,500	2,990
Lead	16.2	14.9	18.0	21.3
Magensium	184	971	302	107
Manganese	36.0	29.4	34.4	7.3
Nickel	5.6	3.4	9.4	2.6
Potassium	ND	ND	149	150
Selenium	ND	ND	0.91J	ND
Sodium	239	217	576	279
Thallium	ND	ND	ND	ND
Vanadium	15.3	8.7	29.2	7.1
Zinc	131	76.7	328	59.4
Cyanide	ND	ND	0.17	ND

Notes: mg/kg = Milligrams per kilogram.
J = Estimated Value.
ND = Not detected.

Table 4-10 Inorganics Detected in Surface Water

Analyte	MISW101 (µg/ℓ)	MISW101D (µg/ℓ)	MISW102 (µg/ℓ)	Background MISW103 (µg/ℓ)
Aluminum	979	497	3,080	1,170
Arsenic	8.0	7.0	26.7	24.6
Barium	30.J	26.3J	33.7	37.6J
Calcium	30,900	29,600	6,510	10,900
Chromium	ND	ND	ND	ND
Copper	1.5	1.5	7.3	2.3
Iron	1,170J	679J	11,700J	6,360J
Lead	3.8J	2.4J	57.5	14.0
Magensium	932	887	593	960
Manganese	15.8J	11.4J	66.J	31.5J
Nickel	ND	ND	12.6	ND
Potassium	308	325	165	510
Sodium	2,910	2,800	2,660	4,250
Vanadium	4.1	3.2	11.4	3.9
Zinc	29.9	17.4	197	67.6

Notes: µg/ℓ = Micrograms per Liter.
J = Estimated Value.
ND = Not detected.

5.0 SCREENING RISK EVALUATION

This Screening Risk Evaluation (SRE) characterizes and evaluates potential health risks associated with potential exposure to the contaminants detected at the MILCON site to workers during construction. A lifetime excess cancer risk less than 1 in one million, commonly expressed as $1x10^{-6}$, or a non-cancer hazard index less than 1.0 is considered insignificant (USEPA, 1989a).

The SRE studies a male construction worker involved in excavation work at this site because a person conducting this type of work has the highest potential for exposure to the soil and contaminants detected at the site. This construction worker is assumed to be exposed to the contaminants at the site via four pathways: inadvertent soil ingestion; absorption of contaminants through the skin; inhalation of contaminants volatilizing from soil; and inhalation of contaminated dust blown up from the soil. The time period during which this construction worker is engaged in excavation work is assumed to be 60 days.

Standard USEPA risk assessment methodology and exposure factors were used to calculate the concentration of each contaminant detected at the MILCON site associated with a lifetime excess cancer risk of $1x10^{-6}$ (USEPA, 1989a; 1991c). These concentrations, called the Soil Screening Concentrations (SSC) are then compared to the contaminant concentrations actually detected at the MILCON site. If the concentration of the contaminants detected at the site are less than the SSCs, then the total lifetime cancer risk due to all four of these exposure pathways is less than $1x10^{-6}$. Therefore, no unacceptable health risks would be expected for a construction worker exposed to the contaminants at the site. Workers with lesser exposures to the soil and sediment contamination would also be expected to have acceptable health risks.

The highest detected concentrations of each contaminant in soil and sediment are compared to their SSCs in Table 5-1. For all surface soil analyses, except VOCs, the value used as the highest detected concentration is five times higher than the concentration actually detected in the sample. This conservative correction was used because surface soil samples, except for VOCs, were actually composites, or mixtures, of five different soil samples collected from five different locations. This was done to maximize the information on the contamination at the site. It is possible, however, that the contamination detected in a composite soil sample was actually in only one of the five samples mixed together. The resulting concentration reported from the laboratory would then be biased low due to dilution from the other four uncontaminated samples. While the potential for this happening is low, it is prudent to account for this possibility and Table 5-1 uses the higher, corrected surface soil contamination values in the SSC comparisons.

None of the contaminants were detected at concentrations in excess of their SSCs. Therefore, the health risks associated with exposure of a construction worker to the contaminants detected at the site are below the target levels considered unacceptable by USEPA, i.e., a lifetime excess cancer risk greater than $1x10^{-6}$ (USEPA, 1989a). Other workers at the site are expected to have lower exposures to the contaminants than the construction worker and, therefore, even lower health risks.

Table 5-1 Maximum Detected Soil and Sediment Concentrations and Soil Screening Concentrations (SSC) for the Contaminants Detected at the Site

Contaminant	Surface Soil	Sediment	SSC	Exceed SSC?
Dioxins and Furans	(ng/kg)	(ng/kg)	(ng/kg)	
2,3,7,8-TCDD	346*	186.7	372	No
Volatile Organic Compounds	(µg/kg)	(µg/kg)	(µg/kg)	
Acetone	81	120	16,867,000	No
2-Butanone	ND	37	124,000	No
Toluene	4	ND	30,237,000	No
Xylenes (total)	ND	2	3,839,000	No
Semivolatile Organic Compounds				
Acenaphthylene	ND	150	NC	-
Anthracene	ND	180	116,214,000	No
Benzo(a)anthracene	3,800*	1,200	79,000	No
Benzo(b)fluoranthene	4,600*	2,900	78,000	No
Benzo(k)fluoranthene	4,700*	1,600	77,200	No
Benzo(a)pyrene	4,000*	1,500	7,900	No
Benzo(g,h,i)perylene	1,550*	1,200	NC	-
bis(2-Ethylhexyl)phthalate	305*	220	412,000	No
Chrysene	4,800*	2,600	789,000	No
Carbazole	ND	210	NC	-
Dibenz(a,h)anthracene	1,100*	600	7,900	No
Fluoranthrene	3,650*	2,400	50,089,000	No
Indeno(1,2,3-cd)pyrene	1,950*	1,300	79,000	No
Pyrene	4,800*	2,200	41,095,000	No
Pesticides/Herbicides				
alpha-Chlordane	27.0*	26	44,000	No
gamma-Chlordane	23.5*	15	44,000	No
Dieldrin	25.5*	4.5	3,550	No
4,4'-DDD	24.0*	6,200	240,000	No
4,4'-DDE	180*	2,200	170,000	No
4,4'-DDT	60*	2,100	162,000	No
Endrin Ketone	31.5*	ND	¹310,000	No
Methoxychlor	150*	ND	8,951,000	No
2,4,5-T	ND	58	16,867,000	No
	(mg/kg)	(mg/kg)	(mg/kg)	
Cyanide	0.80	0.17	3,700	No

Notes:
ng/kg = Nanograms per kilogram
mg/kg = milograms per killogram
µg/kg = Micrograms per kilogram
2,3,7,8-TCDD = 2,3,7,8-Tetrachlorodibenzo-p-dioxin
NC = Can not be calculated due to lack of USEPA toxicity values
* = Five times highest concentration detected value used due to composite sample.
¹ = Due to lack of toxicity data, SSC calculated for Endrin rather than Endrin Ketone.

4,4'-DDE = 4,4'-dichlorodiphenyldichloroethylene
4,4'-DDD = 4,4'-dichlorodiphenyldichloroethane
4,4'-DDT = 4,4'-dichlorodiphenyltrichloroethane

6.0 LIMITATIONS AND UNCERTAINTIES

The SRE is based upon standard USEPA risk assessment methodology developed for analyzing health risks at hazardous waste sites. This methodology relies upon a number of conservative assumptions, each with its own level of uncertainty. Those uncertainties can be grouped into three broad categories: the analytical data, the construction worker exposure scenario, and the toxicity factors for dioxin.

Because of the limited scope of this project, only six composite surface soil samples were collected from the site. It is possible that some contamination present at the construction site was either missed completely or concentrations present at the site are higher than those detected. Except for 2,3,7,8-TCDD, however, all of the contaminants detected were far below their respective SSCs, and it is unlikely that concentrations of these contaminants above the SSCs are present at the site.

In this SRE the highest concentration of 2,3,7,8-TCDD used in the comparison with the SSC for 2,3,7,8-TCDD was close to the SSC. However, the 2,3,7,8-TCDD concentration actually detected at this sampling site, MS1SS103, was 69.2 ng/kg, compared to an SSC 372 ng/kg, and the contaminant concentrations in the composite samples were corrected for possible dilution by uncontaminated soil by multiplying the detected concentration by a factor of five. It is also important to note that this concentration, 69.2 ng/kg, was found only in one of the sampling sites and that the next highest concentration of 2,3,7,8-TCDD was 7 times lower. This suggests that the 2,3,7,8-TCDD contamination at the MILCON site is not uniform and that the use of only the highest detected 2,3,7,8-TCDD concentration may overestimate the risks of the site. If, as is probably more realistic, the 2,3,7,8-TCDD contamination at sampling site MS1SS103 was present in all five soil samples, then the results of the SRE are overly conservative and highly overestimate the risk at the site.

The exposure assumptions used to calculate the SSC for the construction worker may also be overly conservative estimates of the actual exposure conditions at the MILCON site. The assumption that this worker will be exposed to the highest detected concentration of the contaminants at the site 8 hours per day for a period of 60 days is almost certainly an overestimate of the actual exposure conditions at the site during construction. It is unlikely that soil excavation will occur at the site for 60 days and some areas of the soil will be also be covered with an impermeable cap such as gravel or concrete during the construction, further reducing the potential for exposure to the soil contaminants. Thus, the exposure scenario used for the construction worker almost certainly overestimates the actual risks at the site.

The toxicity factors of the contaminants at the site are another common source of uncertainty in SREs. These toxicity factors are developed by the USEPA using a methodology that is filled with conservative, and not uniformly accepted, assumptions. The USEPA recognizes this fact when it states "EPA is reasonably confident that the 'true risk' will not exceed the risk estimate derived through the use of this model and is likely to be less than that predicted" (USEPA, 1989b). Therefore, the actual health risks at the site are probably overestimated.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Concentrations of contaminants detected in surface soil and sediment at the MILCON construction site were compared to screening concentrations associated with an excess cancer risk of one in a million but non-cancer health risks were not quantitatively evaluated. These health risk values are frequently used by the USEPA as acceptable health risks. Screening concentrations were based on a worker engaged in excavation work for 60 days. this scenario is believed to substantially overstate the amount of exposure any worker at the site will actually receive. Based on this comparison, the contaminants present at the MILCON construction site should not pose a significant health threat to construction workers at the site, provided that no greater exposures occur than are described in the SRE.

Although the cancer health risks at the site are not considered significant, the Construction Site Assessment has demonstrated the presence of 2,3,7,8-TCDD and other contaminants. There is also uncertainty concerning the nature non-cancer health risks associated with 2,3,7,8-TCDD exposure. The information gained in the Construction Site Assessment does not preclude the presence of higher undetected concentrations of 2,3,7,8-TCDD. Therefore, it is recommended that initial site operations should be conducted in compliance with the Hazardous Waste Operations and Emergency Response (HAZWOPER) Final Rule (29 CFR 1910.120) until construction is advanced to a point at which workers will no longer be exposed to site contaminants.

Conforming to the HAZWOPER rule will require several measures to be taken at the MILCON construction site. 29 CFR 1910.120 (b) (4) requires that a Health and Safety Plan (HASP) should be developed to address limiting worker exposure to the contaminants. construction and excavation workers in the work phase covered by the Hasp should comply with the training and health monitoring requirements of 29 CFR 1910.120 (e) and (f), respectively. The HASP should address measures necessary to minimize worker exposure to contaminants by specifying appropriate personnel protective equipment. Inhalation and ingestion exposures can be reduced by the use of dust filters. The potential for dermal absorption may be minimized by wearing disposable Tyvek™ suits and gloves when working in areas of potential exposure. These safety requirements will be applicable to the site only as long as workers may potentially contact contaminated surface soil or sediments.

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FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS101D

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 80.7

Date Received: 05/11/93

Date Analyzed: 05/27/93

Lab Sample ID: RD-94003002

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	17900	mg/Kg

Comments:

000380

FORM 1 - GENERAL CHEMISTRY

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number: MISS101

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 78.4

Date Received: 05/11/93

Date Analyzed: 05/27/93

Lab Sample ID: RD-94003001

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	13300	mg/Kg

Comments:

000380

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: M1SS109

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 94.40

Date Received: 05/11/93

Lab Sample ID: 94005007

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	29.6	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: M1SS108

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 93.80

Date Received: 05/11/93

Lab Sample ID: 94005006

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	18.0	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS107

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 88.67

Date Received: 05/11/93

Lab Sample ID: 94005005

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	27.3	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS106

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 91.95

Date Received: 05/11/93

Lab Sample ID: 94005004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	<1.8	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS105

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 91.20

Date Received: 05/11/93

Lab Sample ID: 94005002

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	<1.8	MG/KG	05/28/93

Comments:

0004

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: M1SS104

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 93.90

Date Received: 05/11/93

Lab Sample ID: 94005003

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	3.1	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS103

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 91.69

Date Received: 05/11/93

Lab Sample ID: 94005001

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	6.1	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: M1SS102

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 89.70

Date Received: 05/11/93

Lab Sample ID: 94003004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	47.1	MG/KG	05/28/93

Comments:

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS101 94003-1
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 16-93

SAMPLE WEIGHT (grams): 5.044 (Dry Weight)
ANALYSIS DATE: MAY 29-93
ANALYSIS TIME: 1:57

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K443_0061 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	1.85		(0.65-0.89)	
2,3,7,8-TCDF	ND	1.87		(0.65-0.89)	
1,2,3,7,8-PeCDD	ND	4.68		(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	10.4		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	3.20		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	3.30		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	2.91		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	0.37		(1.05-1.43)	
1,2,3,4,7,8-HxCDF	ND	5.16		(1.05-1.43)	
1,2,3,6,7,8-HxCDF	33.5	0.36	1.34	(1.05-1.43)	36
1,2,3,7,8,9-HxCDF	ND	4.99		(1.05-1.43)	
2,3,4,6,7,8-HxCDF	ND	4.68		(1.05-1.43)	
1,2,3,4,6,7,8-HpCDD	170	0.33	1.08	(0.88-1.20)	29
1,2,3,4,6,7,8-HpCDF	93.9	0.26	0.99	(0.88-1.20)	28
1,2,3,4,7,8,9-HpCDF	ND	3.39		(0.88-1.20)	
OCDD	1720	0.4	0.89	(0.76-1.02)	27
OCDF	200	0.46	0.86	(0.76-1.02)	30
TEF	8.64				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	122	0.92	(0.65-0.89)
13C-2,3,7,8-TCDF	80.1	0.78	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	120	1.65	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	115	1.74	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	115	1.68	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	65.7	1.25	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	70.9	1.17	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	72.6	0.59	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	67.0	0.46	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	70.6	0.56	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	91.7	0.56	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	112	1.08	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	77.0	0.44	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	102	0.39	(0.37-0.51)
13C-OCDD	116	0.88	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	95.0

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

INORGANIC SOIL ANALYSES (mg/kg)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SS107	MS1SS108	MS1SS109
	LAB NUMBER:	94005005	94005006	94005007
	DATE SAMPLED:	05/06/93	05/06/93	05/06/93
	PERCENT SOLIDS:	88.7	93.7	93.2
INORGANIC ANALYSES – Target Analyte List				
ANALYTE	CRQL			
Aluminum	40	1730	2100	3350
Antimony	12	2.0 U	1.9 U	1.9 U
Arsenic	2	1.5 J	1.4 J	2.6
Barium	40	7.5 J	9.2 J	10.1 J
Beryllium	1	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	1	0.32 U	0.30 U	0.30 U
Calcium	1000	396 J	969 J	1060 J
Chromium	2	4.7	5.4	4.4
Cobalt	10	0.95 U	0.90 U	0.90 U
Copper	5	1.9 J	2.1 J	1.7 J
Iron	20	3830	4460	3210
Lead	1.0	4.5	4.1	4.6
Magnesium	1000	31.0 J	150 J	103 J
Manganese	3	10.9 J	29.0 J	10.7 J
Mercury	0.1	0.03 UJ	0.03 UJ	0.03 UJ
Nickel	8	1.6 U	2.9 J	1.6 J
Potassium	1000	95.6 U	97.2 U	105 U
Selenium	1	0.16 UJ	0.15 UJ	0.15 UJ
Silver	2	0.27 U	0.27 U	0.26 U
Sodium	1000	170 J	154 J	167 J
Thallium	2	0.20 U	0.19 U	0.19 U
Vanadium	10	10.1 J	7.2 J	7.0 J
Zinc	4	6.5 J	6.3 J	6.9 J
Cyanide	2	0.05 U	0.05 U	0.05 U

NOTES:
U = Not Detected.
J = Estimated.
UJ = Estimated due to low matrix spike recoveries.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

INORGANIC SOIL ANALYSES (mg/kg)

Validation/Summary Table

	SAMPLE LOCATION:	M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
	LAB NUMBER:	94003001	94003002	94003004	94005001	94005003	94005002	94005004
	DATE SAMPLED:	05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
	PERCENT SOLIDS:	68.8	91.6	91.2	91.6	93.7	92.3	91.6
INORGANIC ANALYSES – Target Analyte List								
ANALYTE	CRQL							
Aluminum	40	5840	3760	7610	3850	1610	1960	4080
Antimony	12	2.6 U	2.0 U	2.0 U	2.0 U	1.9 U	2.0 U	2.0 U
Arsenic	2	4.9	1.9 J	0.83 J	3.3 J	0.26 J	2.2	0.44 J
Barium	40	31.6 J	17.2 J	23.1 J	20.9 J	3.7 J	7.9 J	8.0 J
Beryllium	1	0.29	0.22 U	0.15 U	0.13 J	0.11 UJ	0.11 UJ	0.11 UJ
Cadmium	1	0.41 U	0.31 U	0.31 U	0.31 U	0.30 U	0.30 U	0.31 U
Calcium	1000	6240	3190	8480	48,500	113 J	147 J	298 J
Chromium	2	15.0	10.3	7.5	8.2	2.4 U	8.7	5.3
Cobalt	10	2.7 J	1.5 J	0.92 U	0.92 U	0.90 U	0.91 U	0.92 U
Copper	5	4.8 J	2.7 J	2.0 J	4.5 J	0.45 J	2.3 J	2.0 J
Iron	20	11,600	7350	1750	7330	617	7320	1800
Lead	1.0	10.9 J	8.4 J	4.5 J	11.2	1.3 J	5.2 J	3.8
Magnesium	1000	263 J	141 J	353 J	378 J	55.8 J	45.5 J	82.7 J
Manganese	3	59.2	34.0	18.2	151 J	2.3 J	25.8 J	5.2 J
Mercury	0.1	0.04 U	0.03 J	0.03 U	0.03 UJ	0.03 UJ	0.03 UJ	0.03 UJ
Nickel	8	6.8 J	5.5 J	2.2 U	4.0 J	1.5 U	3.3 J	2.2 J
Potassium	1000	120 J	86.4 J	151 J	97.7 U	50.0 U	64.5 U	90.8 U
Selenium	1	0.20 U	0.15 U	0.15 U	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ
Silver	2	0.35 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
Sodium	1000	282 J	171 J	239 J	457 J	149 J	168 J	150 J
Thallium	2	0.26 U	0.20 UJ	0.20 UJ	0.20 U	0.19 U	0.20 U	0.20 U
Vanadium	10	21.0	15.3	8.4 J	14.0	2.4 J	11.0	5.4 J
Zinc	4	22.7 J	11.5 J	13.4	14.7 J	3.4 J	7.4 J	4.4 J
Cyanide	2	0.07 U	0.05 U	0.05 U	0.05 U	0.08 J	0.16 J	0.05 U

NOTES:
U = Not Detected.
J = Estimated.
UJ = Estimated due to low matrix spike recoveries.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

HERBICIDES SOIL ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:		M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
LAB NUMBER:		94003001	94003002	94003003	94005001	94005003	94005002	94005004
DATE SAMPLED:		05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
DATE EXTRACTED:		05/17/93	05/17/93	05/17/93	05/19/93	05/19/93	05/19/93	05/19/93
DATE ANALYZED:		05/28/93	05/28/93	05/28/93	05/27/93	05/27/93	05/27/93	05/27/93
PERCENT MOISTURE:		31	8	9	8	6	8	8
DILUTION FACTOR:		1.0	1.0	1.0	1.0	1.0	1.0	1.0
HERBICIDE ANALYSIS – Target Compound List								
ANALYTE	CRQL							
MCPA	50,000	73,000 U	55,000 U	55,000 U	55,000 U	53,000 U	54,000 U	55,000 U
Dalapon	1160	1700 U	1300 U	1300 U	1300 U	1300 U	1300 U	1300 U
MCPP	40,000	58,000 U	44,000 U	44,000 U	44,000 U	43,000 U	43,000 U	44,000 U
Dicamba	54	78 U	59 U	59 U	59 U	58 U	58 U	59 U
2,4-D	240	350 U	260 U	260 U	260 U	260 U	260 U	260 U
Dichloroprop (2,4-DP)	130	190 U	140 U	140 U	140 U	140 U	140 U	140 U
2,4,5-T	40	58 U	44 U	44 U	44 U	43 U	43 U	44 U
2,4,5-TP (Silvex)	34	49 U	37 U	37 U	37 U	36 U	37 U	37 U
2,4-DB	182	260 U	200 U	200 U	200 U	190 U	200 U	200 U
Dinoseb	14	20 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

HERBICIDES SOIL ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:		MS1SS107	MS1SS108	MS1SS109
LAB NUMBER:		94005005	94005006	94005007
DATE SAMPLED:		05/06/93	05/06/93	05/06/93
DATE EXTRACTED:		05/19/93	05/19/93	05/19/93
DATE ANALYZED:		05/27/93	05/27/93	05/28/93
PERCENT MOISTURE:		11	6	7
DILUTION FACTOR:		1.0	1.0	1.0
HERBICIDE ANALYSIS – Target Compound List				
ANALYTE	CRQL			
MCPA	50,000	56,000 U	53,000 U	54,000 U
Dalapon	1160	1400 U	1300 U	1300 U
MCPP	40,000	45,000 U	43,000 U	43,000 U
Dicamba	54	61 U	58 U	58 U
2,4-D	240	270 U	260 U	260 U
Dichloroprop (2,4-DP)	130	150 U	140 U	140 U
2,4,5-T	40	45 U	43 U	43 U
2,4,5-TP (Silvex)	34	38 U	36 U	36 U
2,4-DB	182	200 U	190 U	190 U
Dinoseb	14	16 UJ	15 UJ	15 UJ

NOTES:

U = Not detected at the reporting limit.

UJ = Value may be biased low due to low matrix spike recovery for Dinoseb.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

ORGANOCHLORINE PESTICIDE/PCB SOIL ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:		MS1SS107	MS1SS108	MS1SS109
LAB NUMBER:		94005005	94005006	94005007
DATE SAMPLED:		05/06/93	05/06/93	05/06/93
DATE EXTRACTED:		05/18 93	05/18 93	05/18/93
DATE ANALYZED:		05/27/93	05/27/93	05/28/93
PERCENT MOISTURE:		11	6	7
DILUTION FACTOR:		1.0	1.0	1.0
ORGANOCHLORINE PESTICIDES AND PCBs				
Target Compound List				
ANALYTE	CRQL			
alpha-BHC	1.7	1.9 U	1.8 U	7.3 U
beta-BHC	1.7	1.9 U	1.8 U	7.3 U
delta-BHC	1.7	1.9 U	1.8 U	7.3 U
gamma-BHC (Lindane)	1.7	1.9 U	1.8 U	7.3 U
Heptachlor	1.7	1.9 U	1.8 U	7.3 U
Aldrin	1.7	1.9 U	1.8 U	7.3 U
Heptachlor epoxide	1.7	1.9 U	1.8 U	7.3 U
Endosulfan I	1.7	1.9 U	1.8 U	7.3 U
Dieldrin	3.3	19	3.5 U	14 U
4,4'- DDE	3.3	91 D	9.9	14 U
Endrin	3.3	3.7 U	3.5 U	14 U
Endosulfan II	3.3	3.7 U	3.5 U	14 U
4,4'- DDD	3.3	24 J	3.5 U	14 U
Endosulfan sulfate	3.3	3.7 U	3.5 U	14 U
4,4'- DDT	3.3	270 D	8.2	14 U
Methoxychlor	17	19 U	18 U	73 U
Endrin ketone	3.3	3.7 U	3.5 U	14 U
Endrin aldehyde	3.3	3.7 U	3.5 U	14 U
alpha-Chlordane	1.7	1.9 U	1.8 U	65 J
gamma-Chlordane	1.7	1.9 U	1.8 U	57
Toxaphene	170	190 U	180 U	730 U
Aroclor-1016	33	37 U	35 U	140 U
Aroclor-1221	67	75 U	71 U	290 U
Aroclor-1232	33	37 U	35 U	140 U
Aroclor-1242	33	37 U	35 U	140 U
Aroclor-1248	33	37 U	35 U	140 U
Aroclor-1254	33	37 U	35 U	140 U
Aroicor-1260	33	37 U	35 U	140 U

NOTES:
U = Not Detected.
J = Estimated value.
D = Value from diluted sample.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

ORGANOCHLORINE PESTICIDE/PCB SOIL ANALYSES (ug/kg)

Validation/Summary Table

	SAMPLE LOCATION:	M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
	LAB NUMBER:	94003001	94003002	94003003	94005001	94005003	94005002	94005004
	DATE SAMPLED:	05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
	DATE EXTRACTED:	05/18 93	05/18 93	05/18 93	05/18 93	05/18 93	05/18 93	05/18 93
	DATE ANALYZED:	05/29/93	05/29/93	05/28/93	05/27/93	05/27/93	05/27/93	05/27/93
	PERCENT MOISTURE:	31	8	9	8	6	8	8
	DILUTION FACTOR:	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ORGANOCHLORINE PESTICIDES AND PCBs								
Target Compound List								
ANALYTE	CRQL							
alpha-BHC	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
beta-BHC	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
delta-BHC	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
gamma-BHC (Lindane)	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
Aldrin	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
Heptachlor epoxide	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
Endosulfan I	1.7	2.5 U	2.2 U	1.9 U	1.8 U	1.8 U	1.8 U	1.8 U
Dieldrin	3.3	5.1	3.7 J	3.6 U	4.2	3.5 U	3.6 U	3.6 U
4,4'- DDE	3.3	36 J	34	14	8.2	2.7 J	3.4 J	3.6 U
Endrin	3.3	4.8 U	4.2 U	3.6 U	3.6 U	3.5 U	3.6 U	3.6 U
Endosulfan II	3.3	4.8 U	4.2 U	3.6 U	3.6 U	3.5 U	3.6 U	3.6 U
4,4'- DDD	3.3	4.8 U	4.2 U	3.6 U	3.8	3.5 U	3.6 U	3.6 U
Endosulfan sulfate	3.3	4.8 U	4.2 U	3.6 U	3.6 U	3.5 U	3.6 U	3.6 U
4,4'- DDT	3.3	9.0	4.2 J	3.6 U	5.5	12	2.3 J	3.6 U
Methoxychlor	17	34 J	30	19 U	18 U	18 U	18 U	18 U
Endrin ketone	3.3	6.3 J	4.5	3.6 U	3.6 U	3.5 U	3.6 U	3.6 U
Endrin aldehyde	3.3	4.8 U	4.2 U	3.6 U	3.6 U	3.5 U	3.6 U	3.6 U
alpha-Chlordane	1.7	2.5 U	2.2 U	19 U	5.4 J	1.8 U	1.8 U	1.8 U
gamma-Chlordane	1.7	2.5 U	2.2 U	19 U	4.7	1.8 U	1.8 U	1.8 U
Toxaphene	170	250 U	220 U	190 U	180 U	180 U	180 U	180 U
Aroclor-1016	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U
Aroclor-1221	67	97 U	86 U	74 U	73 U	71 U	76 U	73 U
Aroclor-1232	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U
Aroclor-1242	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U
Aroclor-1248	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U
Aroclor-1254	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U
Aroicor-1260	33	48 U	42 U	36 U	36 U	35 U	36 U	36 U

NOTES:
U = Not Detected.
J = Estimated value.
D = Value from diluted sample.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SOIL ANALYSES (ug/kg)
(Continued)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SS107	MS1SS108	MS1SS109
	LAB NUMBER:	94005005	94005006	94005007
	DATE SAMPLED:	05/06/93	05/06/93	05/06/93
	DATE EXTRACTED:	05/11/93	05/11/93	05/11/93
	DATE ANALYZED:	06/02/93	06/02/93	06/02/93
	PERCENT SOLIDS:	11	6	7
	DILUTION FACTOR:	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS - Target Compound List				
ANALYTE	CRQL			
2,4-Dinitrophenol	800	900 U	860 U	860 U
4-Nitrophenol	800	900 U	860 U	860 U
Dibenzofuran	330	370 U	350 U	350 U
2,4-Dinitrotoluene	330	370 U	350 U	350 U
Diethylphthalate	330	370 U	350 U	350 U
4-Chlorophenyl-phenylether	330	370 U	350 U	350 U
Fluorene	330	370 U	350 U	350 U
4-Nitroaniline	800	900 U	860 U	860 U
4,6-Dinitro-2-methylphenol	800	900 U	860 U	860 U
N-nitrosodiphenylamine	330	370 U	350 U	350 U
4-Bromophenyl-phenylether	330	370 U	350 U	350 U
Hexachlorobenzene	330	370 U	350 U	350 U
Pentachlorophenol	800	900 U	860 U	860 U
Phenanthrene	330	370 U	350 U	350 U
Anthracene	330	370 U	350 U	350 U
Carbazole	330	370 U	350 U	350 U
Di-n-butylphthalate	330	370 U	350 U	350 U
Fluoranthene	330	88 J	350 U	350 U
Pyrene	330	77 J	350 U	350 U
Butylbenzylphthalate	330	370 U	350 U	350 U
3,3'-Dichlorobenzidine	330	370 U	350 U	350 U
Benzo (a) anthracene	330	38 J	350 U	350 U
Chrysene	330	52 J	350 U	350 U
bis (2-Ethylhexyl) phthalate	330	370 U	37 J	46 J
Di-n-octylphthalate	330	370 U	350 U	350 U
Benzo (b) fluoranthene	330	96 J	350 U	350 U
Benzo (k) fluoranthene	330	370 U	350 U	350 U
Benzo (a) pyrene	330	370 U	350 U	350 U
Indeno (1,2,3-cd) pyrene	330	45 J	350 U	350 U
Dibenz (a,h) anthracene	330	370 U	350 U	350 U
Benzo (g,h,i) perylene	330	67 J	350 U	350 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SOIL ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:		MS1SS107	MS1SS108	MS1SS109
LAB NUMBER:		94005005	94005006	94005007
DATE SAMPLED:		05/06/93	05/06/93	05/06/93
DATE EXTRACTED:		05/11/93	05/11/93	05/11/93
DATE ANALYZED:		06/02/93	06/02/93	06/02/93
PERCENT MOISTURE:		11	6	7
DILUTION FACTOR:		1.0	1.0	1.0
SEMIVOLATILE ANALYSIS - Target Compound List				
ANALYTE	CRQL			
Phenol	330	370 U	350 U	350 U
bis (2-Chloroethyl) ether	330	370 U	350 U	350 U
2- Chlorophenol	330	370 U	350 U	350 U
1,3- Dichlorobenzene	330	370 U	350 U	350 U
1,4- Dichlorobenzene	330	370 U	350 U	350 U
1,2- Dichlorobenzene	330	370 U	350 U	350 U
2- Methylphenol	330	370 U	350 U	350 U
2,2'-oxybis (1-Chloropropane)	330	370 U	350 U	350 U
4- Methylphenol	330	370 U	350 U	350 U
N-Nitroso-di-n-propylamine	330	370 U	350 U	350 U
Hexachloroethane	330	370 U	350 U	350 U
Nitrobenzene	330	370 U	350 U	350 U
Isophorone	330	370 U	350 U	350 U
2-Nitrophenol	330	370 U	350 U	350 U
2,4-Dimethylphenol	330	370 U	350 U	350 U
bis (2-Chloroethoxy) methane	330	370 U	350 U	350 U
2,4-Dichlorophenol	330	370 U	350 U	350 U
1,2,4-Trichlorobenzene	330	370 U	350 U	350 U
Naphthalene	330	370 U	350 U	350 U
4-Chloroaniline	330	370 U	350 U	350 U
Hexachlorobutadiene	330	370 U	350 U	350 U
4-Chloro-3-methylphenol	330	370 U	350 U	350 U
2-Methylnaphthalene	330	370 U	350 U	350 U
Hexachlorocyclopentadiene	330	370 U	350 U	350 U
2,4,6-Trichlorophenol	330	370 U	350 U	350 U
2,4,5-Trichlorophenol	800	900 U	860 U	860 U
2-Chloronaphthalene	330	370 U	350 U	350 U
2-Nitroaniline	800	900 U	860 U	860 U
Dimethylphthalate	330	370 U	350 U	350 U
Acenaphthylene	330	370 U	350 U	350 U
2,6-Dinitrotoluene	330	370 U	350 U	350 U
3-Nitroaniline	800	900 U	860 U	860 U
Acenaphthene	330	370 U	350 U	350 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SOIL ANALYSES (ug/kg)
(Continued)

Validation/Summary Table

SAMPLE LOCATION:		M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
LAB NUMBER:		94003001	94003002	94003004	94005001	94005002	94005003	94005004
DATE SAMPLED:		05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
DATE EXTRACTED:		05/11/93	05/11/93	05/11/93	05/11/93	05/11/93	05/11/93	05/11/93
DATE ANALYZED:		05/30/93	05/30/93	05/30/93	06/01/93	06/01/93	06/01/93	06/01/93
PERCENT SOLIDS:		31	8	9	8	6	8	8
DILUTION FACTOR:		1.0	1.0	1.0	1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS – Target Compound List								
ANALYTE	CRQL							
2,4-Dinitrophenol	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
4-Nitrophenol	800	1200 U	870 U	880 U	870 U	850 U	870 U	900 U
Dibenzofuran	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,4-Dinitrotoluene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Diethylphthalate	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4-Chlorophenyl-phenylether	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Fluorene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4-Nitroaniline	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
4,6-Dinitro-2-methylphenol	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
N-nitrosodiphenylamine	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4-Bromophenyl-phenylether	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Hexachlorobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Pentachlorophenol	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
Phenanthrene	330	480 U	110 J	360 U	360 U	350 U	360 U	360 U
Anthracene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Carbazole	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Di-n-butylphthalate	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Fluoranthene	330	730	670	360 U	360 U	67 J	360 U	360 U
Pyrene	330	960	780	360 U	360 U	47 J	360 U	360 U
Butylbenzylphthalate	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
3,3'-Dichlorobenzidine	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Benzo (a) anthracene	330	680	760	360 U	360 U	350 U	360 U	360 U
Chrysene	330	860	960	360 U	360 U	39 J	360 U	360 U
bis (2-Ethylhexyl) phthalate	330	61 J	48 J	360 U	360 U	350 U	360 U	360 U
Di-n-octylphthalate	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Benzo (b) fluoranthene	330	920	830	360 U	360 U	44 J	360 U	360 U
Benzo (k) fluoranthene	330	590	840	360 U	360 U	54 J	360 U	360 U
Benzo (a) pyrene	330	230 J	800	360 U	360 U	350 U	360 U	360 U
Indeno (1,2,3-cd) pyrene	330	390 J	390 J	360 U	360 U	350 U	360 U	360 U
Dibenz (a,h) anthracene	330	200 J	220 J	360 U	360 U	350 U	360 U	360 U
Benzo (g,h,i) perylene	330	310 J	270 J	360 U	360 U	350 U	360 U	360 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SOIL ANALYSES (ug/kg)

Validation/Summary Table

	SAMPLE LOCATION:	M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
	LAB NUMBER:	94003001	94003002	94003004	94005001	94005003	94005002	94005004
	DATE SAMPLED:	05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
	DATE EXTRACTED:	05/11/93	05/11/93	05/11/93	05/11/93	05/11/93	05/11/93	05/11/93
	DATE ANALYZED:	05/30/93	05/30/93	05/30/93	06/01/93	06/01/93	06/01/93	06/01/93
	PERCENT MOISTURE:	31	8	9	8	6	8	8
	DILUTION FACTOR:	1.0	1.0	1.0	1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS - Target Compound List								
ANALYTE	CRQL							
Phenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
bis (2-Chloroethyl) ether	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2- Chlorophenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
1,3- Dichlorobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
1,4- Dichlorobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
1,2- Dichlorobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2- Methylphenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,2'-oxybis (1-Chloropropane)	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4- Methylphenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
N-Nitroso-di-n-propylamine	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Hexachloroethane	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Nitrobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Isophorone	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2-Nitrophenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,4-Dimethylphenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
bis (2-Chloroethoxy) methane	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,4-Dichlorophenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
1,2,4-Trichlorobenzene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Naphthalene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4-Chloroaniline	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Hexachlorobutadiene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
4-Chloro-3-methylphenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2-Methylnaphthalene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Hexachlorocyclopentadiene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,4,6-Trichlorophenol	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,4,5-Trichlorophenol	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
2-Chloronaphthalene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2-Nitroaniline	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
Dimethylphthalate	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
Acenaphthylene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
2,6-Dinitrotoluene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U
3-Nitroaniline	800	1200 U	870 U	880 U	870 U	850 U	870 U	870 U
Acenaphthene	330	480 U	360 U	360 U	360 U	350 U	360 U	360 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

VOLATILE SOIL ANALYSES (ug/kg)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SS107	MS1SS108	MS1SS109
	LAB NUMBER:	94005005	94005006	94005007
	DATE SAMPLED:	05/06/93	05/06/93	05/06/93
	DATE ANALYZED:	05/16/93	05/16/93	05/16/93
	PERCENT MOISTURE:	11	6	7
	DILUTION FACTOR:	1.0	1.0	1.0
VOLATILE ANALYSIS - Target Compound List				
ANALYTE	CRQL			
Chloromethane	10	11 J	11 U	11 U
Bromomethane	10	11 J	11 U	11 U
Vinyl chloride	10	11 J	11 U	11 U
Chloroethane	10	11 J	11 U	11 U
Methylene chloride	10	11 J	11 U	11 U
Acetone	10	11 J	11 U	11 U
Carbon Disulfide	10	11 J	11 U	11 U
1,1-Dichloroethene	10	11 J	11 U	11 U
1,1-Dichloroethane	10	11 J	11 U	11 U
1,2-Dichloroethene (total)	10	11 J	11 U	11 U
Chloroform	10	11 J	11 U	11 U
1,2-Dichloroethane	10	11 J	11 U	11 U
2-Butanone	10	11 J	11 U	11 U
1,1,1-Trichloroethane	10	11 J	11 U	11 U
Carbon tetrachloride	10	11 J	11 U	11 U
Bromodichloromethane	10	11 J	11 U	11 U
1,2-Dichloropropane	10	11 J	11 U	11 U
cis-1,3-Dichloropropene	10	11 J	11 U	11 U
Trichloroethene	10	11 J	11 U	11 U
Dibromochloromethane	10	11 J	11 U	11 U
1,1,2-Trichloroethane	10	11 J	11 U	11 U
Benzene	10	11 J	11 U	11 U
trans-1,3-Dichloropropene	10	11 J	11 U	11 U
Bromoform	10	11 J	11 U	11 U
2-Hexanone	10	11 J	11 U	11 U
4-Methyl-2-Pentanone	10	11 J	11 U	11 U
Tetrachloroethene	10	11 J	11 U	11 U
1,1,2,2-Tetrachloroethane	10	11 J	11 U	11 U
Toluene	10	2 J	11 U	11 U
Chlorobenzene	10	11 J	11 U	11 U
Ethylbenzene	10	11 J	11 U	11 U
Styrene	10	11 J	11 U	11 U
Xylenes (total)	10	11 J	11 U	11 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

VOLATILE SOIL ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:	M1SS101	M1SS101D	MS1SS102	MS1SS103	MS1SS104	MS1SS105	MS1SS106
LAB NUMBER:	94003001	94003002	94003004	94005001	94005003	94005002	94005004
DATE SAMPLED:	05/04/93	05/04/93	05/05/93	05/06/93	05/06/93	05/06/93	05/06/93
DATE ANALYZED:	05/15/93	05/15/93	05/15/93	05/16/93	05/16/93	05/16/93	05/16/93
PERCENT MOISTURE:	31	8	9	8	8	8	8
DILUTION FACTOR:	1.0	1.0	1.0	1.0	1.0	1.0	1.0
VOLATILE ANALYSIS – Target Compound List							
ANALYTE	CRQL						
Chloromethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Bromomethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Vinyl chloride	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Chloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Methylene chloride	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Acetone	10	14 U	11 U	11 U	81	11 U	11 U	11 J
Carbon Disulfide	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,1-Dichloroethene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,1-Dichloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,2-Dichloroethene (total)	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Chloroform	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,2-Dichloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
2-Butanone	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,1,1-Trichloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Carbon tetrachloride	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Bromodichloromethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,2-Dichloropropane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
cis-1,3-Dichloropropene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Trichloroethene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Dibromochloromethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,1,2-Trichloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Benzene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
trans-1,3-Dichloropropene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Bromoform	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
2-Hexanone	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
4-Methyl-2-Pentanone	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Tetrachloroethene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
1,1,2,2-Tetrachloroethane	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Toluene	10	14 U	11 U	3 J	11 U	2 J	1 J	4 J
Chlorobenzene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Ethylbenzene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Styrene	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J
Xylenes (total)	10	14 U	11 U	11 U	11 U	11 U	11 U	11 J

NOTES:
U = Not Detected.
J = Estimated.

APPENDIX A

Validated Data Tables

VALIDATED DATA TABLES

SURFACE SOIL SAMPLES

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS102

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 91.4

Date Received: 05/11/93

Date Analyzed: 05/27/93

Lab Sample ID: RD-94003004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	6610	mg/Kg

Comments:

000391

FORM 1 - GENERAL CHEMISTRY

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS103

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 92.2

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005001

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	8450	mg/Kg

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number: MISS104

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 93.7

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005003

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	2350	mg/Kg

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS105

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 92.5

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005002

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	7030	mg/Kg

Comments:

000443

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS106

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 92.1

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	12400	mg/Kg

Comments:

000451

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS107

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 89.3

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005005

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	14700	mg/Kg

Comments:

900452

FORM 1 - GENERAL CHEMISTRY

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number: MISS108

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 93.8

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005006

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	12600	mg/Kg

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MISS109

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94005

Matrix (soil/water): SOIL

Date Collected: 05/06/93

% Solids (if soil): 93.8

Date Received: 05/11/93

Date Analyzed: 05/28/93

Lab Sample ID: RD-94005007

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.1	TOC	10200	mg/Kg

Comments:

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS101D 94003-2
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 16-93

SAMPLE WEIGHT (grams): 5.405 (Dry Weight)
ANALYSIS DATE: MAY 29-93
ANALYSIS TIME: 3:42

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K443_0063 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	1.45		(0.65-0.89)	
2,3,7,8-TCDF	ND	1.54		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	6.57	0.82	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	7.01		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	2.73		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	4.06		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	4.18		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	4.25		(1.05-1.43)	
1,2,3,4,7,8-HxCDF	ND	0.37		(1.05-1.43)	
1,2,3,6,7,8-HxCDF	34.1	0.36	1.22	(1.05-1.43)	29
1,2,3,7,8,9-HxCDF	ND	0.31		(1.05-1.43)	
2,3,4,6,7,8-HxCDF	11.2	0.39	1.15	(1.05-1.43)	25
1,2,3,4,6,7,8-HpCDD	166	0.36	1.05	(0.88-1.20)	28
1,2,3,4,6,7,8-HpCDF	88.1	0.35	0.99	(0.88-1.20)	32
1,2,3,4,7,8,9-HpCDF	ND	5.07		(0.88-1.20)	
OCDD	1330	0.31	0.88	(0.76-1.02)	30
OCDF	157	0.38	0.87	(0.76-1.02)	31
TEF	8.55				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	56.8	0.81	(0.65-0.89)
13C-2,3,7,8-TCDF	48.4	0.75	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	66.3	1.66	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	78.3	1.57	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	75.7	1.56	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	57.1	1.36	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	75.6	1.20	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	72.4	0.46	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	71.9	0.58	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	77.2	0.55	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	109	0.54	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	131	1.02	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	74.4	0.45	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	112	0.45	(0.37-0.51)
13C-OCDD	182	0.89	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	123

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS102 94003-4
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 16-93

SAMPLE WEIGHT (grams): 5.157 (Dry Weight)
ANALYSIS DATE: MAY 29-93
ANALYSIS TIME: 5:28

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K443_0065 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	1.28		(0.65-0.89)	
2,3,7,8-TCDF	ND	4.92		(0.65-0.89)	
1,2,3,7,8-PeCDD	11.9	0.73	1.37	(1.32-1.78)	15
1,2,3,7,8-PeCDF	ND*	3.50		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	2.04		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	5.03		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	5.19		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	4.73		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	5.19		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND	5.20		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	ND	5.48		(1.05-1.43)	
2,3,4,6,7,8-HxCDF	12.7	0.50	1.32	(1.05-1.43)	20
1,2,3,4,6,7,8-HpCDD	25.7	0.43	1.00	(0.88-1.20)	28
1,2,3,4,6,7,8-HpCDF	14.5	0.61	0.79	(0.88-1.20)	26
1,2,3,4,7,8,9-HpCDF	ND	8.13		(0.88-1.20)	
OCDD	202	0.42	0.90	(0.76-1.02)	26
OCDF	ND	13.0		(0.76-1.02)	
TEF	7.84				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	42.0	0.81	(0.65-0.89)
13C-2,3,7,8-TCDF	50.6	0.75	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	58.2	1.66	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	71.1	1.61	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	70.2	1.60	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	58.8	1.21	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	74.0	1.21	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	70.1	0.53	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	73.5	0.52	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	72.7	0.51	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	100	0.52	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	114	1.07	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	65.5	0.43	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	97.6	0.46	(0.37-0.51)
13C-OCDD	157	0.90	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	128

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS103 94005-1
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.867 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 10:37

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0021 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	57.5	0.15	0.78	(0.65-0.89)	2
2,3,7,8-TCDF	2.33	0.12	0.89	(0.65-0.89)	0
1,2,3,7,8-PeCDD	NDR	6.44	0.99	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	16.2		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	0.68		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	NDR	8.31	1.01	(1.05-1.43)	
1,2,3,7,8,9-HxCDD	6.19	0.26	1.43	(1.05-1.43)	2
1,2,3,6,7,8-HxCDD	NDR	9.76	1.01	(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	83.1		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	83.2		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	4.98	0.13	1.26	(1.05-1.43)	3
2,3,4,6,7,8-HxCDF	14.0	0.19	1.24	(1.05-1.43)	2
1,2,3,4,6,7,8-HpCDD	518	0.19	1.02	(0.88-1.20)	3
1,2,3,4,6,7,8-HpCDF	65.3	0.17	1.06	(0.88-1.20)	3
1,2,3,4,7,8,9-HpCDF	NDR	4.31	1.45	(0.88-1.20)	
OCDD	3060	0.14	0.89	(0.76-1.02)	1
OCDF	172	0.20	0.86	(0.76-1.02)	2
TEF	65.1				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	58.7	0.83	(0.65-0.89)
13C-2,3,7,8-TCDF	45.8	0.77	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	54.4	1.56	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	67.5	1.54	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	63.7	1.53	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	65.7	1.23	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	63.5	1.15	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	66.7	0.49	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	62.3	0.57	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	66.3	0.51	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	68.2	0.54	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	76.5	1.09	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	57.7	0.42	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	67.8	0.43	(0.37-0.51)
13C-OCDD	98.9	0.88	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	133

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS104 94005-3
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.925 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 12:31

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0023 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	1.19		(0.65-0.89)	
2,3,7,8-TCDF	ND	2.83		(0.65-0.89)	
1,2,3,7,8-PeCDD	6.20	0.21	1.58	(1.32-1.78)	7
1,2,3,7,8-PeCDF	4.95	0.14	1.47	(1.32-1.78)	9
2,3,4,7,8-PeCDF	ND	0.74		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	3.39		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	1.18		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	3.25		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.15		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	8.65	0.16	1.33	(1.05-1.43)	9
1,2,3,7,8,9-HxCDF	3.18	0.15	1.27	(1.05-1.43)	11
2,3,4,6,7,8-HxCDF	13.4	0.20	1.26	(1.05-1.43)	10
1,2,3,4,6,7,8-HpCDD	17.7	0.15	1.00	(0.88-1.20)	7
1,2,3,4,6,7,8-HpCDF	9.67	0.17	1.01	(0.88-1.20)	7
1,2,3,4,7,8,9-HpCDF	ND	2.01		(0.88-1.20)	
OCDD	87.5	0.14	0.87	(0.76-1.02)	3
OCDF	5.70	0.17	0.78	(0.76-1.02)	5
TEF	6.23				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	66.4	0.79	(0.65-0.89)
13C-2,3,7,8-TCDF	32.0	0.77	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	64.5	1.58	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	72.0	1.50	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	70.3	1.51	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	68.5	1.26	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	87.2	1.20	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	69.0	0.58	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	75.7	0.48	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	72.1	0.52	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	81.9	0.52	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	83.5	1.10	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	63.7	0.42	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	75.0	0.41	(0.37-0.51)
13C-OCDD	113	0.90	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	121

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS105 94005-2
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.635 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 11:39

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0022 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	0.85		(0.65-0.89)	
2,3,7,8-TCDF	ND	7.33		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	6.66	1.18	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND	2.51		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	2.57		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	1.82		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	1.24		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	1.91		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.12		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	5.30	0.13	1.34	(1.05-1.43)	11
1,2,3,7,8,9-HxCDF	3.55	0.12	1.29	(1.05-1.43)	11
2,3,4,6,7,8-HxCDF	15.1	0.17	1.19	(1.05-1.43)	11
1,2,3,4,6,7,8-HpCDD	12.5	0.18	1.07	(0.88-1.20)	8
1,2,3,4,6,7,8-HpCDF	6.05	0.21	1.00	(0.88-1.20)	11
1,2,3,4,7,8,9-HpCDF	ND	2.94		(0.88-1.20)	
OCDD	155	0.16	0.90	(0.76-1.02)	6
OCDF	ND	4.05	0.67	(0.76-1.02)	
TEF	2.77				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	58.8	0.86	(0.65-0.89)
13C-2,3,7,8-TCDF	33.5	0.78	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	67.0	1.59	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	63.9	1.54	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	61.7	1.54	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	79.1	1.42	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	82.4	1.14	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	76.4	0.53	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	75.4	0.53	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	76.5	0.52	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	79.3	0.53	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	79.3	1.07	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	64.0	0.41	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	66.8	0.42	(0.37-0.51)
13C-OCDD	94.9	0.90	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	133

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS106 94005-4
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.587 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 13:30

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0024 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	NDR	4.25	0.57	(0.65-0.89)	
2,3,7,8-TCDF	ND	0.98		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	6.33	1.28	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	5.30		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	0.85		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	NDR	2.46	1.20	(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	1.37		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	1.40		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.12		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	10.7	0.13	1.21	(1.05-1.43)	4
1,2,3,7,8,9-HxCDF	4.46	0.13	1.15	(1.05-1.43)	5
2,3,4,6,7,8-HxCDF	15.2	0.17	1.31	(1.05-1.43)	4
1,2,3,4,6,7,8-HpCDD	34.9	0.13	1.06	(0.88-1.20)	1
1,2,3,4,6,7,8-HpCDF	36.30	0.17	1.06	(0.88-1.20)	2
1,2,3,4,7,8,9-HpCDF	ND	2.15		(0.88-1.20)	
OCDD	297	0.13	0.89	(0.76-1.02)	1
OCDF	21.1	0.17	0.91	(0.76-1.02)	2
TEF	4.06				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	58.1	0.83	(0.65-0.89)
13C-2,3,7,8-TCDF	39.4	0.75	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	53.9	1.59	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	65.7	1.47	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	60.3	1.50	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	60.9	1.23	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	67.5	1.24	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	63.8	1.33	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	58.3	0.53	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	61.0	0.53	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	68.6	0.51	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	64.0	1.10	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	54.0	0.42	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	58.3	0.40	(0.37-0.51)
13C-OCDD	83.2	0.88	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	135

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS107 94005-5
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.515 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 14:22

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0025 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	2.83		(0.65-0.89)	
2,3,7,8-TCDF	ND	2.05		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	5.41	1.89	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	7.49		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	1.73		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	1.86		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	1.77		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	1.71		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.26		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	21.3		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	5.57	0.24	1.28	(1.05-1.43)	11
2,3,4,6,7,8-HxCDF	15.8	0.33	1.34	(1.05-1.43)	11
1,2,3,4,6,7,8-HpCDD	64.0	0.27	1.03	(0.88-1.20)	14
1,2,3,4,6,7,8-HpCDF	26.30	0.34	1.03	(0.88-1.20)	13
1,2,3,4,7,8,9-HpCDF	ND	4.31		(0.88-1.20)	
OCDD	467	0.19	0.92	(0.76-1.02)	10
OCDF	27.8	0.29	0.95	(0.76-1.02)	13
TEF	3.54				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	68.4	0.79	(0.65-0.89)
13C-2,3,7,8-TCDF	67.2	0.80	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	63.8	1.57	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	77.6	1.51	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	73.9	1.50	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	69.4	1.40	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	81.7	1.09	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	66.4	0.53	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	77.9	0.54	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	71.1	0.54	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	75.2	0.54	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	79.3	1.12	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	61.3	0.43	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	70.7	0.41	(0.37-0.51)
13C-OCDD	115	0.89	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	115

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS108 94005-6
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 17-93

SAMPLE WEIGHT (grams): 4.997 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 15:17

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0026 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	2.55		(0.65-0.89)	
2,3,7,8-TCDF	ND	2.89		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	9.37	1.89	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	14.5		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	1.51		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	6.91	0.39	1.17	(1.05-1.43)	6
1,2,3,7,8,9-HxCDD	6.47	0.27	1.12	(1.05-1.43)	7
1,2,3,6,7,8-HxCDD	NDR	6.61	1.47	(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.20		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	40.4		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	5.38	0.14	1.28	(1.05-1.43)	7
2,3,4,6,7,8-HxCDF	12.9	0.23	1.34	(1.05-1.43)	7
1,2,3,4,6,7,8-HpCDD	174	0.24	1.03	(0.88-1.20)	8
1,2,3,4,6,7,8-HpCDF	52.4	0.18	1.03	(0.88-1.20)	8
1,2,3,4,7,8,9-HpCDF	ND	2.23		(0.88-1.20)	
OCDD	1312	0.14	0.92	(0.76-1.02)	6
OCDF	45.2	0.20	0.95	(0.76-1.02)	7
TEF	6.79				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	70.4	0.89	(0.65-0.89)
13C-2,3,7,8-TCDF	58.3	0.86	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	77.0	1.56	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	84.6	1.33	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	81.0	1.39	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	83.2	1.43	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	93.3	1.10	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	83.8	0.54	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	81.4	0.53	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	85.4	0.53	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	79.5	0.55	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	99.5	1.06	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	66.8	0.42	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	74.1	0.41	(0.37-0.51)
13C-OCDD	129	0.87	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	114

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: M1SS109 94005-7
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 20-93

SAMPLE WEIGHT (grams): 4.974 (Dry Weight)
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 16:12

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0027 APPROVED BY: TC

CONGENERS	CONC. pg/g	DL pg/g	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	1.79		(0.65-0.89)	
2,3,7,8-TCDF	ND	7.28		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	7.54	1.03	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	1.81		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	1.83		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	0.32		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	0.30		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	0.31		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND*	13.6		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	38.8		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	ND	2.74		(1.05-1.43)7	
2,3,4,6,7,8-HxCDF	12.5	0.34	1.40	(1.05-1.43)	25
1,2,3,4,6,7,8-HpCDD	56.9	0.27	1.07	(0.88-1.20)	24
1,2,3,4,6,7,8-HpCDF	NDR	10.6	0.84	(0.88-1.20)	
1,2,3,4,7,8,9-HpCDF	ND	2.74		(0.88-1.20)	
OCDD	872	0.19	0.90	(0.76-1.02)	20
OCDF	44.6	0.26	0.87	(0.76-1.02)	21
TEF	3.01				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	32.6	0.86	(0.65-0.89)
13C-2,3,7,8-TCDF	44.9	0.81	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	71.4	1.70	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	56.5	1.69	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	72.1	1.55	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	93.0	1.19	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	99.0	1.21	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	89.3	0.53	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	81.2	0.55	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	92.7	0.54	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	97.4	0.43	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	118	1.07	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	84.0	0.43	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	106	0.43	(0.37-0.51)
13C-OCDD	160	0.89	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	58.1

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS101

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 72.83

Date Received: 05/11/93

Lab Sample ID: 94003001

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	13.2	MG/KG	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

M1SS101D

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94003

Matrix (soil/water): SOIL

Date Collected: 05/04/93

% Solids (if soil): 89.14

Date Received: 05/11/93

Lab Sample ID: 94003002

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
S3550/9071/ 418.1	TPH	19.5	MG/KG	05/28/93

Comments:

000400

VALIDATED DATA TABLES

SURFACE WATER SAMPLES

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

VOLATILE AQUEOUS ANALYSES (ug/L)

Validation/Summary Table

SAMPLE LOCATION:		MS1SW01	MS1SW01D	MS1SW02	MS1SW03
LAB NUMBER:		94004003	94004004	94004005	94004006
DATE SAMPLED:		05/05/93	05/05/93	05/05/93	05/05/93
DATE ANALYZED:		05/13/93	05/13/93	05/13/93	05/13/93
DILUTION FACTOR:		1.0	1.0	1.0	1.0
VOLATILE ANALYSIS - Target Compound List					
ANALYTE	CRQL				
Chloromethane	10	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U
Vinyl Chloride	10	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U
Methylene Chloride	10	10 U	10 U	10 U	10 U
Acetone	10	10 U	10 U	10 U	10 U
Carbon Disulfide	10	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10	10 U	10 U	10 U	10 U
Chloroform	10	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10	10 U	10 U	10 U	10 U
2-Butanone	10	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	10	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10	10 U	10 U	10 U	10 U
Bromodichloromethane	10	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
Trichloroethene	10	10 U	10 U	10 U	10 U
Dibromochloromethane	10	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10	10 U	10 U	10 U	10 U
Benzene	10	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10	10 U	10 U	10 U	10 U
Bromoform	10	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10	10 U	10 U	10 U	10 U
Tetrachloroethene	10	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10	10 U	10 U	10 U	10 U
Toluene	10	10 U	10 U	10 U	10 U
Chlorobenzene	10	10 U	10 U	10 U	10 U
Ethylbenzene	10	10 U	10 U	10 U	10 U
Styrene	10	10 U	10 U	10 U	10 U
Xylene (total)	10	10 U	10 U	10 U	10 U

NOTES:
U = Not Detected.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE AQUEOUS ANALYSES (ug/L)

Validation/Summary Table

SAMPLE LOCATION:		MS1SW01	MS1SW01D	MS1SW02	MS1SW03
LAB NUMBER:		94004003	94004004	94004005	94004006
DATE SAMPLED:		05/05/93	05/05/93	05/05/93	05/05/93
DATE EXTRACTED:		05/10/93	05/10/93	05/10/93	05/10/93
DATE ANALYZED:		05/13/93	05/13/93	05/13/93	05/13/93
DILUTION FACTOR:		1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS – Target Compound List					
ANALYTE	CRQL				
Phenol	10	10 U	10 U	10 U	10 U
bis (2-Chloroethyl) ether	10	10 U	10 U	10 U	10 U
2- Chlorophenol	10	10 U	10 U	10 U	10 U
1,3- Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,4- Dichlorobenzene	10	10 U	10 U	10 U	10 U
1,2- Dichlorobenzene	10	10 U	10 U	10 U	10 U
2- Methylphenol	10	10 U	10 U	10 U	10 U
2,2'-oxybis(1-chloropropane)	10	10 U	10 U	10 U	10 U
4- Methylphenol	10	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U
bis (2-Chloroethoxy) methane	10	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	10 U	10 U
4-Chloroaniline	10	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25	25 U	25 U	25 U	25 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U
2-Nitroaniline	25	25 U	25 U	25 U	25 U
Dimethylphthalate	10	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U
3-Nitroaniline	25	25 U	25 U	25 U	25 U
Acenaphthene	10	10 U	10 U	10 U	10 U

NOTES:
U = Not detected.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE AQUEOUS ANALYSES (ug/L)
(Continued)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SW01	MS1SW01D	MS1SW02	MS1SW03
	LAB NUMBER:	94004003	94004004	94004005	94004006
	DATE SAMPLED:	05/05/93	05/05/93	05/05/93	05/05/93
	DATE EXTRACTED:	05/10/93	05/10/93	05/10/93	05/10/93
	DATE ANALYZED:	05/13/93	05/13/93	05/13/93	05/13/93
	DILUTION FACTOR:	1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS – Target Compound List					
ANALYTE	CRQL				
2,4-Dinitrophenol	25	25 U	25 U	25 U	25 U
4-Nitrophenol	25	25 U	25 U	25 U	25 U
Dibenzofuran	10	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U
Diethylphthalate	10	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U
4-Nitroaniline	25	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine	10	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U
Pentachlorophenol	25	25 U	25 U	25 U	25 U
Phenanthrene	10	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U
Carbazole	10	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10	10 U	10 U	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U
Butylbenzylphthalate	10	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10	10 U	10 U	10 U	10 U
Benzo (a) anthracene	10	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U
bis (2-Ethylhexyl) phthalate	10	10 U	10 U	10 U	10 U
Di-n-octyl phthalate	10	10 U	10 U	10 U	10 U
Benzo (b) fluoranthene	10	10 U	10 U	10 U	10 U
Benzo (k) fluoranthene	10	10 U	10 U	10 U	10 U
Benzo (a) pyrene	10	10 U	10 U	10 U	10 U
Indeno (1,2,3-cd) pyrene	10	10 U	10 U	10 U	10 U
Dibenz (a,h) anthracene	10	10 U	10 U	10 U	10 U
Benzo (g,h,i) perylene	10	10 U	10 U	10 U	10 U

NOTES:
U = Not detected.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

ORGANOCHLORINE PESTICIDE/PCB AQUEOUS ANALYSES (ug/L)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SW01	MS1SW01D	MS1SW02	MS1SW03
	LAB NUMBER:	94004003	94004004	94004005	94004006
	DATE SAMPLED:	05/05/93	05/05/93	05/05/93	05/05/93
	DATE EXTRACTED:	05/11/93	05/11/93	05/11/93	05/11/93
	DATE ANALYZED:	05/21/93	05/21/93	05/21/93	05/21/93
	DILUTION FACTOR:	1.0	1.0	1.0	1.0
ORGANOCHLORINE PESTICIDES AND PCBs					
Target Compound List					
ANALYTE	CRQL				
alpha-BHC	0.05	0.050 U	0.050 U	0.050 U	0.050 U
beta-BHC	0.05	0.050 U	0.050 U	0.050 U	0.050 U
delta-BHC	0.05	0.050 U	0.050 U	0.050 U	0.050 U
gamma-BHC (Lindane)	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Aldrin	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor epoxide	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan I	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	0.10	0.10 U	0.10 U	0.10 U	0.10 U
4,4'- DDE	0.10	0.10 U	0.10 U	0.094 J	0.10 U
Endrin	0.10	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan II	0.10	0.10 U	0.10 U	0.10 U	0.10 U
4,4'- DDD	0.10	0.10 U	0.10 U	0.33	0.10 U
Endosulfan sulfate	0.10	0.10 U	0.10 U	0.10 U	0.10 U
4,4'- DDT	0.10	0.10 U	0.10 U	0.10 U	0.10 U
Methoxychlor	0.50	0.050 U	0.050 U	0.50 U	0.50 U
Endrin ketone	0.10	0.10 U	0.10 U	0.10 U	0.10 U
Endrin aldehyde	0.10	0.10 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane	0.05	0.050 U	0.050 U	0.050 U	0.050 U
gamma-Chlordane	0.05	0.050 U	0.050 U	0.050 U	0.050 U
Toxaphene	5.0	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor-1016	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	2.0	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Aroicor-1260	1.0	1.0 U	1.0 U	1.0 U	1.0 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

HERBICIDES AQUEOUS ANALYSES (ug/L)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SW01	MS1SW01D	MS1SW02	MS1SW03
	LAB NUMBER:	94004003	94004004	94004005	94004006
	DATE SAMPLED:	05/05/93	05/05/93	05/05/93	05/05/93
	DATE EXTRACTED:	05/10/93	05/10/93	05/10/93	05/10/93
	DATE ANALYZED:	05/21/93	05/20/93	05/20/93	05/20/93
	DILUTION FACTOR:	1.0	1.0	1.0	1.0
HERBICIDE ANALYSIS – Target Compound List					
ANALYTE	CRQL				
MCPA	2500	2500 U	2500 U	2500 U	2500 U
Dalapon	58	58 U	58 U	58 U	58 U
MCPP	2000	2000 U	2000 U	2000 U	2000 U
Dicamba	2.7	2.7 U	2.7 U	2.7 U	2.7 U
2,4-D	12	12 U	12 U	12 U	12 U
Dichloroprop (2,4-DP)	6.5	6.5 U	6.5 U	6.5 U	6.5 U
2,4,5-T	2.0	2.0 U	2.0 U	2.0 U	2.0 U
2,4,5-TP (Silvex)	1.7	1.7 U	1.7 U	1.7 U	1.7 U
2,4-DB	9.1	9.1 U	9.1 U	9.1 U	9.1 U
Dinoseb	0.7	0.7 UJ	0.7 UJ	0.7 UJ	0.7 UJ

NOTES:
U = Not detected at the reporting limit.
UJ = Value may be biased low due to low matrix spike recovery for Dinoseb.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

INORGANIC AQUEOUS ANALYSES (ug/L)

Validation/Summary Table

SAMPLE LOCATION:		MS1SW01	MS1SW01D	MS1SW02	MS1SW03
LAB NUMBER:		94004003	94004004	94004005	94004006
DATE SAMPLED:		05/05/93	05/05/93	05/05/93	05/05/93
INORGANIC ANALYSES -- Target Analyte List					
ANALYTE	CRQL				
Aluminum	200	979 J	497 J	3080 J	1170 J
Antimony	60	9.0 U	9.0 U	9.0 U	9.0 U
Arsenic	10	8.0 J	7.0 J	26.7	24.6
Barium	200	30.0 J	26.3 J	33.7 J	37.6J
Beryllium	5	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	5	1.4 U	1.4 U	1.4 U	1.4 U
Calcium	5000	30,900	29,600	6510	10,900
Chromium	10	2.9 U	2.9 U	8.9 J	2.9 U
Cobalt	50	4.2 U	4.2 U	4.2 U	4.2 U
Copper	25	1.5 J	1.5 J	7.3 J	2.3 J
Iron	100	1170 J	679 J	11,700 J	6360 J
Lead	3	3.8 J	2.4 J	57.5	14.0
Magnesium	5000	932 J	887 J	583 J	960 J
Manganese	15	15.8 J	11.4 J	66.0 J	31.5 J
Mercury	0.2	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	40	7.1 U	7.1 U	12.6 J	7.1 U
Potassium	5000	308 J	325 J	165 J	510 J
Selenium	5	0.70 UJ	0.70 UJ	0.70 UJ	0.70 UJ
Silver	10	1.2 U	1.2 U	1.2 U	1.2 U
Sodium	5000	2910 J	2800 J	2660 J	4250 J
Thallium	10	0.90 U	0.90 U	0.90 U	0.90 U
Vanadium	50	4.1 J	3.2 J	11.4 J	3.9 J
Zinc	20	29.9	17.4 J	197	67.6
Cyanide	10	0.90 U	0.90 U	0.90 U	1.0 J

NOTES:
U = Not Detected.
J = Estimated.
UJ = Estimated due to low matrix spike recoveries.

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: MS1SW01 94004-3
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 19-93

SAMPLE VOLUME (litres): 1.045
ANALYSIS DATE: JUNE 3-93
ANALYSIS TIME: 22:32

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0035 APPROVED BY: TC

CONGENERS	CONC. pg/l	DL pg/l	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	ND	6.37		(0.65-0.89)	
2,3,7,8-TCDF	ND	0.57		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	34.8	1.24	(1.32-1.78)	
1,2,3,7,8-PeCDF	ND*	42.8		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	0.56		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	30.8	10.8	1.31	(1.05-1.43)	7
1,2,3,7,8,9-HxCDD	NDR	0.79	1.62	(1.05-1.43)	
1,2,3,6,7,8-HxCDD	32.6	0.90	1.16	(1.05-1.43)	5
1,2,3,4,7,8-HXCDF	ND	0.52		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	200		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	18.9	0.45	1.22	(1.05-1.43)	5
2,3,4,6,7,8-HxCDF	64.2	0.60	1.24	(1.05-1.43)	6
1,2,3,4,6,7,8-HpCDD	1020	1.16	1.01	(0.88-1.20)	6
1,2,3,4,6,7,8-HpCDF	64.5	1.15	1.01	(0.88-1.20)	4
1,2,3,4,7,8,9-HpCDF	NDR	0.58	0.86	(0.88-1.20)	
OCDD	6750	0.31	0.91	(0.76-1.02)	5
OCDF	562	0.39	0.91	(0.76-1.02)	6
TEF	40.8				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	81.7	0.82	(0.65-0.89)
13C-2,3,7,8-TCDF	67.7	0.89	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	83.9	1.61	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	94.4	1.62	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	92.2	1.32	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	103	1.26	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	105	1.22	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	97.7	0.48	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	96.1	0.57	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	105	0.52	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	117	0.52	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	128	1.05	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	97.5	0.45	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	125	0.42	(0.37-0.51)
13C-OCDD	173	0.90	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	122

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: MS1SW01D 94004-4
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 19-93

SAMPLE VOLUME (litres): 1.005
ANALYSIS DATE: JUNE 4-93
ANALYSIS TIME: 1:11

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0038 APPROVED BY: TC

CONGENERS	CONC. pg/l	DL pg/l	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	NDR	12.7	0.81	(0.65-0.89)	
2,3,7,8-TCDF	ND	3.18		(0.65-0.89)	
1,2,3,7,8-PeCDD	NDR	32.6	1.29	(1.32-1.78)	
1,2,3,7,8-PeCDF	NDR	10.1	1.27	(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	0.56		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	NDR	61.5	1.44	(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	5.83		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	NDR	28.8	1.44	(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.64		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	105		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	NDR	15.3	1.49	(1.05-1.43)	
2,3,4,6,7,8-HxCDF	63.3	0.89	1.29	(1.05-1.43)	19
1,2,3,4,6,7,8-HpCDD	708	0.67	1.04	(0.88-1.20)	10
1,2,3,4,6,7,8-HpCDF	158	0.56	0.98	(0.88-1.20)	14
1,2,3,4,7,8,9-HpCDF	ND	6.06		(0.88-1.20)	
OCDD	4730	0.45	0.90	(0.76-1.02)	6
OCDF	373	0.47	0.90	(0.76-1.02)	6
TEF	20.1				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	77.9	0.81	(0.65-0.89)
13C-2,3,7,8-TCDF	73.9	0.81	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	77.4	1.56	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	77.5	1.61	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	73.0	1.36	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	86.8	1.15	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	81.0	1.43	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	61.7	0.51	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	87.7	0.51	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	77.0	0.51	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	91.4	0.53	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	113	1.04	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	84.8	0.45	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	104	0.47	(0.37-0.51)
13C-OCDD	146	0.91	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	113

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: MS1SW02 94004-5
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 19-93

SAMPLE VOLUME (litres): 0.966
ANALYSIS DATE: JUNE 4-93
ANALYSIS TIME: 2:04

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.: FILE: K446_0039 APPROVED BY: TC

CONGENERS	CONC. pg/l	DL pg/l	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	54.0	1.54		(0.65-0.89)	
2,3,7,8-TCDF	NDR	0.99	0.64	(0.65-0.89)	
1,2,3,7,8-PeCDD	ND	26.2		(1.32-1.78)	
1,2,3,7,8-PeCDF	ND	0.95		(1.32-1.78)	
2,3,4,7,8-PeCDF	ND	0.96		(1.32-1.78)	
1,2,3,4,7,8-HxCDD	ND	1.79		(1.05-1.43)	
1,2,3,7,8,9-HxCDD	ND	13.3		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	15.0		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	1.20		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	ND*	1.15		(1.05-1.43)	
1,2,3,7,8,9-HxCDF	ND	0.84		(1.05-1.43)	
2,3,4,6,7,8-HxCDF	67.4	1.45	1.12	(1.05-1.43)	27
1,2,3,4,6,7,8-HpCDD	733	2.19	1.07	(0.88-1.20)	27
1,2,3,4,6,7,8-HpCDF	241	2.12	0.93	(0.88-1.20)	26
1,2,3,4,7,8,9-HpCDF	ND	26.9		(0.88-1.20)	
OCDD	4746	1.21	0.90	(0.76-1.02)	22
OCDF	439	1.62	0.88	(0.76-1.02)	22
TEF	74.2				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	67.2	0.88	(0.65-0.89)
13C-2,3,7,8-TCDF	74.1	0.77	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	69.5	1.57	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	84.3	1.56	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	84.5	1.62	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	89.2	1.30	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	87.4	1.26	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	82.8	0.46	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	76.3	0.57	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	83.2	0.52	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	96.0	0.52	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	76.2	1.00	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	51.4	0.46	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	67.9	0.48	(0.37-0.51)
13C-OCDD	105	0.90	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	123

CANVIRO ANALYTICAL LABORATORIES LTD. - CONCENTRATION REPORT:

SAMPLE DESCRIPTION: MS1SW03 94004-6
METHOD: EPA1613

SAMPLE DATE: MAY 4-93
EXTRACTION DATE: MAY 19-93

SAMPLE VOLUME (litres): 1.011
ANALYSIS DATE: JUNE 4-93
ANALYSIS TIME: 2:56

GC COLUMN & MS: DB-5, 60 m, 0.25 mm ID, 0.25 um df - Kratos Concept HRMS

CANVIRO I.D. NO.:

FILE: K446_0040

APPROVED BY: TC

CONGENERS	CONC. pg/l	DL pg/l	ION RATIO	RATIO LIMITS	RETENTION TIME SHIFT (SEC.)
2,3,7,8-TCDD	NDR	5.37	1.02	(0.65-0.89)	
2,3,7,8-TCDF	ND	11.1		(0.65-0.89)	
1,2,3,7,8-PeCDD	27.3	1.06	1.73	(1.32-1.78)	20
1,2,3,7,8-PeCDF	ND	8.61		(1.32-1.78)	
2,3,4,7,8-PeCDF	NDR	8.75	1.26	(1.32-1.78)	
1,2,3,4,7,8-HxCDD	37.7	0.55	1.27	(1.05-1.43)	20
1,2,3,7,8,9-HxCDD	ND	5.03		(1.05-1.43)	
1,2,3,6,7,8-HxCDD	ND	0.55		(1.05-1.43)	
1,2,3,4,7,8-HXCDF	ND	0.60		(1.05-1.43)	
1,2,3,6,7,8-HXCDF	35.2	0.62	1.23	(1.05-1.43)	28
1,2,3,7,8,9-HxCDF	ND	0.61		(1.05-1.43)	
2,3,4,6,7,8-HxCDF	67.8	0.67	1.15	(1.05-1.43)	19
1,2,3,4,6,7,8-HpCDD	79.5	0.61	1.16	(0.88-1.20)	19
1,2,3,4,6,7,8-HpCDF	27.4	0.63	0.96	(0.88-1.20)	13
1,2,3,4,7,8,9-HpCDF	ND	6.15		(0.88-1.20)	
OCDD	385	0.53	0.91	(0.76-1.02)	8
OCDF	NDR	0.70	1.10	(0.76-1.02)	8
TEF	36.1				

INTERNAL STANDARDS	% RECOVERY	ION RATIO	RATIO LIMITS
13C-2,3,7,8-TCDD	76.1	0.84	(0.65-0.89)
13C-2,3,7,8-TCDF	47.6	0.80	(0.65-0.89)
13C-1,2,3,7,8-PeCDD	89.2	1.59	(1.32-1.78)
13C-1,2,3,7,8-PeCDF	79.6	1.53	(1.32-1.78)
13C-2,3,4,7,8-PeCDF	75.4	1.35	(1.32-1.78)
13C-1,2,3,4,7,8-HxCDD	97.1	1.30	(1.05-1.43)
13C-1,2,3,6,7,8-HxCDD	94.2	1.27	(1.05-1.43)
13C-1,2,3,4,7,8-HxCDF	82.0	0.52	(0.43-0.59)
13C-1,2,3,6,7,8-HxCDF	102	0.52	(0.43-0.59)
13C-1,2,3,7,8,9-HxCDF	94.4	0.52	(0.43-0.59)
13C-2,3,4,6,7,8-HxCDF	111	0.50	(0.43-0.59)
13C-1,2,3,4,6,7,8-HpCDD	127	1.16	(0.88-1.20)
13C-1,2,3,4,6,7,8-HpCDF	88.0	0.46	(0.37-0.51)
13C-1,2,3,4,7,8,9-HpCDF	116	0.46	(0.37-0.51)
13C-OCDD	128	0.91	(0.76-1.02)

CLEAN-UP STANDARD	% RECOVERY
37Cl4-2,3,7,8-TCDD	125

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: MS1SW01

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Lab Sample ID: 94004003

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
EPA418.1	TPH	0.31	MG/L	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

MS1SW01D

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Lab Sample ID: 94004004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
EPA418.1	TPH	<0.06	MG/L	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID

MS1SW02

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Lab Sample ID: 94004005

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
EPA418.1	TPH	<0.06	MG/L	05/28/93

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample ID: MS1SW03

Lab Name: CH2M HILL LABORATORIES

Lab Number(s): 94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Lab Sample ID: 94004006

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS	DATE ANALYZED
EPA418.1	TPH	<0.06	MG/L	05/28/93

Comments:

000377

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MSISW01

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Date Analyzed: 05/24/93

Lab Sample ID: RD-94004003

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.2	TOC	5.4	mg/L

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MSISW01D

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Date Analyzed: 05/24/93

Lab Sample ID: RD-94004004

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.2	TOC	4.9	mg/L

Comments:

000359

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number: MSISW02

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Date Analyzed: 05/24/93

Lab Sample ID: RD-94004005

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.2	TOC	6.6	mg/L

Comments:

FORM 1
ANALYSIS DATA SHEET
GENERAL CHEMISTRY LEVEL 2 & 3

Client Sample Number

MSISW03

Lab Name: CH2M HILL LABORATORIES

Batch Number(s): RD-94004

Matrix (soil/water): WATER

Date Collected: 05/05/93

% Solids (if soil): N/A

Date Received: 05/11/93

Date Analyzed: 05/24/93

Lab Sample ID: RD-94004006

METHOD	ANALYTE	CONCENTRATION	CONC. UNITS
415.2	TOC	5.2	mg/L

Comments:

00036

VALIDATED DATA TABLES

SEDIMENT SAMPLES

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

VOLATILE SEDIMENT ANALYSES (ug/kg)

Validation/Summary Table

SAMPLE LOCATION:		MS1SD01	MS1SD01D	MS1SD02	MS1SD03
LAB NUMBER:		94002001	94002002	94002003	94003003
DATE SAMPLED:		05/04/93	05/04/93	05/04/93	05/05/93
DATE ANALYZED:		05/14/93	05/14/93	05/15/93	05/15/93
PERCENT MOISTURE:		32	22	66	40
DILUTION FACTOR:		1.0	1.0	1.0	1.0
VOLATILE ANALYSIS – Target Compound List					
ANALYTE	CRQL				
Chloromethane	10	15 U	13 U	29 U	17 U
Bromomethane	10	15 U	13 U	29 U	17 U
Vinyl chloride	10	15 U	13 U	29 U	17 U
Chloroethane	10	15 U	13 U	29 U	17 U
Methylene chloride	10	15 U	13 U	29 U	17 U
Acetone	10	15 U	13 U	120 J	20 U
Carbon Disulfide	10	15 U	13 U	29 U	17 U
1,1-Dichloroethene	10	15 U	13 U	29 U	17 U
1,1-Dichloroethane	10	15 U	13 U	29 U	17 U
1,2-Dichloroethene (total)	10	15 U	13 U	29 U	17 U
Chloroform	10	15 U	13 U	29 U	17 U
1,2-Dichloroethane	10	15 U	13 U	29 U	17 U
2-Butanone	10	15 U	13 U	37 J	5 J
1,1,1-Trichloroethane	10	15 U	13 U	29 U	17 U
Carbon tetrachloride	10	15 U	13 U	29 U	17 U
Bromodichloromethane	10	15 U	13 U	29 U	17 U
1,2-Dichloropropane	10	15 U	13 U	29 U	17 U
cis-1,3-Dichloropropene	10	15 U	13 U	29 U	17 U
Trichloroethene	10	15 U	13 U	29 U	17 U
Dibromochloromethane	10	15 U	13 U	29 U	17 U
1,1,2-Trichloroethane	10	15 U	13 U	29 U	17 U
Benzene	10	15 U	13 U	29 U	17 U
trans-1,3-Dichloropropene	10	15 U	13 U	29 U	17 U
Bromoform	10	15 U	13 U	29 U	17 U
2-Hexanone	10	15 U	13 U	29 U	17 U
4-Methyl-2-Pentanone	10	15 U	13 U	29 U	17 U
Tetrachloroethene	10	15 U	13 U	29 U	17 U
1,1,2,2-Tetrachloroethane	10	15 U	13 U	29 U	17 U
Toluene	10	15 U	13 U	29 U	17 U
Chlorobenzene	10	15 U	13 U	29 U	17 U
Ethylbenzene	10	15 U	13 U	29 U	17 U
Styrene	10	15 U	13 U	29 U	17 U
Xylenes (total)	10	2 J	13 U	29 U	17 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SEDIMENT ANALYSES (ug/kg)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SD01	MS1SD01D	MS1SD02	MS1SD03
	LAB NUMBER:	94002001	94002002	94002003	94003003
	DATE SAMPLED:	05/04/93	05/04/93	05/04/93	05/05/93
	DATE EXTRACTED:	05/11/93	05/11/93	05/11/93	05/11/93
	DATE ANALYZED:	05/30/93	06/01/93	05/30/93	05/30/93
	PERCENT MOISTURE:	32	22	66	40
	DILUTION FACTOR:	1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS – Target Compound List					
ANALYTE	CRQL				
Phenol	330	490 U	420 U	970 U	550 U
bis (2-Chloroethyl) ether	330	490 U	420 U	970 U	550 U
2- Chlorophenol	330	490 U	420 U	970 U	550 U
1,3- Dichlorobenzene	330	490 U	420 U	970 U	550 U
1,4- Dichlorobenzene	330	490 U	420 U	970 U	550 U
1,2- Dichlorobenzene	330	490 U	420 U	970 U	550 U
2- Methylphenol	330	490 U	420 U	970 U	550 U
2,2'-oxybis (1-Chloropropane)	330	490 U	420 U	970 U	550 U
4- Methylphenol	330	490 U	420 U	970 U	550 U
N-Nitroso-di-n-propylamine	330	490 U	420 U	970 U	550 U
Hexachloroethane	330	490 U	420 U	970 U	550 U
Nitrobenzene	330	490 U	420 U	970 U	550 U
Isophorone	330	490 U	420 U	970 U	550 U
2-Nitrophenol	330	490 U	420 U	970 U	550 U
2,4-Dimethylphenol	330	490 U	420 U	970 U	550 U
bis (2-Chloroethoxy) methane	330	490 U	420 U	970 U	550 U
2,4-Dichlorophenol	330	490 U	420 U	970 U	550 U
1,2,4-Trichlorobenzene	330	490 U	420 U	970 U	550 U
Naphthalene	330	490 U	420 U	970 U	550 U
4-Chloroaniline	330	490 U	420 U	970 U	550 U
Hexachlorobutadiene	330	490 U	420 U	970 U	550 U
4-Chloro-3-methylphenol	330	490 U	420 U	970 U	550 U
2-Methylnaphthalene	330	490 U	420 U	970 U	550 U
Hexachlorocyclopentadiene	330	490 U	420 U	970 U	550 U
2,4,6-Trichlorophenol	330	490 U	420 U	970 U	550 U
2,4,5-Trichlorophenol	800	1200 U	1000 U	2400 U	1300 U
2-Chloronaphthalene	330	490 U	420 U	970 U	550 U
2-Nitroaniline	800	1200 U	1000 U	2400 U	1300 U
Dimethylphthalate	330	490 U	420 U	970 U	550 U
Acenaphthylene	330	490 U	420 U	970 U	550 U
2,6-Dinitrotoluene	330	490 U	420 U	970 U	550 U
3-Nitroaniline	800	1200 U	1000 U	2400 U	1300 U
Acenaphthene	330	490 U	420 U	970 U	550 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

SEMIVOLATILE SOIL ANALYSES (ug/kg)
(Continued)

Validation/Summary Table

SAMPLE LOCATION:		MS1SD01	MS1SD01D	MS1SD02	MS1SD03
LAB NUMBER:		94002001	94002002	94002003	94003003
DATE SAMPLED:		05/04/93	05/04/93	05/04/93	05/05/93
DATE EXTRACTED:		05/11/93	05/11/93	05/11/93	05/11/93
DATE ANALYZED:		05/30/93	06/01/93	05/30/93	05/30/93
PERCENT SOLIDS:		32	22	66	40
DILUTION FACTOR:		1.0	1.0	1.0	1.0
SEMIVOLATILE ANALYSIS - Target Compound List					
ANALYTE	CRQL				
2,4-Dinitrophenol	800	1200 U	1000 U	2400 U	1300 U
4-Nitrophenol	800	1200 U	1000 U	2400 U	1300 U
Dibenzofuran	330	490 U	420 U	970 U	550 U
2,4-Dinitrotoluene	330	490 U	420 U	970 U	550 U
Diethylphthalate	330	490 U	420 U	970 U	550 U
4-Chlorophenyl-phenylether	330	490 U	420 U	970 U	550 U
Fluorene	330	490 U	420 U	970 U	550 U
4-Nitroaniline	800	1200 U	1000 U	2400 U	1300 U
4,6-Dinitro-2-methylphenol	800	1200 U	1000 U	2400 U	1300 U
N-nitrosodiphenylamine	330	490 U	420 U	970 U	550 U
4-Bromophenyl-phenylether	330	490 U	420 U	970 U	550 U
Hexachlorobenzene	330	490 U	420 U	970 U	550 U
Pentachlorophenol	800	1200 U	1000 U	2400 U	1300 U
Phenanthrene	330	490 U	140 J	440 J	550 U
Anthracene	330	490 U	420 U	180 J	550 U
Carbazole	330	490 U	420 U	210 J	550 U
Di-n-butylphthalate	330	490 U	420 U	970 U	550 U
Fluoranthene	330	170 J	280 J	2400	550 U
Pyrene	330	130 J	270 J	2200	550 U
Butylbenzylphthalate	330	490 U	420 U	970 U	550 U
3,3'-Dichlorobenzidine	330	490 U	420 U	970 U	550 U
Benzo (a) anthracene	330	69 J	120 J	1200	550 U
Chrysene	330	160 J	210 J	2600	550 U
bis (2-Ethylhexyl) phthalate	330	490 U	220 J	970 U	550 U
Di-n-octylphthalate	330	490 U	420 U	970 U	550 U
Benzo (b) fluoranthene	330	130 J	260 J	2900	550 U
Benzo (k) fluoranthene	330	120 J	180 J	1600	550 U
Benzo (a) pyrene	330	490 U	110 J	1500	550 U
Indeno (1,2,3-cd) pyrene	330	54 J	87 J	1300 J	550 U
Dibenz (a,h) anthracene	330	490 U	420 U	600 J	550 U
Benzo (g,h,i) perylene	330	490 U	94 J	1200 J	550 U

NOTES:
U = Not Detected.
J = Estimated.

PROJECT: NCBC MILCON P-745: Gulfport, Mississippi

ORGANOCHLORINE PESTICIDE/PCB SEDIMENT ANALYSES (ug/kg)

Validation/Summary Table

	SAMPLE LOCATION:	MS1SD01	MS1SD01D	MS1SD02	MS1SD03
	LAB NUMBER:	94002001	94002002	94002003	94003003
	DATE SAMPLED:	05/04/93	05/04/93	05/04/93	05/05/93
	DATE EXTRACTED:	05/18/93	05/18/93	05/18/93	05/18/93
	DATE ANALYZED:	05/28/93	05/28/93	05/28/93	05/28/93
	PERCENT MOISTURE:	32	22	66	40
	DILUTION FACTOR:	1.0	1.0	5.0	1.0
ORGANOCHLORINE PESTICIDES AND PCBs					
Target Compound List					
ANALYTE	CRQL				
alpha-BHC	1.7	2.5 U	2.2 U	26 U	2.8 U
beta-BHC	1.7	2.5 U	2.2 U	26 U	2.8 U
delta-BHC	1.7	2.5 U	2.2 U	26 U	2.8 U
gamma-BHC (Lindane)	1.7	2.5 U	2.2 U	26 U	2.8 U
Heptachlor	1.7	2.5 U	2.2 U	26 U	2.8 U
Aldrin	1.7	2.5 U	2.2 U	26 U	2.8 U
Heptachlor epoxide	1.7	2.5 U	2.2 U	26 U	2.8 U
Endosulfan I	1.7	2.5 U	2.2 U	26 U	2.8 U
Dieldrin	3.3	3.4 J	4.5	50 U	3.2 J
4,4'- DDE	3.3	31	44	2200 D	8.3
Endrin	3.3	4.9 U	4.2 U	50 U	5.5 U
Endosulfan II	3.3	4.9 U	4.2 U	50 U	5.5 U
4,4'- DDD	3.3	14 J	20 J	6200 D	3.2 J
Endosulfan sulfate	3.3	4.9 U	4.2 U	50 U	5.5 U
4,4'- DDT	3.3	30	45	2100 D	3.4 J
Methoxychlor	17	25 U	22 U	260 U	28 U
Endrin ketone	3.3	4.9 U	4.2 U	50 U	5.5 U
Endrin aldehyde	3.3	4.9 U	4.2 U	50 U	5.5 U
alpha-Chlordane	1.7	15 J	16 J	26	5.2 J
gamma-Chlordane	1.7	13	15	26 U	3.7 J
Toxaphene	170	250 U	220 U	2600 U	280 U
Aroclor-1016	33	49 U	42 U	500 U	55 U
Aroclor-1221	67	99 U	86 U	1000 U	110 U
Aroclor-1232	33	49 U	42 U	500 U	55 U
Aroclor-1242	33	49 U	42 U	500 U	55 U
Aroclor-1248	33	49 U	42 U	500 U	55 U
Aroclor-1254	33	49 U	42 U	500 U	55 U
Aroicor-1260	33	49 U	42 U	500 U	55 U

NOTES:
U = Not Detected.
J = Estimated value.
D = Value from diluted sample; Dilution Factor = 50.0.

APPENDIX B

PARCC
(Precision Accurary Reliability Completeness Comparability)

TABLE B-1 Organic Fractions, Water Sample and Duplicate Precision
MILCON P-745 NCBC Gulfport, Mississippi

VOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	NO COMPOUNDS DETECTED			20%	
	TOTAL SAMPLES		3					

SEMI VOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	NO COMPOUNDS DETECTED			20%	
	TOTAL SAMPLES		3					

DIOXIN/FURANS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001	BS-01-ER	WATER	2	OCDD	31.7*	15.9	20%	66%
				123789-H6CDF	4.83*	0	20%	200%
				TEF - PCDD	0.032	0.016	20%	67%
				TEF - PCDF	0.483	0	20%	200%
94004	MS1SW01	WATER	1	2378-TCDD	0	12.7*	20%	200%
				12378-P5CDD	34.8*	32.6*	20%	7%
				12378-P5CDF	42.8*	10.1*	20%	124%
				123478-H6CDD	30.8	61.5*	20%	67%
				123789-H6CDD	20.9	0	20%	200%
				123678-H6CDD	32.6*	28.8*	20%	12%
				123678-H6CDF	200*	105*	20%	62%
				123789-H6CDF	18.9	15.3*	20%	21%
				234678-H6CDF	64.2	63.3	20%	1%
				1234678-H6CDD	1020	708	20%	36%
				1234678-H7CDF	64.5	158	20%	84%
				1234789-H7CDF	10.9*	0	20%	200%
				OCDD	6750	4730	20%	35%
				OCDF	562	373	20%	40%
				TEF - PCDD	42.76	46.92	20%	9%
				TEF - PCDF	33.28	20.84	20%	46%
	TOTAL SAMPLES		3					

* - MPC; MAXIMUM POSSIBLE CONCENTRATION REPORTED IN SAMPLE AND /OR DUPLICATE SAMPLE. REPORTED AS MPC DUE TO THE PRESENCE OF POTENTIAL INTERFERENCES WHICH DO NOT SATISFY IDENTIFICATION CRITERIA (I.E. ION RATIOS).

TEF - TOXIC EQUIVALENTS FACTOR

Table B-1 (continued) Organic Fractions, Water Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

PESTICIDES/AROCLORS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	NO COMPOUNDS DETECTED			20%	
	TOTAL SAMPLES		3					

HERBICIDES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	NO COMPOUNDS DETECTED			20%	
	TOTAL SAMPLES		3					

2-3

Table B-1 (continued) Organic Fractions, Water Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

VOLATILES

% OF DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

SEMI VOLATILES

% OF DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

DIOXIN/FURANS

% OF DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
66.7%	5	15	25.0%

PESTICIDES/AROCLORS

% OF DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

HERBICIDES

% OF DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

Table B-2 Inorganic Fractions, Water Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

METALS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	ALUMINUM	979	497	20%	65%
				ARSENIC	8.0	7.0	20%	13%
				BARIUM	30.0	26.3	20%	13%
				CALCIUM	30900	29600	20%	4%
				COPPER	1.5	1.5	20%	0%
				IRON	1170	679	20%	53%
				LEAD	3.8	2.4	20%	45%
				MAGNESIUM	932	887	20%	5%
				MANGANESE	15.8	11.4	20%	32%
				POTASSIUM	308	325	20%	5%
				SODIUM	2910	2800	20%	4%
				VANADIUM	4.1	3.2	20%	25%
				ZINC	39.9	17.4	20%	79%
	TOTAL SAMPLES		3					

TOTAL PETROLEUM HYDROCARBONS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	TPH	0.31	0	20%	200%
	TOTAL SAMPLES		3					

TOTAL ORGANIC CARBON

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94001		WATER	0					
94004	MS1SW01	WATER	3	TOC	5.4	4.9	20%	10%
	TOTAL SAMPLES		3					

Table B-2 (continued) Inorganic Fractions, Water Sample and Duplicate Precision, MILCON P-745, NCBC Gulfport, Mississippi

METALS

% OF DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	7	6	54%

TOTAL PETROLEUM HYDROCARBONS

% OF DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
16.7%	0	1	0.0%

TOTAL ORGANIC CARBON

% OF DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

Table B-3 Organic Fractions, Soil Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

VOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	2	NO COMPOUNDS DETECTED			35%	
94005			7					
	TOTAL SAMPLES		9					

SEMI VOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	2	PHENANTHRENE	0	110	35%	200%
				FLUORANTHENE	730	670	35%	9%
				PYRENE	960	780	35%	21%
				BENZO(A)ANTHRACENE	680	760	35%	11%
				CHRYSENE	860	960	35%	11%
				BIS(2-ETHYLHEXYL)PHTHALATE	61	48	35%	24%
				BENZO(B)FLUORANTHENE	920	830	35%	10%
				BENZO(K)FLUORANTHENE	590	840	35%	35%
				BENZO(A)PYRENE	230	800	35%	111%
				INDENO(1,2,3-CD)PYRENE	390	390	35%	0%
				DIBENZ(A,H)ANTHRACENE	200	220	35%	10%
				BENZO(G,H,I)PERYLENE	310	270	35%	14%
94005			7					
	TOTAL SAMPLES		9					

DIOXIN/FURANS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	2	12378-P5CDD	0	6.57*	35%	200%
				12378-P5CDF	10.4*	7.01*	35%	39%
				123678-H6CDF	33.5	34.1	35%	2%
				234678-H6CDF	0	11.2	35%	200%
				1234678-H7CDD	170	166	35%	2%
				1234678-H7CDF	93.9	88.1	35%	6%
				OCDD	1720	1330	35%	26%
				OCDF	200	157	35%	24%
				TEF PCDD	3.42	6.27	35%	59%
				TEF PCDF	5.01	5.92	35%	17%
94005			7					
	TOTAL SAMPLES		9					

* - MPC; MAXIMUM POSSIBLE CONCENTRATION REPORTED IN SAMPLE AND /OR DUPLICATE SAMPLE. REPORTED AS MPC DUE TO THE PRESENCE OF POTENTIAL INTERFERENCES WHICH DO NOT SATISFY CRITERIA, I.E., ION RATIOS.

TEF - TOXIC EQUIVALENTS FACTOR

Table B-3(continued) Organic Fractions, Soil Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

PESTICIDES/AROCLORS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	2	DIELRIN	5.1	3.7	35%	32%
				4,4'-DDE	36	34	35%	6%
				4,4'-DDT	9.0	4.2	35%	73%
				METHOXYCHLOR	34	30	35%	13%
				ENDRIN KETONE	6.3	4.5	35%	33%
94005			7					
	TOTAL SAMPLES		9					

HERBICIDES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	2	NO COMPOUNDS DETECTED			35%	
94005			7					
	TOTAL SAMPLES		9					

Table B-3(continued) Organic Fractions, Soil Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

VOLATILES

DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
11.1%	1	0	100.0%

SEMIVOLATILES

DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
11.1%	11	1	91.7%

DIOXIN/FURANS

DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
11.1%	6	4	60.0%

PESTICIDES/AROCLORS

DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
11.1%	4	1	80.0%

HERBICIDES

DUPLICATES COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
11.1%	1	0	100.0%

Table B-4 Inorganic Fracitons, Soil Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

METALS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	3	ALUMINUM	5840	3670	35%	46%
				ARSENIC	4.9	1.9	35%	88%
				BARIUM	31.6	17.2	35%	59%
				CALCIUM	6240	3190	35%	65%
				CHROMIUM	15.0	10.3	35%	37%
				COBALT	2.7	1.5	35%	57%
				COPPER	4.8	2.7	35%	56%
				IRON	11600	7350	35%	45%
				LEAD	10.9	8.4	35%	26%
				MAGNESIUM	263	141	35%	60%
				MANGANESE	59.2	34.0	35%	54%
				MERCURY	0.00	0.03	35%	200%
				NICKEL	6.8	5.5	35%	21%
				POTASSIUM	120	86	35%	33%
				SODIUM	282	171	35%	49%
				VANADIUM	21.0	15.3	35%	31%
				ZINC	22.7	11.5	35%	65%
94005			7					
	TOTAL SAMPLES		10					

TOTAL PETROLEUM HYDROCARBONS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	3	TPH	13.2	19.5	35%	39%
94005			7					
	TOTAL SAMPLES		10					

TOTAL ORGANIC CARBON

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94003	M1SS101	SOIL	3	TOC	13300	17900	35%	29%
94005			7					
	TOTAL SAMPLES		10					

Table B-26 Pesticides and PCBs
Sediment Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
PEST COMPOUNDS	**UNITS**			
gamma-BHC (Lindane)	ug/Kg	74	*44	*51
Heptachlor	ug/Kg	74	46	*47
Aldrin	ug/Kg	74	52	35
Dieldrin	ug/Kg	73	43	*52
Endrin	ug/Kg	80	47	*52
4,4'-DDT	ug/Kg	79	37	*72

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDGS AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	ADVISORY LIMITS	RPD
	%R SOIL	SOIL
gamma-BHC(LINDANE)	46%-127%	50
HEPTACHLOR	35%-130%	31
ALDRIN	34%-132%	43
DIELDRIN	31%-134%	38
ENDRIN	42%-139%	45
4,4'-DDT	23%-134%	50

Table B-5 Organic Fractions, Sediment Sample and Duplicate Precision
MILCON P-745, NCBC Gulfport, Mississippi

VOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	NO COMPOUNDS DETECTED			35%	
94003			1					
	TOTAL SAMPLES		3					

SEMIVOLATILES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	PHENANTHRENE	0	140	35%	200%
				FLUORANTHENE	170	280	35%	49%
				PYRENE	130	270	35%	70%
				BENZO(A)ANTHRACENE	69	120	35%	54%
				CHRYSENE	160	210	35%	27%
				BIS(2-ETHYLHEXYL)PHTHALAT	0	220	35%	200%
				BENZO(B)FLUORANTHENE	130	260	35%	87%
				BENZO(K)FLUORANTHENE	120	180	35%	40%
				BENZO(A)PYRENE	0	110	35%	200%
				INDENO(1,2,3-CD)PYRENE	54	87	35%	47%
				BENZO(G,H,I)PERYLENE	0	94	35%	200%
94003			1					
	TOTAL SAMPLES		3					

DIOXIN/FURANS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	2378-TCDD	95.7	15.7	35%	144%
				12378-P5CDD	15*	14.8*	35%	1%
				123478-H6CDD	50.9	21.6*	35%	200%
				123678-H6CDD	67	46.9	35%	35%
				123789-H6CDD	53.6	33.4	35%	46%
				1234678-H7CDD	2670	1520	35%	55%
				OCDD	26800	14900	35%	57%
				12378-P5CDF	70.9*	49.3*	35%	36%
				123478-H6CDF	0	218*	35%	200%
				123678-H6CDF	354*	0	35%	200%
				123789-H6CDF	13.3*	0	35%	200%
				1234678-H7CDF	322	10.6	35%	187%
				1234789-H7CDF	0	9.63*	35%	200%
				OCDF	1980	1210	35%	48%
				TEF PCDD	174	63.3	35%	93%
				TEF PCDF	45.5	29.9	35%	41%
94003			1					
	TOTAL SAMPLES		3					

* - MPC, MAXIMUM POSSIBLE CONCENTRATION REPORTED IN SAMPLE AND/OR DUPLICATE SAMPLE.
REPORTED AS MPC DUE TO THE PRESENCE OF POTENTILA INTERFERENCES WHICH DO NOT SATISGYOF POTENTIAL I
IDENTIFICATION CRITERIA, I.E., ION RATIOS.

TEF - TOXIC EQUIVALENTS FACTOR

SED - SEDIMENT

Table B-5 (continued) Organic Fractions, Sediment Sample and Duplicate Precision, MILCON P-745 NCBC Gulfport, Mississippi

PESTICIDES/AROCLORS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	DIELDRIN	3.4	4.5	35%	28%
				4,4'-DDE	31	44	35%	35%
				4,4'-DDD	14	20	35%	35%
				4,4'-DDT	30	45	35%	40%
				ALPHA-CHLORDANE	15	16	35%	6%
				GAMMA-CHLORDANE	13	15	35%	14%
94003			1					
	TOTAL SAMPLES		3					

HERBICIDES

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	2,4,5-T	0	58	35%	200%
94003			1					
	TOTAL SAMPLES		3					

Table B-5 (continued) Organic Fractions, Sediment Sample and Duplicate Precision, MILCON P-745 NCBC Gulfport, Mississippi

VOLATILES

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	0	100.0%

SEMIVOLATILES

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	10	9.1%

DIOXIN/FURANS

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	1	15	6.3%

PESTICIDES/AROCLORS

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	4	2	66.7%

HERBICIDES

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
33.3%	0	1	0.0%

Table B-6 Inorganic Fractions, Sediment and Duplicate Precision
MILCON P-745 NCBC Gulfport, Mississippi

METALS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	ALUMINUM	4470	3550	35%	23%
				ARSENIC	17.6	14.5	35%	19%
				BARIUM	28.3	29.3	35%	3%
				CADMIUM	0.42	0	35%	200%
				CALCIUM	4150	5140	35%	21%
				CHROMIUM	10.8	6.6	35%	48%
				COPPER	5.0	3.0	35%	50%
				IRON	5530	3520	35%	44%
				LEAD	16.2	14.9	35%	8%
				MAGNESIUM	184	971	35%	136%
				MANGANESE	36	29.4	35%	20%
				NICKEL	5.6	3.4	35%	49%
				SODIUM	239	217	35%	10%
				VANADIUM	15.3	8.7	35%	55%
				ZINC	131	76.7	35%	52%
	TOTAL SAMPLES		2					

TOTAL PETROLEUM HYDROCARBONS

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	TPH	76.7	105	35%	31%
	TOTAL SAMPLES		2					

TOTAL ORGANIC CARBON

SDG	SAMPLE ID	MATRIX	NO. ASSC. SAMPLES	COMPOUND	SAMPLE CONC.	DUP CONC	MAX RPD	RPD
94002	MS1SD01	SED	2	TOC	16500	19700	35%	18%
	TOTAL SAMPLES		2					

Table B-6(continued) Inorganic Fractions, Sediment and Duplicate Precision
MILCON P-745 NCBC Gulfport, Mississippi

METALS

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
50.0%	7	8	46.7%

TOTAL PETROLEUM HYDROCARBONS

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
50.0%	1	0	100.0%

TOTAL ORGANIC CARBON

DUPLICATE COLLECTED	RPD IN	RPD OUT	% WITHIN RPD LIMIT
50.0%	1	0	100.0%

Table B-7 GC/MS Volatile Organic Compounds
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01*		SDG 94004		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
VOA COMPOUNDS	UNITS			
1,1-DICHLOROETHENE	ug/L	105	102	3
TRICHLOROETHENE	ug/L	114	115	1
BENZENE	ug/L	106	108	2
TOLUENE	ug/L	111	107	4
CHLOROBENZENE	ug/L	108	111	3

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-BT, BS-02-ER
94005: BS-03-BT, BS-03-ER

COMPOUND	ADVISORY LIMITS		RPD
	%R WATER		WATER
1,1-DICHLOROETHENE	61%-145%		14
TRICHLOROETHENE	71%-120%		14
BENZENE	76%-127%		11
TOLUENE	76%-125%		13
CHLOROBENZENE	75%-130%		13

Table B-8 Semivolatile Organic Compounds
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE	*SAMPLE MS1SW01*	SDG 94004		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
SVOA COMPOUNDS	**UNITS**			
PHENOL	ug/L	80	75	0
2-CHLOROPHENOL	ug/L	81	80	1%
1,4-DICHLOROBENZENE	ug/L	73	76	4%
N-NITROSO-DI-N-PROP.(1)	ug/L	89	87	2%
1,2,4-TRICHLOROBENZENE	ug/L	77	82	6%
4-CHLORO-3-METHYLPHENOL	ug/L	87	83	5%
ACENAPHTHENE	ug/L	77	75	3%
4-NITROPHENOL	ug/L	*84	*82	20%
2,4-DINITROTOLUENE	ug/L	80	81	1%
PENTACHLOROPHENOL	ug/L	94	93	1%
PYRENE	ug/L	88	80	10%

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER
94005: BS-03-ER

COMPOUND	ADVISORY LIMITS	RPD
	% R WATER	WATER
PHENOL	12%-89%	42
2-CHLOROPHENOL	27%-123%	40
1,4-DICHLOROBENZENE	36%-97%	28
N-NITROSO-DI-N-PROP.(1)	41%-116%	38
1,2,4-TRICHLOROBENZENE	39%-98%	28
4-CHLORO-3-METHYLPHENOL	23%-97%	42
ACENAPHTHENE	46%-118%	31
4-NITROPHENOL	10%-80%	50
2,4-DINITROTOLUENE	24%-96%	38
PENTACHLOROPHENOL	9%-103%	50
PYRENE	26%-127%	31

Table B-9 Dioxin/Furan
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01*		SDG 94004		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	RPD
METALS COMPOUNDS	**UNITS**			
2378-TCDD	pg/uL	87.4	99.9	13.0
2378-TCDF	pg/uL	87.3	111.0	24.0
12378-P5CDD	pg/uL	115.0	115.0	0.0
12378-P5CDF	pg/uL	89.6	96.4	10.0
23478-P5CDF	pg/uL	108.0	96.2	11.0
123478-H6CDD	pg/uL	93.0	114.0	19.0
123789-H6CDD	pg/uL	107.0	105.0	1.7
123678-H6CDD	pg/uL	95.2	85.2	11.0
123478-H6CDF	pg/uL	102.0	95.4	6.9
123678-H6CDF	pg/uL	98.4	109.0	10.0
123789-H6CDF	pg/uL	84.8	91.9	7.8
234678-H6CDF	pg/uL	98.60	99.8	1.1
1234678-H7CDD	pg/uL	175.0	176.0	0.0
1234678-H7DCDF	pg/uL	118.0	126.0	6.1
1234789-H6CDF	pg/uL	91.2	93.0	2.0
OCDD	pg/uL	30.0	41.0	2.8
OCDF	pg/uL	92.6	73.6	17.0

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01

QC LIMITS WERE NOT PROVIDED BY THE LABORATORY.
%R AND RPDS WERE DEEMED IN CONTROL BY THE DATA REVIEWER.

Table B-10 Pesticides and PCBs
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01*		SDG 94004		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
PEST COMPOUNDS	UNITS			
gamma-BHC (Lindane)	ug/L	80	89	11
Heptachlor	ug/L	76	87	14
Aldrin	ug/L	65	77	17
Dieldrin	ug/L	82	91	10
Endrin	ug/L	88	98	11
4,4'-DDT	ug/L	72	91	23

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER
94005: BS-03-ER

COMPOUND	ADVISORY LIMITS	RPD
	% R WATER	WATER
gamma-BHC(Lindane)	56%-123%	15
HEPTACHLOR	40%-131%	20
ALDRIN	40%-120%	22
DIELDRIN	52%-126%	18
ENDRIN	56%-121%	21
4,4'-DDT	38%-127%	27

Table B-11 Herbicides
Water Sample Matix Spike/ Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Misisippi

MS = MATRIX SPIKE *SAMPLE MS1SW01*		SDG 94004		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
HERB COMPOUNDS	UNITS			
2,4-D	ug/L	56	58	4
2,4-DB	ug/L	68	68	0
2,4,5-T	ug/L	70	70	0
2,4,5-TP (SILVEX)	ug/L	64	66	3
DALAPON	ug/L	88	87	1
DICAMBA	ug/L	60	60	0
DICHLORPROP	ug/L	74	74	0
DINOSEB	ug/L	40	40	0
MCPA	ug/L	72	72	0
MCPP	ug/L	74	76	3

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER
94005: BS-03-ER

NO QC LIMITS WERE REPORTED BY THE LABORATORY.
DATA WAS DETERMINED TO BE IN CONTROL BY DATA VALIDATOR.

Table B-12

Metals and Cyanide
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01S*		SDG 94004	
MD = MATRIX DUPLICATE *SAMPLE MS1SW01D*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
METALS COMPOUNDS	UNITS		
ALUMINUM	ug/L	202.4*	20.5*
ANTIMONY	ug/L	101.8	NC
ARSENIC	ug/L	89.2	7.8
BARIUM	ug/L	100.5	0.0
BERYLLIUM	ug/L	97.1	NC
CADMIUM	ug/L	90.1	NC
CHROMIUM	ug/L	102.6	NC
COBALT	ug/L	100.1	NC
COPPER	ug/L	99.2	24.6
IRON	ug/L	156.6*	22.0*
LEAD	ug/L	89.0	5.1
MAGNESIUM	ug/L	NR	1.5
MANGANESE	ug/L	99.7	5.8
MERCURY	ug/L	110.0	NC
NICKEL	ug/L	97.0	NC
POTASSIUM	ug/L	NR	200.0
SELENIUM	ug/L	91.9	NC
SILVER	ug/L	99.6	NC
SODIUM	ug/L	NR	0.8
THALLIUM	ug/L	98.8	NC
VANADIUM	ug/L	97.2	16.5
ZINC	ug/L	99.5	0.8
CYANIDE	ug/L	101.0	NC

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER

COMPOUND	ADVISORY LIMITS			RPD
	%R WATER	%R SOIL		WATER/SOIL
ALL COMPOUNDS	75%-125%	75%-125		+/-20/35% OR +/-CRDL

+/- CRDL = RPD Limits applicable only on values 3 times the Contract Required Detection Limit (CRDL)

Table B-12 (continued)

Metals and Cyanide
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE BS-03ERS*		SDG 94005	
MD = MATRIX DUPLICATE *SAMPLE BS-03-ERD*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
METALS COMPOUNDS	UNITS		
ALUMINUM	ug/L	100	200.0
ANTIMONY	ug/L	101.6	NC
ARSENIC	ug/L	99.2	NC
BARIUM	ug/L	102.8	0.0
BERYLLIUM	ug/L	99.3	NC
CADMIUM	ug/L	88.5	NC
CALCIUM	ug/L	NR	29.2
CHROMIUM	ug/L	101.0	NC
COBALT	ug/L	105.5	NC
COPPER	ug/L	101.3	23.9
IRON	ug/L	99.2	1.4
LEAD	ug/L	105.5	8.2
MAGNESIUM	ug/L	NR	0.0
MANGANESE	ug/L	101.1	0.0
MERCURY	ug/L	114.0	NC
NICKEL	ug/L	100.4	NC
POTASSIUM	ug/L	NR	200.0
SELENIUM	ug/L	90.5	NC
SILVER	ug/L	102.3	NC
SODIUM	ug/L	NR	30.4
THALLIUM	ug/L	94.8	NC
VANADIUM	ug/L	99.4	NC
ZINC	ug/L	101.1	6.8
CYANIDE	ug/L	NR	NC

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94005: BS-03-ER

COMPOUND	ADVISORY LIMITS			RPD
	%R WATER	%R SOIL		WATER/SOIL
ALL COMPOUNDS	75%-125%	75%-125		+/-20/35% OR +/-CRDL

+/- CRDL = RPD Limits applicable only on values 3 times the Contract Required Detection Limit (CRDL)

Table B-13 Total Petroleum Hydrocarbons
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01S*		SDG 94004	
MD = MATRIX DUPLICAT *SAMPLE MS1SW01D*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TPH RESULTS	**UNITS**		
TOTAL PETROLEUM HYDROCARBONS	mg/L	88.1	NA

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCUL
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.
NA DENOTES THAT A DUPLICATE ANALYSIS WAS NOT PERFORMED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER

COMPOUND	ADVISORY LIMITS		RPD
	%R WATER		WATER
ALL COMPOUNDS	80-120		+/-20%

Table B-14 Total Organic Carbon
Water Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE BS-P1-FB*		SDG 94001	
MD = MATRIX DUPLICAT *SAMPLE BS-D1-FB*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	UNITS		
TOTAL ORGANIC CARBON	mg/L	96.0	0.0

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCUL
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.
NA DENOTES THAT A MS OR A DUP WAS NOT PERFORMED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94001: BS-D1-FB, BS-P1-FB, BS-01-ER

COMPOUND	ADVISORY LIMITS		RPD
	%R WATER		WATER
ALL COMPOUNDS	78-118		+/-18%

Table B-14 (continued)

Total Organic Carbon
Water Sample Matrix Spike/Matrix Spike Duplicate
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SW01*		SDG 94004	
MD = MATRIX DUPLICAT *SAMPLE MS1SW01*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	UNITS		
TOTAL ORGANIC CARBON	mg/L	97.0	5.6

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCUL
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.
NA DENOTES THAT A MS OR A DUP WAS NOT PERFORMED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94004: MS1SW01, MS1SW01D, MS1SW02, MS1SW03, BS-02-ER
94005: BS-03-ER

COMPOUND	ADVISORY LIMITS		RPD
	%R WATER		WATER
ALL COMPOUNDS	78-118		+/-18%

Table B-14 (continued)

Total Organic Carbon
Water Sample Matrix Spike/Matrix Spike Duplicate
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE NA*		SDG 94005	
MD = MATRIX DUPLICAT *SAMPLE BS-03-ER*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	UNITS		
TOTAL ORGANIC CARBON	mg/L	NA	0.0

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCUL
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.
NA DENOTES THAT A MS OR A DUP WAS NOT PERFORMED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94005: BS-03-ER

COMPOUND	ADVISORY LIMITS		RPD
	%R WATER		WATER
ALL COMPOUNDS	78-118		+/-18%

Table B-15

GC/MS Volatile Organic Compounds
Soil Sample Matrix/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101*		SDG 94003		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
VOA COMPOUNDS	UNITS			
1,1-DICHLOROETHENE	ug/L	95	90	5
TRICHLOROETHENE	ug/L	96	95	1
BENZENE	ug/L	91	89	2
TOLUENE	ug/L	91	88	3
CHLOROBENZENE	ug/L	89	88	1

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	SOIL		SOIL
1,1-DICHLOROETHENE	59%-172%		22
TRICHLOROETHENE	62%-137%		24
BENZENE	66%-142%		21
TOLUENE	59%-139%		21
CHLOROBENZENE	60%-133%		21

Table B-16 Semivolatile Organic Compounds
Soil Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101*		SDG 94003		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
SVOA COMPOUNDS	**UNITS**			
PHENOL	ug/Kg	62	77	22
2-CHLOROPHENOL	ug/Kg	71	74	4
1,4-DICHLOROBENZENE	ug/Kg	54	67	21
N-NITROSO-DI-N-PROPYLAMINE	ug/Kg	71	78	9
1,2,4-TRICHLOROBENZENE	ug/Kg	67	70	4
4-CHLORO-3-METHYLPHENOL	ug/Kg	63	78	21
ACENAPHTHENE	ug/Kg	64	73	13
4-NITROPHENOL	ug/Kg	70	81	15
2,4-DINITROTOLUENE	ug/Kg	62	69	11
PENTACHLOROPHENOL	ug/Kg	45	61	30
PYRENE	ug/Kg	129	91	35

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	ADVISORY LIMITS	RPD
	%R SOIL	SOIL
PHENOL	26%-90%	35
2-CHLOROPHENOL	25%-102%	50
1,4-DICHLOROBENZENE	28%-104%	27
N-NITROSO-DI-N-PROP.	41%-126%	38
1,2,4-TRICHLOROBENZENE	38%-107%	23
4-CHLORO-3-METHYLPHENOL	26%-103%	33
ACENAPHTHENE	31%-137%	19
4-NITROPHENOL	11%-114%	50
2,4-DINITROTOLUENE	28%-89%	47
PENTACHLOROPHENOL	17%-109%	47
PYRENE	35%-142%	36

Table B-17 Dioxin and Furan
Soil Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SS01*		SDG 94003		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	RPD
DIOXIN/FURAN COMPOUNDS	**UNITS**			
2378-TCDD	pg/uL	77.1	89.0	14.0
2378-TCDF	pg/uL	90.7	99.2	8.9
12378-P5CDD	pg/uL	94.4	95.2	0.8
12378-P5CDF	pg/uL	80.2	80.0	0.2
23478-P5CDF	pg/uL	80.6	72.6	10.0
123478-H6CDD	pg/uL	106.0	90.6	16.0
123789-H6CDD	pg/uL	104.0	86.4	19.0
123678-H6CDD	pg/uL	106.0	104.0	1.9
123478-H6CDF	pg/uL	80.0	87.2	8.6
123678-H6CDF	pg/uL	99.6	89.4	9.1
123789-H6CDF	pg/uL	83.6	81.8	2.2
234678-H6CDF	pg/uL	81.8	82.2	0.5
1234678-H7CDD	pg/uL	70.0	85.8	9.7
1234678-H7DCDF	pg/uL	173.0	119.0	28.0
1234789-H6CDF	pg/uL	77.4	81.2	4.8
OCDD	pg/uL	115.0	140.0	4.4
OCDF	pg/uL	118.0	96.6	13.0

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

QC LIMITS WERE NOT PROVIDED BY THE LABORATORY.
%R AND RPDS WERE DEEMED IN CONTROL BY THE REVIEWER.

Table B-18 Pesticides and PCBs
Soil Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101*		SDGs 94003		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
PEST COMPOUNDS	**UNITS**			
gamma-BHC (Lindane)	ug/Kg	80	74	8
Heptachlor	ug/Kg	78	73	7
Aldrin	ug/Kg	80	73	9
Dieldrin	ug/Kg	86	78	10
Endrin	ug/Kg	81	75	8
4,4'-DDT	ug/Kg	88	94	7

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDGs AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	ADVISORY LIMITS		RPD
	%R SOIL		SOIL
gamma-BHC(LINDANE)	46%-127%		50
HEPTACHLOR	35%-130%		31
ALDRIN	34%-132%		43
DIELDRIN	31%-134%		38
ENDRIN	42%-139%		45
4,4'-DDT	23%-134%		50

Table B-19

Herbicides
Soil Sample Matrix/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101*		SDG 94003		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
HERB COMPOUNDS	UNITS			
2,4-D	ug/L	62	65	9
2,4-DB	ug/L	73	80	7
2,4,5-T	ug/L	73	76	7
2,4,5-TP (SILVEX)	ug/L	73	76	7
DALAPON	ug/L	236	225	10
DICAMBA	ug/L	68	69	7
DICHLORPROP	ug/L	107	93	11
DINOSEB	ug/L	*40	*41	9
MCPA	ug/L	103	103	8
MCPP	ug/L	68	71	10

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: N1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

.NO QC LIMITS WERE REPORTED BY THE LABORATORY.
DATA WAS DETERMINED TO BE IN CONTROL BY DATA VALIDATOR.

Table B-20

Metals and Cyanide
Soil Sample Matrix/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101S*		SDG 94003	
MD = MATRIX DUPLICATE *SAMPLE M1SS101D*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
METALS COMPOUNDS	UNITS		
ALUMINUM	mg/Kg	NR	6.3
ANTIMONY	mg/Kg	92.8	NC
ARSENIC	mg/Kg	89.0	7.9
BARIUM	mg/Kg	97.3	3.8
BERYLLIUM	mg/Kg	85.4	29.4
CADMIUM	mg/Kg	93.6	NC
CALCIUM	mg/Kg	NR	1.3
CHROMIUM	mg/Kg	100.1	3.9
COBALT	mg/Kg	95.4	5.7
COPPER	mg/Kg	96.0	11.6
IRON	mg/Kg	NR	1.0
LEAD	mg/Kg	271.7*	0.5
MAGNESIUM	mg/Kg	NR	14.0
MANGANESE	mg/Kg	96.7	21.8*
MERCURY	mg/Kg	97.7	NC
NICKEL	mg/Kg	95.0	18.7
POTASSIUM	mg/Kg	NR	16.3
SELENIUM	mg/Kg	78.8	NC
SILVER	mg/Kg	95.5	200.0
SODIUM	mg/Kg	NR	25.60
THALLIUM	mg/Kg	92.2	NC
VANADIUM	mg/Kg	94.1	24.0
ZINC	mg/Kg	91.9	19.0
CYANIDE	mg/Kg	99.5	NC

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102

COMPOUND	ADVISORY LIMITS			RPD
	%R WATER	%R SOIL		WATER/SOIL
ALL COMPOUNDS	75%-125%	75%-125%		+/-20/35% OR +/-CRDL

+/- CRDL = RPD Limits applicable only on values 3 times the Contract Required Detection Limit (CRDL)

Table B-20 (continued) Metals and Cyanide
Soil Sample Matrix/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS103S*		SDG 94005	
MD = MATRIX DUPLICATE *SAMPLE M1SS103D*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
METALS COMPOUNDS	UNITS		
ALUMINUM	mg/Kg	NR	15.4
ANTIMONY	mg/Kg	69.7	NC
ARSENIC	mg/Kg	107.5	12.5
BARIUM	mg/Kg	95.0	19.8
BERYLLIUM	mg/Kg	86.8	200.0
CADMIUM	mg/Kg	80.7	NC
CALCIUM	mg/Kg	NR	20.5*
CHROMIUM	mg/Kg	99.0	4.7
COBALT	mg/Kg	95.1	NC
COPPER	mg/Kg	94.9	25.6
IRON	mg/Kg	NR	3.2
LEAD	mg/Kg	114.9	6.6
MAGNESIUM	mg/Kg	NR	12.9
MANGANESE	mg/Kg	144.2*	18.3
MERCURY	mg/Kg	109.9	NC
NICKEL	mg/Kg	91.6	2.6
POTASSIUM	mg/Kg	NR	5.2
SELENIUM	mg/Kg	72.3*	NC
SILVER	mg/Kg	94.0	NC
SODIUM	mg/Kg	NR	16.4
THALLIUM	mg/Kg	97.0	NC
VANADIUM	mg/Kg	94.1	0.3
ZINC	mg/Kg	93.9	7.1
CYANIDE	mg/Kg	109.9	NC

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	ADVISORY LIMITS			RPD
	%R WATER	%R SOIL		WATER/SOIL
ALL COMPOUNDS	75%-125%	75%-125%		+/-20/35% OR +/-CRDL

+/- CRDL = RPD Limits applicable only on values 3 times the Contract Required Detection Limit (CRDL)

Table B-21 Total Petroleum Hydrocarbons
Soil Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101MS*		SDG 94003	
MD = MATRIX DUPLICATE *SAMPLE M1SS101DUP*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TPH RESULTS	**UNITS**		
TOTAL PETROLEUM HYDROCARBONS	mg/KG	100.6	6.8

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102
94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	ADVISORY LIMITS		RPD
	%R SOIL		SOIL
ALL COMPOUNDS	80-120		+/-20%

Table B-22 Total Organic Carbon
Soil Sample Matrix Spike/Matrix Spike Duplicate
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE M1SS101MS*		SDG 94003	
MD = MATRIX DUPLICATE *SAMPLE M1SS101DUP*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	**UNITS**		
TOTAL ORGANIC CARBON	mg/KG	101.2	1.6

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102

MS = MATRIX SPIKE *SAMPLE M1SS103MS*		SDG 94005	
MD = MATRIX DUPLICATE *SAMPLE M1SS103DUP*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	**UNITS**		
TOTAL ORGANIC CARBON	mg/KG	99.6	2.9

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94005: M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109

COMPOUND	ADVISORY LIMITS		RPD
	%R SOIL		SOIL
ALL COMPOUNDS	74-128		+/-33%

Table B-23 GC/MS Volatile Organic Compounds
Sediment Sample Matrix Spike/Matrix Spike Duplicates, MILCON
P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
VOA COMPOUNDS	**UNITS**			
1,1-DICHLOROETHENE	ug/L	96	96	0
TRICHLOROETHENE	ug/L	96	98	2
BENZENE	ug/L	88	93	6
TOLUENE	ug/L	93	98	5
CHLOROBENZENE	ug/L	90	93	3

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	SOIL		SOIL
1,1-DICHLOROETHENE	59%-172%		22
TRICHLOROETHENE	62%-137%		24
BENZENE	66%-142%		21
TOLUENE	59%-139%		21
CHLOROBENZENE	60%-133%		21

Table B-24 Semivolatile Organic Compounds
Sediment Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
SVOA COMPOUNDS	**UNITS**			
PHENOL	ug/Kg	78	79	1
2-CHLOROPHENOL	ug/Kg	75	76	1
1,4-DICHLOROBENZENE	ug/Kg	68	69	1
N-NITROSO-DI-N-PROPYLAMINE	ug/Kg	80	79	1
1,2,4-TRICHLOROBENZENE	ug/Kg	74	73	1
4-CHLORO-3-METHYLPHENOL	ug/Kg	79	77	3
ACENAPHTHENE	ug/Kg	73	74	1
4-NITROPHENOL	ug/Kg	74	77	4
2,4-DINITROTOLUENE	ug/Kg	78	77	1
PENTACHLOROPHENOL	ug/Kg	98	82	18
PYRENE	ug/Kg	67	73	9

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	ADVISORY LIMITS	RPD
	%R SOIL	SOIL
PHENOL	26%-90%	35
2-CHLOROPHENOL	25%-102%	50
1,4-DICHLOROBENZENE	28%-104%	27
N-NITROSO-DI-N-PROP	41%-126%	38
1,2,4-TRICHLOROBENZENE	38%-107%	23
4-CHLORO-3-METHYLPHENOL	26%-103%	33
ACENAPHTHENE	31%-137%	19
4-NITROPHENOL	11%-114%	50
2,4-DINITROTOLUENE	28%-89%	47
PENTACHLOROPHENOL	17%-109%	47
PYRENE	35%-142%	36

Table B-25 Dioxin and Furan
Sediment Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	RPD
DIOXIN/FURAN COMPOUNDS	**UNITS**			
2378-TCDD	pg/uL	112.0	102.0	3.3
2378-TCDF	pg/uL	81.5	86.5	6.0
12378-P5CDD	pg/uL	107.0	113.0	5.6
12378-P5CDF	pg/uL	96.2	107.0	11.0
23478-P5CDF	pg/uL	82.2	80.4	2.2
123478-H6CDD	pg/uL	113.0	88.2	21.0
123789-H6CDD	pg/uL	109.0	105.0	2.6
123678-H6CDD	pg/uL	98.2	106.0	6.3
123478-H6CDF	pg/uL	96.0	106.0	10.0
123678-H6CDF	pg/uL	78.2	68.2	14.0
123789-H6CDF	pg/uL	80.4	88.2	9.3
234678-H6CDF	pg/uL	81.2	75.4	7.4
1234678-H7CDD	pg/uL	64.0	*	*
1234678-H7DCDF	pg/uL	73.4	173.0	39.0
1234789-H6CDF	pg/uL	89.6	80.8	10.0
OCDD	pg/uL	47.7	198.0	122
OCDF	pg/uL	112.0	128.0	3

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

QC LIMITS WERE NOT PROVIDED BY THE LABORATORY.
MOST %R AND RPDS WERE DEEMED IN CONTROL BY THE REVIEWER.
SEE PARCCS NARRATIVE FOR FURTHER INFORMATION.

Table B-26 Pesticides and PCBs
Sediment Sample Matrix Spike/Matrix Spike Duplicates
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
PEST COMPOUNDS	**UNITS**			
gamma-BHC (Lindane)	ug/Kg	74	*44	*51
Heptachlor	ug/Kg	74	46	*47
Aldrin	ug/Kg	74	52	35
Dieldrin	ug/Kg	73	43	*52
Endrin	ug/Kg	80	47	*52
4,4'-DDT	ug/Kg	79	37	*72

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

CORRESPONDING SDGS AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	ADVISORY LIMITS	RPD
	%R SOIL	SOIL
gamma-BHC(LINDANE)	46%-127%	50
HEPTACHLOR	35%-130%	31
ALDRIN	34%-132%	43
DIELDRIN	31%-134%	38
ENDRIN	42%-139%	45
4,4'-DDT	23%-134%	50

Table B-27 Herbicides
Sediment Sample Matrix Spike/Matrix Spike Duplicate
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01*		SDG 94002		
MSD = MATRIX SPIKE DUPLICATE		MS	MSD	
RPD = RELATIVE PERCENT DIFFERENCE		%R	%R	%RPD
HERB COMPOUNDS	UNITS			
2,4-D	ug/L	87	58	9
2,4-DB	ug/L	84	68	7
2,4,5-T	ug/L	80	70	7
2,4,5-TP (SILVEX)	ug/L	72	66	7
DALAPON	ug/L	149	87	10
DICAMBA	ug/L	71	60	7
DICHLORPROP	ug/L	99	74	11
DINOSEB	ug/L	*44	*40	9
MCPA	ug/L	89	72	8
MCPP	ug/L	76	76	10

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

CORRESPONDING SDG AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

NO QC LIMITS WERE REPORTED BY THE LABORATORY.
DATA WAS DETERMINED TO BE IN CONTROL BY DATA VALIDATOR.

Table B-28

Metals and Cyanide
Sedimenet Sample Matrix Spike/Matrix Spike Duplicate
MILCON P-745 NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01S*		SDG 94002	
MD = MATRIX DUPLICATE *SAMPLE MS1SD01D*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
METALS COMPOUNDS	UNITS		
ALUMINUM	mg/Kg	NR	11.8
ANTIMONY	mg/Kg	92.2	NC
ARSENIC	mg/Kg	72.8*	11.0
BARIUM	mg/Kg	99.9	25.2
BERYLLIUM	mg/Kg	88.0	2.4
CADMIUM	mg/Kg	83.9	200.0
CALCIUM	mg/Kg	NR	67.6*
CHROMIUM	mg/Kg	106.9	16.6
COBALT	mg/Kg	97.6	NC
COPPER	mg/Kg	95.1	24.0
IRON	mg/Kg	NR	3.6
LEAD	mg/Kg	101.4	13.8
MAGNESIUM	mg/Kg	NR	17.2
MANGANESE	mg/Kg	108.5	18.5
MERCURY	mg/Kg	92.9	NC
NICKEL	mg/Kg	96.5	44.7
POTASSIUM	mg/Kg	NR	200.0
SELENIUM	mg/Kg	79.8	NC
SILVER	mg/Kg	99.2	200.0
SODIUM	mg/Kg	NR	0.70
THALLIUM	mg/Kg	90.8	NC
VANADIUM	mg/Kg	94.1	12.0
ZINC	mg/Kg	80.6	25.1*
CYANIDE	mg/Kg	101.6	NC

* DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	ADVISORY LIMITS			RPD
	%R WATER	%R SOIL		WATER/SOIL
ALL COMPOUNDS	75%-125%	75%-125%		+/-20/35% OR +/-CRDL

+/- CRDL = RPD Limits applicable only on values 3 times the Contract Required Detection Limit (CRDL)

Table B-30 Total Organic Carbon
Sediment Samnple Matrix Spike/Matrix Spike Duplicates
MILCON NCBC Gulfport, Mississippi

MS = MATRIX SPIKE *SAMPLE MS1SD01MS*		SDG 94002	
MD = MATRIX DUPLICATE *SAMPLE MS1SD01DUP*		MS	MD
RPD = RELATIVE PERCENT DIFFERENCE		%R	RPD
TOC RESULTS	**UNITS**		
TOTAL ORGANIC CARBON	mg/KG	98.9	4.5

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES THAT BOTH SAMPLES ARE NON-DETECT AND A RPD CANNOT BE CALCULATED.
NR DENOTES THAT A MATRIX SPIKE RECOVERY CALCULATION IS NOT REQUIRED.

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	ADVISORY LIMITS		RPD
	%R SOIL		SOIL
ALL COMPOUNDS	74-128		+/-33%

Table B-31 (continued)

Inital and Continuing Calibration
Semivolatile Organic Compounds
MILCON NCBC Gulfport, Mississippi

ICAL = INITIAL CALIBRATION = %RSD	SDG 94001		SDG 94002		
CCAL = CONTINUING CALIBRATION = %D	ICAL	CCAL1	ICAL	CCAL1	CCAL1
DATE	052893	052993	052893	052993	060193
INSTRUMENT ID	4600	4600	4600	4600	INCOS-XL
CALIBRATION CRITERIA	%RSD/ RRF	%D/ RRF	%RSD/ RRF	%D/ RRF	%D/ RRF
3-NITROANILINE	40.9	29.0	40.9	31.7	
3,3'-DICHLOROBENZIDINE	39.1		39.1		
INDENO(1,2,3-CD)PYRENE				-27.1	
DIBENZO(A,H)ANTHRACENE				-32.6	
BENZO(G,H,I)PERYLENE				-28.9	
4-CHLOROANILINE				49.2	
N-NITROSO-DI-PROPYLAMINE					28.3
NITROBENZENE					29.6
ISOPHORONE					29.8
NITROBENZENE D5					33.9
2,2'-OXYBIS(1-CHLOROPROPANE)					29.0
2-NITROANILINE					35.7
4-NITROPHENOL					38.4
BUTLYBENZYLPHTHALATE					39.2
BIS(2-ETHYLHEXYL)PHTHALATE					39.0
DI-N-OCTYLPHTHALATE					38.9

SDGS, CALIBRATIONS AND ASSOCIATED SAMPLES:

SDG 94001
ICAL1: NONE ASSOCIATED
CCAL1: BS-P1-FB, BS-01-ER, BS-D1-FB
SDG 94002
ICAL1: NONE ASSOCIATED
CCAL1: MS1SD01, MS1SD02M, MS1SD01MS, MS1SD01MSD
CCAL1: MS1SD01D

Table B-31 (continued)

Inital and Continuing Calibration
Semivolatile Organic Compounds
MILCON NCBC Gulfport, Mississippi

ICAL = INITIAL CALIBRATION = %RSD	SDG 94005	
CCAL = CONTINUING CALIBRATION = %D	CCAL1	CCAL3
DATE	060193	060293
INSTRUMENT ID	INCOS-XL	INCOS-XL
CALIBRATION CRITERIA	%D/ RRF	%D/ RRF
BENZO(G,H,I)PERYLENE		-34.1
N-NITROSO-DI-PROPYLAMINE	28.3	-25.8
NITROBENZENE	29.6	
ISOPHORONE	29.8	
NITROBENZENE D5	33.9	
2,2'-OXYBIS(1-CHLOROPROPANE)	29.0	
2-NITROANILINE	35.7	
2,4-DINITROPHENOL		25.4
4-NITROPHENOL	38.4	-34.3
BUTLYBENZYLPHTHALATE	39.2	
BIS(2-ETHYLHEXYL)PHTHALATE	39.0	
PYRENE		-26.5
DI-N-OCTYLPHTHALATE	38.9	-28.9

SDGS, CALIBRATIONS AND ASSOCIATED SAMPLES:

SDG 94005
CCAL1: BS-03-ER, M1SS103, M1S105, M1SS104, M1SS106
CCAL2: M1SS107

Table B-32 Water Serial Dilution
Metals Summary Table
MILCON NCBC Gulfport, Mississippi

SAMPLE BS-03-ERL		SDG 94005
RPD = RELATIVE PERCENT DIFFERENCE		%D
METALS COMPOUNDS	**UNITS**	
BARIUM	ug/L	100.0
CALCIUM	ug/L	999.9
COPPER	ug/L	10.0
IRON	ug/L	4.0
MAGNESIUM	ug/L	418.0
MANGANESE	ug/L	23.1
SODIUM	ug/L	100.0
ZINC	ug/L	33.7

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES NO CALCULATION DUE TO NON-DETECT RESULTS IN BOTH SA

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94005: BS-03-ER

COMPOUND	RPD
	WATER/SOI
ALL ICP COMPOUNDS	+/-10%

+/-10% RULES ONLY APPLIES TO RESULTS GREATER THAN 50 TIMES THE IDL

Table B-32 (continued)

Soil Serial Dilution
Metals Summary Table
MILCON NCBC Gulfport, Mississippi

SAMPLE M1SS101L		SDG 94003
RPD = RELATIVE PERCENT DIFFERENCE		%D
METALS COMPOUNDS	UNITS	
ALUMINUM	ug/L	2.9
BARIUM	ug/L	13.5*
BERYLLIUM	ug/L	279.8
CALCIUM	ug/L	2.9
CHROMIUM	ug/L	6.0
COBALT	ug/L	100.0
COPPER	ug/L	35.8
IRON	ug/L	2.2
MAGNESIUM	ug/L	1.3
MANGANESE	ug/L	2.2
NICKEL	ug/L	69.6
POTASSIUM	ug/L	202.6
SODIUM	ug/L	0.6
VANADIUM	ug/L	7.3
ZINC	ug/L	15.8*

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES NO CALCULATION DUE TO NON-DETECT RESULTS IN BOTH SAMPLES

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94003: M1SS101, M1SS101D, M1SS102

COMPOUND	RPD
	WATER/SOIL
ALL ICP COMPOUNDS	+/-10%

+/-10% RULES ONLY APPLIES TO RESULTS GREATER THAN 50 TIMES THE IDL

Table B-32 (continued)

Sediment Serial Dilution
Metals Summary Table
MILCON NCBC Gulfport, Mississippi

SAMPLE MS1SD01L		SDG 94002
RPD = RELATIVE PERCENT DIFFERENCE		%D
METALS COMPOUNDS	UNITS	
ALUMINUM	ug/L	2.0
BARIUM	ug/L	2.4
BERYLLIUM	ug/L	100.0
CADMIUM	ug/L	100.0
CALCIUM	ug/L	6.2
CHROMIUM	ug/L	15.0
COPPER	ug/L	7.1
IRON	ug/L	1.8
MAGNESIUM	ug/L	0.1
MANGANESE	ug/L	4.4
NICKEL	ug/L	143.1
SODIUM	ug/L	5.5
VANADIUM	ug/L	0.6
ZINC	ug/L	3.3

*** DENOTES VALUE NOT WITHIN QA/QC ADVISORY LIMITS**

NC DENOTES NO CALCULATION DUE TO NON-DETECT RESULTS IN BOTH SAMPLES

CORRESPONDING SDG'S AND ASSOCIATED SAMPLES

94002: MS1SD01, MS1SD01D, MS1SD02
94003: MS1SD03

COMPOUND	RPD
	WATER/SOIL
ALL ICP COMPOUNDS	+/-10%

+/-10% RULES ONLY APPLIES TO RESULTS GREATER THAN 50 TIMES THE IDL

Table B-34 Surrogate % Recoveries
Semivolatile Water Samples
MILCON NCBC Gulfport, Mississippi

SDG	SAMPLE ID	S1	S2	S3	S4	S5	S6	S7	S8	TOTAL OUT
94001	BS-01-ER	94	89	100	94	90	95	95	82	0
	BS-D1-FB	90	88	97	93	90	95	92	79	0
	BS-P1-FB	93	89	104	95	90	98	95	80	0
94004	BS-02-ER	95	90	98	92	88	105	95	83	0
	MS1SW01	99	93	89	95	92	104	99	82	0
	MS1SW01D	97	84	96	96	93	104	99	70	0
	MS1SW02	97	89	99	93	90	101	98	72	0
	MS1SW03	94	82	95	92	88	103	94	67	0
	MS1SW01_MS	98	76	95	103	102	109	103	63	0
	MS1SW01_MSD	95	71	79	100	97	105	99	61	0
94005	BS-03-ER	92	95	102	90	80	104	93	86	0

S1 = NITROBENZENE-D5 QC LIMITS = 35% - 114%
S2 = 2-FLUOROBIPHENYL QC LIMITS = 43% - 116%
S3 = TERPHENYL-D14 QC LIMITS = 33% - 141%
S4 = PHENOL D-5 QC LIMITS = 10% - 110%
S5 = 2-FLUOROPHENOL QC LIMITS = 21% - 110%
S6 = 2,4,6-TRIBROMOPHENOL QC LIMITS = 10% - 123%
S7 = 2-CHLOROPHENOL-D4 QC LIMITS = 33% - 110% (ADVISORY)
S8 = 1,2-DICHLOROBENZENE-D4 QC LIMITS = 16% - 110% (ADVISORY)

Table B-36 Surrogate % Recoveries
Herbicide Water Samples
MILCON NCBC Gulfport, Mississippi

SDG	SAMPLE ID	2,4-DCP	TOTAL OUT
94001	BS-01-ER	86	0
	BS-D1-FB	90	0
	BS-P1-FB	89	0
94004	BS-02-ER	87	0
	MS1SW01	88	0
	MS1SW01D	82	0
	MS1SW02	94	0
	MS1SW03	93	0
	MS1SW01_MS	102	0
	MS1SW01_MSD	104	0
94005	BS-03-ER	92	0

2,4-DCP - 2,4-DICHLOROPHENYLACETIC

NO QC LIMITS REPORTED BY LABORATORY.
RECOVERIES DEEMED IN CONTROL BY DATA VALIDATOR.

Table B-38 Surrogate % Recoveries
Semivolatile Sediment & Soil Samples
MILCON NCBC Gulfport, Mississippi

SDG	SAMPLE ID	S1	S2	S3	S4	S5	S6	S7	S8	TOTAL OUT
94002	MS1SD01	82	87	77	84	83	89	84	76	0
	MS1SD01D	95	106	97	97	79	113	100	93	0
	MS1SD02	89	99	81	94	95	105	93	81	0
	MS1SD01_MS	85	90	83	92	90	96	89	69	0
	MS1SD-1_MSD	85	89	88	91	88	92	86	63	0
94003	M1SS101	78	84	76	84	81	79	81	71	0
	M1SS101D	86	90	83	89	85	82	86	78	0
	M1SS102	91	94	88	95	89	93	89	78	0
	MS1SD03	72	82	73	79	72	82	74	61	0
	M1SS101_MS	69	67	56	55	55	64	60	46	0
	M1SS101_MSD	84	86	75	89	86	80	84	58	0
94005	M1SS103	82	94	91	65	56	86	70	69	0
	M1SS104	90	97	92	65	57	93	70	73	0
	M1SS105	80	84	84	60	52	82	65	63	0
	M1SS106	81	92	94	68	58	91	72	67	0
	M1SS107	73	79	72	63	55	79	62	58	0
	M1SS108	72	79	66	49	47	86	50	58	0
	M1SS109	64	70	63	47	45	78	48	51	0

S1 = NITROBENZENE-D5 QC LIMITS = 23% - 120%
S2 = 2-FLUOROBIPHENYL QC LIMITS = 30% - 115%
S3 = TERPHENYL-D14 QC LIMITS = 18% - 137%
S4 = PHENOL D-5 QC LIMITS = 24% - 113%
S5 = 2-FLUOROPHENOL QC LIMITS = 25% - 121%
S6 = 2,4,6-TRIBROMOPHENOL QC LIMITS = 19% - 122%
S7 = 2-CHLOROPHENOL-D4 QC LIMITS = 20% - 130% (ADVISORY)
S8 = 1,2-DICHLOROBENZENE-D4 QC LIMITS = 20% - 130% (ADVISORY)

Table B-40 Surrogate % Recoveries
Herbicide Sediment & Soil Samples
MILCON NCBC Gulfport, Mississippi

SDG	SAMPLE ID	2,4-DCP	TOTAL OUT
94002	MS1SD01	116	0
	MS1SD01D	106	0
	MS1SD02	114	0
	MS1SD01_MS	109	0
	MS1SD-1_MSD	119	0
94003	M1SS101	104	0
	M1SS101D	109	0
	M1SS102	112	0
	MS1SD03	104	0
	M1SS101_MS	103	0
	M1SS101_MSD	105	0
94005	M1SS103	108	0
	M1SS104	113	0
	M1SS105	116	0
	M1SS106	109	0
	M1SS107	112	0
	M1SS108	109	0
	M1SS109	110	0

2,4-DCP - 2,4-DICHLOROPHENYLACETIC ACID

NO QC LIMITS REPORTED BY LABORATORY.
RESULTS DEEMED IN CONTROL BY DATA VALIDATOR.

Table B-42 GC/MS Volatiles Detected in Field Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	FB CONC.	UNITS	VALIDATION QUALIFIER
94002	BS-D1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	METHYLENE CHLORIDE	3	ug/L	
			CHLOROFORM	1	ug/L	
			DIBROMOCHLOROMETHANE	1	ug/L	
94003	BS-D1-FB	M1SS101S, M1SS101MD, MS1SD03, M1SS102, M1SS101	NO CONTAMINATION FOUND			
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	METHYLENE CHLORIDE	3	ug/L	
			CHLOROFORM	1	ug/L	
			DIBROMOCHLOROMETHANE	1	ug/L	

Table B-44 Pesticides/Aroclors Detected in Field Blanks
MILCON NCBC Gulfport, Mississippi

	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	FB CONC.	UNITS	VALIDATION QUALIFIER
94002	BS-D1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			
94003	BS-D1-FB	M1SS101S, M1SS101MD, MS1SD03, M1SS102, M1SS101	NO CONTAMINATION FOUND			
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			

Table B-46 Metals Detected in Field Blanks
MILCON NCBC Gulfport, Mississippi

	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	FB CONC.	UNITS	VALIDATION QUALIFIER
94002	BS-D1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	ALUMINUM	18.7	UG/L	
			BARIUM	4.60	UG/L	
			COPPER	2.90	UG/L	
			IRON	447	UG/L	
			LEAD	2.50	UG/L	
			MAGNESIUM	15.6	UG/L	
			MANGANESE	34.7	UG/L	
			SODIUM	45.2	UG/L	
			ZINC	38.8	UG/L	
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD	ALUMINUM	14.0	UG/L	
			BARIUM	9.00	UG/L	
			CALCIUM	685	UG/L	
			COPPER	7.50	UG/L	
			IRON	824	UG/L	
			LEAD	0.80	UG/L	
			MAGNESIUM	84.4	UG/L	
			MANGANESE	33.8	UG/L	
			POTASSIUM	190	UG/L	
			SODIUM	54700	UG/L	
			ZINC	73.0	UG/L	
94003	BS-D1-FB	M1SS101S, M1SS101MD, MS1SD03, M1SS102, M1SS101	ALUMINUM	18.7	UG/L	
			BARIUM	4.60	UG/L	
			COPPER	2.90	UG/L	
			IRON	447	UG/L	
			LEAD	2.50	UG/L	
			MAGNESIUM	15.6	UG/L	
			MANGANESE	34.7	UG/L	
			SODIUM	45.2	UG/L	
			ZINC	38.8	UG/L	
	BS-P1-FB	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	ALUMINUM	14.0	UG/L	
			BARIUM	9.00	UG/L	
			CALCIUM	685	UG/L	
			COPPER	7.50	UG/L	
			IRON	824	UG/L	
			LEAD	0.80	UG/L	
			MAGNESIUM	84.4	UG/L	
			MANGANESE	33.8	UG/L	
			POTASSIUM	190	UG/L	
			SODIUM	54700	UG/L	
			ZINC	73.0	UG/L	

Table B-48 Semivolatiles Detected in Equipment Rinse Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	RB CONC.	UNITS	VALIDATION QUALIFIER
94002	BS-01-ER	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			
94003	BS-01-ER	M1SS101S, M1SS101MD, MS1SD03, M1SS102, M1SS101, M1SS101D	NO CONTAMINATION FOUND			
94004	BS-02-ER	MS1SW01, MS1SW01S, MS1SW01M MS1SW01D, MS1SW02, MS1SW03	NO CONTAMINATION FOUND			
94005	BS-03-ER	M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109	NO CONTAMINATION FOUND			

Table B-50 Herbicides Detected in Equipment Rinse Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	RB CONC.	UNITS	VALIDATION QUALIFIER
94002	BS-01-ER	MS1SD01, MS1SD01S, MS1SD01MD MS1SD01D, MS1SD02	NO CONTAMINATION FOUND			
94003	BS-01-ER	M1SS101S, M1SS101MD, MS1SD03, M1SS102, M1SS101, M1SS101D	NO CONTAMINATION FOUND			
94004	BS-02-ER	MS1SW01, MS1SW01S, MS1SW01M MS1SW01D, MS1SW02, MS1SW03	NO CONTAMINATION FOUND			
94005	BS-03-ER	M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109	NO CONTAMINATION FOUND			

Table B-52 GC/MS Volatiles Detected in Method Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	MB CONC.	UNITS	VALIDATION QUALIFIER
94001	VBLKW1	BS-P1-FB, BS-01-ER	METHYLENE CHLORIDE	2	ug/L	CRQL
		BS-01-ER	ACETONE	6		
94002	VBLKS1	MS1SD01, MS1SD01D, MS1SD01MS, MS1SD01MSD	METHYLENE CHLORIDE	2	ug/Kg	CRQL
			ACETONE	3		
	VBLKS2	MS1SD02	METHYLENE CHLORIDE	3	ug/Kg	
			ACETONE	3		
94003	SBLKS1	M1SS101, M1SS101D, MS1SD03, M1SS102, M1SS101MS, M1SS101MSD	METHYLENE CHLORIDE	2	ug/Kg	CRQL
		MS1SD03	ACETONE	3	ug/Kg	U
		M1SS102, M1SS101MS, M1SS101MSD	ACETONE	3	ug/Kg	CRQL
94004	VBLKW1	MS1SW03, MS1SW02, MS1SW01D, BS-02-ER, MS1SW01MS, MS1SW01MSD	METHYLENE CHLORIDE	2	ug/L	CRQL
		MS1SW03, MS1SW01MS	ACETONE	4	ug/L	CRQL
	VBLKW2	BS-02-BT	METHYLENE CHLORIDE	4	ug/L	
			ACETONE	4	ug/L	
94005	VBLKW1	BS-03-BT, BS-03-ER	METHYLENE CHLORIDE	2	ug/L	
			ACETONE	4	ug/L	
	VBLKS1	M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108, M1SS109	METHYLENE CHLORIDE	1	ug/Kg	CRQL
		M1SS103	ACETONE	5	ug/Kg	NA
		M1SS104, M1SS106, M1SS107, M1SS108, M1SS109		5	ug/Kg	CRQL

Table B-54 Pesticides/Aroclors Detected in Method Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	BLANK ID	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	MB CONC.	UNITS	VALIDATION QUALIFIER
94001	PBLKW_05-06	BS-P1-FB, BS-01-ER, BS-D1-FB	NO CONTAMINATION FOUND			
94002	PBLKS1_05-18	MS1SD01, MS1SD02, MS1SD01_MS, MS1SD01MSD, MS1SD01D	NO CONTAMINATION FOUND			
94003	PBLKS1_05-18	M1SS101, M1SS101D, MS1SD03, M1SS102, M1SS101MSD, M1SS101MS	NO CONTAMINATION FOUND			
94004	PBLKW1_05-11	MS1SW03, MS1SW02, MS1SW01D, BS-02-ER, MS1SW01MS, MS1SW01MSD MS1SW01	NO CONTAMINATION FOUND			
94005	PBLKW1_05-11	BS-03-ER	NO CONTAMINATION FOUND			
	PBLKS1_05-18	M1SS103, M1SS104, M1SS105, M1SS106, M1SS107, M1SS108 M1SS109	NO CONTAMINATION FOUND			

Table B-56 Inorganics Detected in Method Blanks
MILCON NCBC Gulfport, Mississippi

SDG NUMBER	RELATED ENVIRONMENTAL SAMPLES	CONTAMINANT	MB CONC.	UNITS	VALIDATION QUALIFIER
94001	BS-D1-FB, BS-P1-FB,	CALCIUM	59.7	ug/L	U
	BS-01-ER	IRON	11.1	ug/L	
		MANGANESE	0.46	ug/L	
		SELENIUM	-0.91	ug/L	UJ
94002	MS1SD01, MS1SD01D,	BERYLLIUM	0.12	mg/KG	U
	MS1SD02	CALCIUM	12.2	mg/KG	
		SODIUM	7.71	mg/KG	
		MANGANESE	-0.06	mg/KG	
		MERCURY	-0.03	mg/KG	UJ
94003	M1SS101, M1SS101D, MS1SD03,	BERYLLIUM	0.16	mg/KG	U
	M1SS102, M1SS101S, M1SS101D	MANGANESE	0.12	mg/KG	
		SODIUM	7.5	mg/KG	
		ZINC	0.28	mg/KG	
94004	MS1SW01, MS1S201S, MS1SW01MS,	CALCIUM	59.70	mg/KG	U
	MS1SW01D, MS1SW02, MS1SW03	IRON	11.10	mg/KG	
		MANGANESE	0.46	mg/KG	
		SELENIUM	-0.91	mg/KG	UJ
94005	M1SS103, M1SS105, M1SS104,	CHROMIUM	0.70	mg/KG	
	M1SS106, M1SS107, M1SS108	CALCIUM	11.10	mg/KG	
	M1SS109, M1SS103S, M1SS103D	POTASSIUM	43.70	mg/KG	U
		SODIUM	5.40	mg/KG	
		BERYLLIUM	-0.15	mg/KG	
		MERCURY	-0.034	mg/KG	UJ
		ZINC	0.30	mg/KG	
	BS-03-ER, BS-03-ERS, BS-03-ERD	ALUMINUM	13.0	ug/L	
		CALCIUM	89.3	ug/L	U
		LEAD	0.30	ug/L	
		POTASSIUM	199	ug/L	
		ZINC	2.03	ug/L	

Table B-58 PARCC Criteria Summary
Soil Samples
MILCON NCBC Gulfport, Mississippi

SDGs	PRECISION	ACCURACY	REPRESENT-ATIVENESS	COMPARABILITY	COMPLETENESS
92001	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92002	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92003	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92004	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92005	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE

Table B-60 PARCC Criteria Summary
Quality Control Samples
MILCON NCBC Gulfport, Mississippi

SDGs	PRECISION	ACCURACY	REPRESENT-ATIVENESS	COMPARABILITY	COMPLETENESS
92001	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92002	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92003	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92004	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
92005	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE

Table B-61 (continued)

Semivolatiles - Rejected Data
MILCON NCBC Gulfport, Mississippi

					# OF COMPOUNDS REJECTED PER MATIX			
SDG	# SAMPLES/MATRIX				QC	SW	SS	SD
	QC	SW	SS	SD				
92001	3	0	0	0	0	0	0	0
92002	0	0	0	3	0	0	0	0
92003	0	0	3	1	0	0	0	0
92004	1	4	0	0	0	0	0	0
92005	1	0	7	0	0	0	0	0
GRAND TOTAL	5	4	10	4	0	0	0	0
COMPLETION GOAL (>85%)					100.0%	100.0%	100.0%	100.0%

MATRIX KEY

QC = QC SAMPLES
SW = SURFACE WATER SAMPLES
SS = SURFACE SOIL SAMPLES
SD = SEDIMENT SAMPLES

*** 64 TARGET ANALYTES PER SAMPLE**

Table B-61 (continued)

Pesticides/PCBS - Rejected Data
MILCON NCBC Gulfport, Mississippi

					# OF COMPOUNDS REJECTED PER MATIX			
SDG	# SAMPLES/MATRIX				QC	SW	SS	SD
	QC	SW	SS	SD				
92001	3	0	0	0	0	0	0	0
92002	0	0	0	3	0	0	0	0
92003	0	0	3	1	0	0	0	0
92004	1	4	0	0	0	0	0	0
92005	1	0	7	0	0	0	0	0
GRAND TOTAL	5	4	10	4	0	0	0	0
COMPLETION GOAL (>85%)					100.0%	100.0%	100.0%	100.0%

MATRIX KEY

QC = QC SAMPLES
SW = SURFACE WATER SAMPLES
SS = SURFACE SOIL SAMPLES
SD = SEDIMENT SAMPLES

*** 28 TARGET ANALYTES PER SAMPLE**

Table B-61 (continued)

Inorganics/Cyanide - Rejected Data
MILCON NCBC Gulfport, Mississippi

SDG	# SAMPLES/MATRIX				# OF COMPOUNDS REJECTED PER MATIX			
	QC	SW	SS	SD	QC	SW	SS	SD
92001	3	0	0	0	0	0	0	0
92002	0	0	0	3	0	0	0	0
92003	0	0	3	1	0	0	0	0
92004	1	4	0	0	0	0	0	0
92005	1	0	7	0	0	0	0	0
GRAND TOTAL	5	4	10	4	0	0	0	0
COMPLETION GOAL (>85%)					100.0%	100.0%	100.0%	100.0%

MATRIX KEY

QC = QC SAMPLES
SW = SURFACE WATER SAMPLES
SS = SURFACE SOIL SAMPLES
SD = SEDIMENT SAMPLES

*** 24 TARGET ANALYTES PER SAMPLE**

Table B-61 (continued)

Total Organic Carbon - Rejected Data
MILCON NCBC Gulfport, Mississippi

					# OF COMPOUNDS REJECTED PER MATIX			
SDG	# SAMPLES/MATRIX				QC	SW	SS	SD
	QC	SW	SS	SD				
92001	4	0	0	0	0	0	0	0
92002	0	0	0	3	0	0	0	0
92003	0	0	3	1	0	0	0	0
92004	0	4	0	0	0	0	0	0
92005	1	0	7	0	0	0	0	0
GRAND TOTAL	5	4	10	4	0	0	0	0
COMPLETION GOAL (>85%)					100.0%	100.0%	100.0%	100.0%

MATRIX KEY

QC = QC SAMPLES
SW = SURFACE WATER SAMPLES
SS = SURFACE SOIL SAMPLES
SD = SEDIMENT SAMPLES

*** 1 TARGET ANALYTES PER SAMPLE**

APPENDIX C

Screening Risk Equations and Methodology

U_m = Mean annual wind speed, 4.5 meters per second,
U_t = Equivalent threshold wind speed at 10 meter elevation, 12.8 meters per second,
F(x) = Function dependent on U_m/U_t, 0.0497.

The volatilization factor (VF) defines the relationship between the concentration of contaminants in soil and the volatilized contaminants in the air. The equation for determining the VF is:

$$VF = \frac{LS \times V \times DH}{A} \times \frac{(3.14 \times \alpha \times T)^{1/2}}{2 \times D_{ei} \times E \times K_{as}\ 10^{-3}\ kg/g}$$

Where

VF = Volatilization factor, 1.23×10^6 cubic meters per kilogram,
LS = Width of contaminated area, 45 meters,
V = Wind speed in mixing zone, 2.25 meters per second,
DH = Diffusion height, 2 meters,
A = Area of contamination, 20,250,000 cm^2,
T = Exposure interval, 7.9×10^8 seconds,
E = True soil porosity, 0.35.

Values of D_{ei}, the effective diffusivity, for the individual chemicals were determined using molecular diffusivities estimated by Fuller's method (USEPA, 1989). Fuller's method for calculating molecular diffusivity is based on the equation:

$$D_i = \frac{0.001T^{1.75}\sqrt{\frac{1}{MW_i} + \frac{1}{MW_a}}}{P_a[(\Sigma V_i)^{1/3} + (\Sigma V_a)^{1/3}]^2}$$

Where

D_i = molecular diffusivity, square centimeters per second,
T = absolute temperature, degrees Kelvin,
MW_i = molecular weight of chemical of concern, grams per mole,
MW_a = average molecular weight of air components, 28.8 grams per mole,
P_a = absolute pressure, 1 atmosphere,
ΣV_i = molecular diffusion volume of chemical of concern, cubic centimeters per mole, and
ΣV_a = molecular diffusion volume of air, 20.1 cubic centimeters per mole.

The molecular diffusion volume of a chemical ,ΣV_i, is obtained by summing atomic diffusion volumes of the compound components. Representative atomic diffusion volumes are:

C = 16.5	Cl = 19.5	Aromatic ring = -20.2
H = 1.98	Br = 35.0	Heterocyclic ring = -20.2
O = 5.48	F = 25.0	
N = 5.59	S = 17.0	