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SAMPLING AND ANALYSIS REPORT FOR BUILDING 535 AVIATION ORDNANCE LOADING DOCK FORMER RAILROAD BED SITE NAS CECIL FIELD FL

5/10/2002

TETRA TECH NUS INC

Sampling and Analysis Report

for

Building 535, Aviation Ordnance Loading Dock Former Railroad Bed Site

Naval Air Station Cecil Field

Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0078

May 2002

SAMPLING AND ANALYSIS REPORT
FOR
BUILDING 535, AVIATION ORDNANCE LOADING DOCK
FORMER RAILROAD BED SITE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0078

MAY 2002

PREPARED UNDER THE SUPERVISION OF:

Mark Speranza

MARK SPERANZA, P.E.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMITTAL BY:

Debbie Wroblewski

DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

The professional opinions rendered in this decision document identified as Sampling and Analysis Report for Aviation Ordnance Loading Dock (Building 535), Naval Air Station Cecil Field, Jacksonville, Florida were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. Decision documents are based on information obtained from others and under the supervision of the signing engineer. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on the project described in this report.

Mark Speranza

Mark Speranza, P.E.
Professional Engineering No. PE0050304

Date: 5/10/02

Mark Speranza

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Mark Speranza, P.E.
Professional Engineering No. PE0050304

Date: 5/10/02

Mark Speranza

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ACRONYMS

µg/kg	microgram per kilogram
AVORD	Aviation Ordnance
BCT	BRAC Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
EBS	Environmental Baseline Survey
EISOPQAM	Environmental Investigations Standard Operating Procedures and Quality Assurance Manual
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFD	Former Fuel Depot
FL-PRO	Florida Petroleum Residual Organics
HLA	Harding Lawson Associates
IBDS	Inorganic Background Data Set
mg/kg	milligram per kilogram
NAS	Naval Air Station
PAH	polynuclear aromatic hydrocarbon
RAC	Remedial Action Contractor
SAR	Sampling and Analysis Report
SCTL	Soil Cleanup Target Level
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TAL	Target Analyte List
TCL	Target Compound List
TRPH	total recoverable petroleum hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS), under contract to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), has completed the Base Realignment and Closure (BRAC) Sampling and Analysis Program for the Building 535, Aviation Ordnance (AVORD) Loading Dock, Former Railroad Bed Site at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This program was conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Contract Number N62467-94-D-0888, Contract Task Order (CTO) 0078. This Sampling and Analysis Report (SAR) summarizes the related operations, results, conclusions, and recommendations of the field investigation.

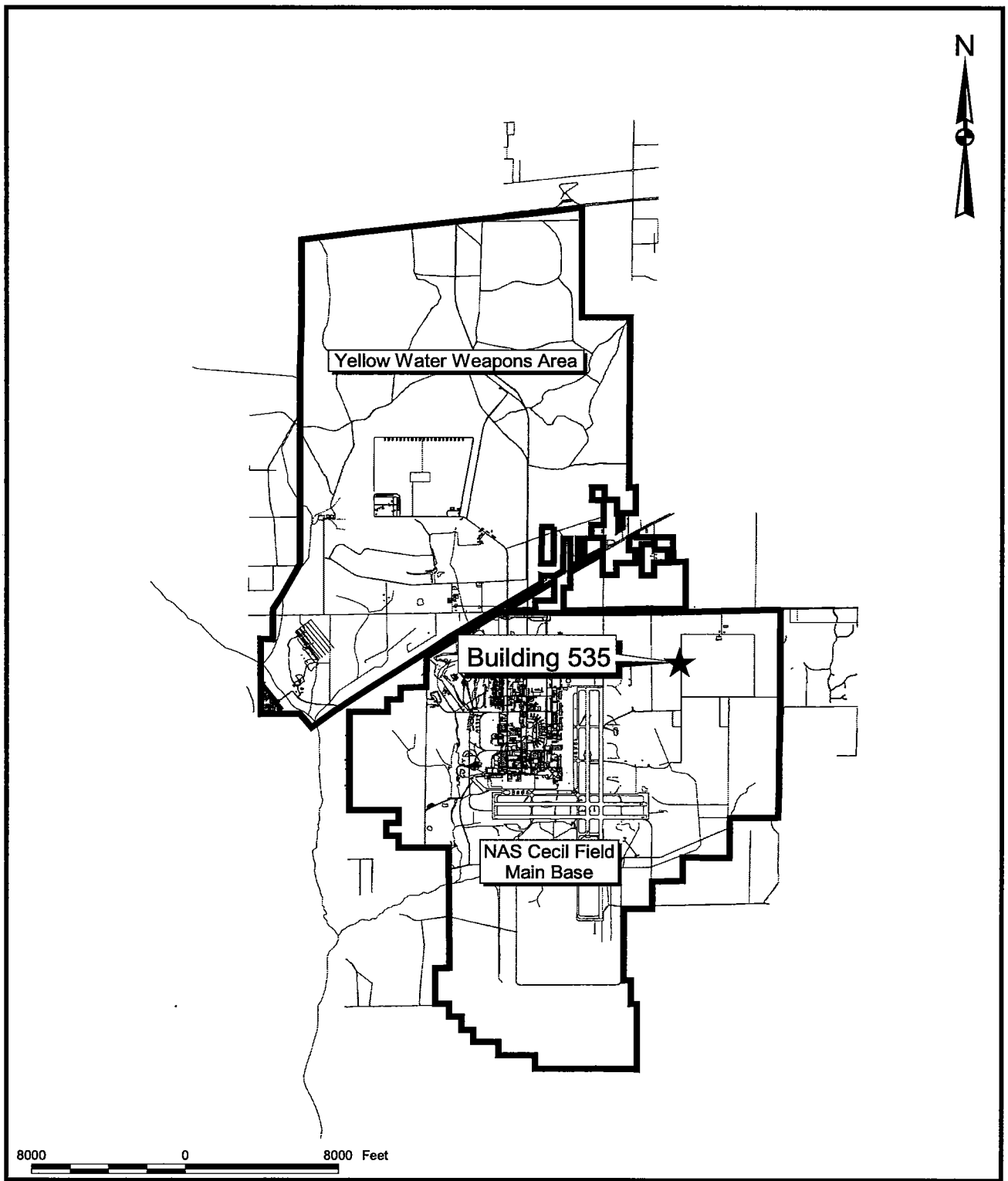
The Navy operated approximately 18 miles of railroad tracks at NAS Cecil Field, including spurs and sidings, from the 1940s to 1983. The railroad cars distributed supplies and materials throughout the Facility. When the system was closed in 1984, the railroad ties and tracks were removed. In developed areas of the Base, some former railroad bed areas were reworked during subsequent construction activities. Areas of the former railroad beds are visible as low mounded features in some undeveloped areas, but may be overgrown and difficult to distinguish in other undeveloped areas.

In general, railroad tracks may have elevated concentrations of certain contaminants as a result of routine operational activities. These contaminants may include polynuclear aromatic hydrocarbons (PAHs), total recoverable petroleum hydrocarbons (TRPH) and metals from the fossil fuels used to power the engines and from ballast materials/ties used along the tracks. These elevated concentrations of contaminants do not constitute a release because they are a result of normal operating practices of the railroad. However, at certain areas along the tracks, the potential for releases is expected to be more likely based on the activities conducted there. These areas include loading docks where materials were on- and off-loaded from railroad cars and areas where cars were fueled, maintained, and parked. Four of these areas were identified at NAS Cecil Field including a loading dock in Yellow Water Weapons Area (Building 635), the AVORD Loading Dock (Building 535), the locomotive fueling, maintenance, and parking area (Building 98), and the area where fuels were off-loaded from rails cars to the South Fuel Farm [Former Fuel Depot (FFD)]. These areas of the former railroad bed were recommended for biased soil sampling and analysis to investigate potential releases. Sampling was generally limited to the areas at which loading and/or maintenance activities were conducted.

Building 535 is located in the Main Base portion of NAS Cecil Field as shown on Figure 1-1. It is located on the east side of NAS Cecil Field within the area formerly known as the weapons depot. An investigation was conducted to verify the presence of soil contamination and to delineate the extent of contamination in the surface and subsurface soil. A dig and haul package (excavation plan) was prepared by TtNUS based

on the results of the field investigations (TtNUS, 2001b). The contaminated soil was excavated by the Remedial Action Contractor (RAC), CH2M Hill, in accordance with the dig and haul package. Soil contamination was removed to achieve residential land use.

This SAR summarizes the related field operations, results, conclusions, and recommendations of the investigation conducted by TtNUS from June 2000 through January 2001 and the activities related to the removal action as described in the Source Removal Report for Excavation of PAH and TRPH Contaminated Soil at Former Railroad Bed, Building 535 (CH2M Hill, 2001). The results of the investigation and the subsequent removal action indicate that no further action is needed at this site.



DRAWN BY: MJJ	DATE: 09Mar02	GENERAL LOCATION MAP FORMER RAILROAD BED - BUILDING 535 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-1 / REV: 0

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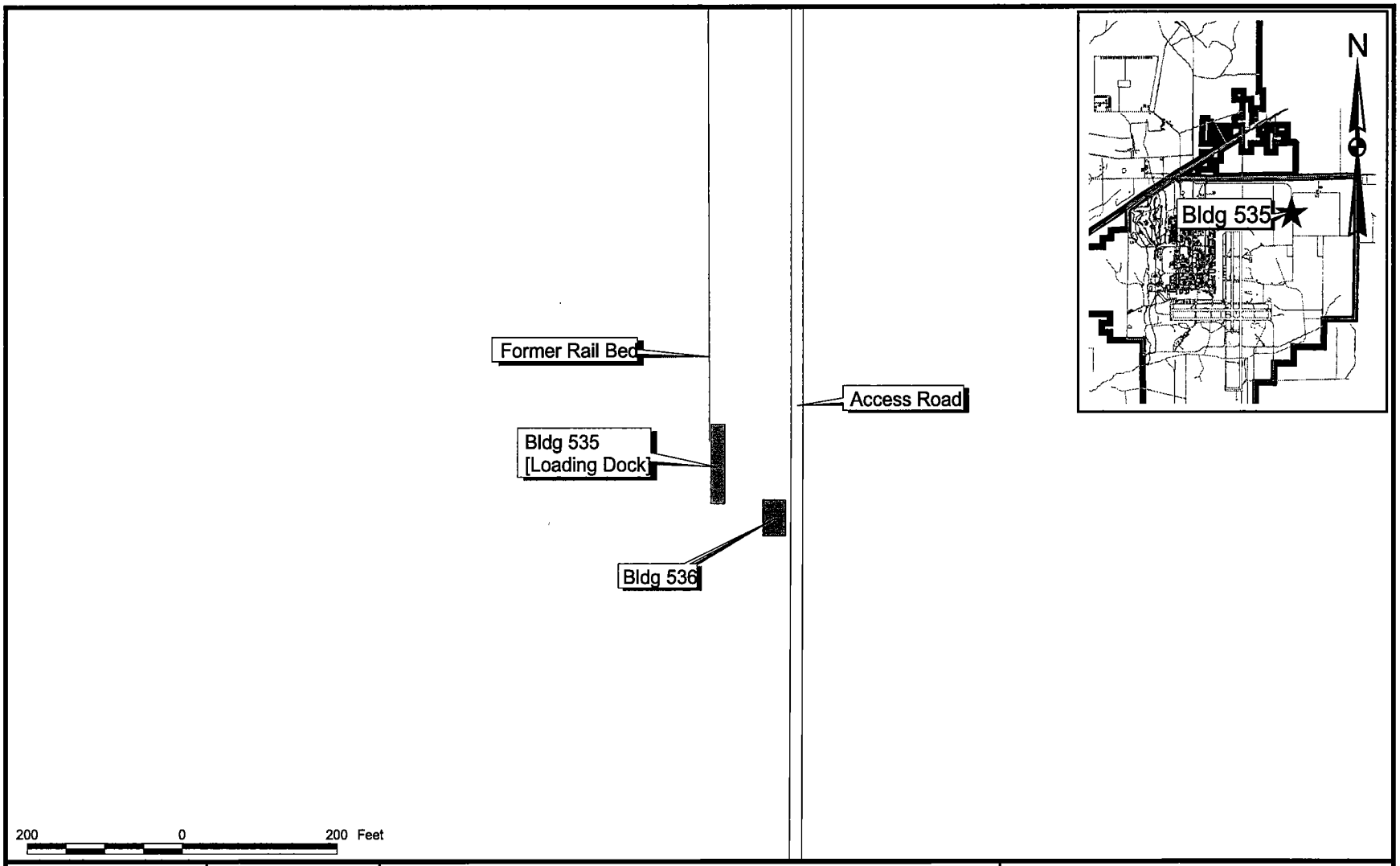

DRAWN BY: MJJ	DATE: 01Jun00	SITE PLAN FORMER RAILROAD BED - BUILDING 535 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY	DATE		APPROVED BY / DATE
COST/SCHEDULE-AREA			APPROVED BY / DATE
SCALE: AS NOTED			DRAWING NO.: FIGURE 1-2 / REV: 0

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2.0 FIELD INVESTIGATIONS

The field investigation at the Building 535, AVORD Loading Dock, was conducted in three phases. The initial phase of the investigation was conducted on June 16, 2000 to assess potential soil contamination in the vicinity of Building 535. The initial sampling event included the collection and analysis of four surface soil samples (CEF-535-SS-001-01 through CEF-535-SS-004-01) collected at a depth of 0 to 1 foot below ground surface (bgs). The soil samples were analyzed for PAHs, Target Compound List (TCL) pesticides, Target Analyte List (TAL) metals, and TRPH (TtNUS, 2000a).

Phase II of the field investigation was conducted on August 8, 2000 to delineate exceedances of Florida Department of Environmental Protection (FDEP) residential and leachability to groundwater Soil Cleanup Target Levels (SCTLs) for PAHs. A total of 15 surface soil samples were collected as follows:

SAMPLE ID CEF-535-	LOCATION	DEPTH
SS-101-02	At CEF-535-SS-001 location	1 – 2’
SS-102-01	Approximately 7 feet east of CEF-535-SS-001 location	0 – 1’
SS-103-01	Approximately 7 feet west of CEF-535-SS-001 location	0 – 1’
SS-104-02	At CEF-535-SS-002 location	1 – 2’
SS-105-01	Approximately 7 feet east of CEF-535-SS-002 location	0 – 1’
SS-106-01	Approximately 7 feet west of CEF-535-SS-001 location	0 – 1’
SS-107-01	25 feet north of CEF-535-SS-001 location	0 – 1’
SS-108-01	Approximately 7 feet east of CEF-535-SS-107-01 location	0 – 1’
SS-109-01	Approximately 7 feet west of CEF-535-SS-107-01 location	0 – 1’
SS-110-01	50 feet north of CEF-535-SS-001 location	0 – 1’
SS-111-01	Approximately 7 feet east of CEF-535-SS-110-01 location	0 – 1’
SS-112-01	Approximately 7 feet west of CEF-535-SS-110-01 location	0 – 1’
SS-113-01*	75 feet north of CEF-535-SS-001 location	0 – 1’
SS-114-01*	Approximately 7 feet east of CEF-535-SS-113-01 location	0 – 1’
SS-115-01*	Approximately 7 feet west of CEF-535-SS-113-01 location	0 – 1’

* Samples were collected in the undisturbed portion of the railroad bed material. The area to the south of these samples, closer to Building 535, appeared to have been re-worked. The BCT determined that this would be the northern boundary of the site (Meeting Minute 1435).

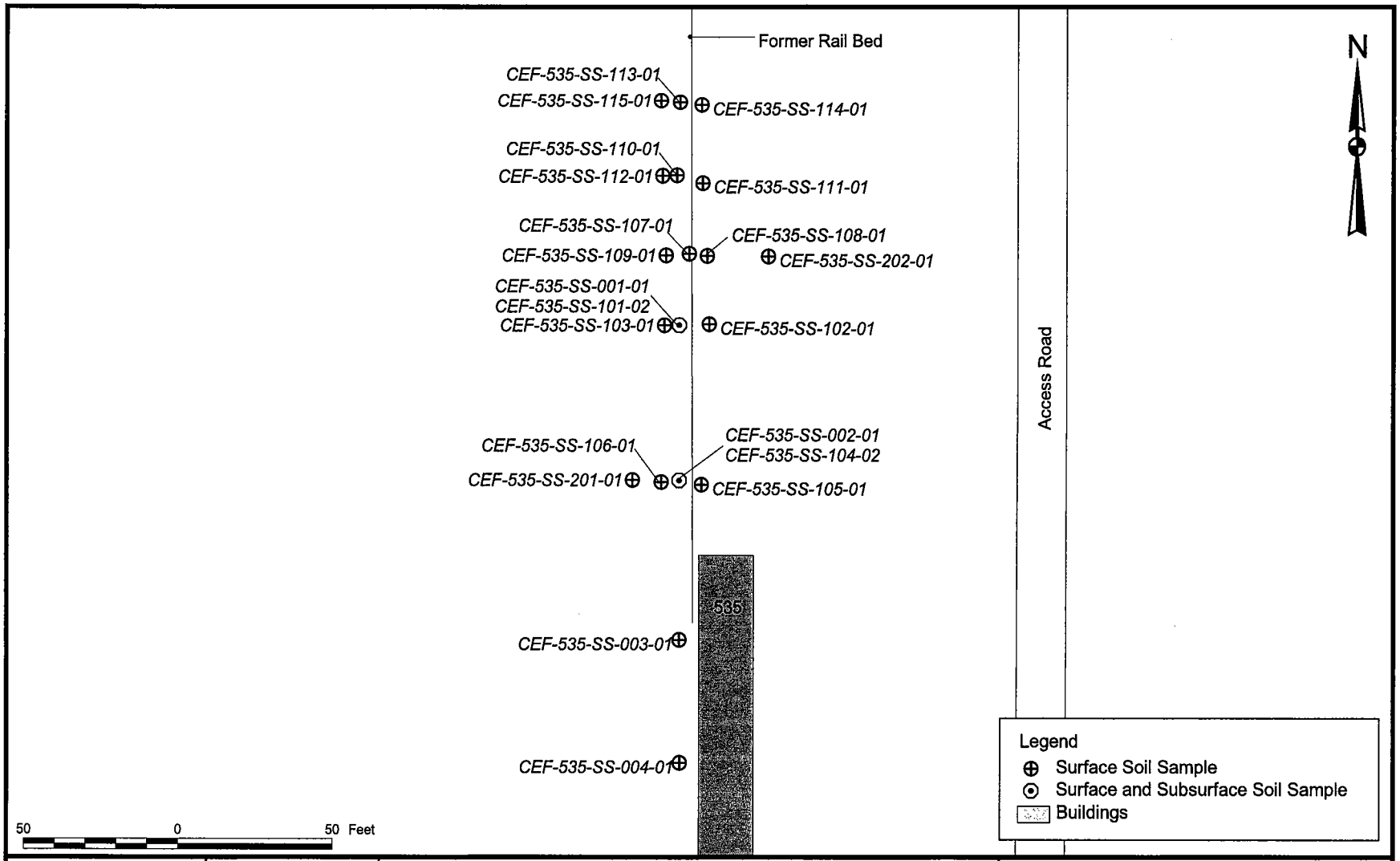
Based on the results of Phase I sampling, Phase II samples were analyzed for PAHs only (TtNUS, 2000b).

The Phase III field investigation was conducted on April 6, 2001 to further delineate the horizontal extent of PAH contamination identified during previous sampling events. Two surface soil samples (CEF-535-SS-201-01 and CEF-535-SS-202-01) were collected. Sample CEF-535-SS-201-01 was collected 8 feet west of previous sample location CEF-535-SS-106-01 at a depth of 0 to 1 foot bgs to determine the lateral extent of contamination to the west. Sample CEF-535-SS-202-01 was collected 10 feet east of previous sample location CEF-535-SS-108-01 at a depth of 0 to 1 foot bgs to determine the lateral extent of contamination to the east. These two samples were analyzed for PAHs (TtNUS, 2000c).

All surface soil samples were collected as grab samples using plastic, disposable trowels. Sampling activities were performed in accordance with the procedures described in the U.S. Environmental Protection Agency (U.S. EPA) Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM) (U.S. EPA, 1996) and the NAS Cecil Field Base-Wide Generic Work Plan (TtNUS, 1998). As agreed by the BCT, no rinsate or trip blanks were collected. In addition, field blanks were not collected because the sampling equipment was disposable.

Soil samples were analyzed for PAHs using U.S. EPA Method SW-846 8310, for TCL pesticides using U.S. EPA Method SW-846 8081A, for TAL metals using U.S. EPA Method SW-846 6010B, and for TRPH using the Florida Petroleum Residual Organics (FL-PRO) method. ACCUTEST Southeast, in Orlando, Florida, performed the analyses.

A site plan showing sample locations from the three phases of sampling is presented on Figure 2-1.



DRAWN BY: MJJ	DATE: 01Jun00	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:	APPROVED BY: DATE:
COST/SCHEDULE-AREA:		APPROVED BY: DATE:
SCALE: AS NOTED		DRAWING NO.: FIGURE 2-1 / REV: 0

SAMPLE LOCATION MAP
FORMER RAILROAD BED - BUILDING 535
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

P:\GIS\NAS_CecilField\Bldg0535.apr 27Mar02 MJJ Layout 2-1

3.0 DATA EVALUATION AND REMOVAL ACTION

3.1 DATA EVALUATION

Contaminant concentrations in individual soil samples were compared to the FDEP criteria in the Florida Administrative Code (FAC) Chapter 62-777 (FDEP, 1999) and, for metals only, to NAS Cecil Field site-specific Inorganic Background Data Set (IBDS) values (HLA, 1998). Organic analytical results were compared to the more stringent of the FDEP residential SCTL for direct exposure or the leachability to groundwater criterion. The criteria used for inorganic results comparisons were the lesser of the residential and leachability SCTLs and the greater of that concentration and the IBDS value. Refer to Table 3-1 for screening criteria.

During Phase I sampling, PAHs were detected in two soil samples and TRPH and metals were detected in all four of the soil samples collected at the AVORD Loading Dock. Pesticides were not detected in soil samples collected during Phase I at the site. Therefore, soil samples were no longer analyzed for pesticides. Metals and TRPHs were not detected at concentrations in excess of FDEP SCTLs during Phase I. Based on these data, the remaining investigations (Phases II and III) concentrated on determining the horizontal extent of PAH contamination. Tables 3-1 and 3-2 present analytical data for Phases I through III of the investigation, and Figure 3-1 presents the locations of the samples exceeding the FDEP criteria. Complete laboratory analytical data are provided in Appendix A.

The BRAC Cleanup Team (BCT) determined that the northern boundary of the site would be determined by sample CEF-535-SS-113-01. The site was considered to end at this point based on professional judgement that a train off loading material at Building 535 would not impact the soils any further north of this point (Meeting Minute 1435). The BCT also determined that contamination present at Building 535 is not considered a CERCLA release (Decision Number 521 of the BCT Meeting Minutes).

3.2 REMOVAL ACTION

Based on the soil investigation that was conducted, the BCT determined that a removal action was required at Building 535, the AVORD Loading Dock Area and agreed upon the proposed removal area presented by TtNUS in the Dig and Haul Package (TtNUS, 2001b). The area of removal was based on remediation of the area to a residential land use scenario. A source removal was conducted on September 12 through 27, 2001. A total of 272 tons of PAH-contaminated soils were excavated. Soils were excavated to the horizontal limits shown on Figure 3-2. The excavated soil was stockpiled onto a 10-mil plastic lined area and covered with a 10-mil plastic liner. Upon receipt of approval for waste disposal, the soil was loaded into a truck, transported, and disposed off site on September 13, 18, 19, and

20, 2001. As shown on Figure 3-2, approximately 3,196 square feet of soil were excavated to a depth of 1 feet bgs, for a total estimated volume of 118 cubic yards. The excavated soil was transported by Beaver Bulk Trucking to the Broadhurst Landfill, a Subtitle D solid waste disposal facility in Jessup, Georgia (CH2M Hill, 2001).

Clean fill material from the Coxwell's Crystal Springs Pit was used to backfill the excavation. The site was graded and seeded with a mixture of Bahia and rye grass. A layer of straw was applied to prevent wind and water erosion. No confirmatory sampling and analysis was performed (CH2M Hill, 2001) as per the Dig and Haul Package (TtNUS, 2001b).

Detailed information on the remedial activities, including photographs, laboratory results, copies of the soil manifests, certificates of disposal, and certificates of clean fill, is provided in the Source Removal Report (CH2M Hill, 2001).

3.3 HUMAN HEALTH PRELIMINARY RISK EVALUATION

Soil sampling at Building 535, the AVORD Loading Dock, identified concentrations of carcinogenic PAHs (cPAHS) in excess of the FDEP SCTLs for direct residential exposure. Because cPAHs were detected at concentrations greater than the residential SCTLs, the BCT agreed that cPAHs should be regarded as a family of compounds and their concentrations should be defined in terms of benzo(a)pyrene (BaP) equivalents (BaPEq). Total BaPEq concentrations were derived for each sample using the U.S. EPA toxicity equivalency factors (TEFs) (U.S. EPA, 1995). If a specific cPAH within a sample was not detected, one-half its detection limit was used in the calculation of BaPEq. If no cPAHs were detected within a sample, one-half the detection limit of BaP was used in the calculation.

Following remedial action excavation, BaPEqs are the only constituents remaining on site at a concentration in excess of its residential SCTL. However, exceedance of a criterion by individual samples does not necessarily indicate a significant exceedance of a target risk level. Exposure to a contaminant in the soil is a result of exposure to an area, not an individual sampling location; therefore, the entire data set was used to determine post-excavation exposure concentrations. This exposure concentration is best represented by the 95 percent upper confidence limit (UCL) of residual concentrations.

Data from the fill were used to calculate post-excavation concentrations for BaP and BaPEq by replacing pre-excavation concentrations with concentrations in the fill, or one-half the detection limit if the analyte was not detected in the fill. On this basis, the calculated post-excavation exposure concentrations of BaP (1.8 µg/kg) and BaPEq (1.8 µg/kg) were lower than the residential SCTL value (100 µg/kg). Therefore, a human health Preliminary Risk Evaluation (PRE) is not required (refer to Table 3-3).

3.4 ECOLOGICAL RISK EVALUATION

A screening-level ecological risk assessment (SERA) was conducted to evaluate the potential risks to ecological receptors at Building 535. Steps 1 through 3A of the ecological risk assessment were conducted in accordance with the following documents: U.S. EPA Ecological Risk Assessment Guidance for Superfund (U.S. EPA, 1997), U.S. EPA Region 4 Ecological Risk Assessment Bulletins – Supplement to RAGs (U.S. EPA, 1999), U.S. EPA Amended Guidance on Ecological Risk Assessment at Military Bases (U.S. EPA, 2000), and the Navy Policy for Conducting Ecological Risk Assessments (DON, 1999). Steps 1 through 3A consist of the following:

Step 1	Screening-Level Problem Formulation and Ecological Effects Evaluation
Step 2	Screening-Level Exposure Estimate and Risk Calculation
Step 3A	Refinement of Preliminary Chemicals of Potential Concern (COPCs)

3.4.1 Step 1: Screening-Level Problem Formulation and Ecological Effects Evaluation

A source removal was conducted at Building 535 from the period of September 12 through 27, 2001. A total of 272 tons of non-hazardous soil was excavated to the proposed horizontal and vertical excavation limits, as specified in the Dig and Haul Package for Former Railroad Bed, Building 535 (TtNUS, 2001b). The depth of excavation specified was 1 foot below land surface (bls) and the vertical limits were verified by a field survey performed by TtNUS.

The preliminary assessment endpoints for this ecological risk assessment were the protection of terrestrial biota from adverse effects of chemicals on growth, survival, and reproduction. The preliminary measurement endpoints were chemical concentrations in surface soil associated with adverse effects on growth, survival, and reproduction of soil-dwelling organisms.

3.4.2 Step 2: Screening-Level Exposure Estimate and Risk Calculation

Maximum concentrations of analytes detected in surface soil were compared to conservative ecological screening values (ESVs). Analytes whose maximum concentrations did not exceed ESVs were dropped from further consideration, and those that exceeded ESVs (or did not have ESVs) were retained as ecological COPCs. The ESVs used for the initial screening were the lowest of those established by U.S. EPA Region 4 (U.S. EPA, 1999; 2001).

3.4.2.1 Screening Results – Surface Soil

Four soil samples (CEF-535-SS-101-02, CEF-535-SS-101-02-D, CEF-535-SS-104-02, and CEF-535-SS-004-01) were not excavated. CEF-535-SS-101-02, CEF-535-SS-101-02-D, and CEF-535-SS-104-02 were taken at a depth of 1 to 2 feet from the excavated area, and CEF-535-SS-004-01 was taken at the surface to a depth of 1 foot from outside the excavated area. The remaining soil in the excavated area was covered with 1 foot of clean soil. For this ecological evaluation, CEF-535-SS-101-02 and CEF-535-SS-101-02-D were averaged into a single sample.

Nine PAHs were retained as COPCs from samples taken at CEF-535-SS-101-02-AVG and CEF-535-SS-104-02 because their maximum concentration was above the screening value (see Table 3-4). PAH concentrations from CEF-535-SS-004-01 were all below detection limits. Only inorganic chemicals were analyzed for at CEF-535-SS-004-01 (see Table 3-4). Aluminum, chromium, iron, and vanadium were retained as COPCs.

3.4.3 Step 3A: Refinement of Preliminary Contaminants of Potential Concern

Subsequent to the initial screening, other factors are considered to further refine COPCs. These factors include food chain modeling, habitat quality, area use factors, toxicological evaluation of COPCs, frequency of detection, background concentrations, and comparisons of COPCs to alternate guidelines (U.S. EPA, 1997; 2001; DON, 1999).

Food chain modeling was not conducted to investigate potential risks to representative receptors from ingested doses of COPCs because the site is small. Also, no chemicals for which food chain modeling is conducted were retained as COPCs or were detected below the background concentration. Food chain modeling is not performed for PAHs.

An Inorganic Background Data Set (IBDS) has been developed to represent facility-wide background concentrations of metals at NAS Cecil Field (HLA, 1998). Concentrations of metals in surface soil at Building 535 were compared to these IBDS values in Step 3A. Surface soil IBDS values for COPCs at Building 535 are shown in Table 3-4.

3.4.3.1 Step 3A Discussion

Soil Plants and Invertebrates

PAHs

Few USEPA Region 4 screening values have been developed for PAHs (U. S. EPA, 1999). Of the nine PAHs detected, benzo(a)pyrene, fluoranthene, and pyrene were the only detected PAHs with screening values. Both samples (CEF-535-SS-101-02-AVG and CEF-535-SS-104-02) had concentrations below the screening value for benzo(a)pyrene (100 µg/kg). Concentrations for fluoranthene and pyrene were above the Region 4 screening values for these parameters (100 µg/kg). All other PAH concentrations from these samples were below 180 µg/kg. Total PAH concentrations were below or near the Region 4 screening value (1000 µg/kg). Also, because a 1-foot layer of clean soil has been placed over the excavated area at Building 535, ecological receptors are expected to have limited, if any, contact with these soils. Therefore, risks from PAHs to ecological receptors are expected to be negligible at this site.

Inorganics

Inorganic chemicals were only detected at CEF-535-SS-004-01. Aluminum, chromium, iron, and vanadium were retained as COPCs because the maximum concentration was above the Region 4 screening values. All inorganics were detected at concentrations below background levels developed for NAS Cecil Field (Table 3-4). Therefore, risks to ecological receptors from inorganic chemicals would not be site related.

3.4.4 Screening-Level and Step 3A Uncertainty Analysis

Uncertainties are associated with most steps of a SERA, from selecting endpoints, collecting data, and evaluating toxicity. The following topics summarize some of the uncertainties associated with the SERA that was conducted for Building 535.

Assessment and Measurement Endpoints: Measurement endpoints were used to evaluate the assessment endpoints based on measurements pertaining to representative species or other indicators. There is uncertainty in this prediction because the species or indicators may not accurately represent the assessment endpoints.

Exposure Characterization: There is uncertainty in the chemical concentration data used for exposure estimates.

Ecological Effects Data: There is uncertainty in some of the ecological effects data because they are typically developed in a laboratory for species that may or may not be present at the site. In addition, for soil, often only a few studies are available or the guideline value is based on highly variable data.

Risk Characterization: Risks are projected if a HQ is greater than or equal to unity regardless of the magnitude of the HQ. Also, there is uncertainty in how the predicted risks to a species at the site translate into risk to the population in the area as a whole.

3.4.5 Ecological Risk Summary and Conclusions

A screening-level ecological risk assessment was performed for Building 535. Organic and inorganic chemicals were detected in the surface soil at maximum concentrations that exceeded conservative screening levels and, therefore, they were selected as COPCs. These COPCs were assessed in a less conservative Step 3A evaluation.

The results of the Step 3A analysis indicate that all of the chemicals detected in the surface soil at Building 535 present negligible risks to ecological receptors. Therefore, no additional investigations for ecological receptors are proposed for this site.

TABLE 3-1

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 4

PARAMETER	FDEP SCTL[1]		CEF-535-						
	Residential Direct Exposure	Leachability to Groundwater	SS-001-01	SS-002-01	SS-003-01		SS-004-01	SS-101-02	
					Sample	Duplicate		Sample	Duplicate
Polynuclear Aromatic Hydrocarbons (µg/kg)									
1-Methylnaphthalene	68,000	2,200	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
2-Methylnaphthalene	80,000	6,100	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
Acenaphthene	1,900,000	2,100	7700 U	1500 U	380 U	380 U	370 U	740 U	740 U
Acenaphthylene	1,100,000	27,000	15000 U	2900 U	760 U	750 U	750 U	740 U	740 U
Anthracene	18,000,000	2,500,000	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
Benzo(a)antharacene	1,400	3,200	**4780**	**758**	76 U	75 U	75 U	**107**	**124**
Benzo(a)pyrene	100	8,000	**4710**	**641**	76 U	75 U	75 U	**69.4 J**	**86.4**
Benzo(b)fluoranthene	1,400	10,000	**5830**	**1030**	76 U	75 U	75 U	**107**	**135**
Benzo(g,h,i)perylene	2,300,000	32,000,000	**3790**	**657**	76 U	75 U	75 U	**66.1 J**	**80.8**
Benzo(k)fluoranthene	15,000	25,000	**3260**	**536**	76 U	75 U	75 U	**48.1 J**	**58.7 J**
Chrysene	140,000	77,000	**4900 J**	**814 J**	380 U	380 U	370 U	**56.2 J**	**76.9 J**
Dibenzo(a,h)anthracene	100	30,000	1500 U	290 U	76 U	75 U	75 U	74 U	74 U
Fluoranthene	2,900,000	1,200,000	**6730 J**	**971 J**	380 U	380 U	370 U	**131 J**	**146 J**
Fluorene	2,200,000	160,000	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	**3370**	**561**	76 U	75 U	75 U	**63.5 J**	**75.6**
Naphthalene	40,000	1,700	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
Phenanthrene	2,000,000	250,000	7700 U	1500 U	380 U	380 U	370 U	370 U	370 U
Pyrene	2,200,000	880,000	**6880 J**	**1020 J**	380 U	380 U	370 U	**107 J**	**142 J**

TABLE 3-1

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 2 OF 4

PARAMETER	FDEP SCTL[1]		CEF-535-						
	Residential Direct Exposure	Leachability to Groundwater	SS-102-01	SS-103-01	SS-104-02	SS-105-01	SS-106-01	SS-107-01	SS-108-01
Polynuclear Aromatic Hydrocarbons (µg/kg)									
1-Methylnaphthalene	68,000	2,200	370 U	370 U	370 U	730 U	360 U	370 U	400 U
2-Methylnaphthalene	80,000	6,100	370 U	370 U	370 U	730 U	360 U	370 U	400 U
Acenaphthene	1,900,000	2,100	740 U	750 U	740 U	1400 U	720 U	740 U	800 U
Acenaphthylene	1,100,000	27,000	740 U	750 U	740 U	1400 U	720 U	740 U	800 U
Anthracene	18,000,000	2,500,000	370 U	370 U	370 U	730 U	360 U	370 U	400 U
Benzo(a)antharacene	1,400	3,200	**124**	**54.8 J**	**124**	140 U	**217**	**505**	**450**
Benzo(a)pyrene	100	8,000	**98.7**	**74.5 J**	**89.7**	140 U	**177**	**408**	**350**
Benzo(b)fluoranthene	1,400	10,000	**166**	**106**	**180**	140 U	**264**	**617**	**650**
Benzo(g,h,i)perylene	2,300,000	32,000,000	**99.6**	**62 J**	**95.8**	140 U	**125**	**452**	**368**
Benzo(k)fluoranthene	15,000	25,000	**75.5**	**45 J**	**90.2**	140 U	**126**	**311**	**296**
Chrysene	140,000	77,000	**78.8 J**	370 U	**126 J**	730 U	**135 J**	**360 J**	**336 J**
Dibenzo(a,h)anthracene	100	30,000	74 U	75 U	74 U	140 U	72 U	**48.5 J**	**42.8 J**
Fluoranthene	2,900,000	1,200,000	**133 J**	370 U	**223 J**	730 U	**256 J**	**594**	**622**
Fluorene	2,200,000	160,000	370 U	370 U	370 U	730 U	360 U	370 U	400 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	**97.2**	**69 J**	**102**	140 U	**162**	**381**	**376**
Naphthalene	40,000	1,700	370 U	370 U	370 U	730 U	360 U	370 U	400 U
Phenanthrene	2,000,000	250,000	370 U	370 U	370 U	730 U	360 U	370 U	400 U
Pyrene	2,200,000	880,000	**157 J**	370 U	**172 J**	730 U	**235 J**	**581**	**545**

TABLE 3-1

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 3 OF 4

PARAMETER	FDEP SCTL[1]		CEF-535-						
	Residential Direct Exposure	Leachability to Groundwater	SS-109-01	SS-110-01	SS-111-01 Sample	SS-111-01 Duplicate	SS-112-01	SS-113-01	SS-114-01
Polynuclear Aromatic Hydrocarbons (µg/kg)									
1-Methylnaphthalene	68,000	2,200	360 U	1500 U	370 U	370 U	370 U	370 U	380 U
2-Methylnaphthalene	80,000	6,100	360 U	1500 U	370 U	370 U	370 U	370 U	380 U
Acenaphthene	1,900,000	2,100	730 U	3000 U	750 U	750 U	740 U	740 U	760 U
Acenaphthylene	1,100,000	27,000	730 U	3000 U	750 U	750 U	740 U	740 U	760 U
Anthracene	18,000,000	2,500,000	360 U	370 U	370 U	370 U	370 U	370 U	380 U
Benzo(a)antharacene	1,400	3,200	73 U	**1240**	**71.2 J**	**70.7 J**	74 U	**529**	**61.5 J**
Benzo(a)pyrene	100	8,000	73 U	**914**	**32.2 J**	**30.8 J**	74 U	**397**	**35.5 J**
Benzo(b)fluoranthene	1,400	10,000	73 U	**1450**	**63.8 J**	**67.6 J**	74 U	**712**	109
Benzo(g,h,i)perylene	2,300,000	32,000,000	73 U	**825**	75 U	75 U	74 U	**386**	**65.6 J**
Benzo(k)fluoranthene	15,000	25,000	73 U	**743**	**37.7 J**	**33.7 J**	74 U	**333**	**47.9 J**
Chrysene	140,000	77,000	360 U	**892**	370 U	**49.9 J**	370 U	**478**	380 U
Dibenzo(a,h)anthracene	100	30,000	73 U	**114**	75 U	75 U	74 U	**39.9 J**	76 U
Fluoranthene	2,900,000	1,200,000	360 U	**1690**	370 U	370 U	370 U	**777**	380 U
Fluorene	2,200,000	160,000	360 U	1500 U	370 U	370 U	370 U	370 U	380 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	73 U	**808**	75 U	75 U	74 U	**401**	**54 J**
Naphthalene	40,000	1,700	360 U	1500 U	370 U	370 U	370 U	370 U	380 U
Phenanthrene	2,000,000	250,000	360 U	370 U	370 U	370 U	370 U	370 U	380 U
Pyrene	2,200,000	880,000	360 U	**1700**	370 U	370 U	370 U	**741**	380 U

TABLE 3-1

POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	FDEP SCTL[1]		CEF-535-			
	Residential Direct Exposure	Leachability to Groundwater	SS-115-01	SS-201-01	SS-202-01	
					Sample	Duplicate
Polynuclear Aromatic Hydrocarbons (µg/kg)						
1-Methylnaphthalene	68,000	2,200	380 U	360 U	370 U	370 U
2-Methylnaphthalene	80,000	6,100	380 U	360 U	370 U	370 U
Acenaphthene	1,900,000	2,100	760 U	710 U	740 U	730 U
Acenaphthylene	1,100,000	27,000	760 U	710 U	740 U	730 U
Anthracene	18,000,000	2,500,000	380 U	360 U	370 U	370 U
Benzo(a)antharacene	1,400	3,200	76 U	360 U	370 U	370 U
Benzo(a)pyrene	100	8,000	76 U	71 U	74 U	73 U
Benzo(b)fluoranthene	1,400	10,000	76 U	71 U	74 U	73 U
Benzo(g,h,i)perylene	2,300,000	32,000,000	76 U	71 U	74 U	73 U
Benzo(k)fluoranthene	15,000	25,000	76 U	71 U	74 U	73 U
Chrysene	140,000	77,000	380 U	360 U	370 U	370 U
Dibenzo(a,h)anthracene	100	30,000	76 U	71 U	74 U	73 U
Fluoranthene	2,900,000	1,200,000	380 U	360 U	370 U	370 U
Fluorene	2,200,000	160,000	380 U	360 U	370 U	370 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	76 U	71 U	74 U	73 U
Naphthalene	40,000	1,700	380 U	360 U	370 U	370 U
Phenanthrene	2,000,000	250,000	380 U	360 U	370 U	370 U
Pyrene	2,200,000	880,000	380 U	360 U	370 U	370 U

U = Not detected at or above detection limit (associated value).
J = Estimated concentration.
Bolded values exceed detection limit.
Shaded values exceed regulatory criterion.
(1) Florida Department of Environmental Protection Soil Cleanup Target Levels, FAC Chapter 62-777 (FDEP, 1999).

TABLE 3-2

PESTICIDE, TRPH, AND INORGANIC ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 2

PARAMETER	FDEP SCTL[1]		IBDS VALUE[2]	CEF-535-				
	Residential Direct Exposure	Leachability to Groundwater		SS-001-01	SS-002-01	SS-003-01		SS-004-01
						Sample	Duplicate	
Pesticides (µg/kg)								
4,4'-DDD	4,600	4,000	NC	77 U	37 U	38 U	38 U	37 U
4,4'-DDE	3,300	18,000	NC	77 U	37 U	38 U	38 U	37 U
4,4'-DDT	3,300	11,000	NC	77 U	37 U	38 U	38 U	37 U
Aldrin	70	500	NC	38 U	18 U	19 U	19 U	19 U
Apha-BHC	200	0	NC	38 U	18 U	19 U	19 U	19 U
Alpha-Chlordane	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Beta-BHC	600	1	NC	38 U	18 U	19 U	19 U	19 U
Delta-BHC	22,000	200	NC	38 U	18 U	19 U	19 U	19 U
Dieldrin	70	4	NC	38 U	18 U	19 U	19 U	19 U
Endosulfan I	410,000	3,800	NC	38 U	18 U	19 U	19 U	19 U
Endosulfan II	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Endosulfan Sulfate	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Endrin	21,000	1,000	NC	77 U	37 U	38 U	38 U	37 U
Endrin Aldehyde	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Endrin Ketone	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Gamma-BHC (Lindane)	700	9	NC	38 U	18 U	19 U	19 U	19 U
Gamma-Chlordane	NC	NC	NC	77 U	37 U	38 U	38 U	37 U
Heptachlor	200	23,000	NC	38 U	18 U	19 U	19 U	19 U
Heptachlor Epoxide	100	600	NC	38 U	18 U	19 U	19 U	19 U
Methoxychlor	370,000	160,000	NC	150 U	73 U	76 U	75 U	75 U
Toxaphene	1,000	31,000	NC	3800 U	1800 U	1900 U	1900 U	1900 U
Total Recoverable Petroleum Hydrocarbons (mg/kg)								
TRPH	2500	340	NC	**290**	**91.3**	**13.5**	**13.7**	**34.1 J**

TABLE 3-2

PESTICIDE, TRPH, AND INORGANIC ANALYTICAL DATA
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 2 OF 2

PARAMETER	FDEP SCTL[1]		IBDS VALUE[2]	CEF-535-				
	Residential Direct Exposure	Leachability to Groundwater		SS-001-01	SS-002-01	SS-003-01		SS-004-01
						Sample	Duplicate	
Inorganics (mg/kg)								
Aluminum	72,000	NC	4,430	**13600**	**1910**	**1160**	**1320**	**2150**
Antimony	26	5	9.44	0.29 U	0.27 U	0.29 U	0.27 U	0.27 U
Arsenic	0.8	29	2.04	**2.6**	**0.79**	**0.44**	0.39 U	0.39 U
Barium	110	1,600	14.4	**114**	**14.4**	**7.2**	**7.8**	**7.2**
Beryllium	120	63	0.35	**3.1**	0.14 U	0.04 U	0.04 U	0.07 U
Cadmium	75	8	1.72	0.04 U	0.2 U	0.27 U	0.25 U	0.29 U
Chromium	210	38	7.75	3.6 U	3.4 U	**5**	**4.3**	**4.2**
Cobalt	4,700	NC	3.11	**0.86**	0.24 U	0.27 U	0.27 U	0.22 U
Copper	110	NC	5.97	**6.4**	**6.6**	**2.3**	**2.4**	**1.8**
Iron	23,000	NC	1,490	**4220 J**	**1190 J**	**1240 J**	**328 J**	**399 J**
Lead	400	NC	197	**5.5**	**7.4**	1.7 U	3.2 U	2.3 U
Manganese	1,600	NC	22	**641**	**53.4**	**23.5**	**18.2**	**15.5**
Mercury	3.4	2.1	0.16	0.03 U	0.01 U	0.03 U	0.02 U	0.01 U
Nickel	110	130	3.89	2.5 U	1.4 U	0.74 U	0.83 U	0.97 U
Selenium	390	5	1.68	0.66 U	0.23 U	0.25 U	0.23 U	0.23 U
Silver	390	17	2.13	0.12 U	0.11 U	0.12 U	0.11 U	0.11 U
Thallium	NC	NC	2.84	0.32 U	0.3 U	0.33 U	0.3 U	0.31 U
Vanadium	15	980	6.3	**9.5**	**2.8**	**2.3**	**3.6**	**2.7**
Zinc	23,000	6,000	37	**9.3**	**35.2**	**10.4**	**10.6**	**11.1**

U = Not detected at or above detection limit (associated value).
J = Estimated concentration.
Bolded values exceed detection limit.
Shaded values exceed regulatory criterion.
NC = No criterion.
(1) Florida Department of Environmental Protection Soil Cleanup Target Levels, FAC Chapter 62-777 (FDEP, 1999).
(2) NAS Cecil Field Inorganic Background Data Set (HLA, 1998).

TABLE 3-3

PRE- AND POST-REMEDIATION BENZO(A)PYRENE EQUIVALENT CONCENTRATIONS
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Sample		Pre-Excavation BaPEq	Post-Excavation BaPEq
MIN		36.0000	1.8000
MAX		6,896.00	604.00
MEAN		595.19	75.64
t 0.95, n-1		0.20948809	0.241864526
STANDARD DEVIATION		1,488.91	135.80
COEFFICIENT OF VARIATION		2.50	1.80
n		21	21
UCL $_{0.95}$		663.25	82.81
Goal remediation level		**100.00 1.8**	**100.00 1.8**
CEF-535-SS-001-01		6896	1.8
CEF-535-SS-101-02	D	151	151
CEF-535-SS-002-01		1027	1.8
CEF-535-SS-104-02		176	176
CEF-535-SS-003-01	DU	38	19
CEF-535-SS-004-01	U	38	38
CEF-535-SS-102-01		176	176
CEF-535-SS-103-01		136	136
CEF-535-SS-105-01	U	70	35
CEF-535-SS-106-01		278	1.8
CEF-535-SS-107-01		611	1.8
CEF-535-SS-108-01		544	1.8
CEF-535-SS-109-01	U	37	1.8
CEF-535-SS-110-01		1386	1.8
CEF-535-SS-111-01	D	87	87
CEF-535-SS-112-01	U	37	1.8
CEF-535-SS-113-01		604	604
CEF-535-SS-114-01		96	96
CEF-535-SS-115-01	U	38	19
CEF-535-SS-201-01	U	36	18
CEF-535-SS-202-01	DU	37	19

D Duplicate Sample
U Nondetect

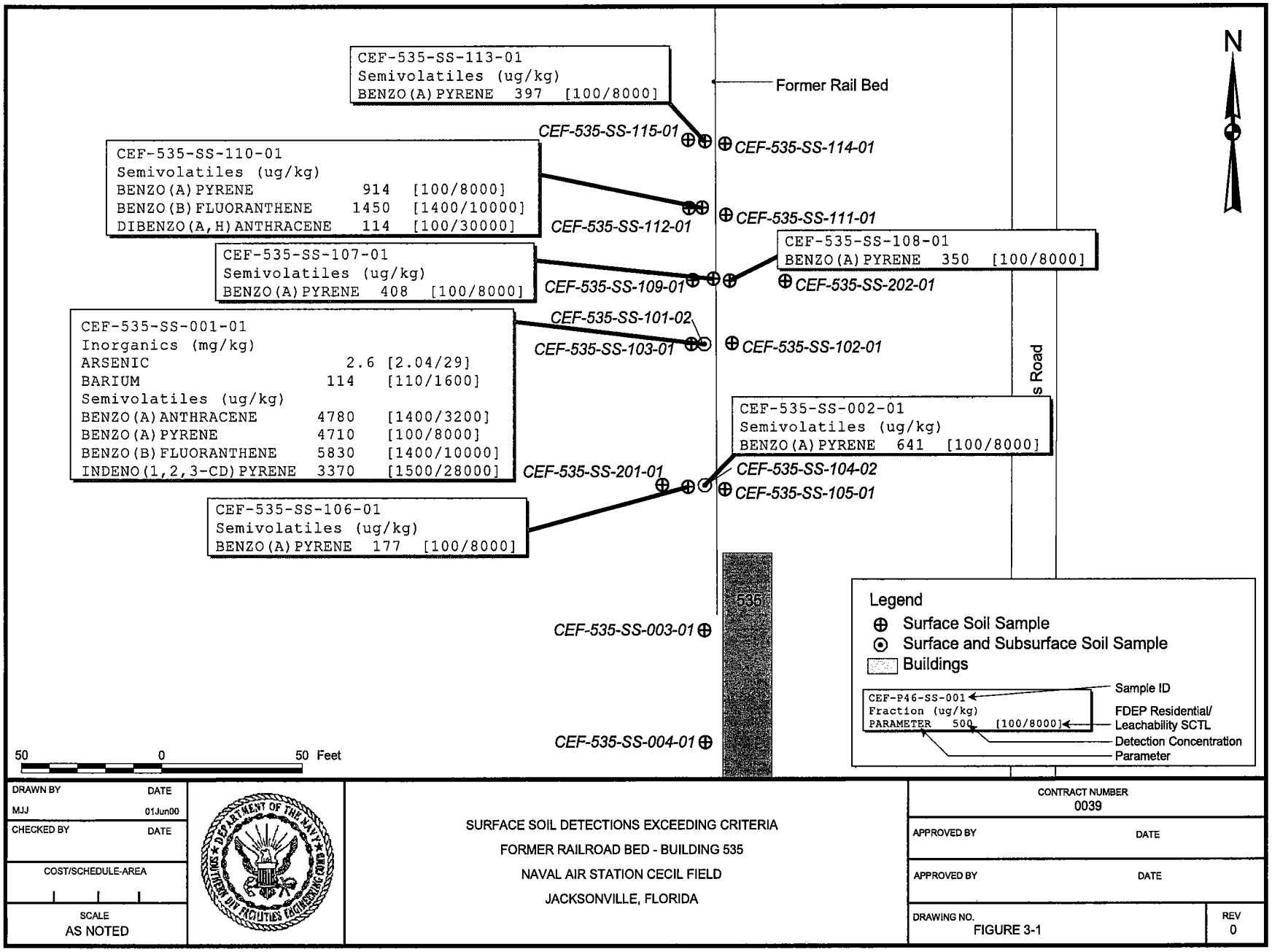
Bold indicates excavated samples.

TABLE 3-4

POST EXCAVATION SAMPLES
BUILDING 535, AVORD LOADING DOCK
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

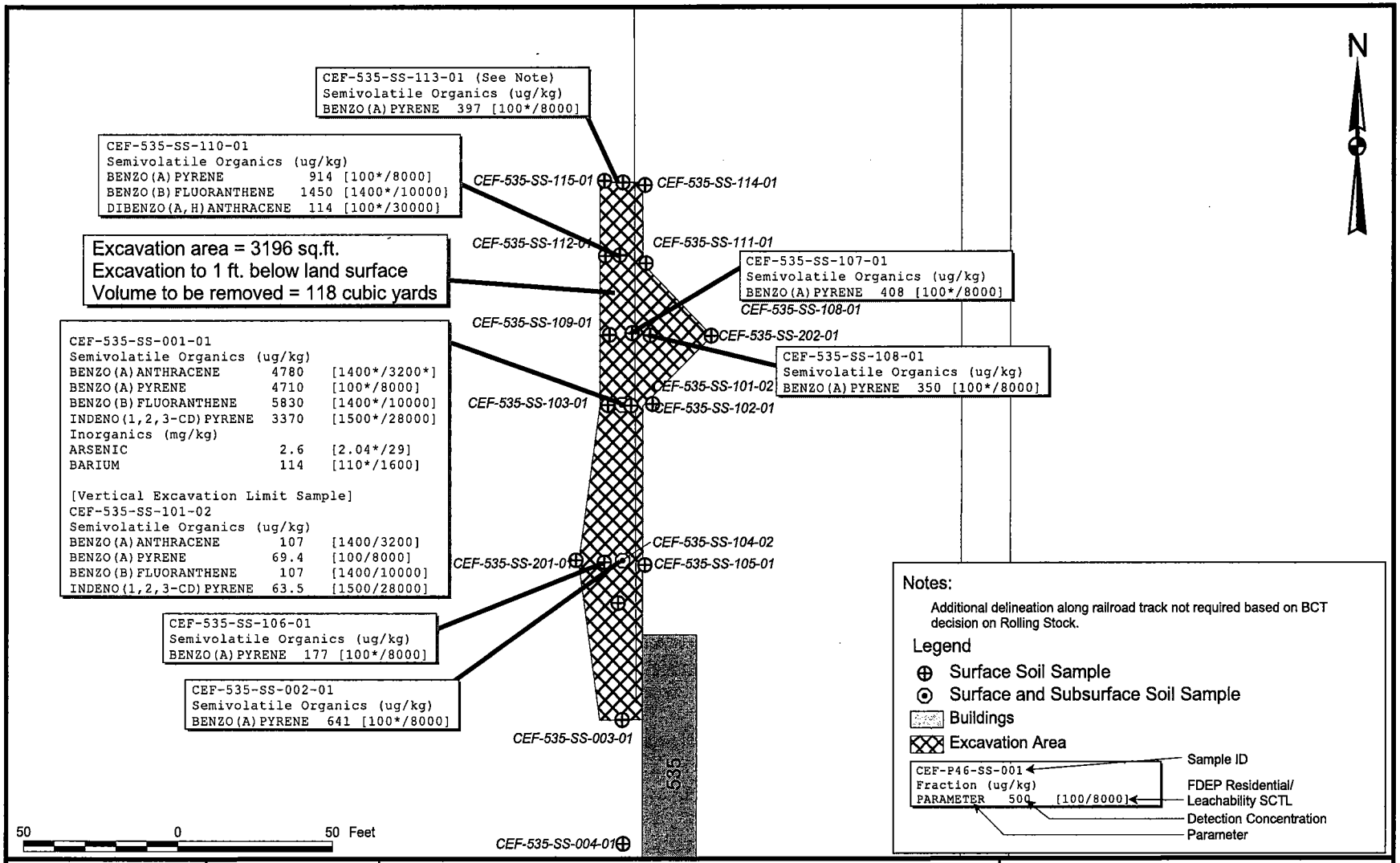
Parameter	Sample			Inorganic Background Data Set Levels[1]	EPA Region IV Screening Value[2]	Maximum Hazard Quotient[3]	Selected as COPC[4] (Yes/No?)
	CEF-535-SS-10102--AVG	CEF-535-SS-104-02	CEF-535-SS-004-01				
	Depth 1-2'	Depth 1-2'	Depth 0-1'				
Semivolatiles (ug/kg)							
Benzo(a)anthracene	116	124	75 U	NA	NA	NA	YES
Benzo(a)pyrene	77.9 J	89.7	75 U	NA	100	0.90	NO
Benzo(b)fluoranthene	121	180	75 U	NA	NA	NA	YES
Benzo(g,h,i)perylene	73.45 J	95.8	75 U	NA	NA	NA	YES
Benzo(k)fluoranthene	53.4 J	90.2	75 U	NA	NA	NA	YES
Chrysene	66.6 J	126 J	370 U	NA	NA	NA	YES
Fluoranthene	138.5 J	223 J	370 U	NA	100	2.23	YES
Indeno(1,2,3-CD)pyrene	69.6 J	102	75 U	NA	NA	NA	YES
Pyrene	124.5 J	172 J	370 U	NA	100	1.72	YES
Total PAHs	841	1203		NA	1000	1.20	YES
Inorganics (mg/kg)							
Aluminum			2150	4430	50	43	YES
Barium			7.2	14.4	165	0.04	NO
Calcium			52800	NA	NA	NA	NO
Chromium			4.2	7.75	0.4	10.5	YES
Copper			1.8	5.97	40	0.05	NO
Iron			399 J	1490	200	2.0	YES
Magnesium			433	NA	NA	NA	NO
Manganese			15.5	22	100	0.155	NO
Sodium			168	NA	NA	NA	NO
Vanadium			2.7	6.3	2	1.4	YES
Zinc			11.1	37	50	0.30	NO

1 Inorganic Background Data Set, NAS Cecil Field.
2 USEPA Region IV Ecological Screening Values (USEPA,1999).
3 Maximum detected concentration divided by the screening value was used to calculate the Hazard Quotient.
4 Chemicals were selected as COPCs if the maximum hazard quotient was greater than 1.0 or if the chemical did not have a screening value. Calcium, magnesium, and sodium were not retained as COPCs because they are essential nutrients and have low toxicity.



DRAWN BY: MJJ	DATE: 01Jun00	SURFACE SOIL DETECTIONS EXCEEDING CRITERIA FORMER RAILROAD BED - BUILDING 535 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-1 / REV: 0

P:\GIS\NAS_CecilField\Bldg0535.apr 27Mar02 MJJ Layout 3-1



DRAWN BY: MJJ	DATE: 12Sept00	REMOVAL ACTION DESIGN PLAN SOIL EXCAVATION FORMER RAILROAD BED - BUILDING 535 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER: 0039
CHECKED BY:	DATE:		APPROVED BY: DATE:
COST/SCHEDULE-AREA			APPROVED BY: DATE:
SCALE: AS NOTED			DRAWING NO.: FIGURE 3-2 REV: 1

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4.0 CONCLUSIONS AND RECOMMENDATION

Field investigations determined that PAH contamination was present at Building 535, the AVORD Loading Dock area, and a removal action was performed in September 2001 to excavate and dispose off site the soil contaminated above the FDEP residential SCTLs. Since the removal action, the soils at this site no longer represent a risk to human health for residential use and to the environment.

Based upon these conclusions, the recommendation for Building 535, the AVORD Loading Dock is no further action LUCIP. It is also recommended that the Environmental Baseline Survey (EBS) color code should be changed from Gray to Dark Green to denote areas where release, disposal, and/or migration of hazardous substances have occurred and that remedial actions to protect human health and the environment have been taken. Residual PAH concentrations in the soil no longer represent a hazard to human health for residential use or to the environment.

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APPENDIX A

LABORATORY ANALYTICAL DATA

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MR. M. SPERANZA** **DATE: APRIL 26, 2001**

FROM: **SETH STAFFEN** **CC: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –PAH / TPH**
CTO 078 – NAS CECIL FIELD
SDG F9387 / F9388

SAMPLES:

5/Soil/PAH/TPH

SDG F9387 - CEF-98-SS-201-1, CEF-98-SS-202-1, CEF-98-SS-203-1, CEF-98-SS-204-1, CEF-98-SS-DUP3

3/Soil/PAH

SDG F9388 - CEF-535-SS-201-01, CEF-535-202-01, CEF-535-SS-DUP-4

OVERVIEW

The sample sets for CTO 078, SDG F9387 and F9388 Naval Air Station (NAS) Cecil Field; Florida consisted of eight (8) solid environmental samples. The samples were analyzed for Target Compound List (TCL) Polynuclear Aromatic Hydrocarbons (PAH), and Total Petroleum Hydrocarbons (TPH). Two field duplicate pairs were included: CEF-98-SS-201-01 / CEF-98-SS-DUP-3 and CEF-535-SS-202-01 / CEF-535-SS-DUP-4.

The samples were collected by Tetra Tech, NUS on April 6, 2001, and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8310 and FLORIDA-PRO analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Initial/continuing calibrations
* • Laboratory method/field quality control blank results
• Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

The text of this report is formulated to address only gross noncompliances resulting in the rejection of data and the elimination of false positives.

PAH FRACTION

SDG F9387- Samples CEF-98-SS-201-01, CEF-98-SS-201-01, CEF-98-SS-203-01, and CEF-98-SS-DUP3 were analyzed at a 40X, 4X, 20X, and 20X dilution, respectively; thus causing elevated reporting limits. All quality control parameters were met for this fraction.

SDG F9388- All quality control parameters were met for this fraction.

TPH FRACTION

SDG F9387 - All quality control parameters were met for this fraction.

ADDITONAL COMMENTS

Positive results below the reporting limit were qualified as estimated (J), due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory performance: Due to matrix interference, the surrogates were diluted out of several samples in SDG: F9387.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the NFESC guidelines "Navy IRCDQM" (September 1999). The text of this report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Seth Staffen

Environmental Scientist/Data Validator
Tetra Tech, NUS

Joseph A. Samchuck

Data Validation Quality Assurance Officer
Tetra Tech, NUS

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

CTO078-NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F9388

SAMPLE NUMBER:	CEF-535-SS-201-01			CEF-535-SS-202-01			CEF-535-SS-DUP 4					
SAMPLE DATE:	04/06/01			04/06/01			04/06/01			/ /		
LABORATORY ID:	F9388-1			F9388-2			F9388-3					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.1 %			0.1 %			0.1 %			100.0 %		
UNITS:	UG/KG			UG/KG			UG/KG					
FIELD DUPLICATE OF:							CEF-535-SS-202-01					
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	360	U		370	U		370	U				
2-METHYLNAPHTHALENE	360	U		370	U		370	U				
ACENAPHTHENE	710	U		740	U		730	U				
ACENAPHTHYLENE	710	U		740	U		730	U				
ANTHRACENE	360	U		370	U		370	U				
BENZO(A)ANTHRACENE	360	U		370	U		370	U				
BENZO(A)PYRENE	71	U		74	U		73	U				
BENZO(B)FLUORANTHENE	71	U		74	U		73	U				
BENZO(G,H,I)PERYLENE	71	U		74	U		73	U				
BENZO(K)FLUORANTHENE	71	U		74	U		73	U				
CHRYSENE	360	U		370	U		370	U				
DIBENZO(A,H)ANTHRACENE	71	U		74	U		73	U				
FLUORANTHENE	360	U		370	U		370	U				
FLUORENE	360	U		370	U		370	U				
INDENO(1,2,3-CD)PYRENE	71	U		74	U		73	U				
NAPHTHALENE	360	U		370	U		370	U				
PHENANTHRENE	360	U		370	U		370	U				
PYRENE	360	U		370	U		370	U				

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	CEF-535-SS-201-01		
Lab Sample ID:	F9388-1	**Date Sampled:**	04/06/01
Matrix:	SO - Soil	**Date Received:**	04/07/01
Method:	EPA 8310 SW846 3550B	**Percent Solids:**	93.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006998.D	1	04/09/01	MRE	04/09/01	OP2965	GAA280
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	710	ug/kg	
208-96-8	Acenaphthylene	ND	710	ug/kg	
120-12-7	Anthracene	ND	360	ug/kg	
56-55-3	Benzo(a)anthracene	ND	360	ug/kg	
50-32-8	Benzo(a)pyrene	ND	71	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	71	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	71	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	71	ug/kg	
218-01-9	Chrysene	ND	360	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	71	ug/kg	
206-44-0	Fluoranthene	ND	360	ug/kg	
86-73-7	Fluorene	ND	360	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	71	ug/kg	
91-20-3	Naphthalene	ND	360	ug/kg	
90-12-0	1-Methylnaphthalene	ND	360	ug/kg	
91-57-6	2-Methylnaphthalene	ND	360	ug/kg	
85-01-8	Phenanthrene	ND	360	ug/kg	
129-00-0	Pyrene	ND	360	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		37-158%
92-94-4	p-Terphenyl	84%		59-149%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-202-01		
Lab Sample ID:	F9388-2	**Date Sampled:**	04/06/01
Matrix:	SO - Soil	**Date Received:**	04/07/01
Method:	EPA 8310 SW846 3550B	**Percent Solids:**	90.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006999.D	1	04/09/01	MRE	04/09/01	OP2965	GAA280
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	ND	370	ug/kg	
50-32-8	Benzo(a)pyrene	ND	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	74	ug/kg	
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		37-158%
92-94-4	p-Terphenyl	83%		59-149%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-DUP 4		
Lab Sample ID:	F9388-3	**Date Sampled:**	04/06/01
Matrix:	SO - Soil	**Date Received:**	04/07/01
Method:	EPA 8310 SW846 3550B	**Percent Solids:**	90.8
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007000.D	1	04/09/01	MRE	04/09/01	OP2965	GAA280
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	730	ug/kg	
208-96-8	Acenaphthylene	ND	730	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	ND	370	ug/kg	
50-32-8	Benzo(a)pyrene	ND	73	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	73	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	73	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	73	ug/kg	
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	73	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	73	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		37-158%
92-94-4	p-Terphenyl	86%		59-149%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-07-0-026

TO: **MARK SPERANZA** **DATE: SEPTEMBER 19, 2000**

FROM: **JUSTIN ORBICH** **CC: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PAH**
CTO 078 – NAS CECIL FIELD
SDG F7330

SAMPLES: 17/Surface Soil

CEF-535-DUP2	CEF-535-DUP3
CEF-535-SS-101-02	CEF-535-SS-102-01
CEF-535-SS-103-01	CEF-535-SS-104-02
CEF-535-SS-105-01	CEF-535-SS-106-01
CEF-535-SS-107-01	CEF-535-SS-108-01
CEF-535-SS-109-01	CEF-535-SS-110-01
CEF-535-SS-111-01	CEF-535-SS-112-01
CEF-535-SS-113-01	CEF-535-SS-114-01
CEF-535-SS-115-01	

OVERVIEW

The sample set for CTO 078, SDG F7330 Naval Air Station (NAS) Cecil Field; Florida consists of seventeen (17) surface soil environmental samples. The samples were analyzed for Polynuclear Aromatic Hydrocarbon (PAH) organic compounds. Two (2) field duplicate pairs (CEF-535-SS-101-02/CEF-535-DUP2 and CEF-535-SS-111-01/CEF-535-DUP3) were included within this SDG.

The samples were collected by Tetra Tech, NUS on August 8th, 2000 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8310 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Initial/continuing calibrations
* • Laboratory method/field quality control blank results
* • Field Duplicate Precision
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

PAH FRACTION

Sample CEF-535-SS-105-01 was analyzed at a 5X dilution thus causing elevated reporting limits.

ADDITIONAL COMMENTS

Several samples contained positive results for compounds below the reporting limits. These results were qualified as estimated (J).

EXECUTIVE SUMMARY

Laboratory performance: None.

Other Factors Affecting Data Quality: A sample was analyzed at a dilution thus causing elevated reporting limits.

MEMO TO: MARK SPERANZA
DATE: SEPTEMBER 19, 2000 – PAGE 3

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the NFESC guidelines "Navy IRCDQM" (September 1999). The text of this report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Justin Orbich

Chemist/Data Validator
Tetra Tech, NUS

Joseph A. Samchuck

Data Validation Quality Assurance Officer
Tetra Tech, NUS

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

DATA QUALIFIER DEFINITIONS:

U - Value is a nondetected result as reported by the laboratory and should not be considered present.

J - Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.

UJ - Nondetected results is estimated as a result of a technical noncomplicane.

APPENDIX A

Qualified Analytical Results

ACCUTEST

Report of Analysis

Client Sample ID:	CEF-535-DUP2		
Lab Sample ID:	F7330-16	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000026.D	1	08/29/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	124	74	ug/kg	
50-32-8	Benzo(a)pyrene	86.4	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	135	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	80.8	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	58.7	74	ug/kg	J
218-01-9	Chrysene	76.9	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	146	370	ug/kg	J
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	75.6	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	142	370	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	72%		22-130%
92-94-4	p-Terphenyl	91%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-DUP3		
Lab Sample ID:	F7330-17	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.3
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000027.D	1	08/29/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	750	ug/kg	
208-96-8	Acenaphthylene	ND	750	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	70.7	75	ug/kg	J
50-32-8	Benzo(a)pyrene	30.8	75	ug/kg	J
205-99-2	Benzo(b)fluoranthene	67.6	75	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	75	ug/kg	
207-08-9	Benzo(k)fluoranthene	33.7	75	ug/kg	J
218-01-9	Chrysene	49.9	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	75	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	75	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		22-130%
92-94-4	p-Terphenyl	92%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-101-02		
Lab Sample ID:	F7330-1	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000010.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	107	74	ug/kg	
50-32-8	Benzo(a)pyrene	69.4	74	ug/kg	J
205-99-2	Benzo(b)fluoranthene	107	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	66.1	74	ug/kg	J
207-08-9	Benzo(k)fluoranthene	48.1	74	ug/kg	J
218-01-9	Chrysene	56.2	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	131	370	ug/kg	J
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	63.5	74	ug/kg	J
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	107	370	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		22-130%
92-94-4	p-Terphenyl	97%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-102-01		
Lab Sample ID:	F7330-2	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.8
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000011.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	124	74	ug/kg	
50-32-8	Benzo(a)pyrene	98.7	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	166	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	99.6	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	75.5	74	ug/kg	
218-01-9	Chrysene	78.8	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	133	370	ug/kg	J
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	97.2	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	157	370	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	80%		22-130%
92-94-4	p-Terphenyl	96%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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ACCUTEST.

Report of Analysis

Client Sample ID:	CEF-535-SS-103-01		
Lab Sample ID:	F7330-3	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000012.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	750	ug/kg	
208-96-8	Acenaphthylene	ND	750	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	54.8	75	ug/kg	J
50-32-8	Benzo(a)pyrene	74.5	75	ug/kg	J
205-99-2	Benzo(b)fluoranthene	106	75	ug/kg	
191-24-2	Benzo(g,h,i)perylene	62.0	75	ug/kg	J
207-08-9	Benzo(k)fluoranthene	45.0	75	ug/kg	J
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	75	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	69.0	75	ug/kg	J
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		22-130%
92-94-4	p-Terphenyl	102%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-104-02		
Lab Sample ID:	F7330-4	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	90.4
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000013.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	124	74	ug/kg	
50-32-8	Benzo(a)pyrene	89.7	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	180	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	95.8	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	90.2	74	ug/kg	
218-01-9	Chrysene	126	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	223	370	ug/kg	J
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	102	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	172	370	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		22-130%
92-94-4	p-Terphenyl	100%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-105-01		
Lab Sample ID:	F7330-5	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	91.7
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA003999.D	2	08/30/00	NF	08/17/00	OP1964	GAA125
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	1400	ug/kg	
208-96-8	Acenaphthylene	ND	1400	ug/kg	
120-12-7	Anthracene	ND	730	ug/kg	
56-55-3	Benzo(a)anthracene	ND	140	ug/kg	
50-32-8	Benzo(a)pyrene	ND	140	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	140	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	140	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	140	ug/kg	
218-01-9	Chrysene	ND	730	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	140	ug/kg	
206-44-0	Fluoranthene	ND	730	ug/kg	
86-73-7	Fluorene	ND	730	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	140	ug/kg	
91-20-3	Naphthalene	ND	730	ug/kg	
90-12-0	1-Methylnaphthalene	ND	730	ug/kg	
91-57-6	2-Methylnaphthalene	ND	730	ug/kg	
85-01-8	Phenanthrene	ND	730	ug/kg	
129-00-0	Pyrene	ND	730	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	65%		22-130%
92-94-4	p-Terphenyl	84%		53-130%

(a) Dilution required due to matrix interference; extract was viscous.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-106-01		
Lab Sample ID:	F7330-6	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	92.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000015.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	720	ug/kg	
208-96-8	Acenaphthylene	ND	720	ug/kg	
120-12-7	Anthracene	ND	360	ug/kg	
56-55-3	Benzo(a)anthracene	217	72	ug/kg	
50-32-8	Benzo(a)pyrene	177	72	ug/kg	
205-99-2	Benzo(b)fluoranthene	264	72	ug/kg	
191-24-2	Benzo(g,h,i)perylene	125	72	ug/kg	
207-08-9	Benzo(k)fluoranthene	126	72	ug/kg	
218-01-9	Chrysene	135	360	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	72	ug/kg	
206-44-0	Fluoranthene	256	360	ug/kg	J
86-73-7	Fluorene	ND	360	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	162	72	ug/kg	
91-20-3	Naphthalene	ND	360	ug/kg	
90-12-0	1-Methylnaphthalene	ND	360	ug/kg	
91-57-6	2-Methylnaphthalene	ND	360	ug/kg	
85-01-8	Phenanthrene	ND	360	ug/kg	
129-00-0	Pyrene	235	360	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		22-130%
92-94-4	p-Terphenyl	97%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-107-01		
Lab Sample ID:	F7330-7	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	90.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000016.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	505	74	ug/kg	
50-32-8	Benzo(a)pyrene	408	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	617	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	452	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	311	74	ug/kg	
218-01-9	Chrysene	360	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	48.5	74	ug/kg	J
206-44-0	Fluoranthene	594	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	381	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	581	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		22-130%
92-94-4	p-Terphenyl	101%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Client Sample ID:	CEF-535-SS-108-01		
Lab Sample ID:	F7330-8	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	83.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000018.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	800	ug/kg	
208-96-8	Acenaphthylene	ND	800	ug/kg	
120-12-7	Anthracene	ND	400	ug/kg	
56-55-3	Benzo(a)anthracene	450	80	ug/kg	
50-32-8	Benzo(a)pyrene	350	80	ug/kg	
205-99-2	Benzo(b)fluoranthene	650	80	ug/kg	
191-24-2	Benzo(g,h,i)perylene	368	80	ug/kg	
207-08-9	Benzo(k)fluoranthene	296	80	ug/kg	
218-01-9	Chrysene	336	400	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	42.8	80	ug/kg	J
206-44-0	Fluoranthene	622	400	ug/kg	
86-73-7	Fluorene	ND	400	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	376	80	ug/kg	
91-20-3	Naphthalene	ND	400	ug/kg	
90-12-0	1-Methylnaphthalene	ND	400	ug/kg	
91-57-6	2-Methylnaphthalene	ND	400	ug/kg	
85-01-8	Phenanthrene	ND	400	ug/kg	
129-00-0	Pyrene	545	400	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		22-130%
92-94-4	p-Terphenyl	97%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-109-01		
Lab Sample ID:	F7330-9	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	91.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000019.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	730	ug/kg	
208-96-8	Acenaphthylene	ND	730	ug/kg	
120-12-7	Anthracene	ND	360	ug/kg	
56-55-3	Benzo(a)anthracene	ND	73	ug/kg	
50-32-8	Benzo(a)pyrene	ND	73	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	73	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	73	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	73	ug/kg	
218-01-9	Chrysene	ND	360	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	73	ug/kg	
206-44-0	Fluoranthene	ND	360	ug/kg	
86-73-7	Fluorene	ND	360	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	73	ug/kg	
91-20-3	Naphthalene	ND	360	ug/kg	
90-12-0	1-Methylnaphthalene	ND	360	ug/kg	
91-57-6	2-Methylnaphthalene	ND	360	ug/kg	
85-01-8	Phenanthrene	ND	360	ug/kg	
129-00-0	Pyrene	ND	360	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	72%		22-130%
92-94-4	p-Terphenyl	91%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-110-01		
Lab Sample ID:	F7330-10	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	90.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000020.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2 [a]	AA004000.D	4	08/30/00	NF	08/17/00	OP1964	GAA125

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND [b]	3000	ug/kg	
208-96-8	Acenaphthylene	ND [b]	3000	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	1240	74	ug/kg	
50-32-8	Benzo(a)pyrene	914	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	1450	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	825	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	743	74	ug/kg	
218-01-9	Chrysene	892	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	114	74	ug/kg	
206-44-0	Fluoranthene	1690	370	ug/kg	
86-73-7	Fluorene	ND [b]	1500	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	808	74	ug/kg	
91-20-3	Naphthalene	ND [b]	1500	ug/kg	
90-12-0	1-Methylnaphthalene	ND [b]	1500	ug/kg	
91-57-6	2-Methylnaphthalene	ND [b]	1500	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	1700	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%	79%	22-130%
92-94-4	p-Terphenyl	101%	115%	53-130%

(a) Dilution required due to matrix interference.
(b) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-111-01		
Lab Sample ID:	F7330-11	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.1
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000021.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	750	ug/kg	
208-96-8	Acenaphthylene	ND	750	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	71.2	75	ug/kg	J
50-32-8	Benzo(a)pyrene	32.2	75	ug/kg	J
205-99-2	Benzo(b)fluoranthene	63.8	75	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	75	ug/kg	
207-08-9	Benzo(k)fluoranthene	37.7	75	ug/kg	J
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	75	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	75	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	68%		22-130%
92-94-4	p-Terphenyl	90%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-112-01		
Lab Sample ID:	F7330-12	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	89.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000022.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	ND	74	ug/kg	
50-32-8	Benzo(a)pyrene	ND	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	74	ug/kg	
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	74	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		22-130%
92-94-4	p-Terphenyl	93%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-113-01		
Lab Sample ID:	F7330-13	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	90.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000023.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	740	ug/kg	
208-96-8	Acenaphthylene	ND	740	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	529	74	ug/kg	
50-32-8	Benzo(a)pyrene	397	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	712	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	386	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	333	74	ug/kg	
218-01-9	Chrysene	478	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	39.9	74	ug/kg	J
206-44-0	Fluoranthene	777	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	401	74	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	741	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	72%		22-130%
92-94-4	p-Terphenyl	96%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-SS-114-01		
Lab Sample ID:	F7330-14	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	87.7
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000024.D	1	08/28/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	760	ug/kg	
208-96-8	Acenaphthylene	ND	760	ug/kg	
120-12-7	Anthracene	ND	380	ug/kg	
56-55-3	Benzo(a)anthracene	61.5	76	ug/kg	J
50-32-8	Benzo(a)pyrene	35.5	76	ug/kg	J
205-99-2	Benzo(b)fluoranthene	109	76	ug/kg	
191-24-2	Benzo(g,h,i)perylene	65.6	76	ug/kg	J
207-08-9	Benzo(k)fluoranthene	47.9	76	ug/kg	J
218-01-9	Chrysene	ND	380	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	76	ug/kg	
206-44-0	Fluoranthene	ND	380	ug/kg	
86-73-7	Fluorene	ND	380	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	54.0	76	ug/kg	J
91-20-3	Naphthalene	ND	380	ug/kg	
90-12-0	1-Methylnaphthalene	ND	380	ug/kg	
91-57-6	2-Methylnaphthalene	ND	380	ug/kg	
85-01-8	Phenanthrene	ND	380	ug/kg	
129-00-0	Pyrene	ND	380	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		22-130%
92-94-4	p-Terphenyl	93%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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ACCUTEST

Report of Analysis

Client Sample ID:	CEF-535-SS-115-01		
Lab Sample ID:	F7330-15	**Date Sampled:**	08/08/00
Matrix:	SO - Soil	**Date Received:**	08/11/00
Method:	EPA 8310	**Percent Solids:**	87.7
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE000025.D	1	08/29/00	NF	08/17/00	OP1964	GEE1
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	760	ug/kg	
208-96-8	Acenaphthylene	ND	760	ug/kg	
120-12-7	Anthracene	ND	380	ug/kg	
56-55-3	Benzo(a)anthracene	ND	76	ug/kg	
50-32-8	Benzo(a)pyrene	ND	76	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	76	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	76	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	76	ug/kg	
218-01-9	Chrysene	ND	380	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	76	ug/kg	
206-44-0	Fluoranthene	ND	380	ug/kg	
86-73-7	Fluorene	ND	380	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	76	ug/kg	
91-20-3	Naphthalene	ND	380	ug/kg	
90-12-0	1-Methylnaphthalene	ND	380	ug/kg	
91-57-6	2-Methylnaphthalene	ND	380	ug/kg	
85-01-8	Phenanthrene	ND	380	ug/kg	
129-00-0	Pyrene	ND	380	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	67%		22-130%
92-94-4	p-Terphenyl	87%		53-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: M. SPERANZA [redacted] **DATE:** AUGUST 6, 2000

FROM: GRETCHEN PHIPPS **COPIES:** DV FILE

SUBJECT: INORGANIC DATA VALIDATION – METALS
CTO 078 - NAS CECIL FIELD
SDG – F6831

SAMPLES: 33/Soils/

CEF-[redacted]-DUP1[1]
CEF-535-SS-001-01[1]
CEF-535-SS-002-01[1]
CEF-535-SS-003-01[1]
CEF-535-SS-004-01[1]
CEF-P21-DUP1[2]
CEF-P21-DUP2[3]
CEF-P21-DUP3[3]
CEF-P21-SS-801-02[2]
CEF-P21-SS-804-02[3]
CEF-P21-SS-805-02[3]
CEF-P21-SS-806-02[3]
CEF-P21-SS-807-02[3]
CEF-P21-SS-817-02[2]
CEF-P21-SS-819-02[2]
CEF-P21-SS-820-02[2]
CEF-P21-SS-822-02[2]
CEF-P21-SS-823-02[2]
CEF-P[redacted]-SS-825-02[2]
CEF-P21-SS-827-02[2]
CEF-P21-SU-829-03[2]
CEF-P42-DUP1[2]
CEF-P42-DUP3[4]
CEF-P42-SS-807-02[4]
CEF-P42-SS-809-02[2]
CEF-P42-SS-810-02[5]
CEF-P42-SS-816-02[2]
CEF-P42-SS-818-02[2]
CEF-P42-SS-823-02[2]
CEF-P42-SS-826-02[4]
CEF-P49-SS-601-02[6]
CEF-P49-SS-603-02[6]
CEF-P49-SS-609-02[6]

[1]Samples analyzed for TAL metals.
[2]Samples analyzed for arsenic.
[3]Samples analyzed for mercury.
[4]Samples analyzed for antimony and arsenic.
[5]Samples analyzed for antimony.
[6]Samples analyzed for lead.

Overview

The sample set for CTO 078, Cecil Field, SDG F6831 consists of thirty-three (33) soil environmental samples. Six (6) field duplicate pairs (CEF-535-SS-003-01 / CEF-535-DUP1, CEF-P21-SS-817-02 / CEF-P21-DUP1, CEF-P21-SS-819-02 / DEF-P21-DUP2, CEF-P21-SS-806-02 / CEF-P21-DUP3, CEF-P42-SS-816-02 / CEF-P42-DUP1, CEF-P42-SS-807-02 / CEF-P42-DUP3) were included within this SDG.

The samples were collected by Tetra Tech NUS on June 16-18, 2000 and analyzed by Accutest Laboratory under Naval Facilities Engineering Service Center (NFESC) Quality Assurance / Quality Control (QA / QC) criteria. Metals analyses were conducted using SW 846 method 6010B/7470A.

Notes

Sample CEF-P49-SS-603-02 was not diluted for lead analyses in the original data submission. The laboratory was contacted by Joe Samchuck and the sample was reanalyzed at a 100X dilution. The Form 1 was amended with the result from the reanalysis.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Field duplicate imprecision was noted for antimony, arsenic, iron and mercury.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994 and the NFESC document entitled "Navy IRCDQM." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Tetra Tech NUS
Joseph A. Samchuck
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-DUP1			CEF-535-SS-001-01			CEF-535-SS-002-01			CEF-535-SS-003-01		
SAMPLE DATE:	06/16/00			06/16/00			06/16/00			06/16/00		
LABORATORY ID:	F6831-5			F6831-1			F6831-2			F6831-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			86.6 %			90.9 %			87.9 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:	CEF-535-SS-003-01											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
INORGANICS												
ALUMINUM	1320			13600			1910			1160		
ANTIMONY	0.27	U		0.29	U		0.27	U		0.29	U	
ARSENIC	0.39	U		2.6			0.79			0.44		
BARIUM	7.8			114			14.4			7.2		
BERYLLIUM	0.04	U		3.1			0.14	U	A	0.04	U	
CADMIUM	0.25	U	A	0.04	U		0.20	U	A	0.27	U	A
CALCIUM	93000			75200			25300			109000		
CHROMIUM	4.3			3.6	U	A	3.4	U	A	5.0		
COBALT	0.27	U	A	0.86			0.24	U	A	0.27	U	A
COPPER	2.4			6.4			6.6			2.3		
IRON	328	J	G	4220	J	G	1190	J	G	1240	J	G
LEAD	3.2	U	A	5.5			7.4			1.7	U	A
MAGNESIUM	692			9510			634			806		
MANGANESE	18.2			641			53.4			23.5		
MERCURY	0.02	U	A	0.03	U	A	0.01	U	A	0.03	U	A
NICKEL	0.83	U	A	2.5	U	A	1.4	U	A	0.74	U	A
POTASSIUM	101	U	A	1530			166			104	U	A
SELENIUM	0.23	U		0.66	U	A	0.23	U		0.25	U	
SILVER	0.11	U		0.12	U		0.11	U		0.12	U	
SODIUM	200			371			149			246		
THALLIUM	0.30	U		0.32	U		0.30	U		0.33	U	
VANADIUM	3.6			9.5			2.8			2.3		
ZINC	10.6			9.3			35.2			10.4		

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-SS-004-01			CEF-P21-DUP1			CEF-P21-DUP2			CEF-P21-DUP3		
SAMPLE DATE:	06/16/00			06/17/00			06/17/00			06/17/00		
LABORATORY ID:	F6831-4			F6831-34			F6831-35			F6831-36		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			97.0 %			81.4 %			74.3 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:				CEF-P21-SS-817-02			CEF-P21-SS-819-02			CEF-P21-SS-806-02		
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
INORGANICS												
ALUMINUM	2150											
ANTIMONY	0.27	U										
ARSENIC	0.39	U		3.8	J	G						
BARIUM	7.2											
BERYLLIUM	0.07	U	A									
CADMIUM	0.29	U	A									
CALCIUM	52800											
CHROMIUM	4.2											
COBALT	0.22	U	A									
COPPER	1.8											
IRON	399	J	G									
LEAD	2.3	U	A									
MAGNESIUM	433											
MANGANESE	15.5											
MERCURY	0.01	U	A				0.56	J	G	5.4	J	G
NICKEL	0.97	U	A									
POTASSIUM	106	U	A									
SELENIUM	0.23	U										
SILVER	0.11	U										
SODIUM	168											
THALLIUM	0.31	U										
VANADIUM	2.7											
ZINC	11.1											

APPENDIX B
RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	CEF-535-DUP1		
Lab Sample ID:	F6831-5	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
		Percent Solids:	88.5
Project:	NAS Cecil Field		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	1320	22.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Antimony	0.27 U	6.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Arsenic	0.39 U	0.56	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Barium	7.8 B	22.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Beryllium	0.04 U	0.56	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cadmium	0.25 B	0.45	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Calcium	93000	559	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Chromium	4.3	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cobalt	0.27 B	5.6	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Copper	2.4 B	2.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Iron	328	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Lead	3.2 B	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Magnesium	692	559	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Manganese	18.2	1.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Mercury	0.02 B	0.18	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	0.83 B	4.5	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Potassium	101 B	559	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Selenium	0.23 U	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Sodium	200 B	559	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Thallium	0.30 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Vanadium	3.6 B	5.6	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Zinc	10.6	2.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CEF-535-SS-001-01		
Lab Sample ID:	F6831-1	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
		Percent Solids:	86.6
Project:	NAS Cecil Field		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	13600	24.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Antimony	0.29 U	7.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Arsenic	2.6	0.60	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Barium	114	24.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Beryllium	3.1	0.60	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cadmium	0.04 U	0.48	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Calcium	75200	601	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Chromium	3.6	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cobalt	0.86 B	6.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Copper	6.4	3.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Iron	4220	12.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Lead	5.5 B	12.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Magnesium	9510	601	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Manganese	641	1.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Mercury	0.03 B	0.19	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	2.5 B	4.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Potassium	1530	601	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Selenium	0.66 B	12.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Silver	0.12 U	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Sodium	371 B	601	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Thallium	0.32 U	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Vanadium	9.5	6.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Zinc	9.3	2.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CEF-535-SS-002-01		
Lab Sample ID:	F6831-2	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
		Percent Solids:	90.9
Project:	NAS Cecil Field		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	1910	22.5	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Antimony	0.27 U	6.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Arsenic	0.79	0.56	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Barium	14.4 B	22.5	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Beryllium	0.14 B	0.56	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cadmium	0.20 B	0.45	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Calcium	25300	561	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Chromium	3.4	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cobalt	0.24 B	5.6	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Copper	6.6	2.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Iron	1190	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Lead	7.4 B	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Magnesium	634	561	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Manganese	53.4	1.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Mercury	0.01 B	0.17	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	1.4 B	4.5	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Potassium	166 B	561	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Selenium	0.23 U	11.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Sodium	149 B	561	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Thallium	0.30 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Vanadium	2.8 B	5.6	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Zinc	35.2	2.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CEF-535-SS-003-01		
Lab Sample ID:	F6831-3	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
		Percent Solids:	87.9
Project:	NAS Cecil Field		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	1160	24.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Antimony	0.29 U	7.3	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Arsenic	0.44 B	0.61	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Barium	7.2 B	24.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Beryllium	0.04 U	0.61	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cadmium	0.27 B	0.48	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Calcium	109000	605	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Chromium	5.0	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cobalt	0.27 B	6.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Copper	2.3 B	3.0	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Iron	1240	12.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Lead	1.7 B	12.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Magnesium	806	605	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Manganese	23.5	1.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Mercury	0.03 B	0.19	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	0.74 B	4.8	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Potassium	104 B	605	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Selenium	0.25 U	12.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Silver	0.12 U	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Sodium	246 B	605	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Thallium	0.33 U	1.2	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Vanadium	2.3 B	6.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Zinc	10.4	2.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CEF-535-SS-004-01		
Lab Sample ID:	F6831-4	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
		Percent Solids:	89.2
Project:	NAS Cecil Field		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Aluminum	2150	22.9	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Antimony	0.27 U	6.9	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Arsenic	0.39 U	0.57	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Barium	7.2 B	22.9	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Beryllium	0.07 B	0.57	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cadmium	0.29 B	0.46	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Calcium	52800	572	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Chromium	4.2	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Cobalt	0.22 B	5.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Copper	1.8 B	2.9	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Iron	399	11.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Lead	2.3 B	11.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Magnesium	433 B	572	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Manganese	15.5	1.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Mercury	0.01 B	0.16	mg/kg	1	06/26/00	06/27/00	SJL	SW846 7471A
Nickel	0.97 B	4.6	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Potassium	106 B	572	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Selenium	0.23 U	11.4	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Sodium	168 B	572	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Thallium	0.31 U	1.1	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Vanadium	2.7 B	5.7	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A
Zinc	11.1	2.3	mg/kg	1	06/21/00	06/26/00	JK	SW846 6010A

RL = Reporting Limit

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-07-0-027

TO: MARK SPERANZA **DATE:** AUGUST 4, 2000

FROM: JUSTIN ORBICH **CC:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION – PAH/PEST/PCB/HERB/TPH/OPEST
CTO 078 – NAS CECIL FIELD
SDG F6831

SAMPLES: 24/Polynuclear Aromatic Hydrocarbon

CEF-535-DUP1	CEF-535-SS-001-01
CEF-535-SS-002-01	CEF-535-SS-003-01
CEF-535-SS-004-01	CEF-P42-DUP1
CEF-P42-DUP2	CEF-P42-DUP3
CEF-P42-SS-806-02	CEF-P42-SS-807-02
CEF-P42-SS-810-02	CEF-P42-SS-813-02
CEF-P42-SS-816-02	CEF-P42-SS-820-02
CEF-P42-SS-823-02	CEF-P42-SS-826-02
CEF-P42-SS-827-02	CEF-P42-SS-828-02
CEF-P42-SS-829-02	CEF-P42-SS-832-02
CEF-P42-SU-821-04	CEF-P49-DUP1
CEF-P49-SU-605-03	CEF-P49-SU-607-03

21/Total Petroleum Hydrocarbon

CEF-535-DUP1	CEF-535-SS-001-01
CEF-535-SS-002-01	CEF-535-SS-003-01
CEF-535-SS-004-01	CEF-P21-DUP1
CEF-P21-DUP2	CEF-P21-DUP3
CEF-P21-SS-801-02	CEF-P21-SS-804-02
CEF-P21-SS-805-02	CEF-P21-SS-806-02
CEF-P21-SS-807-02	CEF-P21-SS-817-02
CEF-P21-SS-819-02	CEF-P21-SS-820-02
CEF-P21-SS-822-02	CEF-P42-DUP1
CEF-P42-SS-813-02	CEF-P42-SS-816-02
CEF-P42-SS-823-02	

6/Herbicide

CEF-P21-DUP1	CEF-P21-SS-803-03
CEF-P21-SS-817-02	CEF-P21-SS-819-02
CEF-P21-SS-820-02	CEF-P21-SS-822-02

38/Pesticide

CEF-535-DUP1	CEF-535-SS-001-01
CEF-535-SS-002-01	CEF-535-SS-003-01

CEF-535-SS-004-01	CEF-P21-DUP1
CEF-P21-DUP2	CEF-P21-DUP3
CEF-P21-SS-801-02	CEF-P21-SS-803-03
CEF-P21-SS-804-02	CEF-P21-SS-805-02
CEF-P21-SS-806-02	CEF-P21-SS-807-02
CEF-P21-SS-809-02	CEF-P21-SS-811-01
CEF-P21-SS-812-01	CEF-P21-SS-813-01
CEF-P21-SS-814-02	CEF-P21-SS-815-01
CEF-P21-SS-816-01	CEF-P21-SS-817-02
CEF-P21-SS-819-02	CEF-P21-SS-820-02
CEF-P21-SS-822-02	CEF-P21-SS-831-01
CEF-P25-DUP1	CEF-P25-DUP2*
CEF-P25-SS-701-02	CEF-P25-SS-703-02
CEF-P25-SS-705-02	CEF-P25-SS-707-02
CEF-P25-SS-709-02	CEF-P25-SS-711-02
CEF-P25-SS-713-01	CEF-P25-SS-714-01
CEF-P25-SS-715-02	CEF-P25-SS-717-01*

6/Organophopshorous Pesticide

CEF-P21-DUP2	CEF-P21-DUP3
CEF-P21-SS-804-02	CEF-P21-SS-805-02
CEF-P21-SS-806-02	CEF-P21-SS-807-02

OVERVIEW

The sample set for CTO 078, SDG F6831 Naval Air Station (NAS) Cecil Field; Florida consists of sixty (60) soil environmental samples. The samples were analyzed for Polynuclear Aromatic Hydrocarbon (PAH), Total Petroleum Hydrocarbon (TPH), herbicide, pesticide, and organophosphorous pesticide organic compounds. The pesticide samples designated (*) were analyzed for Polychlorinated Biphenyl (PCB) organic compounds. Nine (9) field duplicate pairs (CEF-535-SS-003-01/CEF-535-DUP1, CEF-P42-SS-816-02/CEF-P42-DUP1, CEF-P42-SS-820-02/CEF-P42-DUP2, CEF-P42-SS-807-02/CEF-P42-DUP3, CEF-P49-SU-607-03/CEF-P49-DUP1, CEF-P21-SS-817-02/CEF-P21-DUP1, CEF-P21-SS-819-02/CEF-P21-DUP2, CEF-P21-SS-806-02/CEF-P21-DUP3, CEF-P25-SS-705-02/CEF-P25-DUP1, and CEF-P25-SS-717-01/CEF-P25-DUP2) were included within this SDG.

The samples were collected by Tetra Tech, NUS on June 16th, 17th, and 18th, 2000 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8081A, 8082, 8310, 8141A, 8151A, and FLORIDA-PRO analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Initial/continuing calibrations
* • Laboratory method/field quality control blank results
• Field Duplicate Precision
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

PAH FRACTION

The following samples were analyzed at a dilution thus causing elevated reporting limits.

Sample	Dilution Factor
CEF-535-SS-001-01	20X
CEF-535-SS-002-01	4X
CEF-P42-SS-810-02	8X
CEF-P49-DUP1	80X
CEF-P49-SU-605-03	200X
CEF-P49-SU-607-03	150X

The field duplicate pair (CEF-P42-SS-807-02/CEF-P42-DUP3) Relative Percent Differences (RPD) exceeded 50% for 1-methynapthalene, 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, beno(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. The positive and nondetected results were qualified as estimated (J) and (UJ), respectively.

The field duplicate pair (CEF-P49-SU-607-03/CEF-P49-DUP1) RPD exceeded 50% for 2-methylnaphthalene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. The positive and nondetected results were qualified as estimated (J) and (UJ), respectively.

PESTICIDE/PCB FRACTION

The following samples were analyzed at a dilution thus causing elevated reporting limits.

Sample	Dilution Factor
CEF-535-DUP1-01	10X
CEF-535-SS-001-01	20X
CEF-535-SS-002-01	10X
CEF-535-SS-003-01	10X
CEF-535-SS-004-01	10X
CEF-P21-DUP1	50X
CEF-P21-DUP2	40X
CEF-P21-DUP3	1000X
CEF-P21-SS-803-03	25X
CEF-P21-SS-804-02	500X
CEF-P21-SS-805-02	20X
CEF-P21-SS-806-02	5X
CEF-P21-SS-809-02	25X
CEF-P21-SS-811-01	20X
CEF-P21-SS-813-01	100X
CEF-P21-SS-814-02	10X
CEF-P21-SS-815-01	4X
CEF-P21-SS-816-01	10X
CEF-P21-SS-817-02	500X
CEF-P21-SS-819-02	40X
CEF-P21-SS-831-01	10X
CEF-P25-DUP1	5X
CEF-P25-DUP2	10X
CEF-P25-SS-701-02	16X
CEF-P25-SS-703-02	5X
CEF-P25-SS-705-02	4X

CEF-P25-SS-707-02	10X
CEF-P25-SS-711-02	5X
CEF-P25-SS-713-02	400X
CEF-P25-SS-714-01	200X
CEF-P25-SS-715-02	20X
CEF-P25-SS-717-01	50X

The field duplicate pair (CEF-P21-SS-817-02/CEF-P21-DUP1) RPD exceeded 50% for alpha-BHC and gamma-Chlordane. The positive results were qualified as estimated (J).

The field duplicate pair (CEF-P25-SS-717-02/CEF-P25-DUP2) RPD exceeded 50% for Dieldrin and AROCLOR-1254. The positive results were qualified as estimated (J).

HERBICIDE FRACTION

All quality control parameters were met for this fraction.

TPH FRACTION

The following samples were analyzed at a dilution thus causing elevated reporting limits.

Sample	Dilution Factor
CEF-535-SS-001-01	20X
CEF-535-SS-002-01	4X
CEF-535-SS-004-01	5X
CEF-P21-DUP1	4X
CEF-P21-DUP2	5X
CEF-P21-DUP3	8X
CEF-P21-SS-804-02	4X
CEF-P21-SS-805-02	4X
CEF-P21-SS-806-02	20X
CEF-P21-SS-817-02	4X
CEF-P21-SS-819-02	4X

The field duplicate pair (CEF-P21-SS-817-02/CEF-P21-DUP1) RPD exceeded 50% for TPH (c8-c40). The positive results were qualified as estimated (J).

ORGANOPHOSPHOROUS PESTICIDE FRACTION

It should be noted that the laboratory only reported 28 of 47 compounds listed in method 8141A.

Two compounds, Demeton-o and Monocrotophos, were omitted from the electronic deliverable. The reviewer amended the electronic deliverable to report the missing compounds.

EXECUTIVE SUMMARY

Laboratory performance: Two compounds, Demeton-o and Monocrotophos, were omitted from the organophosphorous compound list.

Other Factors Affecting Data Quality: Several samples were analyzed at a dilution thus causing elevated reporting limits in all fractions. The field duplicate pair RPDs exceeded the 50% upper control limit in the fraction.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (October 1999) and the NFESC guidelines "Navy IRCDQM" (September 1999). The text of this report has been formulated to address only those problems affecting data quality.

"I attest that the data referenced herein was validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Justin Orbich

Chemist/Data Validator
Tetra Tech, NUS

Joseph A. Samchuck

Data Validation Quality Assurance Officer
Tetra Tech, NUS

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

DATA QUALIFIER DEFINITIONS:

U - Value is a nondetected result as reported by the laboratory and should not be considered present.

J - Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.

UJ - Nondetected results is estimated as a result of a technical noncomplicane.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

Qualified Analytical Results

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-DUP1	CEF-535-SS-001-01	CEF-535-SS-002-01	CEF-535-SS-003-01
SAMPLE DATE:	06/16/00	06/16/00	06/16/00	06/16/00
LABORATORY ID:	F6831-5	F6831-1	F6831-2	F6831-3
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	88.5 %	86.6 %	90.9 %	87.9 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:	CEF-535-SS-003-01			

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	13.7			290			91.3			13.5		

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-SS-004-01			CEF-P21-DUP1			CEF-P21-DUP2			CEF-P21-DUP3		
SAMPLE DATE:	06/16/00			06/17/00			06/17/00			06/17/00		
LABORATORY ID:	F6831-4			F6831-34			F6831-35			F6831-36		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			97.0 %			81.4 %			74.3 %		
UNITS:	MG/KG			MG/KG			MG/KG			MG/KG		
FIELD DUPLICATE OF:				CEF-P21-SS-817-02			CEF-P21-SS-819-02			CEF-P21-SS-806-02		
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	34.1	J	P	172	J	G	116			200		

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-DUP1			CEF-535-SS-001-01			CEF-535-SS-002-01			CEF-535-SS-003-01		
SAMPLE DATE:	06/16/00			06/16/00			06/16/00			06/16/00		
LABORATORY ID:	F6831-5			F6831-1			F6831-2			F6831-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			86.6 %			90.9 %			87.9 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:	CEF-535-SS-003-01											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	380	U		7700	U		1500	U		380	U	
2-METHYLNAPHTHALENE	380	U		7700	U		1500	U		380	U	
ACENAPHTHENE	380	U		7700	U		1500	U		380	U	
ACENAPHTHYLENE	750	U		15000	U		2900	U		760	U	
ANTHRACENE	380	U		7700	U		1500	U		380	U	
BENZO(A)ANTHRACENE	75	U		4780			758			76	U	
BENZO(A)PYRENE	75	U		4710			641			76	U	
BENZO(B)FLUORANTHENE	75	U		5830			1030			76	U	
BENZO(G,H,I)PERYLENE	75	U		3790			657			76	U	
BENZO(K)FLUORANTHENE	75	U		3260			536			76	U	
CHRYSENE	380	U		4900	J	P	814	J	P	380	U	
DIBENZO(A,H)ANTHRACENE	75	U		1500	U		290	U		76	U	
FLUORANTHENE	380	U		6730	J	P	971	J	P	380	U	
FLUORENE	380	U		7700	U		1500	U		380	U	
INDENO(1,2,3-CD)PYRENE	75	U		3370			561			76	U	
NAPHTHALENE	380	U		7700	U		1500	U		380	U	
PHENANTHRENE	380	U		7700	U		1500	U		380	U	
PYRENE	380	U		6880	J	P	1020	J	P	380	U	

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-SS-004-01			CEF-P42-DUP1			CEF-P42-DUP2			CEF-P42-DUP3		
SAMPLE DATE:	06/16/00			06/18/00			06/18/00			06/18/00		
LABORATORY ID:	F6831-4			F6831-64			F6831-65			F6831-66		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			95.7 %			96.2 %			93.0 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:				CEF-P42-SS-816-02			CEF-P42-SS-820-02			CEF-P42-SS-807-02		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	370	U		92.6	J	P	350	U		530	J	G
2-METHYLNAPHTHALENE	370	U		146	J	P	350	U		685	J	G
ACENAPHTHENE	370	U		350	U		350	U		886	J	G
ACENAPHTHYLENE	750	U		700	U		690	U		720	U	
ANTHRACENE	370	U		350	U		350	U		2900	U	
BENZO(A)ANTHRACENE	75	U		70	U		69	U		803	J	G
BENZO(A)PYRENE	75	U		27	J	P	69	U		807	J	G
BENZO(B)FLUORANTHENE	75	U		70	U		69	U		544	J	G
BENZO(G,H,I)PERYLENE	75	U		27.5	J	P	69	U		676	J	G
BENZO(K)FLUORANTHENE	75	U		70	U		69	U		278	J	G
CHRYSENE	370	U		350	U		350	U		920	J	G
DIBENZO(A,H)ANTHRACENE	75	U		70	U		69	U		570	U	
FLUORANTHENE	370	U		88.4	J	P	350	U		2200	J	G
FLUORENE	370	U		350	U		350	U		114	J	P
INDENO(1,2,3-CD)PYRENE	75	U		18.5	J	P	69	U		465	J	G
NAPHTHALENE	370	U		132	J	P	350	U		456	J	G
PHENANTHRENE	370	U		80.5	J	P	350	U		1760	J	G
PYRENE	370	U		58.3	J	P	350	U		1550	J	G

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-DUP1			CEF-535-SS-001-01			CEF-535-SS-002-01			CEF-535-SS-003-01		
SAMPLE DATE:	06/16/00			06/16/00			06/16/00			06/16/00		
LABORATORY ID:	F6831-5			F6831-1			F6831-2			F6831-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	88.5 %			86.6 %			90.9 %			87.9 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:	CEF-535-SS-003-01											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
PESTICIDES/PCBs												
4,4'-DDD	38	U		77	U		37	U		38	U	
4,4'-DDE	38	U		77	U		37	U		38	U	
4,4'-DDT	38	U		77	U		37	U		38	U	
ALDRIN	19	U		38	U		18	U		19	U	
ALPHA-BHC	19	U		38	U		18	U		19	U	
ALPHA-CHLORDANE	38	U		77	U		37	U		38	U	
BETA-BHC	19	U		38	U		18	U		19	U	
DELTA-BHC	19	U		38	U		18	U		19	U	
DIELDRIN	19	U		38	U		18	U		19	U	
ENDOSULFAN I	19	U		38	U		18	U		19	U	
ENDOSULFAN II	38	U		77	U		37	U		38	U	
ENDOSULFAN SULFATE	38	U		77	U		37	U		38	U	
ENDRIN	38	U		77	U		37	U		38	U	
ENDRIN ALDEHYDE	38	U		77	U		37	U		38	U	
ENDRIN KETONE	38	U		77	U		37	U		38	U	
GAMMA-BHC (LINDANE)	19	U		38	U		18	U		19	U	
GAMMA-CHLORDANE	38	U		77	U		37	U		38	U	
HEPTACHLOR	19	U		38	U		18	U		19	U	
HEPTACHLOR EPOXIDE	19	U		38	U		18	U		19	U	
METHOXYCHLOR	75	U		150	U		73	U		76	U	
TOXAPHENE	1900	U		3800	U		1800	U		1900	U	

CTO078-NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F6831

SAMPLE NUMBER:	CEF-535-SS-004-01			CEF-P21-DUP1			CEF-P21-DUP2			CEF-P21-DUP3		
SAMPLE DATE:	06/16/00			06/17/00			06/17/00			06/17/00		
LABORATORY ID:	F6831-4			F6831-34			F6831-35			F6831-36		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.2 %			97.0 %			81.4 %			74.3 %		
UNITS:	UG/KG			UG/KG			UG/KG			UG/KG		
FIELD DUPLICATE OF:				CEF-P21-SS-817-02			CEF-P21-SS-819-02			CEF-P21-SS-806-02		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	37	U		170	U		160	U		4500	U	
4,4'-DDE	37	U		133	J	P	79.5	J	P	4500	U	
4,4'-DDT	37	U		170	U		160	U		4500	U	
ALDRIN	19	U		86	U		82	U		2200	U	
ALPHA-BHC	19	U		86	U		82	U		2200	U	
ALPHA-CHLORDANE	37	U		603	J	G	639			26500	J	G
BETA-BHC	19	U		86	U		82	U		2200	U	
DELTA-BHC	19	U		86	U		82	U		2200	U	
DIELDRIN	19	U		86	U		28.5	J	P	2200	UJ	G
ENDOSULFAN I	19	U		86	U		82	U		2200	U	
ENDOSULFAN II	37	U		170	U		160	U		4500	U	
ENDOSULFAN SULFATE	37	U		170	U		160	U		4500	U	
ENDRIN	37	U		170	U		160	U		4500	U	
ENDRIN ALDEHYDE	37	U		170	U		160	U		4500	U	
ENDRIN KETONE	37	U		170	U		160	U		4500	U	
GAMMA-BHC (LINDANE)	19	U		86	U		82	U		2200	U	
GAMMA-CHLORDANE	37	U		635	J	G	586			30600	J	G
HEPTACHLOR	19	U		86	U		82	U		2200	U	
HEPTACHLOR EPOXIDE	19	U		86	U		82	U		2200	U	
METHOXYCHLOR	75	U		340	U		330	U		9000	U	
TOXAPHENE	1900	U		8600	U		8200	U		220000	U	

APPENDIX B

Results as Reported by the Laboratory

Report of Analysis

Client Sample ID:	CEF-535-DUP1		
Lab Sample ID:	F6831-5	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	EPA 8310	**Percent Solids:**	88.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA002256.D	1	06/28/00	CCJ	06/23/00	OP1729	GAA85
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	380	ug/kg	
208-96-8	Acenaphthylene	ND	750	ug/kg	
120-12-7	Anthracene	ND	380	ug/kg	
56-55-3	Benzo(a)anthracene	ND	75	ug/kg	
50-32-8	Benzo(a)pyrene	ND	75	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	75	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	75	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	75	ug/kg	
218-01-9	Chrysene	ND	380	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	75	ug/kg	
206-44-0	Fluoranthene	ND	380	ug/kg	
86-73-7	Fluorene	ND	380	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	75	ug/kg	
91-20-3	Naphthalene	ND	380	ug/kg	
90-12-0	1-Methylnaphthalene	ND	380	ug/kg	
91-57-6	2-Methylnaphthalene	ND	380	ug/kg	
85-01-8	Phenanthrene	ND	380	ug/kg	
129-00-0	Pyrene	ND	380	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		35-135%
92-94-4	p-Terphenyl	101%		50-150%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-001-01		
Lab Sample ID:	F6831-1	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	EPA 8310	**Percent Solids:**	86.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA002228.D	20	06/27/00	CCJ	06/23/00	OP1729	GAA84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	7700	ug/kg	
208-96-8	Acenaphthylene	ND	15000	ug/kg	
120-12-7	Anthracene	ND	7700	ug/kg	
56-55-3	Benzo(a)anthracene	4780	1500	ug/kg	
50-32-8	Benzo(a)pyrene	4710	1500	ug/kg	
205-99-2	Benzo(b)fluoranthene	5830	1500	ug/kg	
191-24-2	Benzo(g,h,i)perylene	3790	1500	ug/kg	
207-08-9	Benzo(k)fluoranthene	3260	1500	ug/kg	
218-01-9	Chrysene	4900	7700	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	1500	ug/kg	
206-44-0	Fluoranthene	6730	7700	ug/kg	J
86-73-7	Fluorene	ND	7700	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3370	1500	ug/kg	
91-20-3	Naphthalene	ND	7700	ug/kg	
90-12-0	1-Methylnaphthalene	ND	7700	ug/kg	
91-57-6	2-Methylnaphthalene	ND	7700	ug/kg	
85-01-8	Phenanthrene	ND	7700	ug/kg	
129-00-0	Pyrene	6880	7700	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	74%		35-135%
92-94-4	p-Terphenyl	128%		50-150%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-002-01		
Lab Sample ID:	F6831-2	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	EPA 8310	**Percent Solids:**	90.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA002183.D	4	06/26/00	CCJ	06/23/00	OP1729	GAA84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	1500	ug/kg	
208-96-8	Acenaphthylene	ND	2900	ug/kg	
120-12-7	Anthracene	ND	1500	ug/kg	
56-55-3	Benzo(a)anthracene	758	290	ug/kg	
50-32-8	Benzo(a)pyrene	641	290	ug/kg	
205-99-2	Benzo(b)fluoranthene	1030	290	ug/kg	
191-24-2	Benzo(g,h,i)perylene	657	290	ug/kg	
207-08-9	Benzo(k)fluoranthene	536	290	ug/kg	
218-01-9	Chrysene	814	1500	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	290	ug/kg	
206-44-0	Fluoranthene	971	1500	ug/kg	J
86-73-7	Fluorene	ND	1500	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	561	290	ug/kg	
91-20-3	Naphthalene	ND	1500	ug/kg	
90-12-0	1-Methylnaphthalene	ND	1500	ug/kg	
91-57-6	2-Methylnaphthalene	ND	1500	ug/kg	
85-01-8	Phenanthrene	ND	1500	ug/kg	
129-00-0	Pyrene	1020	1500	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	67%		35-135%
92-94-4	p-Terphenyl	98%		50-150%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-003-01		
Lab Sample ID:	F6831-3	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	EPA 8310	**Percent Solids:**	87.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA002254.D	1	06/27/00	CCJ	06/23/00	OP1729	GAA85
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	380	ug/kg	
208-96-8	Acenaphthylene	ND	760	ug/kg	
120-12-7	Anthracene	ND	380	ug/kg	
56-55-3	Benzo(a)anthracene	ND	76	ug/kg	
50-32-8	Benzo(a)pyrene	ND	76	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	76	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	76	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	76	ug/kg	
218-01-9	Chrysene	ND	380	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	76	ug/kg	
206-44-0	Fluoranthene	ND	380	ug/kg	
86-73-7	Fluorene	ND	380	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	76	ug/kg	
91-20-3	Naphthalene	ND	380	ug/kg	
90-12-0	1-Methylnaphthalene	ND	380	ug/kg	
91-57-6	2-Methylnaphthalene	ND	380	ug/kg	
85-01-8	Phenanthrene	ND	380	ug/kg	
129-00-0	Pyrene	ND	380	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		35-135%
92-94-4	p-Terphenyl	96%		50-150%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-004-01		
Lab Sample ID:	F6831-4	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	EPA 8310	**Percent Solids:**	89.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA002255.D	1	06/28/00	CCJ	06/23/00	OP1729	GAA85
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	370	ug/kg	
208-96-8	Acenaphthylene	ND	750	ug/kg	
120-12-7	Anthracene	ND	370	ug/kg	
56-55-3	Benzo(a)anthracene	ND	75	ug/kg	
50-32-8	Benzo(a)pyrene	ND	75	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	75	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	75	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	75	ug/kg	
218-01-9	Chrysene	ND	370	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	75	ug/kg	
206-44-0	Fluoranthene	ND	370	ug/kg	
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	75	ug/kg	
91-20-3	Naphthalene	ND	370	ug/kg	
90-12-0	1-Methylnaphthalene	ND	370	ug/kg	
91-57-6	2-Methylnaphthalene	ND	370	ug/kg	
85-01-8	Phenanthrene	ND	370	ug/kg	
129-00-0	Pyrene	ND	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	71%		35-135%
92-94-4	p-Terphenyl	93%		50-150%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	CEF-535-DUP1		
Lab Sample ID:	F6831-5	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	FLORIDA-PRO	**Percent Solids:**	88.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP09076.D	1	07/01/00	CCJ	06/25/00	OP1733	GOP401
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	13.7	9.4	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		40-140%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-001-01		
Lab Sample ID:	F6831-1	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	FLORIDA-PRO	**Percent Solids:**	86.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP09072.D	20	07/01/00	CCJ	06/25/00	OP1733	GOP401
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	290	190	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		40-140%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-002-01		
Lab Sample ID:	F6831-2	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	FLORIDA-PRO	**Percent Solids:**	90.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP09073.D	4	07/01/00	CCJ	06/25/00	OP1733	GOP401
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	91.3	37	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		40-140%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-003-01		
Lab Sample ID:	F6831-3	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	FLORIDA-PRO	**Percent Solids:**	87.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP09074.D	1	07/01/00	CCJ	06/25/00	OP1733	GOP401
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	13.5	9.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		40-140%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-004-01		
Lab Sample ID:	F6831-4	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	FLORIDA-PRO	**Percent Solids:**	89.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	OP09075.D	5	07/01/00	CCJ	06/25/00	OP1733	GOP401
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	34.1	47	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	107%		40-140%

(a) Dilution required due to matrix interference; extract was viscous.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-DUP1		
Lab Sample ID:	F6831-5	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	SW846 3550B/8081A	**Percent Solids:**	88.5
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST05575.D	10	06/30/00	SKW	06/24/00	OP1730	GST206
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	19	ug/kg	
319-84-6	alpha-BHC	ND	19	ug/kg	
319-85-7	beta-BHC	ND	19	ug/kg	
319-86-8	delta-BHC	ND	19	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	19	ug/kg	
5103-71-9	alpha-Chlordane	ND	38	ug/kg	
5103-74-2	gamma-Chlordane	ND	38	ug/kg	
60-57-1	Dieldrin	ND	19	ug/kg	
72-54-8	4,4'-DDD	ND	38	ug/kg	
72-55-9	4,4'-DDE	ND	38	ug/kg	
50-29-3	4,4'-DDT	ND	38	ug/kg	
72-20-8	Endrin	ND	38	ug/kg	
1031-07-8	Endosulfan sulfate	ND	38	ug/kg	
7421-93-4	Endrin aldehyde	ND	38	ug/kg	
53494-70-5	Endrin ketone	ND	38	ug/kg	
959-98-8	Endosulfan-I	ND	19	ug/kg	
33213-65-9	Endosulfan-II	ND	38	ug/kg	
76-44-8	Heptachlor	ND	19	ug/kg	
1024-57-3	Heptachlor epoxide	ND	19	ug/kg	
72-43-5	Methoxychlor	ND	75	ug/kg	
8001-35-2	Toxaphene	ND	1900	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	96%		50-144%
2051-24-3	Decachlorobiphenyl	125%		10-180%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-001-01		
Lab Sample ID:	F6831-1	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	SW846 3550B/8081A	**Percent Solids:**	86.6
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST05472.D	20	06/27/00	SKW	06/24/00	OP1730	GST204
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	38	ug/kg	
319-84-6	alpha-BHC	ND	38	ug/kg	
319-85-7	beta-BHC	ND	38	ug/kg	
319-86-8	delta-BHC	ND	38	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	38	ug/kg	
5103-71-9	alpha-Chlordane	ND	77	ug/kg	
5103-74-2	gamma-Chlordane	ND	77	ug/kg	
60-57-1	Dieldrin	ND	38	ug/kg	
72-54-8	4,4'-DDD	ND	77	ug/kg	
72-55-9	4,4'-DDE	ND	77	ug/kg	
50-29-3	4,4'-DDT	ND	77	ug/kg	
72-20-8	Endrin	ND	77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	77	ug/kg	
7421-93-4	Endrin aldehyde	ND	77	ug/kg	
53494-70-5	Endrin ketone	ND	77	ug/kg	
959-98-8	Endosulfan-I	ND	38	ug/kg	
33213-65-9	Endosulfan-II	ND	77	ug/kg	
76-44-8	Heptachlor	ND	38	ug/kg	
1024-57-3	Heptachlor epoxide	ND	38	ug/kg	
72-43-5	Methoxychlor	ND	150	ug/kg	
8001-35-2	Toxaphene	ND	3800	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	94%		50-144%
2051-24-3	Decachlorobiphenyl	149%		10-180%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-002-01		
Lab Sample ID:	F6831-2	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	SW846 3550B/8081A	**Percent Solids:**	90.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST05473.D	10	06/27/00	SKW	06/24/00	OP1730	GST204
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	18	ug/kg	
319-84-6	alpha-BHC	ND	18	ug/kg	
319-85-7	beta-BHC	ND	18	ug/kg	
319-86-8	delta-BHC	ND	18	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	18	ug/kg	
5103-71-9	alpha-Chlordane	ND	37	ug/kg	
5103-74-2	gamma-Chlordane	ND	37	ug/kg	
60-57-1	Dieldrin	ND	18	ug/kg	
72-54-8	4,4'-DDD	ND	37	ug/kg	
72-55-9	4,4'-DDE	ND	37	ug/kg	
50-29-3	4,4'-DDT	ND	37	ug/kg	
72-20-8	Endrin	ND	37	ug/kg	
1031-07-8	Endosulfan sulfate	ND	37	ug/kg	
7421-93-4	Endrin aldehyde	ND	37	ug/kg	
53494-70-5	Endrin ketone	ND	37	ug/kg	
959-98-8	Endosulfan-I	ND	18	ug/kg	
33213-65-9	Endosulfan-II	ND	37	ug/kg	
76-44-8	Heptachlor	ND	18	ug/kg	
1024-57-3	Heptachlor epoxide	ND	18	ug/kg	
72-43-5	Methoxychlor	ND	73	ug/kg	
8001-35-2	Toxaphene	ND	1800	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	94%		50-144%
2051-24-3	Decachlorobiphenyl	119%		10-180%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-003-01		
Lab Sample ID:	F6831-3	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	SW846 3550B/8081A	**Percent Solids:**	87.9
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST05571.D	10	06/29/00	SKW	06/24/00	OP1730	GST206
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	19	ug/kg	
319-84-6	alpha-BHC	ND	19	ug/kg	
319-85-7	beta-BHC	ND	19	ug/kg	
319-86-8	delta-BHC	ND	19	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	19	ug/kg	
5103-71-9	alpha-Chlordane	ND	38	ug/kg	
5103-74-2	gamma-Chlordane	ND	38	ug/kg	
60-57-1	Dieldrin	ND	19	ug/kg	
72-54-8	4,4'-DDD	ND	38	ug/kg	
72-55-9	4,4'-DDE	ND	38	ug/kg	
50-29-3	4,4'-DDT	ND	38	ug/kg	
72-20-8	Endrin	ND	38	ug/kg	
1031-07-8	Endosulfan sulfate	ND	38	ug/kg	
7421-93-4	Endrin aldehyde	ND	38	ug/kg	
53494-70-5	Endrin ketone	ND	38	ug/kg	
959-98-8	Endosulfan-I	ND	19	ug/kg	
33213-65-9	Endosulfan-II	ND	38	ug/kg	
76-44-8	Heptachlor	ND	19	ug/kg	
1024-57-3	Heptachlor epoxide	ND	19	ug/kg	
72-43-5	Methoxychlor	ND	76	ug/kg	
8001-35-2	Toxaphene	ND	1900	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	98%		50-144%
2051-24-3	Decachlorobiphenyl	132%		10-180%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-535-SS-004-01		
Lab Sample ID:	F6831-4	**Date Sampled:**	06/16/00
Matrix:	SO - Soil	**Date Received:**	06/20/00
Method:	SW846 3550B/8081A	**Percent Solids:**	89.2
Project:	NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST05572.D	10	06/29/00	SKW	06/24/00	OP1730	GST206
Run #2							

Pesticide TCL List

CAS No.	Compound	Result	RL	Units	Q
309-00-2	Aldrin	ND	19	ug/kg	
319-84-6	alpha-BHC	ND	19	ug/kg	
319-85-7	beta-BHC	ND	19	ug/kg	
319-86-8	delta-BHC	ND	19	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	19	ug/kg	
5103-71-9	alpha-Chlordane	ND	37	ug/kg	
5103-74-2	gamma-Chlordane	ND	37	ug/kg	
60-57-1	Dieldrin	ND	19	ug/kg	
72-54-8	4,4'-DDD	ND	37	ug/kg	
72-55-9	4,4'-DDE	ND	37	ug/kg	
50-29-3	4,4'-DDT	ND	37	ug/kg	
72-20-8	Endrin	ND	37	ug/kg	
1031-07-8	Endosulfan sulfate	ND	37	ug/kg	
7421-93-4	Endrin aldehyde	ND	37	ug/kg	
53494-70-5	Endrin ketone	ND	37	ug/kg	
959-98-8	Endosulfan-I	ND	19	ug/kg	
33213-65-9	Endosulfan-II	ND	37	ug/kg	
76-44-8	Heptachlor	ND	19	ug/kg	
1024-57-3	Heptachlor epoxide	ND	19	ug/kg	
72-43-5	Methoxychlor	ND	75	ug/kg	
8001-35-2	Toxaphene	ND	1900	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	100%		50-144%
2051-24-3	Decachlorobiphenyl	132%		10-180%

(a) Dilution required due to matrix interference.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound