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SAMPLING AND ANALYSIS REPORT FOR BUILDING 98 FORMER RAILROAD BED SITE
NAS CECIL FIELD FL
3/6/2002
TETRA TECH NUS INC

Sampling and Analysis Report
for
Building 98
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

March 2002

**SAMPLING AND ANALYSIS REPORT
FOR
BUILDING 98
FORMER RAILROAD BED SITE**

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

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
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Naval Facilities Engineering Command
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North Charleston, South Carolina 29406**

**Submitted by:
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**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0078**

MARCH 2002

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The professional opinions rendered in this decision document identified as Sampling and Analysis Report for Building 98, Former Railroad Bed Site, 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.
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Date: 3/6/02

Mark Speranza



CERTIFICATION OF TECHNICAL
DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete and accurate and comply with all requirements of this contract.

DATE: _____ March 6, 2002 _____

COMPANY CERTIFICATION AUTHORIZATION NUMBER: 7988
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ACRONYMS

AVORD	Aviation Ordnance
BaP	Benzo(a)pyrene
BaPEq	BaP equivalents
BCT	BRAC Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
CLEAN	Comprehensive Long-Term Environmental Action Navy
CPAH	Carcinogenic polynuclear aromatic hydrocarbons
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
FL-PRO	Florida Petroleum Residual Organics
HDPE	High-density polyethylene
IBDS	Inorganic Background Data Set
µg/kg	microgram per kilogram
NAS	Naval Air Station
PAH	Polynuclear aromatic hydrocarbon
PRE	Preliminary Risk Evaluation
PSC	Potential Source of Contamination
RAC	Remedial Action Contractor
SAR	Sampling and Analysis Report
SCTL	Soil Cleanup Target Level
SFF	South Fuel Farm
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TAL	Target Analyte List
TEF	Toxicity Equivalent Factor
TRPH	Total recoverable petroleum hydrocarbon
TiNUS	Tetra Tech NUS, Inc.
U.S. EPA	U.S. Environmental Protection Agency
UCL	Upper Confidence Limit

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 98 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 and 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, a loading dock in Yellow Water Weapons Area (Building 635), the Aviation Ordnance (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 (SFF) (Former Fuel Depot). 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.

The Building 98 Former Railroad Bed Site is located in the Main Base portion of NAS Cecil Field as shown on Figure 1-1. PSC 50 is located between the Former Railroad Bed Site and Building 98, along the former railroad loading dock (see Figure 1-2). A field investigation was performed at PSC 50 between April and June 1999 to delineate PAH soil contamination detected during an earlier study. The results of this investigation are shown in Table 1-1. In February 2000, 188 tons of PAH contaminated soil were removed

from PSC 50 and replaced with clean fill, and the site was designated for no further action (TtNUS, 2001b). However, the Building 98 Former Railroad Bed Site, located adjacent and east of PSC 50, was not addressed at that time. Therefore, beginning in June 2000, an investigation was conducted to verify the presence of soil contamination and to delineate the extent of contamination in the soil at the Building 98 Former Railroad Bed Site.

A Dig and Haul Package (excavation plan) to remove soil contamination to achieve industrial land use was prepared in January 2001 by TtNUS (TtNUS, 2001a). However, the BRAC Cleanup Team (BCT) determined that the site should be cleaned up to achieve residential land use; therefore, TtNUS performed an additional field investigation in April 2001 based upon residential requirements. In July 2001, the contaminated soil was excavated by the Remedial Action Contractor (RAC), CH2M Hill Constructors, Inc., in accordance with the residential cleanup requirements in the revised Dig and Haul Package (TtNUS, 2001e).

This SAR summarizes the related field operations, results, conclusions, and recommendations of the investigation conducted by TtNUS from June 2000 through April 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 98/Potential Source of Contamination 50 (CH2M Hill, 2001). The results of the investigation and the subsequent removal action indicate that no further action is needed at this site.

TABLE 1-1

SOIL ANALYTICAL DATA – PREVIOUS INVESTIGATIONS
 BUILDING 98/PSC 50
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA
 PAGE 1 OF 3

Parameter	FDEP SCTL		Sample Location						
	Residential Direct Exposure	Leachability to Groundwater	58S00601 (Average)	58S00701	58S03401	58S03501	58S03601	58S03701	58S03801
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)									
1-Methylnaphthalene	68,000	2,100	NA	NA	120	180 U	18 U	180 U	18 U
2-Methylnaphthalene	83,000	6,100	4,300	3,600	120	616 J	120 U	120 U	100 U
Acenaphthene	1,900,000	2,100	430 U	360 U	21 U	414 J	120 U	120 U	100 U
Acenaphthylene	1,100,000	27,000	76 J	160 J	42 U	100 U	120 U	120 U	100 U
Anthracene	18,000,000	2,500,000	63 J	64 J	2 U	217 J	120 U	120 U	100 U
Benzo(a)anthracene	1,400	3,200	670	590	41	3100 J	19 UJ	38.9 J	30.8
Benzo(a)pyrene	100	8,000	600	1,000	48	3550 J	90.9	132	43.8
Benzo(b)fluoranthene	1,400	10,000	1,160	1,600	63	5600 J	146	190	94
Benzo(g,h,i)perylene	2,300,000	32,000,000	425	680	41	3600 J	122	127	57.3
Benzo(k)fluoranthene	15,000	25,000	290 J	580	53	2240 J	93.9	105	42.4
Chrysene	140,000	77,000	825	810	72	4490 J	150 J	226 J	56.1 J
Dibenzo(a,h)anthracene	100	30,000	89	140 J	39	110 J	19 U	18 U	16 U
Fluoranthene	2,900,000	1,200,000	975	640	4.2 U	9660 J	352	364	84.7
Fluorene	2,200,000	160,000	430 U	360 U	4.2 U	207 J	120 U	120 U	100 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	405	700	39	4110 J	19 U	158	65.8
Naphthalene	40,000	17,000	430 U	360 U	21 U	100 U	120 U	120 U	100 U
Phenanthrene	2,000,000	250,000	86 J	360 U	2.1 U	1390 J	120 U	120 U	100 U
Pyrene	2,200,000	880,000	1,540	1,200	2.1 U	11700 J	396	348	137

TABLE 1-1

SOIL ANALYTICAL DATA – PREVIOUS INVESTIGATIONS
 BUILDING 98/PSC 50
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA
 PAGE 2 OF 3

Parameter	FDEP SCTL		CEF-P50						
	Residential Direct Exposure	Leachability to Groundwater	SS-001-01	SS-002-01	SS-003-01	SS-004-01	SS-005-01		SS-006-01
							Sample	Duplicate	
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)									
1-Methylnaphthalene	68,000	2,100	110 U	100 U	110 U	1050 J	120 U	120 U	100 U
2-Methylnaphthalene	83,000	6,100	779 J	100 U	110 U	616 J	120 U	120 U	100 U
Acenaphthene	1,900,000	2,100	417 J	100 U	228 J	414 J	120 U	120 U	100 U
Acenaphthylene	1,100,000	27,000	110 U	100 U	110 U	100 U	120 U	120 U	100 U
Anthracene	18,000,000	2,500,000	110 U	100 U	110 U	217 J	120 U	120 U	100 U
Benzo(a)anthracene	1,400	3,200	1690 J	15 U	2590 J	3100 J	19 UJ	38.9 J	30.8
Benzo(a)pyrene	100	8,000	2040 J	70	4070 J	3550 J	90.9	132	43.8
Benzo(b)fluoranthene	1,400	10,000	3130 J	194	6080 J	5600 J	146	190	94
Benzo(g,h,i)perylene	2,300,000	32,000,000	2120 J	88.5	3980 J	3600 J	122	127	57.3
Benzo(k)fluoranthene	15,000	25,000	1420 J	120	2580 J	2240 J	93.9	105	42.4
Chrysene	140,000	77,000	2690 J	15 U	2960 J	4490 J	150 J	226 J	56.1 J
Dibenzo(a,h)anthracene	100	30,000	82.5 J	15 U	140 J	110 J	19 U	18 U	16 U
Fluoranthene	2,900,000	1,200,000	4660 J	90.5	4110 J	9660 J	352	364	84.7
Fluorene	2,200,000	160,000	110 U	100 U	110 U	207 J	120 U	120 U	100 U
Indeno(1,2,3-cd)pyrene	1,500	28,000	2320 J	15 U	4420 J	4110 J	19 U	158	65.8
Naphthalene	40,000	17,000	110 U	100 U	110 U	100 U	120 U	120 U	100 U
Phenanthrene	2,000,000	250,000	976 J	100 U	402 J	1390 J	120 U	120 U	100 U
Pyrene	2,200,000	880,000	5740 J	160	7390 J	11700 J	396	348	137

TABLE 1-1

SOIL ANALYTICAL DATA – PREVIOUS INVESTIGATIONS
BUILDING 98/PSC 50
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 3 OF 3

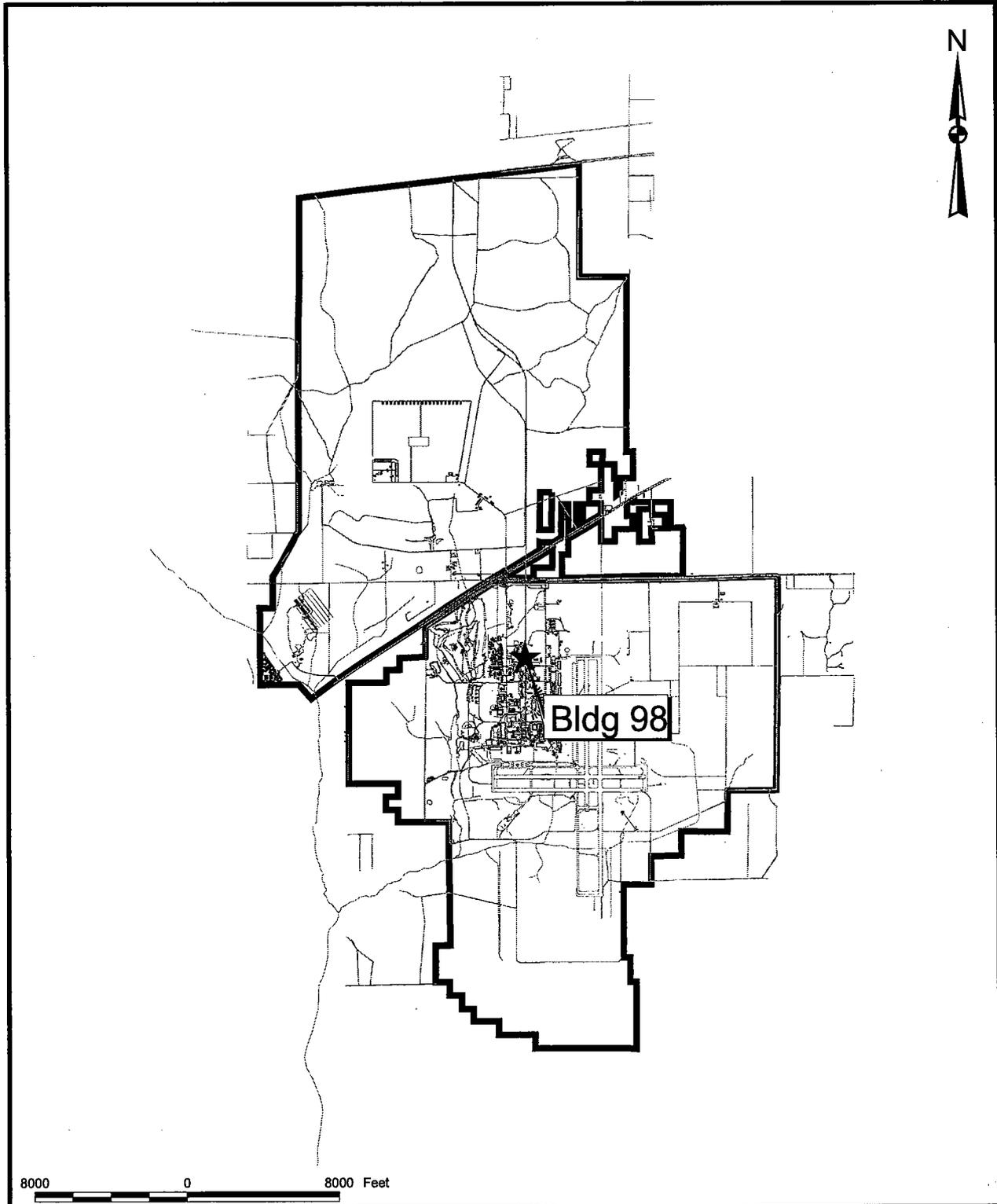
Parameter	FDEP SCTL		CEF-P50							
	Residential Direct Exposure	Leachability to Groundwater	SS-007-01	SS-008-02	SS-009-02	SS-101-01	SS-102-01	SS-103-01		SS-104-02
								Sample	Duplicate	
POLYNUCLEAR AROMATIC HYDROCARBONS (µg/kg)										
1-Methylnaphthalene	68,000	2,100	100 U	110 U	120 U	36 U	36 U	35 U	35 U	37 U
2-Methylnaphthalene	83,000	6,100	209	110 U	120 U	36 U	36 U	35 U	35 U	45
Acenaphthene	1,900,000	2,100	203	110 U	120 U	36 U	36 U	35 U	35 U	59
Acenaphthylene	1,100,000	27,000	172	110 U	120 U	74 U	74 U	71 U	71 U	74 U
Anthracene	18,000,000	2,500,000	100 U	110 U	120 U	5.5 U	5.5 U	5.3 U	5.3 U	14
Benzo(a)anthracene	1,400	3,200	510	17 U	18 U	10	5.5 U	8.8	9.9	5.6 U
Benzo(a)pyrene	100	8,000	697	17 U	18 U	15	8.4	14	22	120
Benzo(b)fluoranthene	1,400	10,000	1230	17 U	18 U	31	25	30	48	180
Benzo(g,h,i)perylene	2,300,000	32,000,000	867	17 U	18 U	17	11	33	36	120
Benzo(k)fluoranthene	15,000	25,000	520	17 U	18 U	12	7.4	12	20	86
Chrysene	140,000	77,000	787 J	17 U	18 U	6.6	5.5 U	11	9.1	110
Dibenzo(a,h)anthracene	100	30,000	16 U	17 U	18 U	9.7 U	9.1 U	8.8 U	8.7 U	14
Fluoranthene	2,900,000	1,200,000	1030	17 U	18 U	16	8.5	23	25	250
Fluorene	2,200,000	160,000	100 U	110 U	120 U	7.8	7.2 U	7 U	7.1 U	59
Indeno(1,2,3-cd)pyrene	1,500	28,000	976	17 U	18 U	8.8	8.3	16	29	96
Naphthalene	40,000	17,000	100 U	110 U	120 U	40	44	35 U	35 U	37 U
Phenanthrene	2,000,000	250,000	183	110 U	120 U	5.5 U	5.5 U	5.3 U	5.3 U	24
Pyrene	2,200,000	880,000	1620	17 U	18 U	25	11	27	37	250

NOTES:

Highlighted values exceed the more restrictive criteria FDEP SCTL.

FDEP SCTL = Florida Department of Environmental Protection Soil Target Cleanup Levels, Florida Administrative Code (FAC) 62-777 (1999).

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GENERAL LOCATION MAP
 BUILDING 98 / FORMER RAILROAD BED SITE
 SAMPLING AND ANALYSIS REPORT
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

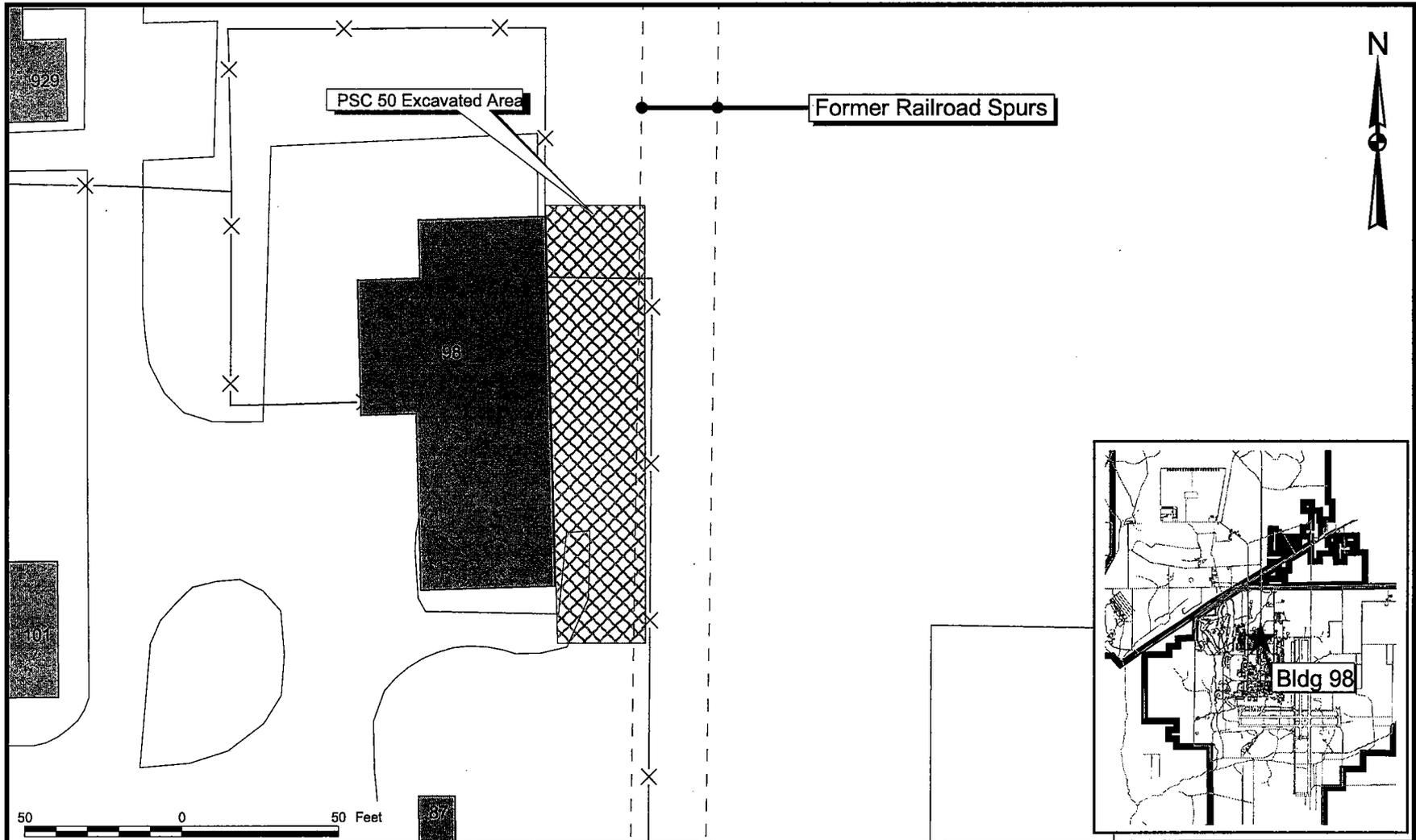
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SITE LOCATION MAP
BUILDING 98 / FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

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2.0 FIELD INVESTIGATIONS

The field investigation at the Building 98 Former Railroad Bed Site was conducted in four phases. The initial phase of the investigation was conducted on June 15, 2000 to assess potential soil contamination in the vicinity of the former railroad bed site. The initial sampling event included the collection and analysis of two surface soil samples (CEF-098-SS-001-01 and CEF-098-SS-002-01) collected at a depth of 0 to 1 foot below ground surface (bgs). The soil samples were analyzed for PAHs, Target Analyte List (TAL) metals, pesticides, and TRPH (TtNUS, 2000a).

Phase II of the field investigation was conducted on August 8, 2000 to delineate PAH and TRPH contamination detected during the initial phase of the investigation. Three surface soil samples (CEF-098-SS-102-01, CEF-098-SS-103-01, and CEF-098-SS-104-01) were collected at a depth of 0 to 1 foot bgs at a distance of 15 feet north, east, and south, respectively, of previous sample location CEF-098-SS-001-01 to determine the horizontal extent of contamination. In addition, one horizontal delineation sample (CEF-098-SS-105-01) was collected west of sample location CEF-098-SS-001-01 midway between that point and the eastern edge of the excavated area of PSC 50. Finally, one sample (CEF-098-SS-101-02) was collected at 1 to 2 feet bgs at CEF-098-SS-001-01 to determine the vertical extent of PAH and TRPH contamination. Based on contaminants detected during the first phase of the field investigation, Phase II samples were analyzed for PAHs and TRPH (TtNUS, 2000b).

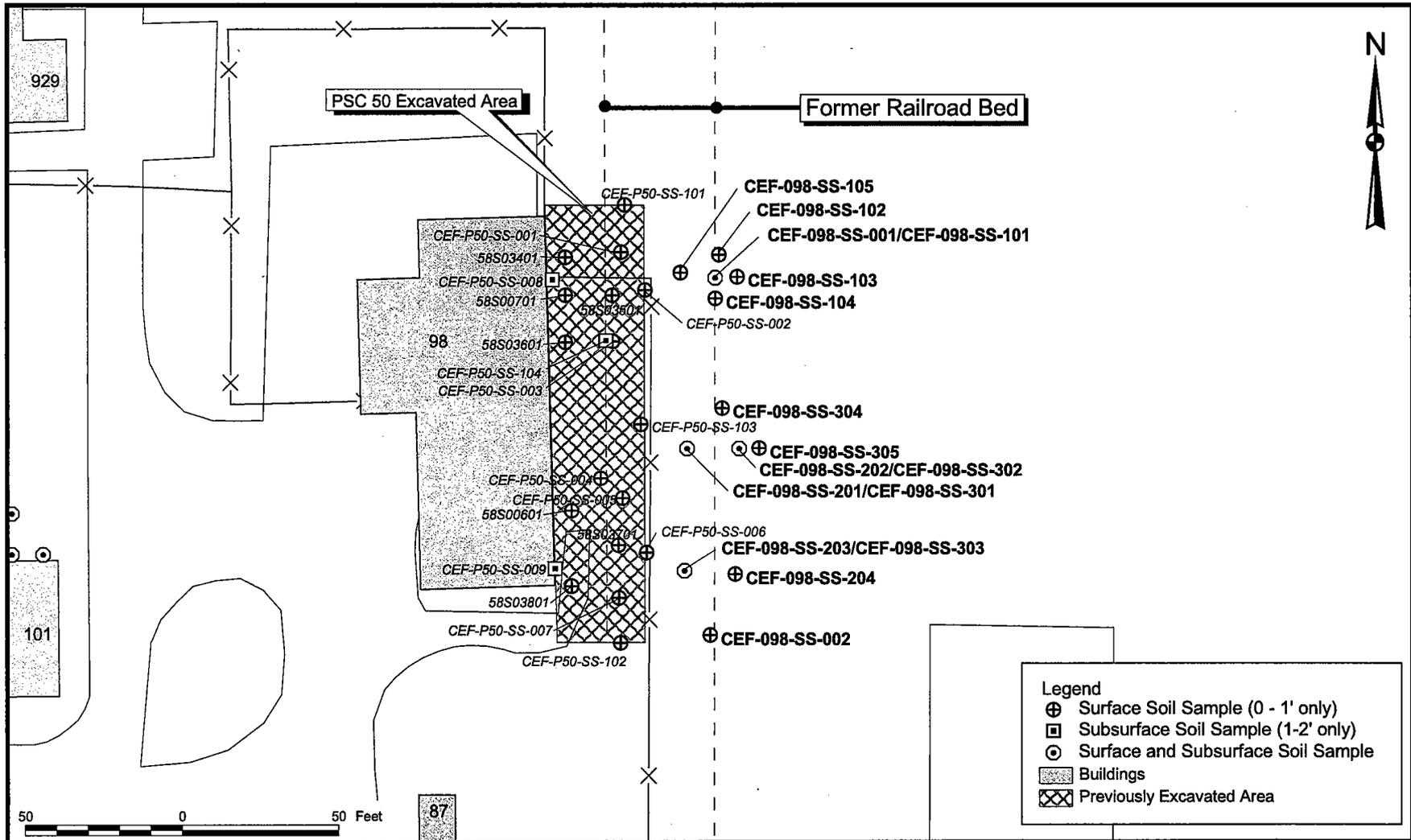
The Phase III field investigation was conducted on April 6, 2001 to delineate the horizontal extent of PAH and TRPH contamination based on residential land use requirements. Four surface soil samples (CEF-098-SS-201-01, CEF-098-SS-202-01, CEF-098-SS-203-01, and CEF-098-SS-204-01) were collected at depths of 0 to 1 foot bgs in the area east of the previous PSC 50 excavation and south of the industrial land use excavation proposed in the Dig and Haul Package (TtNUS, 2001a). These four samples were analyzed for PAHs and TRPH (TtNUS, 2001c).

Phase IV of the field investigation was conducted on May 3, 2001 to further delineate the horizontal and vertical extent of PAH contamination identified during previous sampling events. Two surface soil samples (CEF-098-SS-304-01 and CEF-098-SS-305-01) were collected at locations 20 feet north and 5 feet west of previous sample location CEF-098-SS-202-01 and 15 feet east of previous sample location CEF-098-SS-202-01, respectively. In addition, three soil samples (CEF-098-SS-301-02, CEF-098-SS-302-02, and CEF-098-SS-303-02) were collected at depths of 1 to 2 feet bgs, at previous locations CEF-098-SS-201-01, CEF-098-SS-202-01, and CEF-098-SS-203-01, respectively, to further delineate the vertical extent of contamination. Phase IV samples were analyzed for PAHs and TRPH (TtNUS, 2001d).

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 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 four phases of sampling is presented on Figure 2-1.



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SAMPLE LOCATION MAP
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3.0 DATA EVALUATION AND REMOVAL ACTION

3.1 DATA EVALUATION

The concentrations of individual samples were compared to the Florida Department of Environmental Protection (FDEP) criteria in the Florida Administrative Code (FAC) Chapter 62-777 (FDEP, 1999) and also to the NAS Cecil Field Site-Specific Inorganic Background Data Set (IBDS) (HLA, 1998) with respect to metals. Analytical results were compared to the more stringent of the FDEP residential soil contaminant target level (SCTL) for direct exposure or the leachability to groundwater criteria.

During Phase I sampling, PAHs, TRPH, and metals were detected in the two soil samples collected at the Building 98 Former Railroad Bed Site (see Table 3-1). Inorganics and pesticides were not detected at concentrations in excess of FDEP SCTLs during Phase I; therefore, the remaining investigations (Phases II through IV) concentrated on determining the horizontal and vertical extent of PAH and TRPH contamination. Table 3-2 shows the samples that exceeded FDEP SCTLs for PAHs and TRPH during Phases I through IV of the investigations and Figure 3-1 shows the locations of the samples exceeding the FDEP criteria. Laboratory analytical data are provided in Appendix A.

3.2 HUMAN HEALTH PRELIMINARY RISK EVALUATION

The results of the sampling at the Building 98/PSC 50 Abandoned Railroad Bed Site identified the extent of PAH and TRPH contamination in excess of FDEP residential SCTLs. The main compound of concern was benzo(a)pyrene (BaP) due to its relatively high concentration and low SCTL. However, TRPH and several other PAHs, including benzo(a)anthracene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(k)fluoranthene, also exceeded their respective SCTLs at one or more locations. Because carcinogenic PAHs (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 BaP equivalent (BaPEq). Total BaPEq concentrations were derived for each sample using the U.S. EPA toxicity equivalent factors (TEF) (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.

A statistically based approach using BaP and BaPEq, compounds chemically similar to BaP, was used to determine how much excavation would be required to remediate the PAH contamination at this site. It was determined that not all samples with these compounds at concentrations greater than their individual SCTLs would need to be removed. The exceedance of a criterion by an individual sample does not

necessarily indicate a significant exceedance of a target risk level. Exposure to BaP and BaPEq in the soil is a result of exposure to an area, not an individual sampling location. Therefore, in addition to the Former Railroad Bed Site data set, the data set from PSC 50 (which was previously excavated), was used to determine a post-excavation exposure concentration that would be less than FDEP SCTLs for the individual contaminants. The reason the data from both sites were used is that the two sites are contiguous and therefore should be viewed as one site for purposes of exposure.

The exposure concentrations for BaP and BaPEq at the combined sites are best represented by the 95 percent upper confidence limit (UCL) of the mean. The UCL of BaP at the combined sites was 914 µg/kg and the corresponding UCL for BaPEq was 1,324 µg/kg, both of which exceed their respective SCTL criteria of 100 µg/kg. The pre- and post-excavation data analysis is provided in Table 3-3.

The statistically based approach, used to determine the BaP and BaPEq concentrations above which the soil must be removed to achieve a UCL less than or equal to the FDEP SCTL, involves an iterative process. In theory, the sampling locations with the highest BaP and BaPEq concentrations would be excavated and replaced with clean fill. The clean fill for this combined site was collected from both the Dallas Harts Borrow Pit (PSC 50) and the Coxwell's Crystal Springs Pit (Building 98). The excavated sample points were assumed to be replaced with a clean fill having a BaP concentration of 1.8 µg/kg, a value equal to one-half the method detection limit. The data set was then evaluated in a stepwise manner, first by replacing all excavated concentrations at PSC 50 with the clean fill concentrations, then by replacing the highest concentrations at the Former Railroad Bed Site with clean fill concentrations, and then recalculating the UCL. When the UCL was less than the FDEP SCTL (100 µg/kg), the calculations were stopped.

This iterative process indicated that locations exhibiting a BaP concentration exceeding 400 µg/kg or a BaPEq concentration exceeding 680 µg/kg would require removal to achieve a UCL less than the FDEP residential SCTL. Therefore, the soil located around samples CEF-098-SS-001-01, CEF-098-SS-201-01, and CEF-098-SS-203-01 would require removal. This area is shown on Figure 3-2. One sample within the shaded area, CEF-098-SS-202-01, had a concentration less than the amount necessary to achieve the SCTL but was included to facilitate the definition of the excavated area. Since the post-remediation UCLs are less than FDEP SCTLs, a Human Health Preliminary Risk Evaluation (PRE) is not required.

3.3 REMOVAL ACTION

Based on the soil investigations conducted at the Building 98/PSC 50 Abandoned Railroad Bed Site, the BCT determined that a removal action was required to reduce risks associated with the site and agreed upon the proposed removal area presented by TtNUS in the Dig and Haul Package for Building 98/PSC 50 Area (TtNUS, 2001a). A source removal was conducted at this site from July 13 through

July 17, 2001, and a total of 326 tons of nonhazardous PAH and TRPH-contaminated soil were excavated from the area surrounding the aforementioned sampling locations. The actual weight of the excavated material was 146 tons greater than the amount that was estimated in the Dig and Haul Package (TtNUS, 2001e) because of the quantity of contaminated ballast that was mixed in with the soil. Soils were excavated to the horizontal limits specified in the Dig and Haul Package and shown on Figure 3-2. The excavation extended to a depth of 1 foot bgs, as proposed in the Dig and Haul Package.

The soil was excavated using a hydraulic track excavator and stockpiled on a 10-mil high-density polyethylene (HDPE) liner. The soil stockpiles were covered with a 10-mil liner during periods of non-activity at the site. The nonhazardous soil, which was analyzed for waste characterization by CCI/J.A. Jones Environmental services before the excavation, was transported off site by trucks to the Broadhurst Landfill 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 rye and bahia grass. A layer of straw was applied to prevent wind and water erosion.

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

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TABLE 3-1

PESTICIDE AND INORGANICS ANALYTICAL DATA
BUILDING 98
FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

PARAMETER	CEF-098-			FDEP RESIDENTIAL SCTL ⁽¹⁾	FDEP LEACHABILITY SCTL ⁽²⁾	IBDS VALUE ⁽³⁾
	SS-001-01		SS-002-01			
	Sample	Duplicate				
Pesticides, ug/kg						
Aldrin	18 U	18 U	3.5 U	70	500	NC
alpha-BHC	18 U	18 U	3.5 U	200	0.3	NC
beta-BHC	18 U	18 U	3.5 U	600	1.0	NC
delta-BHC	18 U	18 U	3.5 U	22,000	200	NC
gamma-BHC (Lindane)	18 U	18 U	3.5 U	700	9.0	NC
alpha-Chlordane	35 U	35 U	7.0 U	3100 ⁽⁴⁾	9600 ⁽⁴⁾	NC
gamma-Chlordane	35 U	35 U	7.0 U	3100 ⁽⁴⁾	9600 ⁽⁴⁾	NC
Dieldrin	18 U	18 U	3.5 U	70	4.0	NC
4,4'-DDD	35 U	35 U	7.0 U	4600	4000	NC
4,4'-DDE	35 U	35 U	7.0 U	3300	18,000	NC
4,4'-DDT	35 U	35 U	3.0 J	3300	11,000	NC
Endrin	35 U	35 U	7.0 U	21,000	1000	NC
Endosulfan sulfate	35 U	35 U	7.0 U	NC	NC	NC
Endrin aldehyde	35 U	35 U	7.0 U	NC	NC	NC
Endrin ketone	35 U	35 U	7.0 U	NC	NC	NC
Endosulfan-I	18 U	18 U	3.5 U	410,000 ⁽⁵⁾	3800 ⁽⁵⁾	NC
Endosulfan-II	35 U	35 U	7.0 U	410,000 ⁽⁵⁾	3800 ⁽⁵⁾	NC
Heptachlor	18 U	18 U	3.5 U	200	23,000	NC
Heptachlor epoxide	18 U	18 U	3.5 U	100	600	NC
Methoxychlor	71 U	71 U	14 U	370,000	160,000	NC
Toxaphene	1800 U	1800 U	350 U	1000	31,000	NC
Inorganics, mg/kg						
Aluminum	3400	3700	1630	72,000	NC	4430
Antimony	0.26 U	0.27 U	0.25 U	26	5.0	9.44
Arsenic	0.46 U	0.51 U	0.67 U	0.80	29	2.04
Barium	5.8	8.5	10.5	110	1600	14.4
Beryllium	0.11 U	0.17 U	0.20 U	120	63	0.35
Cadmium	0.04 U	0.04 U	0.04 U	75	8.0	1.72
Calcium	5610	9110	2150	NC	NC	9.44
Chromium	4.4	4.4	2.1	210	38	7.75
Cobalt	0.18 U	0.24 U	0.18 U	4700	NC	3.11
Copper	9.0	7.8	13.4	110	NC	5.97
Iron	598	681	808	23,000	NC	1490
Lead	8.4	8.1	7.2	400	NC	197
Magnesium	123	306	282	NC	NC	329
Manganese	14.1 J	26.1 J	32.8 J	1600	NC	22
Mercury	0.09 U	0.06 U	0.06 U	3.4	2.1	0.16
Nickel	1.7 U	0.84 U	0.75 U	110	130	3.89
Potassium	88.2 U	131	92.2 U	NC	NC	102
Selenium	1.3 U	1.1 U	0.41 U	390	5.0	1.68
Silver	0.11 U	0.11 U	0.10 U	390	17	2.13
Sodium	71.9	93.2	75.6	NC	NC	343
Thallium	0.30 U	0.30 U	0.29 U	NC	NC	2.84
Vanadium	2.7	3.3	2.1	15	980	6.3
Zinc	10.6	10.8	6.2	23,000	6000	37

J = Estimated value.

U = Not detected at or above detection limit (associated value).

NC = No criteria.

1 Florida Residential Soil Cleanup Target Level, FAC Chapter 62-777 (FDEP, 1999).

2 Florida Leachability to Groundwater Soil Cleanup Target Level, FAC Chapter 62-777 (FDEP, 1999).

3 NAS Cecil Field Inorganic Background Data Set (HLA, 1998).

4 Criterion for total chlordane.

5 Criterion for endosulfan.

Highlighted value indicates exceedance of regulatory criteria.

TABLE 3-2

PAH AND TRPH ANALYTICAL DATA
BUILDING 98
FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 3

PARAMETER	FDEP SCTL		CEF-098-						
	Residential Direct Exposure ⁽¹⁾	Leachability to Groundwater ⁽²⁾	SS-001-01		SS-002-01	SS-101-02		SS-102-01	SS-103-01
			Sample	Duplicate		Sample	Duplicate		
Polynuclear Aromatic Hydrocarbons, µg/kg									
1-Methylnaphthalene	68,000	2100	3500 U	3500 U	350 U	180 U	180 U	200 U	180 U
2-Methylnaphthalene	83,000	6100	3500 U	3500 U	350 U	180 U	180 U	200 U	180 U
Acenaphthene	1,900,000	2100	3500 U	3500 U	350 U	180 U	180 U	200 U	180 U
Acenaphthylene	1,100,000	27,000	7100 U	7100 U	700 U	180 U	180 U	200 U	180 U
Anthracene	18,000,000	2,500,000	3500 U	3500 U	350 U	3.0 J	2.6 J	1.2 J	3.0 J
Benzo(a)anthracene	1400	3200	958	1180	186	86.8	81.2	123	54.7
Benzo(a)pyrene	100	8000	3430	3820	230	67.7	51.2	29.8	32.6
Benzo(b)fluoranthene	1400	10,000	3480	3210	393	151	106	118	56.4
Benzo(g,h,i)perylene	2,300,000	32,000,000	1890	2100	220	86.3	54.2	17.7 J	46.5
Benzo(k)fluoranthene	15,000	25,000	2180	2030	208	85.5	118	99.6	21.2 J
Chrysene	140,000	77,000	1120 J	1220 J	319 J	89.4	56.3	70.9	46.5
Dibenzo(a,h)anthracene	100	30,000	710 U	710 U	70 U	27 U J	54.6 J	73.3	64.8
Fluoranthene	2,900,000	1,200,000	1380 J	2330 J	353	146 J	72.6 J	112	41
Fluorene	2,200,000	160,000	3500 U	3500 U	350 U	180 U	180 U	200 U	180 U
Indeno(1,2,3-cd)pyrene	1500	28,000	2590	2740	260	89	63.8	29.4	41.4
Naphthalene	40,000	17,000	3500 U	3500 U	350 U	180 U	180 U	200 U	180 U
Phenanthrene	2,000,000	250,000	3500 U	3500 U	350 U	80 J	23.8 J	200 U	26.4 J
Pyrene	2,200,000	880,000	4290	6690	454	172	95.1	88.1	48.5
Total Recoverable Petroleum Hydrocarbons, mg/kg									
TRPH	340	340	469 J	272 J	35.8	37.4	32.2	126	21.7

TABLE 3-2
PAH AND TRPH ANALYTICAL DATA
BUILDING 98
FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 2 OF 3

PARAMETER	FDEP SCTL		CEF-098-						
	Residential Direct Exposure ⁽¹⁾	Leachability to Groundwater ⁽²⁾	SS-104-01	SS-105-01	SS-201-01		SS-202-01	SU-203-01	SU-204-01
					Sample	Duplicate			
Polynuclear Aromatic Hydrocarbons, µg/kg									
1-Methylnaphthalene	68,000	2100	180 U	190 U	14,000 U	7200 U	1500 U	7100 U	370 U
2-Methylnaphthalene	83,000	6100	180 U	190 U	14,000 U	7200 U	1500 U	7100 U	370 U
Acenaphthene	1,900,000	2100	180 U	190 U	29,000 U	14,000 U	2900 U	14,000 U	740 U
Acenaphthylene	1,100,000	27,000	180 U	190 U	29,000 U	14,000 U	2900 U	14,000 U	740 U
Anthracene	18,000,000	2,500,000	10.8	20.6 J	14,000 U	7200 U	1500 U	7100 U	370 U
Benzo(a)anthracene	1400	3200	293	484	18,100	7800	1500 U	6960 J	370 U
Benzo(a)pyrene	100	8000	222	400	24,300	11,600	290 U	5410	115
Benzo(b)fluoranthene	1400	10,000	353	1060	36,200	19,000	306	9400	201
Benzo(g,h,i)perylene	2,300,000	32,000,000	248	582	30,200	16,400	161 J	6960	130
Benzo(k)fluoranthene	15,000	25,000	224	461	21,200	11,300	290 U	6070	100
Chrysene	140,000	77,000	242	574	31,400	10,500	1500 U	12,200	183 J
Dibenzo(a,h)anthracene	100	30,000	37.5	70.7	3160	1420	290 U	1400 U	51.7 J
Fluoranthene	2,900,000	1,200,000	446	865	17,800	9130	1500 U	20,400	167 J
Fluorene	2,200,000	160,000	180 U	190 U	14,000 U	7200 U	1500 U	7100 U	370 U
Indeno(1,2,3-cd)pyrene	1500	28,000	213	485	21,800	11,900	156 J	4820	134
Naphthalene	40,000	17,000	180 U	190 U	14,000 U	7200 U	1500 U	7100 U	370 U
Phenanthrene	2,000,000	250,000	70.7 J	72.6 J	14,000 U	7200 U	1500 U	7100 U	370 U
Pyrene	2,200,000	880,000	457	934	25,400	14,000	1500 U	20,900	204 J
Total Recoverable Petroleum Hydrocarbons, mg/kg									
TRPH	340	340	46.2	48.3	930	481	821	355	62.2

TABLE 3-2

**PAH AND TRPH ANALYTICAL DATA
BUILDING 98
FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 3 OF 3**

PARAMETER	FDEP SCTL		CEF-098-				
	Residential Direct Exposure ⁽¹⁾	Leachability to Groundwater ⁽²⁾	SS-301-02	SS-302-02	SU-303-02	SU-304-01	SU-305-01
Polynuclear Aromatic Hydrocarbons, µg/kg							
1-Methylnaphthalene	68,000	2100	370 U	350 U	360 U	430 U	350 U
2-Methylnaphthalene	83,000	6100	370 U	350 U	360 U	430 U	350 U
Acenaphthene	1,900,000	2100	750 U	710 U	720 U	850 U	700 U
Acenaphthylene	1,100,000	27,000	750 U	710 U	720 U	850 U	700 U
Anthracene	18,000,000	2,500,000	370 U	350 U	360 U	430 U	350 U
Benzo(a)anthracene	1400	3200	370 U	350 U	360 U	430 U	350 U
Benzo(a)pyrene	100	8000	75 U	71 U	72 U	85 U	70 U
Benzo(b)fluoranthene	1400	10,000	75 U	71 U	72 U	85 U	70 U
Benzo(g,h,i)perylene	2,300,000	32,000,000	75 U	71 U	72 U	85 U	70 U
Benzo(k)fluoranthene	15,000	25,000	75 U	71 U	72 U	85 U	70 U
Chrysene	140,000	77,000	370 U	350 U	360 U	430 U	350 U
Dibenzo(a,h)anthracene	100	30,000	75 U	71 U	72 U	85 U	70 U
Fluoranthene	2,900,000	1,200,000	370 U	350 U	360 U	430 U	350 U
Fluorene	2,200,000	160,000	370 U	350 U	360 U	430 U	350 U
Indeno(1,2,3-cd)pyrene	1500	28,000	75 U	71 U	72 U	85 U	70 U
Naphthalene	40,000	17,000	370 U	350 U	360 U	430 U	350 U
Phenanthrene	2,000,000	250,000	370 U	350 U	360 U	430 U	350 U
Pyrene	2,200,000	880,000	370 U	350 U	360 U	430 U	350 U
Total Recoverable Petroleum Hydrocarbons, mg/kg							
TRPH	340	340	9.4 U	8.8 U	12.5	24.7	9.02

J = Estimated value.

U = Not detected at or above detection limit (associated value).

1 Florida Residential Soil Cleanup Target Level, FAC Chapter 62-777 (FDEP, 1999).

2 Florida Leachability to Groundwater Soil Cleanup Target Level, FAC Chapter 62-777 (FDEP, 1999).

Highlighted value indicates exceedance of regulatory criteria.

TABLE 3-3

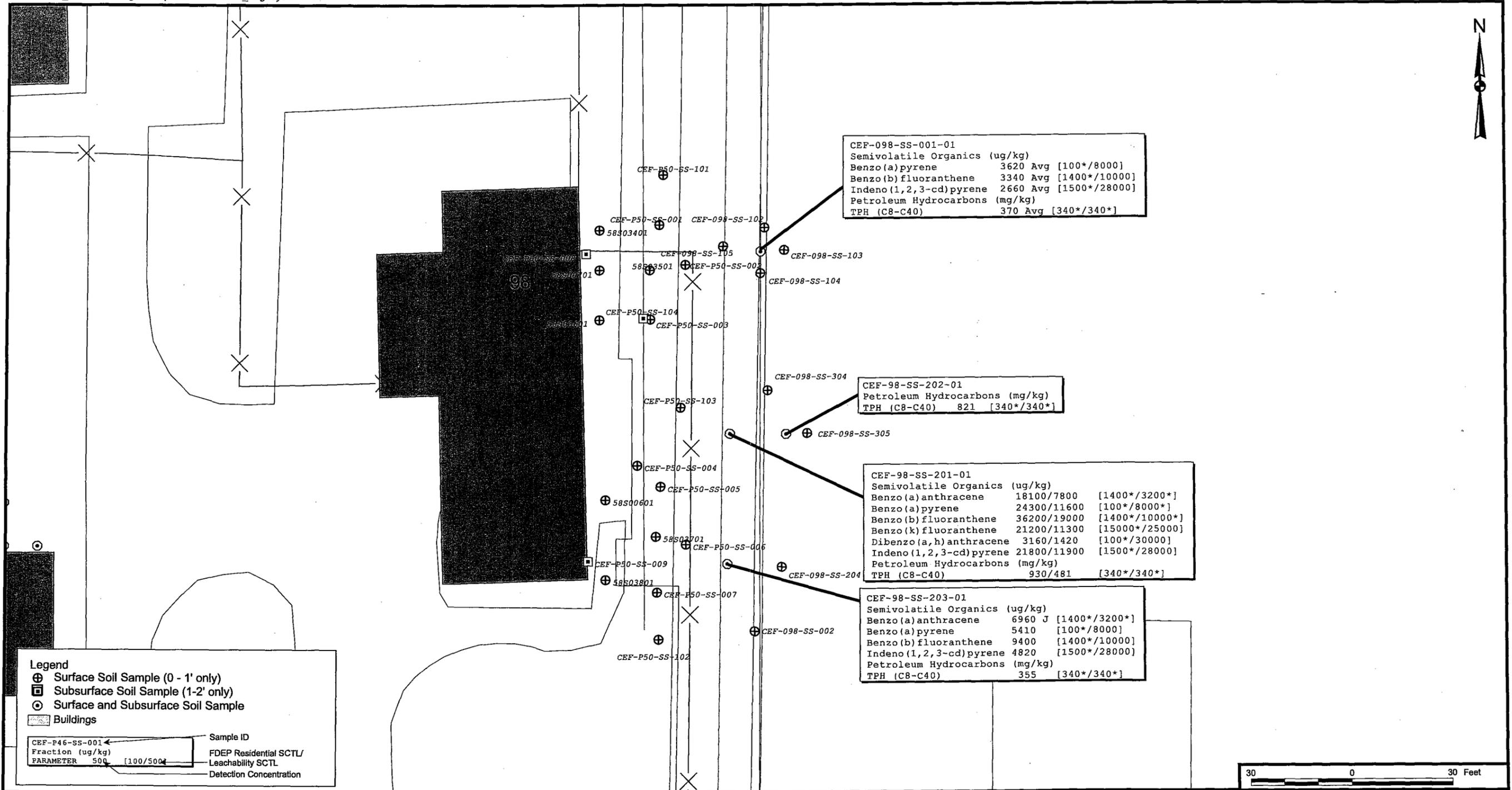
ATTAINMENT OF SCTLs
BUILDING 98
FORMER RAILROAD BED SITE
SAMPLING AND ANALYSIS REPORT
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Sample	PRE-EXCAVATION		POST-EXCAVATION	
	BaP	BaPEq	BaP	BaPEq
MIN	1.8000	1.8000	1.8000	1.8000
MAX	17,950.00	26,163.00	400.00	680.00
MEAN	797.67	1,165.70	44.40	71.56
t 0.95, n-1	0.222353061	0.209048293	0.234572628	0.242591103
STANDARD DEVIATION	3,125.93	4,553.98	82.65	136.89
COEFFICIENT OF VARIATION	3.92	3.91	1.86	1.91
n	36	36	36	36
UCL _{0.95}	913.52	1,324.36	47.63	77.10
<i>Goal</i>	100.00	100.00	100.00	100.00
<i>remediation level</i>	8.5	8.5	8.5	8.5
CEF-98-SS-201-01	17950	26163	1.8	1.8
CEF-98-SS-203-01	5410	8301	1.8	1.8
CEF-98-SS-001-01	3620	4511	1.8	1.8
CEF-98-SS-105-01	400	680	400	680
CEF-98-SS-002-01	230	341	230	341
CEF-98-SS-104-01	222	347	222	347
CEF-98-SS-202-01	145	421	1.8	1.8
CEF-P50-SS-104-02	120	162	120	162
CEF-98-SS-204-01	115	220	115	220
CEF-P50-SS-002-01	70	99	70	99
CEF-98-SS-101-02	59.5	124	59.5	124
CEF-P50-SS-006-01	43.8	58	43.8	58
CEF-98-SS-304-02	43	43	43	43
CEF-98-SS-301-02	38	38	38	38
CEF-98-SS-302-02	36	36	36	36
CEF-98-SS-303-02	36	36	36	36
CEF-98-SS-305-02	35	35	35	35
CEF-98-SS-103-01	32.6	113	32.6	113
CEF-98-SS-102-01	29.8	127	29.8	127
CEF-P50-SS-103-01	18	30	18	30
CEF-P50-SS-101-01	15	25	15	25
CEF-P50-SS-009-02	9	9	9	9
CEF-P50-SS-008-02	8.5	8.5	8.5	8.5
58S00601	1.8	1.8	1.8	1.8
58S00701	1.8	1.8	1.8	1.8
58S03401 (JR47327)	1.8	1.8	1.8	1.8
58S03501 (JR47328)	1.8	1.8	1.8	1.8
58S03601 (JR47329)	1.8	1.8	1.8	1.8
58S03701 (JR473210)	1.8	1.8	1.8	1.8
58S03801 (JR473211)	1.8	1.8	1.8	1.8
CEF-P50-SS-001-01	1.8	1.8	1.8	1.8
CEF-P50-SS-003-01	1.8	1.8	1.8	1.8
CEF-P50-SS-004-01	1.8	1.8	1.8	1.8
CEF-P50-SS-005-01	1.8	1.8	1.8	1.8
CEF-P50-SS-007-01	1.8	1.8	1.8	1.8
CEF-P50-SS-102-01	8.4	16	8.4	16

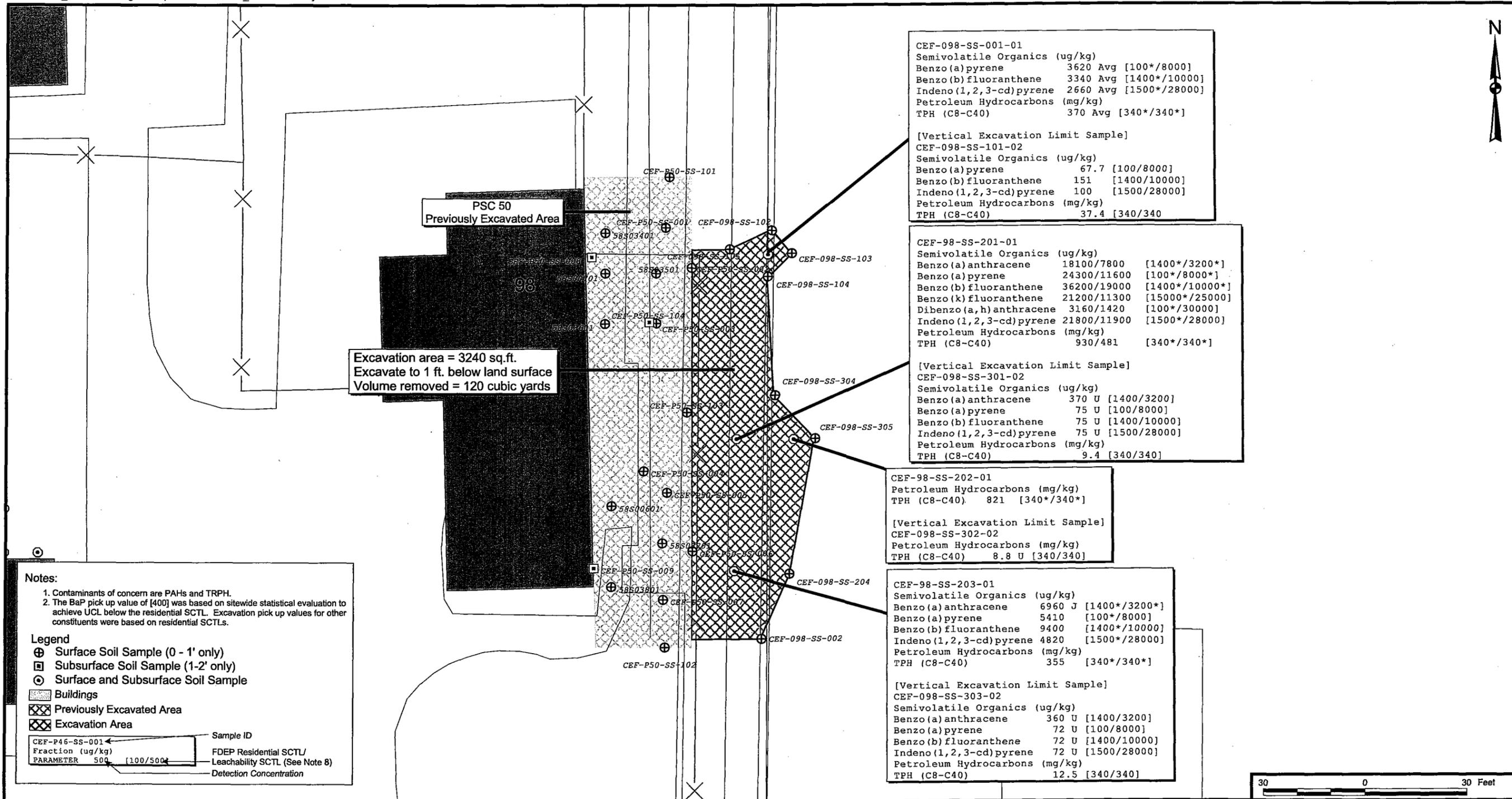
Bolded samples were previously excavated during the PSC 50 remediation.

Bolded and italicized samples were excavated during the Former Railroad Bed Site Remediation.

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NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SAMPLING LOCATION AND EXCEEDANCE MAP BUILDING 98 / FORMER RAILROAD BED SITE SAMPLING AND ANALYSIS REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA		CONTRACT NO. 0039	
							MJJ	25May01		APPROVED BY	DATE	APPROVED BY	DATE
							CHECKED BY	DATE					
							COST/SCHED-AREA						
							SCALE	AS NOTED			DRAWING NO.	REV.	
											FIGURE 3-1	1	



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		REMEDIAL SOIL EXCAVATION BUILDING 98 / FORMER RAILROAD BED SITE SAMPLING AND ANALYSIS REPORT NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NO. 0039		
							MJJ	25May01			APPROVED BY	DATE	
											APPROVED BY	DATE	
											DRAWING NO.	REV.	
												FIGURE 3-2	1

4.0 CONCLUSIONS AND RECOMMENDATIONS

Field investigations determined that PAHs and TRPH contamination was present in soil at the Building 98 Former Railroad Bed Site. A removal action was performed in July 2001 to excavate and dispose off site the soil contaminated above FDEP residential SCTLs. Since the removal action, the soil at this site no longer represents a risk to human health or the environment.

Based upon these conclusions, the recommendation for the Former Railroad Bed Site at Building 98 is no further action. It is also recommended that the Environmental Baseline Survey (EBS) color code should be 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 and TRPH concentrations in the soil no longer represent a hazard to human health or the environment.

REFERENCES

CH2M Hill (CH2M Hill Constructors, Inc.), 2001. Source Removal Report, Excavation of PAH and TRPH-Contaminated Soil at Building 98, Potential Source of Contamination 50/Former Railroad Bed Site. Prepared for SOUTHNAVFACENGCOCM, North Charleston, South Carolina. NAS Cecil Field, Jacksonville, Florida, October.

FDEP (Florida Department of Environmental Protection), 1999. Contaminant Target Rule, Soil, Groundwater, and Surface Water Target Cleanup Levels. Florida Administrative Code (FAC) 62-777, August.

HLA (Harding Lawson Associates), 1998. Naval Air Station, Cecil Field Site-Specific Inorganic Background Data Set.

TtNUS (Tetra Tech NUS, Inc.), 1998. Base-Wide Generic Work Plan, NAS Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOCM, North Charleston, South Carolina, October.

TtNUS, 2000a. Phase I Sampling and Analysis Work Plan, Former Railroad Bed – Building 98/PSC 50 Area, Naval Air Station Cecil Field, Jacksonville, Florida, June.

TtNUS, 2000b. Phase II Sampling and Analysis Work Plan, Former Railroad Bed – Building 98/PSC 50 Area, Naval Air Station Cecil Field, Jacksonville, Florida, July.

TtNUS, 2001a. Dig and Haul Package for Building 98/PSC 50 Area, Former Naval Air Station Cecil Field, Jacksonville, Florida. Pittsburgh, Pennsylvania, January.

TtNUS, 2001b. Technical Memorandum for No Further Action, Potential Source of Contamination 50, Facility 98. NAS Cecil Field, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOCM, North Charleston, South Carolina, January.

TtNUS, 2001c. Phase III Sampling and Analysis Work Plan, Former Railroad Bed – Building 98/PSC 50 Area, Naval Air Station Cecil Field, Jacksonville, Florida, April.

TtNUS, 2001d. Phase IV Sampling and Analysis Work Plan, Former Railroad Bed – Building 98/PSC 50 Area, Naval Air Station Cecil Field, Jacksonville, Florida, April.

TtNUS, 2001e. Dig and Haul Package for Building 98/PSC 50 Area, Former Naval Air Station Cecil Field, Jacksonville, Florida. Pittsburgh, Pennsylvania, June.

U.S. EPA Region IV, 1996. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual. Athens, Georgia, May.

APPENDIX A

LABORATORY ANALYTICAL DATA

Laboratory Blank Analyses

The following contaminants were present in a laboratory method / preparation blanks at the following maximum concentration:

<u>Analyte</u>	<u>Maximum Concentration</u>	<u>Action Level(soil)</u>
Aluminum	51.5µg/L	25.75 mg/kg
Arsenic	4.4µg/L	2.2 mg/kg
Barium	1.2µg/L	0.6 mg/kg
Beryllium	1.9µg/L	0.95 mg/kg
Cadmium	1.1µg/L	0.55 mg/kg
Calcium	23.5µg/L	11.75 mg/kg
Chromium	0.69µg/L	0.345 mg/kg
Cobalt	1.2µg/L	0.6 mg/kg
Copper	3.4µg/L	1.7 mg/kg
Iron	47.6µg/L	23.8 mg/kg
Magnesium	28.3µg/L	14.15 mg/kg
Manganese	1.1µg/L	0.55 mg/kg
Mercury	0.2µg/L	0.16 mg/kg
Nickel ⁽¹⁾	0.35 mg/kg	1.75 mg/kg
Potassium	246µg/L	123 mg/kg
Selenium	4.2µg/L	2.1 mg/kg
Silver	1.5µg/L	0.75 mg/kg
Vanadium	1.0µg/L	0.5 mg/kg
Zinc	1.3µg/L	0.65 mg/kg

(1) Maximum concentration present in a soil preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot, percent solids and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels for arsenic, beryllium, cadmium, cobalt, mercury, nickel, potassium and selenium were qualified, "U", as a result of blank contamination

Field Duplicate Imprecision

Field duplicate imprecision (Relative Percent Difference >50%) was noted for manganese. The positive results reported for manganese were qualified as estimated, "J".

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 manganese.

MEMO TO: M. SPERANZA - PAGE 3
DATE: AUGUST 9, 2000

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)."


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

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 ($< 2 \times$ 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

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 noncompliance.
-

CTO078-NAS CECIL FIELD

SOIL DATA
Accutest, NJ
SDG: F6811

SAMPLE NUMBER:	CEF-098-DUP1	CEF-098-SS-001-01	CEF-098-SS-002-01	CEF-635-SS-001-01
SAMPLE DATE:	06/15/00	06/15/00	06/15/00	06/15/00
LABORATORY ID:	F6811-3	F6811-1	F6811-2	F6811-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	94.1 %	94.1 %	95.1 %	93.0 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:	CEF-098-SS-001-01			

	RESULT	QUAL	CODE									
INORGANICS												
ALUMINUM	3700			3400			1630			3240		
ANTIMONY	0.27	U		0.26	U		0.25	U		0.26	U	
ARSENIC	0.51	U	A	0.46	U	A	0.67	U	A	2.2	U	A
BARIIUM	8.5			5.8			10.5			42.3		
BERYLLIUM	0.17	U	A	0.11	U	A	0.20	U	A	0.68	U	A
CADMIUM	0.04	U										
CALCIUM	9110			5610			2150			18400		
CHROMIUM	4.4			4.4			2.1			3.5		
COBALT	0.24	U	A	0.18	U	A	0.18	U	A	0.49	U	A
COPPER	7.8			9.0			13.4			3.7		
IRON	681			598			808			3440		
LEAD	8.1			8.4			7.2			9.8		
MAGNESIUM	306			123			282			2280		
MANGANESE	26.1	J	P	14.1	J	P	32.8	J	P	189	J	P
MERCURY	0.06	U	A	0.09	U	A	0.06	U	A	0.06	U	A
NICKEL	0.84	U	A	1.7	U	A	0.75	U	A	0.95	U	A
POTASSIUM	131			88.2	U	A	92.2	U	A	528		
SELENIUM	1.1	U	A	1.3	U	A	0.41	U	A	0.22	U	
SILVER	0.11	U		0.11	U		0.10	U		0.10	U	
SODIUM	93.2			71.9			75.6			155		
THALLIUM	0.30	U		0.30	U		0.29	U		0.29	U	
VANADIUM	3.3			2.7			2.1			5.3		
ZINC	10.8			10.6			6.2			12.7		

Report of Analysis

Client Sample ID: CEF-098-SS-001-01	Date Sampled: 06/15/00
Lab Sample ID: F6811-1	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Project: NAS Cecil Field-Site 11	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method
Aluminum	3400	22.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Antimony	0.26 U	6.6	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Arsenic	0.46 B	0.55	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Barium	5.8 B	22.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Beryllium	0.11 B	0.55	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Cadmium	0.04 U	0.44	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Calcium	5610	553	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Chromium	4.4	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Cobalt	0.18 B	5.5	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Copper	9.0	2.8	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Iron	598	11.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Lead	8.4 B	11.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Magnesium	123 B	553	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Manganese	14.1	1.7	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Mercury	0.09 B	0.17	mg/kg	1	06/20/00	06/22/00 SJL	SW846 7471A
Nickel	1.7 B	4.4	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Potassium	88.2 B	553	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Selenium	1.3 B	11.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Sodium	71.9 B	553	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Thallium	0.30 U	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Vanadium	2.7 B	5.5	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Zinc	10.6	2.2	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A

RL = Reporting Limit

00284

Report of Analysis

Client Sample ID: CEF-098-DUP1	Date Sampled: 06/15/00
Lab Sample ID: F6811-3	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Project: NAS Cecil Field-Site 11	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method
Aluminum	3700	22.4	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Antimony	0.27 U	6.7	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Arsenic	0.51 B	0.56	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Barium	8.5 B	22.4	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Beryllium	0.17 B	0.56	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Cadmium	0.04 U	0.45	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Calcium	9110	559	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Chromium	4.4	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Cobalt	0.24 B	5.6	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Copper	7.8	2.8	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Iron	681	11.2	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Lead	8.1 B	11.2	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Magnesium	306 B	559	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Manganese	26.1	1.7	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Mercury	0.06 B	0.16	mg/kg	1	06/20/00	06/22/00 SJL	SW846 7471A
Nickel	0.84 B	4.5	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Potassium	131 B	559	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Selenium	1.1 B	11.2	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Silver	0.11 U	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Sodium	93.2 B	559	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Thallium	0.30 U	1.1	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Vanadium	3.3 B	5.6	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A
Zinc	10.8	2.2	mg/kg	1	06/19/00	06/22/00 SJL	SW846 6010A

RL = Reporting Limit

00286

Report of Analysis

Client Sample ID:	CEF-098-SS-002-01	Date Sampled:	06/15/00
Lab Sample ID:	F6811-2	Date Received:	06/16/00
Matrix:	SO - Soil	Percent Solids:	95.1
Project:	NAS Cecil Field-Site 11		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method
Aluminum	1630	21.2	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Antimony	0.25 U	6.4	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Arsenic	0.67	0.53	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Barium	10.5 B	21.2	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Beryllium	0.20 B	0.53	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Cadmium	0.04 U	0.42	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Calcium	2150	531	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Chromium	2.1	1.1	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Cobalt	0.18 B	5.3	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Copper	13.4	2.7	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Iron	808	10.6	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Lead	7.2 B	10.6	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Magnesium	282 B	531	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Manganese	32.8	1.6	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Mercury	0.06 B	0.19	mg/kg	1	06/20/00	06/22/00	SJL SW846 7471A
Nickel	0.75 B	4.2	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Potassium	92.2 B	531	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Selenium	0.41 B	10.6	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Silver	0.10 U	1.1	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Sodium	75.6 B	531	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Thallium	0.29 U	1.1	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Vanadium	2.1 B	5.3	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A
Zinc	6.2	2.1	mg/kg	1	06/19/00	06/22/00	SJL SW846 6010A

RL = Reporting Limit

00285



Tetra Tech NUS

INTERNAL CORRESPONDENCE

PITT-07-0-025

TO: MARK SPERANZA DATE: AUGUST 9, 2000

FROM: JUSTIN ORBICH CC: DV FILE

SUBJECT: ORGANIC DATA VALIDATION – PEST/PAH/TPH
CTO 078 – NAS CECIL FIELD
SDG F6811

SAMPLES: 9/Surface Soil

CEF-098-DUP1	CEF-098-SS-001-01
CEF-098-SS-002-01	CEF-635-SS-001-01
CEF-635-SS-002-01	CEF-635-SS-003-01
CEF-635-SS-004-01	CEF-635-SS-005-01
CEF-635-SS-DUP1	

OVERVIEW

The sample set for CTO 078, SDG F6811 Naval Air Station (NAS) Cecil Field; Florida consists of nine (9) surface soil environmental samples. The samples were analyzed for pesticide, Polynuclear Aromatic Hydrocarbon (PAH), and Total Petroleum Hydrocarbon (TPH) organic compounds. Two (2) field duplicate pairs (CEF-098-SS-001-01/CEF-098-DUP1 and CEF-635-SS-001-01/CEF-635-SS-DUP1) were included within this SDG.

The samples were collected by Tetra Tech, NUS on June 15th, 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, 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
- • 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.

PESTICIDE FRACTION

The following samples were analyzed at dilutions thus causing elevated reporting limits:

<u>Sample</u>	<u>Dilution</u>
CEF-098-DUP1	10X

MEMO TO: MARK SPERANZA
 DATE: AUGUST 9, 2000 – PAGE 2

CEF-098-SS-001-01	10X
CEF-098-SS-002-01	2X
CEF-635-SS-001-01	40X
CEF-635-SS-002-01	40X
CEF-635-SS-003-01	10X
CEF-635-SS-004-01	10X
CEF-635-SS-005-01	10X
CEF-635-SS-DUP1	40X

PAH FRACTION

The following samples were analyzed at dilutions thus causing elevated reporting limits:

<u>Sample</u>	<u>Dilution</u>
CEF-098-DUP1	10X
CEF-098-SS-001-01	10X
CEF-635-SS-001-01	200X
CEF-635-SS-002-01	50X
CEF-635-SS-003-01	20X
CEF-635-SS-004-01	10X
CEF-635-SS-005-01	10X
CEF-635-SS-DUP1	80X

The field duplicate pair (CEF-098-SS-001-01/CEF-098-DUP1) Relative Percent Differences (RPDs) exceeded the 50% upper control limit for fluoranthene. The positive results were qualified as estimated (J), in the aforementioned pair.

The field duplicate pair (CEF-635-SS-001-01/CEF-635-SS-DUP1) Relative Percent Differences (RPDs) exceeded the 50% upper control limit for benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene. The positive results were qualified as estimated (J), in the aforementioned pair.

TPH FRACTION

The field duplicate pair (CEF-098-SS-001-01/CEF-098-DUP1) Relative Percent Differences (RPDs) exceeded the 50% upper control limit for TPH (c8-c40). The positive results were qualified as estimated (J), in the aforementioned pair.

EXECUTIVE SUMMARY

Laboratory performance: None.

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

MEMO TO: MARK SPERANZA
DATE: AUGUST 9, 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

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 noncompliance.
-

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
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- 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 ($< 2 \times$ 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: F6811**

SAMPLE NUMBER:	CEF-098-DUP1	CEF-098-SS-001-01	CEF-098-SS-002-01	CEF-635-SS-001-01
SAMPLE DATE:	06/15/00	06/15/00	06/15/00	06/15/00
LABORATORY ID:	F6811-3	F6811-1	F6811-2	F6811-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	94.1 %	94.1 %	95.1 %	93.0 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:	CEF-098-SS-001-01			

	RESULT	QUAL	CODE									
PESTICIDES/PCBs												
4,4'-DDD	35	U		35	U		7.0	U		140	U	
4,4'-DDE	35	U		35	U		7.0	U		140	U	
4,4'-DDT	35	U		35	U		3.0	J		140	U	
ALDRIN	18	U		18	U		3.5	U		72	U	
ALPHA-BHC	18	U		18	U		3.5	U		72	U	
ALPHA-CHLORDANE	35	U		35	U		7.0	U		140	U	
BETA-BHC	18	U		18	U		3.5	U		72	U	
DELTA-BHC	18	U		18	U		3.5	U		72	U	
DIELDRIN	18	U		18	U		3.5	U		72	U	
ENDOSULFAN I	18	U		18	U		3.5	U		72	U	
ENDOSULFAN II	35	U		35	U		7.0	U		140	U	
ENDOSULFAN SULFATE	35	U		35	U		7.0	U		140	U	
ENDRIN	35	U		35	U		7.0	U		140	U	
ENDRIN ALDEHYDE	35	U		35	U		7.0	U		140	U	
ENDRIN KETONE	35	U		35	U		7.0	U		140	U	
GAMMA-BHC (LINDANE)	18	U		18	U		3.5	U		72	U	
GAMMA-CHLORDANE	35	U		35	U		7.0	U		140	U	
HEPTACHLOR	18	U		18	U		3.5	U		72	U	
HEPTACHLOR EPOXIDE	18	U		18	U		3.5	U		72	U	
METHOXYCHLOR	71	U		71	U		14	U		290	U	
TOXAPHENE	1800	U		1800	U		350	U		7200	U	

CTO078-NAS CECIL FIELD

SOIL DATA
Accutest, NJ
SDG: F6811

SAMPLE NUMBER:	CEF-098-DUP1	CEF-098-SS-001-01	CEF-098-SS-002-01	CEF-635-SS-001-01
SAMPLE DATE:	06/15/00	06/15/00	06/15/00	06/15/00
LABORATORY ID:	F6811-3	F6811-1	F6811-2	F6811-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	94.1 %	94.1 %	95.1 %	93.0 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:	CEF-098-SS-001-01			

	RESULT	QUAL	CODE									
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	3500	U		3500	U		350	U		72000	U	
2-METHYLNAPHTHALENE	3500	U		3500	U		350	U		72000	U	
ACENAPHTHENE	3500	U		3500	U		350	U		72000	U	
ACENAPHTHYLENE	7100	U		7100	U		700	U		140000	U	
ANTHRACENE	3500	U		3500	U		350	U		72000	U	
BENZO(A)ANTHRACENE	1180			958			186			64400	J	P
BENZO(A)PYRENE	3820			3430			230			54000	J	P
BENZO(B)FLUORANTHENE	3210			3480			393			58800		
BENZO(G,H,I)PERYLENE	2100			1890			220			34300	J	P
BENZO(K)FLUORANTHENE	2030			2180			208			38300		
CHRYSENE	1220	J	P	1120	J	P	319	J	P	58200	J	GP
DIBENZO(A,H)ANTHRACENE	710	U		710	U		70	U		14000	U	
FLUORANTHENE	2330	J	P	1380	J	P	353			82800	J	P
FLUORENE	3500	U		3500	U		350	U		72000	U	
INDENO(1,2,3-CD)PYRENE	2740			2590			260			38100	J	R
NAPHTHALENE	3500	U		3500	U		350	U		72000	U	
PHENANTHRENE	3500	U		3500	U		350	U		72000	U	
PYRENE	6690			4290			454			136000	J	P

CTO078-NAS CECIL FIELD

SOIL DATA
Accutest, NJ
SDG: F6811

SAMPLE NUMBER:	CEF-098-DUP1	CEF-098-SS-001-01	CEF-098-SS-002-01	CEF-635-SS-001-01
SAMPLE DATE:	06/15/00	06/15/00	06/15/00	06/15/00
LABORATORY ID:	F6811-3	F6811-1	F6811-2	F6811-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	94.1 %	94.1 %	95.1 %	93.0 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:	CEF-098-SS-001-01			

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	272	J	G	469	J	G	35.8			3260		

Report of Analysis

Client Sample ID: CEF-098-SS-001-01	Date Sampled: 06/15/00
Lab Sample ID: F6811-1	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Method: SW846 3550B/8081A	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	ST05461.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	35	ug/kg	
5103-74-2	gamma-Chlordane	ND	35	ug/kg	
60-57-1	Dieldrin	ND	18	ug/kg	
72-54-8	4,4'-DDD	ND	35	ug/kg	
72-55-9	4,4'-DDE	ND	35	ug/kg	
50-29-3	4,4'-DDT	ND	35	ug/kg	
72-20-8	Endrin	ND	35	ug/kg	
1031-07-8	Endosulfan sulfate	ND	35	ug/kg	
7421-93-4	Endrin aldehyde	ND	35	ug/kg	
53494-70-5	Endrin ketone	ND	35	ug/kg	
959-98-8	Endosulfan-I	ND	18	ug/kg	
33213-65-9	Endosulfan-II	ND	35	ug/kg	
76-44-8	Heptachlor	ND	18	ug/kg	
1024-57-3	Heptachlor epoxide	ND	18	ug/kg	
72-43-5	Methoxychlor	ND	71	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	98%		50-144%
2051-24-3	Decachlorobiphenyl	138%		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-098-DUP1	Date Sampled: 06/15/00
Lab Sample ID: F6811-3	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Method: SW846 3550B/8081A	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	ST05463.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	35	ug/kg	
5103-74-2	gamma-Chlordane	ND	35	ug/kg	
60-57-1	Dieldrin	ND	18	ug/kg	
72-54-8	4,4'-DDD	ND	35	ug/kg	
72-55-9	4,4'-DDE	ND	35	ug/kg	
50-29-3	4,4'-DDT	ND	35	ug/kg	
72-20-8	Endrin	ND	35	ug/kg	
1031-07-8	Endosulfan sulfate	ND	35	ug/kg	
7421-93-4	Endrin aldehyde	ND	35	ug/kg	
53494-70-5	Endrin ketone	ND	35	ug/kg	
959-98-8	Endosulfan-I	ND	18	ug/kg	
33213-65-9	Endosulfan-II	ND	35	ug/kg	
76-44-8	Heptachlor	ND	18	ug/kg	
1024-57-3	Heptachlor epoxide	ND	18	ug/kg	
72-43-5	Methoxychlor	ND	71	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	81%		50-144%
2051-24-3	Decachlorobiphenyl	96%		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-098-SS-002-01	Date Sampled: 06/15/00
Lab Sample ID: F6811-2	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 95.1
Method: SW846 3550B/8081A	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	ST05462.D	2	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	3.5	ug/kg	
319-84-6	alpha-BHC	ND	3.5	ug/kg	
319-85-7	beta-BHC	ND	3.5	ug/kg	
319-86-8	delta-BHC	ND	3.5	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	3.5	ug/kg	
5103-71-9	alpha-Chlordane	ND	7.0	ug/kg	
5103-74-2	gamma-Chlordane	ND	7.0	ug/kg	
60-57-1	Dieldrin	ND	3.5	ug/kg	
72-54-8	4,4'-DDD	ND	7.0	ug/kg	
72-55-9	4,4'-DDE	ND	7.0	ug/kg	
50-29-3	4,4'-DDT ^b	3.0	7.0	ug/kg	J
72-20-8	Endrin	ND	7.0	ug/kg	
1031-07-8	Endosulfan sulfate	ND	7.0	ug/kg	
7421-93-4	Endrin aldehyde	ND	7.0	ug/kg	
53494-70-5	Endrin ketone	ND	7.0	ug/kg	
959-98-8	Endosulfan-I	ND	3.5	ug/kg	
33213-65-9	Endosulfan-II	ND	7.0	ug/kg	
76-44-8	Heptachlor	ND	3.5	ug/kg	
1024-57-3	Heptachlor epoxide	ND	3.5	ug/kg	
72-43-5	Methoxychlor	ND	14	ug/kg	
8001-35-2	Toxaphene	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	96%		50-144%
2051-24-3	Decachlorobiphenyl	140%		10-180%

(a) Dilution required due to matrix interference.

(b) All hits confirmed by dual column analysis.

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-098-SS-001-01	Date Sampled: 06/15/00
Lab Sample ID: F6811-1	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Method: EPA 8310	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA002172.D	10	06/26/00	CCJ	06/23/00	OP1729	GAA84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	3500	ug/kg	
208-96-8	Acenaphthylene	ND	7100	ug/kg	
120-12-7	Anthracene	ND	3500	ug/kg	
56-55-3	Benzo(a)anthracene	958	710	ug/kg	
50-32-8	Benzo(a)pyrene	3430	710	ug/kg	
205-99-2	Benzo(b)fluoranthene	3480	710	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1890	710	ug/kg	
207-08-9	Benzo(k)fluoranthene	2180	710	ug/kg	
218-01-9	Chrysene	1120	3500	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	710	ug/kg	
206-44-0	Fluoranthene	1380	3500	ug/kg	J
86-73-7	Fluorene	ND	3500	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2590	710	ug/kg	
91-20-3	Naphthalene	ND	3500	ug/kg	
90-12-0	1-Methylnaphthalene	ND	3500	ug/kg	
91-57-6	2-Methylnaphthalene	ND	3500	ug/kg	
85-01-8	Phenanthrene	ND	3500	ug/kg	
129-00-0	Pyrene	4290	3500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		35-135%
92-94-4	p-Terphenyl	122%		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-098-DUP1
Lab Sample ID: F6811-3
Matrix: SO - Soil
Method: EPA 8310
Project: NAS Cecil Field-Site 11

Date Sampled: 06/15/00
Date Received: 06/16/00
Percent Solids: 94.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA002174.D	10	06/26/00	CCJ	06/23/00	OP1729	GAA84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	3500	ug/kg	
208-96-8	Acenaphthylene	ND	7100	ug/kg	
120-12-7	Anthracene	ND	3500	ug/kg	
56-55-3	Benzo(a)anthracene	1180	710	ug/kg	
50-32-8	Benzo(a)pyrene	3820	710	ug/kg	
205-99-2	Benzo(b)fluoranthene	3210	710	ug/kg	
191-24-2	Benzo(g,h,i)perylene	2100	710	ug/kg	
207-08-9	Benzo(k)fluoranthene	2030	710	ug/kg	
218-01-9	Chrysene	1220	3500	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	710	ug/kg	
206-44-0	Fluoranthene	2330	3500	ug/kg	J
86-73-7	Fluorene	ND	3500	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2740	710	ug/kg	
91-20-3	Naphthalene	ND	3500	ug/kg	
90-12-0	1-Methylnaphthalene	ND	3500	ug/kg	
91-57-6	2-Methylnaphthalene	ND	3500	ug/kg	
85-01-8	Phenanthrene	ND	3500	ug/kg	
129-00-0	Pyrene	6690	3500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		35-135%
92-94-4	p-Terphenyl	113%		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-098-SS-002-01		Date Sampled: 06/15/00
Lab Sample ID: F6811-2		Date Received: 06/16/00
Matrix: SO - Soil		Percent Solids: 95.1
Method: EPA 8310		
Project: NAS Cecil Field-Site 11		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA002173.D	1	06/26/00	CCJ	06/23/00	OP1729	GAA84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	350	ug/kg	
208-96-8	Acenaphthylene	ND	700	ug/kg	
120-12-7	Anthracene	ND	350	ug/kg	
56-55-3	Benzo(a)anthracene	186	70	ug/kg	
50-32-8	Benzo(a)pyrene	230	70	ug/kg	
205-99-2	Benzo(b)fluoranthene	393	70	ug/kg	
191-24-2	Benzo(g,h,i)perylene	220	70	ug/kg	
207-08-9	Benzo(k)fluoranthene	208	70	ug/kg	
218-01-9	Chrysene	319	350	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	70	ug/kg	
206-44-0	Fluoranthene	353	350	ug/kg	
86-73-7	Fluorene	ND	350	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	260	70	ug/kg	
91-20-3	Naphthalene	ND	350	ug/kg	
90-12-0	1-Methylnaphthalene	ND	350	ug/kg	
91-57-6	2-Methylnaphthalene	ND	350	ug/kg	
85-01-8	Phenanthrene	ND	350	ug/kg	
129-00-0	Pyrene	454	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		35-135%
92-94-4	p-Terphenyl	110%		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-098-SS-001-01	Date Sampled: 06/15/00
Lab Sample ID: F6811-1	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Method: FLORIDA-PRO	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08967.D	25	06/26/00	CCJ	06/23/00	OP1728	GOP399
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	469	220	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	89%		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-098-DUP1	Date Sampled: 06/15/00
Lab Sample ID: F6811-3	Date Received: 06/16/00
Matrix: SO - Soil	Percent Solids: 94.1
Method: FLORIDA-PRO	
Project: NAS Cecil Field-Site 11	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08970.D	10	06/26/00	CCJ	06/23/00	OP1728	GOP399
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	272	88	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		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-098-SS-002-01		Date Sampled: 06/15/00
Lab Sample ID: F6811-2		Date Received: 06/16/00
Matrix: SO - Soil		Percent Solids: 95.1
Method: FLORIDA-PRO		
Project: NAS Cecil Field-Site 11		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP08968.D	2	06/26/00	CCJ	06/23/00	OP1728	GOP399
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	35.8	18	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	93%		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

MEMO TO: MARK SPERANZA
DATE: SEPTEMBER 19, 2000 – PAGE 2

PET FRACTION

All quality control parameters were met for this fraction.

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: The field duplicate pair RPD exceeded the upper control limit for several compounds.

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

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 noncompliance.
-

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 ($< 2 \times$ 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%

NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F7328

SAMPLE NUMBER:	CEF-098-DUP2	CEF-098-SS-101-02	CEF-098-SS-102-01	CEF-098-SS-103-01
SAMPLE DATE:	08/08/00	08/08/00	08/08/00	08/08/00
LABORATORY ID:	F7328-6	F7328-1	F7328-2	F7328-3
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.0 %	92.3 %	90.7 %	93.6 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:	CEF-098-SS-101-02			

	RESULT	QUAL	CODE									
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	180	U		180	U		200	U		180	U	
2-METHYLNAPHTHALENE	180	U		180	U		200	U		180	U	
ACENAPHTHENE	180	U		180	U		200	U		180	U	
ACENAPHTHYLENE	180	U		180	U		200	U		180	U	
ANTHRACENE	2.6	J	P	3	J	P	1.2	J	P	3	J	P
BENZO(A)ANTHRACENE	81.2			86.8			123			54.7		
BENZO(A)PYRENE	51.2			67.7			29.8			32.6		
BENZO(B)FLUORANTHENE	106			151			118			56.4		
BENZO(G,H,I)PERYLENE	54.2			86.3			17.7	J	P	46.5		
BENZO(K)FLUORANTHENE	118			85.5			99.6			21.2	J	P
CHRYSENE	56.3			89.4			70.9			46.5		
DIBENZO(A,H)ANTHRACENE	54.6	J	G	27	UJ	G	73.3			64.8		
FLUORANTHENE	72.6	J	G	146	J	G	112			41		
FLUORENE	180	U		180	U		200	U		180	U	
INDENO(1,2,3-CD)PYRENE	63.8			89			29.4			41.4		
NAPHTHALENE	180	U		180	U		200	U		180	U	
PHENANTHRENE	23.8	J	G	80	J	G	200	U		26.4	J	P
PYRENE	95.1			172			88.1			48.5		

**NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F7328**

SAMPLE NUMBER:	CEF-098-SS-104-01	CEF-098-SS-105-01		
SAMPLE DATE:	08/08/00	08/08/00	//	//
LABORATORY ID:	F7328-4	F7328-5		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	91.8 %	88.7 %	100.0 %	100.0 %
UNITS:	UG/KG	UG/KG		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	180	U		190	U							
2-METHYLNAPHTHALENE	180	U		190	U							
ACENAPHTHENE	180	U		190	U							
ACENAPHTHYLENE	180	U		190	U							
ANTHRACENE	10.8	J	P	20.6	J	P						
BENZO(A)ANTHRACENE	293			484								
BENZO(A)PYRENE	222			400								
BENZO(B)FLUORANTHENE	353			1060								
BENZO(G,H,I)PERYLENE	248			582								
BENZO(K)FLUORANTHENE	224			461								
CHRYSENE	242			574								
DIBENZO(A,H)ANTHRACENE	37.5			70.7								
FLUORANTHENE	446			865								
FLUORENE	180	U		190	U							
INDENO(1,2,3-CD)PYRENE	213			485								
NAPHTHALENE	180	U		190	U							
PHENANTHRENE	70.7	J	P	72.6	J	P						
PYRENE	457			934								

NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F7328

SAMPLE NUMBER:	CEF-098-DUP2	CEF-098-SS-101-02	CEF-098-SS-102-01	CEF-098-SS-103-01
SAMPLE DATE:	08/08/00	08/08/00	08/08/00	08/08/00
LABORATORY ID:	F7328-6	F7328-1	F7328-2	F7328-3
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.0 %	92.3 %	90.7 %	93.6 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:	CEF-098-SS-101-02			

	RESULT	QUAL	CODE									
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	32.2			37.4			126			21.7		

**NAS CECIL FIELD
SOIL DATA
Accutest, NJ
SDG: F7328**

SAMPLE NUMBER:	CEF-098-SS-104-01	CEF-098-SS-105-01		
SAMPLE DATE:	08/08/00	08/08/00	//	//
LABORATORY ID:	F7328-4	F7328-5		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	91.8 %	88.7 %	100.0 %	100.0 %
UNITS:	MG/KG	MG/KG		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
PETROLEUM HYDROCARBONS												
TPH (C8-C40)	46.2			48.3								



Report of Analysis

Client Sample ID: CEF-098-SS-101-02	
Lab Sample ID: F7328-1	Date Sampled: 08/08/00
Matrix: SO - Soil	Date Received: 08/11/00
Method: SW846 8310	Percent Solids: 92.3
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0367.D	1	08/19/00	AMA	08/14/00	M:OP2176	M:LCB3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	180	ug/kg	
208-96-9	Acenaphthylene	ND	180	ug/kg	
120-12-7	Anthracene	3.0	180	ug/kg	J
56-55-3	Benzo (a) anthracene	86.8	27	ug/kg	
50-32-8	Benzo (a) pyrene	67.7	27	ug/kg	
205-99-2	Benzo (b) fluoranthene	151	27	ug/kg	
191-24-2	Benzo (g,h,i) perylene	86.3	27	ug/kg	
207-08-9	Benzo (k) fluoranthene	85.5	27	ug/kg	
218-01-9	Chrysene	89.4	27	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	27	ug/kg	
206-44-0	Fluoranthene	146	27	ug/kg	
86-73-7	Fluorene	ND	180	ug/kg	
193-37-0	Indeno (1,2,3-cd) pyrene	89.0	27	ug/kg	
90-12-0	1-Methylnaphthalene	ND	180	ug/kg	
91-57-6	2-Methylnaphthalene	ND	180	ug/kg	
91-20-3	Naphthalene	ND	180	ug/kg	
85-01-8	Phenanthrene	80.0	180	ug/kg	J
129-00-0	Pyrene	172	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-4	o-Terphenyl	99%		20-130%

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

Report of Analysis

Client Sample ID: CEF-098-DUP2		Date Sampled: 08/08/00
Lab Sample ID: F7328-6		Date Received: 08/11/00
Matrix: SO - Soil		Percent Solids: n/a
Method: SW846 8310 SW846 3550B		
Project: TETRPAPT: NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0372.D	1	08/19/00	JR	08/14/00	OP2176	LCB3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	180	ug/kg	
208-96-8	Acenaphthylene	ND	180	ug/kg	
120-12-7	Anthracene	2.6	180	ug/kg	J
56-55-3	Benzo (a) anthracene	81.2	27	ug/kg	
50-32-8	Benzo (a) pyrene	51.2	27	ug/kg	
205-99-2	Benzo (b) fluoranthene	106	27	ug/kg	
191-24-2	Benzo (g,h,i) perylene	54.2	27	ug/kg	
207-08-9	Benzo (k) fluoranthene	118	27	ug/kg	
218-01-9	Chrysene	56.3	27	ug/kg	
53-70-3	Dibenz(a,h)anthracene	54.6	27	ug/kg	
206-44-0	Fluoranthene	72.6	27	ug/kg	
86-73-7	Fluorene	ND	180	ug/kg	
193-39-5	Indeno (1,2,3-cd) pyrene	63.8	27	ug/kg	
90-12-0	1-Methylnaphthalene	ND	180	ug/kg	
91-57-6	2-Methylnaphthalene	ND	180	ug/kg	
91-20-3	Naphthalene	ND	180	ug/kg	
85-01-8	Phenanthrene	23.8	180	ug/kg	J
129-00-0	Pyrene	95.1	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		20-130%

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



Report of Analysis

Client Sample ID: CEF-098-SS-102-01 Lab Sample ID: F7328-2 Matrix: SO - Soil Method: SW846 8310 Project: NAS Cecil Field	Date Sampled: 08/08/00 Date Received: 08/11/00 Percent Solids: 90.7
---	--

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0368.D	1	08/19/00	AMA	08/14/00	M:OP2176	M:LCB3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	200	ug/kg	
208-96-8	Acenaphthylene	ND	200	ug/kg	
120-14-7	Anthracene	1.2	200	ug/kg	J
56-55-3	Benzo (a) anthracene	123	29	ug/kg	
50-32-8	Benzo (a) pyrene	29.8	29	ug/kg	
205-99-2	Benzo (b) fluoranthene	118	29	ug/kg	
191-24-2	Benzo (g,h,i) perylene	17.7	29	ug/kg	J
207-08-9	Benzo (k) fluoranthene	99.6	29	ug/kg	
218-08-9	Chrysene	70.9	29	ug/kg	
53-70-3	Dibenz(a,h)anthracene	73.3	29	ug/kg	
206-44-0	Fluoranthene	112	29	ug/kg	
86-72-8	Fluorene	ND	200	ug/kg	
193-25-5	Indeno (1,2,3-cd) pyrene	29.4	29	ug/kg	
90-15-6	1-Methylnaphthalene	ND	200	ug/kg	
91-57-5	2-Methylnaphthalene	ND	200	ug/kg	
91-20-3	Naphthalene	ND	200	ug/kg	
85-01-8	Phenanthrene	ND	200	ug/kg	
129-00-0	Pyrene	88.1	29	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-4	o-Terphenyl	92%		20-130%

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

Client Sample ID: CEF-098-SS-103-01	Date Sampled: 08/08/00
Lab Sample ID: F7328-3	Date Received: 08/11/00
Matrix: SO - Soil	Percent Solids: 93.6
Method: SW846 8310	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0369.D	1	08/19/00	AMA	08/14/00	M:OP2176	M:LCB3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
83-32	Acenaphthene	ND	180	ug/kg	
208-98	Acenaphthylene	ND	180	ug/kg	
120-14	Anthracene	3.0	180	ug/kg	J
56-55	Benzo (a) anthracene	54.7	26	ug/kg	
50-32-8	Benzo (a) pyrene	32.6	26	ug/kg	
205-99-2	Benzo (b) fluoranthene	56.4	26	ug/kg	
191-27-2	Benzo (g,h,i) perylene	46.5	26	ug/kg	
207-08-9	Benzo (k) fluoranthene	21.2	26	ug/kg	J
218-08-9	Chrysene	46.5	26	ug/kg	
53-70-7	Dibenz(a,h)anthracene	64.8	26	ug/kg	
206-47-1	Fluoranthene	41.0	26	ug/kg	
86-71-8	Fluorene	ND	180	ug/kg	
193-27-7	Indeno (1,2,3-cd) pyrene	41.4	26	ug/kg	
90-14-6	1-Methylnaphthalene	ND	180	ug/kg	
91-57-6	2-Methylnaphthalene	ND	180	ug/kg	
91-20-3	Naphthalene	ND	180	ug/kg	
85-01-6	Phenanthrene	26.4	180	ug/kg	J
129-00-1	Pyrene	48.5	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-4	o-Terphenyl	87%		20-130%

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

Client Sample ID:	CEF-098-SS-104-01	Date Sampled:	08/08/00
Lab Sample ID:	F7328-4	Date Received:	08/11/00
Matrix:	SO - Soil	Percent Solids:	91.8
Method:	SW846 8310		
Project:	NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0370.D	1	08/19/00	AMA	08/14/00	M:OP2176	M:LCB3
Run #2							

CAS #	Compound	Result	RL	Units	Q
83-32	Acenaphthene	ND	180	ug/kg	
208-9	Acenaphthylene	ND	180	ug/kg	
120-1	Anthracene	10.8	180	ug/kg	J
56-55	Benzo (a) anthracene	293	27	ug/kg	
50-32	Benzo (a) pyrene	222	27	ug/kg	
205-99	Benzo (b) fluoranthene	353	27	ug/kg	
191-2	Benzo (g,h,i) perylene	248	27	ug/kg	
207-0	Benzo (k) fluoranthene	224	27	ug/kg	
218-0	Chrysene	242	27	ug/kg	
53-70	Dibenz(a,h)anthracene	37.5	27	ug/kg	
206-2	Fluoranthene	446	27	ug/kg	
86-71	Fluorene	ND	180	ug/kg	
193-3	Indeno (1,2,3-cd) pyrene	213	27	ug/kg	
90-17	1-Methylnaphthalene	ND	180	ug/kg	
91-57	2-Methylnaphthalene	ND	180	ug/kg	
91-20	Naphthalene	ND	180	ug/kg	
85-01	Phenanthrene	70.7	180	ug/kg	J
129-0	Pyrene	457	27	ug/kg	

CAS #	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15	o-Terphenyl	89%		20-130%

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

Client Sample ID:	CEF-098-SS-105-01	Date Sampled:	08/08/00
Lab Sample ID:	F7328-5	Date Received:	08/11/00
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	SW846 8310		
Project:	NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	UV0371.D	1	08/19/00	AMA	08/14/00	M:OP2176	M:LCB3

CAS #	Compound	Result	RL	Units	Q
83-37	Acenaphthene	ND	190	ug/kg	
208-98	Acenaphthylene	ND	190	ug/kg	
120-14	Anthracene	20.6	190	ug/kg	J
56-55	Benzo (a) anthracene	484	28	ug/kg	
50-32	Benzo (a) pyrene	400	28	ug/kg	
205-99	Benzo (b) fluoranthene	1060	28	ug/kg	
191-27	Benzo (g,h,i) perylene	582	28	ug/kg	
207-08	Benzo (k) fluoranthene	461	28	ug/kg	
218-01	Chrysene	574	28	ug/kg	
53-70	Dibenz(a,h)anthracene	70.7	28	ug/kg	
206-01	Fluoranthene	865	28	ug/kg	
86-71	Fluorene	ND	190	ug/kg	
193-39	Indeno (1,2,3-cd) pyrene	485	28	ug/kg	
90-14	1-Methylnaphthalene	ND	190	ug/kg	
91-57	2-Methylnaphthalene	ND	190	ug/kg	
91-20	Naphthalene	ND	190	ug/kg	
85-01	Phenanthrene	72.6	190	ug/kg	J
129-00	Pyrene	934	28	ug/kg	

CAS #	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-1	o-Terphenyl	83%		20-130%

ND = Not detected
 RL = Reporting Limit
 E = Error 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-098-SS-101-02	Date Sampled: 08/08/00
Lab Sample ID: F7328-1	Date Received: 08/11/00
Matrix: SO - Soil	Percent Solids: 92.3
Method: FLORIDA-PRO	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10300.D	1	08/16/00	ME	08/14/00	OP1942	GOP426
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	37.4	9.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	104%		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

Page 1 of 1

Client Sample ID: CEF-098-DUP2		Date Sampled: 08/08/00
Lab Sample ID: F7328-6		Date Received: 08/11/00
Matrix: SO - Soil		Percent Solids: 92.0
Method: FLORIDA-PRO		
Project: NAS Cecil Field		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10305.D	1	08/16/00	ME	08/14/00	OP1942	GOP426
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	32.2	9.0	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-098-SS-102-01	Date Sampled: 08/08/00
Lab Sample ID: F7328-2	Date Received: 08/11/00
Matrix: SO - Soil	Percent Solids: 90.7
Method: FLORIDA-PRO	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10323.D	4	08/17/00	ME	08/14/00	OP1942	GOP427
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	126	37	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	106%		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-098-SS-103-01	Date Sampled:	08/08/00
Lab Sample ID:	F7328-3	Date Received:	08/11/00
Matrix:	SO - Soil	Percent Solids:	93.6
Method:	FLORIDA-PRO		
Project:	NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP10302.D	1	08/16/00	ME	08/14/00	OP1942	GOP426
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	21.7	8.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-1534	o-Terphenyl	108%		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-098-SS-104-01	Date Sampled:	08/08/00
Lab Sample ID:	F7328-4	Date Received:	08/11/00
Matrix:	SO - Soil	Percent Solids:	91.8
Method:	FLORIDA-PRO		
Project:	NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #	OP10303.D	1	08/16/00	ME	08/14/00	OP1942	GOP426

CAS #	Compound	Result	RL	Units	Q
	TPH (C8-C40)	46.2	9.1	mg/kg	
CAS #	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15	o-Terphenyl	98%		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-098-SS-105-01	Date Sampled:	08/08/00
Lab Sample ID:	F7328-5	Date Received:	08/11/00
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	FLORIDA-PRO		
Project:	NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #	OP10304.D	1	08/16/00	ME	08/14/00	OP1942	GOP426

CAS	Compound	Result	RL	Units	Q
	TPH (C8-C40)	48.3	9.4	mg/kg	
CAS	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15	o-Terphenyl	101%		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



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.

MEMO TO: MR. M SPERANZA
DATE: 04/26/2001 - PAGE 2

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.

ADDITIONAL 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.

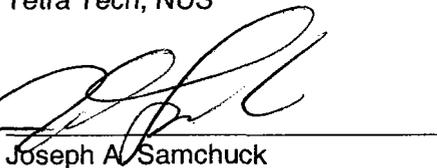
Other Factors Affecting Data Quality: None

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

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 noncompliance.
-

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 ($< 2 \times$ 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: F9387

SAMPLE NUMBER:	CEF-98-SS-201-01	CEF-98-SS-202-01	CEF-98-SS-203-01	CEF-98-SS-204-01
SAMPLE DATE:	04/06/01	04/06/01	04/06/01	04/06/01
LABORATORY ID:	F9387-1	F9387-3	F9387-4	F9387-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.3 %	91.3 %	93.5 %	89.9 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
1-METHYLNAPHTHALENE	14000	U		1500	U		7100	U		370	U	
2-METHYLNAPHTHALENE	14000	U		1500	U		7100	U		370	U	
ACENAPHTHENE	29000	U		2900	U		14000	U		740	U	
ACENAPHTHYLENE	29000	U		2900	U		14000	U		740	U	
ANTHRACENE	14000	U		1500	U		7100	U		370	U	
BENZO(A)ANTHRACENE	18100			1500	U		6960	J	P	370	U	
BENZO(A)PYRENE	24300			290	U		5410			115		
BENZO(B)FLUORANTHENE	36200			306			9400			201		
BENZO(G,H,I)PERYLENE	30200			161	J	P	6960			130		
BENZO(K)FLUORANTHENE	21200			290	U		6070			100		
CHRYSENE	31400			1500	U		12200			183	J	P
DIBENZO(A,H)ANTHRACENE	3160			290	U		1400	U		51.7	J	P
FLUORANTHENE	17800			1500	U		20400			167	J	P
FLUORENE	14000	U		1500	U		7100	U		370	U	
INDENO(1,2,3-CD)PYRENE	21800			156	J	P	4820			134		
NAPHTHALENE	14000	U		1500	U		7100	U		370	U	
PHENANTHRENE	14000	U		1500	U		7100	U		370	U	
PYRENE	25400			1500	U		20900			204	J	P

CTO078-NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F9387

SAMPLE NUMBER: CEF-98-SS-DUP 3
 SAMPLE DATE: 04/06/01
 LABORATORY ID: F9387-2
 QC_TYPE: NORMAL
 % SOLIDS: 92.2 %
 UNITS: UG/KG
 FIELD DUPLICATE OF: CEF-98-SS-201-01

//

//

//

100.0 %

100.0 %

100.0 %

	RESULT	QUAL	CODE									
1-METHYLNAPHTHALENE	7200	U										
2-METHYLNAPHTHALENE	7200	U										
ACENAPHTHENE	14000	U										
ACENAPHTHYLENE	14000	U										
ANTHRACENE	7200	U										
BENZO(A)ANTHRACENE	7800											
BENZO(A)PYRENE	11600											
BENZO(B)FLUORANTHENE	19000											
BENZO(G,H,I)PERYLENE	16400											
BENZO(K)FLUORANTHENE	11300											
CHRYSENE	10500											
DIBENZO(A,H)ANTHRACENE	1420											
FLUORANTHENE	9130											
FLUORENE	7200	U										
INDENO(1,2,3-CD)PYRENE	11900											
NAPHTHALENE	7200	U										
PHENANTHRENE	7200	U										
PYRENE	14000											

CTO078-NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F9387

SAMPLE NUMBER:	CEF-98-SS-201-01	CEF-98-SS-202-01	CEF-98-SS-203-01	CEF-98-SS-204-01
SAMPLE DATE:	04/06/01	04/06/01	04/06/01	04/06/01
LABORATORY ID:	F9387-1	F9387-3	F9387-4	F9387-5
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	92.3 %	91.3 %	93.5 %	89.9 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
TOTAL PETROLEUM HYDROCARBONS	930			821			355			62.2		

CTO078-NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F9387

SAMPLE NUMBER: CEF-98-SS-DUP 3
 SAMPLE DATE: 04/06/01
 LABORATORY ID: F9387-2
 QC_TYPE: NORMAL
 % SOLIDS: 92.2 %
 UNITS: MG/KG
 FIELD DUPLICATE OF: CEF-98-SS-201-01

//

//

//

100.0 %

100.0 %

100.0 %

	RESULT	QUAL	CODE									
TOTAL PETROLEUM HYDROCARBONS	481											

Report of Analysis

Client Sample ID: CEF-98-SS-201-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-1	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 92.3
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA007007.D	40	04/10/01	MRE	04/09/01	OP2965	GAA281
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	29000	ug/kg	
208-96-8	Acenaphthylene	ND	29000	ug/kg	
120-12-7	Anthracene	ND	14000	ug/kg	
56-55-3	Benzo(a)anthracene	18100	14000	ug/kg	
50-32-8	Benzo(a)pyrene	24300	2900	ug/kg	
205-99-2	Benzo(b)fluoranthene	36200	2900	ug/kg	
191-24-2	Benzo(g,h,i)perylene	30200	2900	ug/kg	
207-08-9	Benzo(k)fluoranthene	21200	2900	ug/kg	
218-01-9	Chrysene	31400	14000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	3160	2900	ug/kg	
206-44-0	Fluoranthene	17800	14000	ug/kg	
86-73-7	Fluorene	ND	14000	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	21800	2900	ug/kg	
91-20-3	Naphthalene	ND	14000	ug/kg	
90-12-0	1-Methylnaphthalene	ND	14000	ug/kg	
91-57-6	2-Methylnaphthalene	ND	14000	ug/kg	
85-01-8	Phenanthrene	ND	14000	ug/kg	
129-00-0	Pyrene	25400	14000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^b		37-158%
92-94-4	p-Terphenyl	0% ^b		59-149%

(a) Dilution required due to matrix interference.

(b) Outside control limits due to dilution.

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-98-SS-DUP 3	Date Sampled: 04/06/01
Lab Sample ID: F9387-2	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 92.2
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA007008.D	20	04/10/01	MRE	04/09/01	OP2965	GAA281
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	14000	ug/kg	
208-96-8	Acenaphthylene	ND	14000	ug/kg	
120-12-7	Anthracene	ND	7200	ug/kg	
56-55-3	Benzo(a)anthracene	7800	7200	ug/kg	
50-32-8	Benzo(a)pyrene	11600	1400	ug/kg	
205-99-2	Benzo(b)fluoranthene	19000	1400	ug/kg	
191-24-2	Benzo(g,h,i)perylene	16400	1400	ug/kg	
207-08-9	Benzo(k)fluoranthene	11300	1400	ug/kg	
218-01-9	Chrysene	10500	7200	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1420	1400	ug/kg	
206-44-0	Fluoranthene	9130	7200	ug/kg	
86-73-7	Fluorene	ND	7200	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	11900	1400	ug/kg	
91-20-3	Naphthalene	ND	7200	ug/kg	
90-12-0	1-Methylnaphthalene	ND	7200	ug/kg	
91-57-6	2-Methylnaphthalene	ND	7200	ug/kg	
85-01-8	Phenanthrene	ND	7200	ug/kg	
129-00-0	Pyrene	14000	7200	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^b		37-158%
92-94-4	p-Terphenyl	0% ^b		59-149%

(a) Dilution required due to matrix interference.

(b) Outside control limits due to dilution.

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-98-SS-202-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-3	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 91.3
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA007006.D	4	04/10/01	MRE	04/09/01	OP2965	GAA281
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	2900	ug/kg	
208-96-8	Acenaphthylene	ND	2900	ug/kg	
120-12-7	Anthracene	ND	1500	ug/kg	
56-55-3	Benzo(a)anthracene	ND	1500	ug/kg	
50-32-8	Benzo(a)pyrene	ND	290	ug/kg	
205-99-2	Benzo(b)fluoranthene	306	290	ug/kg	
191-24-2	Benzo(g,h,i)perylene	161	290	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	290	ug/kg	
218-01-9	Chrysene	ND	1500	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	290	ug/kg	
206-44-0	Fluoranthene	ND	1500	ug/kg	
86-73-7	Fluorene	ND	1500	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	156	290	ug/kg	J
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	ND	1500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		37-158%
92-94-4	p-Terphenyl	85%		59-149%

(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-98-SS-203-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-4	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 93.5
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	AA007009.D	20	04/10/01	MRE	04/09/01	OP2965	GAA281
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	14000	ug/kg	
208-96-8	Acenaphthylene	ND	14000	ug/kg	
120-12-7	Anthracene	ND	7100	ug/kg	
56-55-3	Benzo(a)anthracene	6960	7100	ug/kg	J
50-32-8	Benzo(a)pyrene	5410	1400	ug/kg	
205-99-2	Benzo(b)fluoranthene	9400	1400	ug/kg	
191-24-2	Benzo(g,h,i)perylene	6960	1400	ug/kg	
207-08-9	Benzo(k)fluoranthene	6070	1400	ug/kg	
218-01-9	Chrysene	12200	7100	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	1400	ug/kg	
206-44-0	Fluoranthene	20400	7100	ug/kg	
86-73-7	Fluorene	ND	7100	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	4820	1400	ug/kg	
91-20-3	Naphthalene	ND	7100	ug/kg	
90-12-0	1-Methylnaphthalene	ND	7100	ug/kg	
91-57-6	2-Methylnaphthalene	ND	7100	ug/kg	
85-01-8	Phenanthrene	ND	7100	ug/kg	
129-00-0	Pyrene	20900	7100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% ^b		37-158%
92-94-4	p-Terphenyl	0% ^b		59-149%

- (a) Dilution required due to matrix interference.
 (b) Outside control limits due to dilution.

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-98-SS-204-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-5	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 89.9
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006995.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	115	74	ug/kg	
205-99-2	Benzo(b)fluoranthene	201	74	ug/kg	
191-24-2	Benzo(g,h,i)perylene	130	74	ug/kg	
207-08-9	Benzo(k)fluoranthene	100	74	ug/kg	
218-01-9	Chrysene	183	370	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	51.7	74	ug/kg	J
206-44-0	Fluoranthene	167	370	ug/kg	J
86-73-7	Fluorene	ND	370	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	134	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	204	370	ug/kg	J

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

Report of Analysis

Client Sample ID: CEF-98-SS-201-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-1	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 92.3
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP14431.D	20	04/10/01	SKW	04/09/01	OP2966	GOP565
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	930	180	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		66-130%

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

Report of Analysis

Client Sample ID: CEF-98-SS-DUP 3		Date Sampled: 04/06/01
Lab Sample ID: F9387-2		Date Received: 04/07/01
Matrix: SO - Soil		Percent Solids: 92.2
Method: FLORIDA-PRO SW846 3550B		
Project: NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP14432.D	10	04/10/01	SKW	04/09/01	OP2966	GOP565
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	481	90	mg/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		66-130%

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

Report of Analysis

Client Sample ID: CEF-98-SS-202-01	
Lab Sample ID: F9387-3	Date Sampled: 04/06/01
Matrix: SO - Soil	Date Received: 04/07/01
Method: FLORIDA-PRO SW846 3550B	Percent Solids: 91.3
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP14457.D	20	04/11/01	SKW	04/09/01	OP2966	GOP565
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	821	180	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		66-130%

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

Report of Analysis

Client Sample ID: CEF-98-SS-203-01		Date Sampled: 04/06/01
Lab Sample ID: F9387-4		Date Received: 04/07/01
Matrix: SO - Soil		Percent Solids: 93.5
Method: FLORIDA-PRO SW846 3550B		
Project: NAS Cecil Field		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP14434.D	10	04/10/01	SKW	04/09/01	OP2966	GOP565
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	355	89	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	106%		66-130%

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

Report of Analysis

Client Sample ID: CEF-98-SS-204-01	Date Sampled: 04/06/01
Lab Sample ID: F9387-5	Date Received: 04/07/01
Matrix: SO - Soil	Percent Solids: 89.9
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	OP14435.D	1	04/10/01	SKW	04/09/01	OP2966	GOP565
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	62.2	9.2	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		66-130%

(a) Spike recovery indicates possible sample nonhomogeneity.

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

TO: M. SPERANZA – PAGE 2
DATE: JUNE 15, 2001

EXECUTIVE SUMMARY

Laboratory Performance Issues: None

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines (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)."


TetraTech NUS

Angela Scheetz
Chemist/Data Validator


TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

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 noncompliance.
-

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 ($< 2 \times$ 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: F9616

SAMPLE NUMBER:	CEF-098-SS-301-02	CEF-098-SS-302-02	CEF-098-SS-303-02	CEF-098-SS-304-01
SAMPLE DATE:	05/03/01	05/03/01	05/03/01	05/03/01
LABORATORY ID:	F9616-1	F9616-2	F9616-3	F9616-4
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	89.0 %	94.3 %	92.5 %	78.1 %
UNITS:	UG/KG	UG/KG	UG/KG	UG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	370	U		350	U		360	U		430	U	
2-METHYLNAPHTHALENE	370	U		350	U		360	U		430	U	
ACENAPHTHENE	750	U		710	U		720	U		850	U	
ACENAPHTHYLENE	750	U		710	U		720	U		850	U	
ANTHRACENE	370	U		350	U		360	U		430	U	
BENZO(A)ANTHRACENE	370	U		350	U		360	U		430	U	
BENZO(A)PYRENE	75	U		71	U		72	U		85	U	
BENZO(B)FLUORANTHENE	75	U		71	U		72	U		85	U	
BENZO(G,H,I)PERYLENE	75	U		71	U		72	U		85	U	
BENZO(K)FLUORANTHENE	75	U		71	U		72	U		85	U	
CHRYSENE	370	U		350	U		360	U		430	U	
DIBENZO(A,H)ANTHRACENE	75	U		71	U		72	U		85	U	
FLUORANTHENE	370	U		350	U		360	U		430	U	
FLUORENE	370	U		350	U		360	U		430	U	
INDENO(1,2,3-CD)PYRENE	75	U		71	U		72	U		85	U	
NAPHTHALENE	370	U		350	U		360	U		430	U	
PHENANTHRENE	370	U		350	U		360	U		430	U	
PYRENE	370	U		350	U		360	U		430	U	

CTO078-NAS CECIL FIELD

SOIL DATA
Accutest, NJ
SDG: F9616

SAMPLE NUMBER: CEF-098-SS-305-01
 SAMPLE DATE: 05/03/01
 LABORATORY ID: F9616-5
 QC_TYPE: NORMAL
 % SOLIDS: 95.4 %
 UNITS: UG/KG
 FIELD DUPLICATE OF:

//

//

//

100.0 %

100.0 %

100.0 %

	RESULT	QUAL	CODE									
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	350	U										
2-METHYLNAPHTHALENE	350	U										
ACENAPHTHENE	700	U										
ACENAPHTHYLENE	700	U										
ANTHRACENE	350	U										
BENZO(A)ANTHRACENE	350	U										
BENZO(A)PYRENE	70	U										
BENZO(B)FLUORANTHENE	70	U										
BENZO(G,H,I)PERYLENE	70	U										
BENZO(K)FLUORANTHENE	70	U										
CHRYSENE	350	U										
DIBENZO(A,H)ANTHRACENE	70	U										
FLUORANTHENE	350	U										
FLUORENE	350	U										
INDENO(1,2,3-CD)PYRENE	70	U										
NAPHTHALENE	350	U										
PHENANTHRENE	350	U										
PYRENE	350	U										

CTO078-NAS CECIL FIELD

SOIL DATA
Accutest, NJ
SDG: F9616

SAMPLE NUMBER:	CEF-098-SS-301-02	CEF-098-SS-302-02	CEF-098-SS-303-02	CEF-098-SS-304-01
SAMPLE DATE:	05/03/01	05/03/01	05/03/01	05/03/01
LABORATORY ID:	F9616-1	F9616-2	F9616-3	F9616-4
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	89.0 %	94.3 %	92.5 %	78.1 %
UNITS:	MG/KG	MG/KG	MG/KG	MG/KG
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
TOTAL PETROLEUM HYDROCARBONS	9.4	U		8.8	U		12.5			24.7		

CTO078-NAS CECIL FIELD

SOIL DATA

Accutest, NJ

SDG: F9616

SAMPLE NUMBER:	CEF-098-SS-305-01			
SAMPLE DATE:	05/03/01	//	//	//
LABORATORY ID:	F9616-5			
QC_TYPE:	NORMAL			
% SOLIDS:	95.4 %	100.0 %	100.0 %	100.0 %
UNITS:	MG/KG			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE									
TOTAL PETROLEUM HYDROCARBONS	9.02											

Report of Analysis

Client Sample ID: CEF-098-SS-301-02		Date Sampled: 05/03/01
Lab Sample ID: F9616-1		Date Received: 05/04/01
Matrix: SO - Soil		Percent Solids: 89.0
Method: EPA 8310 SW846 3550B		
Project: NAS Cecil Field 0039		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007318.D	1	05/09/01	MRE	05/07/01	OP3101	GAA296
Run #2							

Polynuclear Aromatic Hydrocarbons

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	ND	370	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	90%		37-158%
92-94-4	p-Terphenyl	96%		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

Page 1 of 1

Client Sample ID: CEF-098-SS-302-02	Date Sampled: 05/03/01
Lab Sample ID: F9616-2	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 94.3
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field 0039	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007319.D	1	05/09/01	MRE	05/07/01	OP3101	GAA296
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	350	ug/kg	
56-55-3	Benzo(a)anthracene	ND	350	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	350	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	71	ug/kg	
206-44-0	Fluoranthene	ND	350	ug/kg	
86-73-7	Fluorene	ND	350	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	71	ug/kg	
91-20-3	Naphthalene	ND	350	ug/kg	
90-12-0	1-Methylnaphthalene	ND	350	ug/kg	
91-57-6	2-Methylnaphthalene	ND	350	ug/kg	
85-01-8	Phenanthrene	ND	350	ug/kg	
129-00-0	Pyrene	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		37-158%
92-94-4	p-Terphenyl	102%		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

Page 1 of 1

Client Sample ID: CEF-098-SS-303-02	Date Sampled: 05/03/01
Lab Sample ID: F9616-3	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 92.5
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field 0039	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007320.D	1	05/09/01	MRE	05/07/01	OP3101	GAA296
Run #2							

Polynuclear Aromatic Hydrocarbons

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	ND	360	ug/kg	
50-32-8	Benzo(a)pyrene	ND	72	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	72	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	72	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	72	ug/kg	
218-01-9	Chrysene	ND	360	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	72	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	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	ND	360	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	94%		37-158%
92-94-4	p-Terphenyl	102%		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-098-SS-304-02 01 Kb	Date Sampled: 05/03/01
Lab Sample ID: F9616-4	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 78.1
Method: EPA 8310 SW846 3550B	
Project: NAS Cecil Field 0039	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007321.D	1	05/09/01	MRE	05/07/01	OP3101	GAA296
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	850	ug/kg	
208-96-8	Acenaphthylene	ND	850	ug/kg	
120-12-7	Anthracene	ND	430	ug/kg	
56-55-3	Benzo(a)anthracene	ND	430	ug/kg	
50-32-8	Benzo(a)pyrene	ND	85	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	85	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	85	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	85	ug/kg	
218-01-9	Chrysene	ND	430	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	85	ug/kg	
206-44-0	Fluoranthene	ND	430	ug/kg	
86-73-7	Fluorene	ND	430	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	85	ug/kg	
91-20-3	Naphthalene	ND	430	ug/kg	
90-12-0	1-Methylnaphthalene	ND	430	ug/kg	
91-57-6	2-Methylnaphthalene	ND	430	ug/kg	
85-01-8	Phenanthrene	ND	430	ug/kg	
129-00-0	Pyrene	ND	430	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		37-158 %
92-94-4	p-Terphenyl	103%		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-098-SS-305-02 01 <i>AD</i>		Date Sampled: 05/03/01
Lab Sample ID: F9616-5		Date Received: 05/04/01
Matrix: SO - Soil		Percent Solids: 95.4
Method: EPA 8310 SW846 3550B		
Project: NAS Cecil Field 0039		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA007322.D	1	05/09/01	MRE	05/07/01	OP3101	GAA296
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	700	ug/kg	
208-96-8	Acenaphthylene	ND	700	ug/kg	
120-12-7	Anthracene	ND	350	ug/kg	
56-55-3	Benzo(a)anthracene	ND	350	ug/kg	
50-32-8	Benzo(a)pyrene	ND	70	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	70	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	70	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	70	ug/kg	
218-01-9	Chrysene	ND	350	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	70	ug/kg	
206-44-0	Fluoranthene	ND	350	ug/kg	
86-73-7	Fluorene	ND	350	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	70	ug/kg	
91-20-3	Naphthalene	ND	350	ug/kg	
90-12-0	1-Methylnaphthalene	ND	350	ug/kg	
91-57-6	2-Methylnaphthalene	ND	350	ug/kg	
85-01-8	Phenanthrene	ND	350	ug/kg	
129-00-0	Pyrene	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		37-158%
92-94-4	p-Terphenyl	103%		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-098-SS-301-02	Date Sampled: 05/03/01
Lab Sample ID: F9616-1	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 89.0
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field 0039	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF01767.D	1	05/08/01	SKW	05/07/01	OP3102	GZF84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	ND	9.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	103%		66-130%	

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

Report of Analysis

Client Sample ID: CEF-098-SS-302-02	Date Sampled: 05/03/01
Lab Sample ID: F9616-2	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 94.3
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field 0039	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF01768.D	1	05/08/01	SKW	05/07/01	OP3102	GZF84
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	ND	8.8	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		66-130%

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

Report of Analysis

Client Sample ID: CEF-098-SS-303-02		Date Sampled: 05/03/01
Lab Sample ID: F9616-3		Date Received: 05/04/01
Matrix: SO - Soil		Percent Solids: 92.5
Method: FLORIDA-PRO SW846 3550B		
Project: NAS Cecil Field 0039		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF01771.D	1	05/08/01	SKW	05/07/01	OP3102	GZF84
Run #2							

CAS No.	Compound	Result	RL	Units	Q
	TPH (C8-C40)	12.5	9.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	102%		66-130%	

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

Report of Analysis

Page 1 of 1

Client Sample ID: CEF-098-SS-304-02 01 AS	Date Sampled: 05/03/01
Lab Sample ID: F9616-4	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 78.1
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field 0039	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF01772.D	1	05/08/01	SKW	05/07/01	OP3102	GZF84
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	24.7	11	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	109%		66-130%

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

Report of Analysis

Client Sample ID: CEF-098-SS-305-02 01 AS	Date Sampled: 05/03/01
Lab Sample ID: F9616-5	Date Received: 05/04/01
Matrix: SO - Soil	Percent Solids: 95.4
Method: FLORIDA-PRO SW846 3550B	
Project: NAS Cecil Field 0039	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZF01773.D	1	05/08/01	SKW	05/07/01	OP3102	GZF84
Run #2							

CAS No.	Compound	Result	RL	Units Q
	TPH (C8-C40)	9.02	8.7	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	104%		66-130%

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