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NSWC WHITE OAK
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Section: 1.08
Site 20903-5640 (White Oak)
Doc. #: 0007

Site Screening Report for SWMU 45 (Site 25)

former
Naval Surface Warfare Center
White Oak
Silver Spring, Maryland

NAVFAC
Naval Facilities Engineering Command
NAVFAC WASHINGTON

Naval Facilities Engineering Command
Washington

Contract Number N62467-94-D-0888

Contract Task Order 0839

March 2005

Section: 1.08
Site 20903-5640 (White Oak)
Doc. #: W/0004

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PITT-03-5-006

March 4, 2005

Project Number 4246

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Reference: CLEAN Contract No. N62467-D-94-0888
Contract Task Order 0839

Subject: Final SWMU 45 Site Screening Report
Former Naval Surface Warfare Center, White Oak
Silver Spring, Maryland

Dear David:

Enclosed is one copy of the Final Site Screening Report for Solid Waste Management Unit (SWMU) 45, Building 613 (Site 25), the High Energy Material Process Development Building.

Please feel free to contact me at (412) 921-8291 with any comments or questions regarding the document.

Best regards,

Ronald J. Kotun, Ph.D.
Project Manager

Enclosures

cc: Mr. Bruce Beach (EPA)
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060412/P

SITE SCREENING REPORT
for
SWMU 45 (SITE 25)

FORMER
NAVAL SURFACE WARFARE CENTER
WHITE OAK
SILVER SPRING, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
NAVFAC Washington
Environmental Branch (Code CH32)
Washington Navy Yard, D.C. 20374-5018

Submitted by:
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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0839

MARCH 2005

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NUMBER

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ACRONYMS

ALC	Adelphi Laboratory Center
AOC	Area of Concern
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
CBC	Chillum-Beltsville-Croom
CLEAN	Comprehensive Long-Term Environmental Action navy
CLP	Contract Laboratory Program
CTO	Contract Task Order
DAF	Dilution Attenuation Factor
EFACHES	Engineering Field Activity - Chesapeake
EPA	United States Environmental Protection Agency
GMC	Glenelg-Manor-Chester
GSA	General Services Administration
IRP	Installation Restoration Program
msl	Mean sea level
NAVFAC	???
NSWC	Naval Surface Warfare Center
PCB	Polychlorinated biphenyl
PVC	Polyvinyl chloride
QC	Quality control
RAC	Remedial Action Contractor
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SU	Standard Unit
SWMU	Solid Waste Management Unit
TCL	Target Compound List
TtNUS	Tetra Tech NUS, Inc.
U.S.	United States
USGS	United States Geological Survey
VSAP	Verification Sampling and Analysis Plan

1.0 INTRODUCTION

1.1 PROJECT SCOPE

This Site Screening Report identifies the rationale for the investigation of SWMU 45 – Building 613 (Site 25), the High Energy Material Process Development Building, at the former Naval Surface Warfare Center (NSWC)--White Oak, located in Silver Spring, Maryland. The report was completed by Tetra Tech NUS, Inc. (TtNUS) under Contract Task Order (CTO) 0839 as part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62467-94-D-0888. The CLEAN Contract is part of the Navy's Installation Restoration Program (IRP), which is designed to identify contamination at Navy and Marine Corps facilities resulting from past operations and to institute corrective measures as needed. CTO 0839 is being administered by the Naval Facilities Engineering Command (NAVFAC), Northern Division, through Engineering Field Activity--Chesapeake (EFACHES).

The further characterization of the IRP sites, solid waste management units (SWMUs), Areas of Concern (AOCs), and other miscellaneous waste management sites is necessitated by the closure of the base, transfer of the property, and the potential for future reuse of the property.

1.2 FACILITY BACKGROUND

NSWC--White Oak was a Navy-owned and -operated laboratory for naval surface warfare research located north of Washington, D.C., off New Hampshire Avenue in Silver Spring, Maryland (see Figure 1-1). The former facility property is located in both Prince George's and Montgomery Counties. NSWC-White Oak is bordered by the U.S. Army Adelphi Laboratory Center (ALC) and the United States Naval Reserve Training Center, along with a mixture of residential, park, and commercial properties. The Navy conducted research activities at this facility between 1944 and 1997.

NSWC-White Oak was listed on the Base Realignment and Closure (BRAC) list in the fall of 1995. The facility has now closed, and the research activities have been transferred to other naval facilities. The NSWC-White Oak property was transferred to the General Services Administration (GSA) and the U.S. Army ALC.

1.3 WASTE MANAGEMENT SITES

SWMU 45 is included in this Site Screening Report because it was used to manage and/or dispose wastes or waste-containing materials. Due to the potential reuse and development of this site, it was investigated to characterize the potential risks, if any, to future tenants. The location of SWMU 45 is identified on Figure 1-2.

1.4 ENVIRONMENTAL SETTING

This section discusses the physiography, climate, surface drainage, soils, geology, and hydrogeology at the former NSWC-White Oak.

1.4.1 Physiography

NSWC-White Oak is located northeast of Washington, D.C. near the boundary between the Piedmont and Coastal Plain Physiographic Provinces. The facility lies in gently rolling terrain. The topographic expression of the area is typical of a deeply incised, dendritic stream channel pattern. Local drainage patterns are dominated by Paint Branch and its tributaries.

The highest elevation at the base is approximately 398 feet above mean sea level (msl). The lowest elevation is roughly 145 feet msl. The terrain of the western portion of the base slopes generally eastward toward Paint Branch at an approximately 3.5-percent grade. Similar grades are encountered in the eastern portion of the facility, but slopes are generally more southward or are locally influenced by proximity to Paint Branch and its tributary drainages. Ground slopes increase to as much as 65 percent near stream channels.

1.4.2 Climate

Summers at NSWC-White Oak are warm and humid, and winters are mild. Seasonal temperature variation is about 43°F. The warmest weather occurs in July, with daily temperatures typically ranging from 69° to 88°F. The coldest weather occurs in late January and early February, with daily temperatures typically ranging from 28° to 44°F.

The average annual precipitation is approximately 44 inches. Seasonal variation in precipitation is not pronounced, gradually fluctuating between a typical minimum of 3 inches in February to a typical maximum of 5 inches in August. Snowfall accumulations of more than 10 inches are rare, with the greatest snowfalls occurring in January and February.

The mean annual wind speed varies between 8 miles per hour in August and 11 miles per hour in March. The prevailing direction is from the south most of the year, except for northwesterly winds that occur during January, and March, and December.

1.4.3 Surface Drainage

NSWC-White Oak lies entirely within the drainage basin of Paint Branch, a 12-mile-long tributary to the Northeast Branch of the Anacostia River. Like other streams in the region, Paint Branch is a gaining stream, perennially supported by groundwater discharge from small springs and seeps along its length. One other perennial stream, Westfarm Branch, flows through the facility east of Paint Branch. It originates approximately 1 mile to the north and joins Paint Branch just south of the property line.

In addition to perennial streams, the facility is traversed by eight intermittent streams, all of which discharge to Paint Branch either on the property or nearby. Several of these streams are very small and are not mapped by the United States Geological Survey (USGS).

1.4.4 Soils

The facility soils, with the exception of streambed soils, tend to be moderately to excessively well drained and moderately to severely eroded. The soils generally fall within one of two major associations present in the vicinity, the Glenelg-Manor-Chester (GMC) association and the Chillum-Beltsville-Croom (CBC) association. The GMC association is developed in materials weathered from Piedmont metamorphic rocks, and the CBC association is derived from Coastal Plain materials. Soils at the facility tend to be moderately acidic, with a pH range ranging from 4 to 6 Standard Units (SUs). This may be due to the presence of hydroxyl, humic, and fulvic acids derived from the decay of organic matter.

1.4.5 Geology and Hydrogeology

NSWC-White Oak lies near the boundary between the Piedmont and Coastal Plain Physiographic Provinces. The boundary, known as the Fall Line, runs generally southwest to northeast and is roughly parallel to the Montgomery-Prince George's County line in the While Oak area. Physically, the Fall Line represents the contact where older Piedmont rocks, exposed to the northwest, dip beneath Coastal Plain sediments that increase in thickness to the southeast.

At the facility, Coastal Plain sediments are only a few tens of feet thick and in many places have been entirely eroded away. They are primarily unconsolidated sand and gravel deposits. The underlying or exposed Piedmont bedrock is the Wissahickon Formation, a metamorphic gneiss of late Precambrian age. The upper 50 to 70 feet of the Wissahickon gneiss has been highly weathered to a clayey saprolite material that retains the character of the parent material but is unconsolidated. This saprolite is considered a separate lithologic unit. The Wissahickon gneiss and saprolite together account for at least 50 percent of the exposed formations at NSWC-White Oak. The gneiss tends only to crop out in or near the Paint Branch channel where overlying sediments have been removed by erosion.

1.5 FIELD OPERATIONS

Investigation of the site was conducted in accordance with the work plan for site screening at SWMU 45 (TtNUS 2003a, TtNUS 2003b). This plan was developed by the White Oak BRAC Cleanup Team (BCT) to identify the presence or absence of contaminants at each site. The site screening investigation was conducted in January 2004.

1.6 DATA EVALUATION METHODOLOGIES

1.6.1 Data Validation

Validation of data generated for all samples collected during this site screening investigation was completed via the EPA Contract Laboratory Program (CLP) methods. The validation process included consideration of the following: data completeness, holding time compliance, mass calibrations, field quality control (QC) and laboratory-generated blanks, internal standards, surrogate spikes, blank spikes, field duplicate precision, chemical interferences, quantitation, detection limits, and system performance.

Evaluation of laboratory and field QC blank analyses aided in the elimination of false positive results, which were identified as laboratory artifacts. The overall determination of data utility or reliability was based upon laboratory compliance with specified methods and adherence to QC requirements. Any noncompliance observed during the validation process resulted in qualification of analytical data. The qualifiers alert the data user to imprecise or estimated results and, in the worst case, unreliable and unusable data.

The net results of the validation process were summarized in sample-delivery-group-specific technical report consisting of a memorandum, a section of qualified analytical results, results as reported by the laboratory, and a supporting documentation section that provided the rationale for changes and/or qualification of the data. This memorandum provided a detailed explanation of the results of the data validation review. These memoranda are not included in this report due to the volume of supporting material. All data validation documentation is currently retained on file by TtNUS. Complete analytical results including applicable data qualifiers are presented in Appendix A. Data validation letters are provided in Appendix B.

1.6.1.1 Data Validation Qualifiers

As mentioned previously, the qualification of analytical data during the validation process (i.e., application of B, J, K, L, UJ, UL, UR, and R qualifiers) was conducted as required by the EPA Functional Guidelines.

The attachment of data qualifiers to analytical results signifies the occurrence of QC noncompliance that has been noted during the course of data validation. The various data qualifiers are defined as follows:

- B – This qualifier is added to a positive result (reported by the laboratory without qualification or with a B) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.

- J – Indicates that the chemical was detected but the reported concentration is considered to be estimated based on problems encountered during laboratory analysis. Generally, this qualifier applies to reported concentrations that are less than the Contract-Required Quantitation Limit or Contract-Required Detection Limit. The associated numerical detection limit is regarded as inaccurate or imprecise, and no bias can be determined.

- K – Indicates that the chemical was detected, but the reported concentration is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise and is biased high.

- L – Indicates that the chemical was detected, but the reported concentration is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise and is biased low.

- UJ – Indicates that the chemical was not detected. However, the detection limit (quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise, and no bias can be determined.

- UL – Indicates that the chemical was not detected. However, the detection limit (quantitation limit) is considered to be estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise and biased low.

- UR – Indicates that the chemical may or may not be present. The nondetected analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (i.e., holding times missed by a factor of two times the specified time limit, severe calibration noncompliance, and extremely low QC recoveries). Results qualified UR are considered to be biased low.

- R – Indicates that the chemical may or may not be present. The positive analytical result reported by the laboratory is considered to be unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies.

The preceding data qualifiers may be categorized as indicative of major problems and minor problems. Major problems are defined as issues that result in the rejection of data qualified with UR and R data validation qualifiers. These data are considered invalid and are not used for risk screening and decision making. Minor problems are defined as issues resulting in the estimation of data, qualified with the B, J, K, L, UL, and UJ data validation qualifiers. Estimated analytical results are considered to be suitable for risk screening and decision-making purposes.

1.6.2.2 Human Health Risk-Based Screening Evaluation

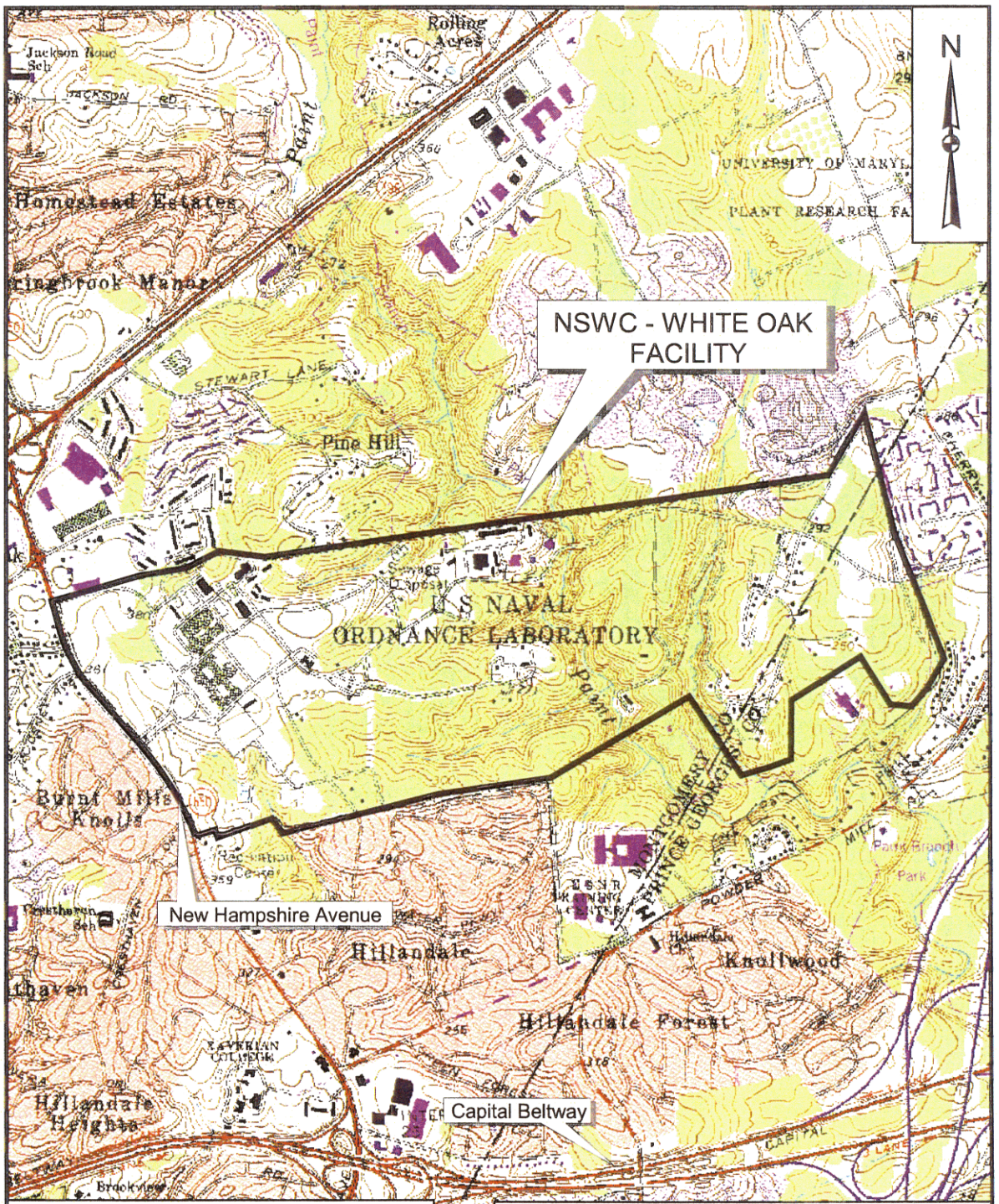
Human health screening levels for soil were selected from EPA Region 3 Risk-Based Concentrations (RBCs) for residential and industrial soil ingestion. For each detected constituent, the maximum detected concentration is compared to its appropriate screening criterion. If the maximum detected concentration is greater than its appropriate screening criterion, it is retained as a constituent of potential concern.

Risk ratios were then developed for each site by dividing the site-specific exposure concentration by the appropriate screening criterion. Only carcinogenic compounds were detected in the soil samples; therefore, risk ratios were only developed for carcinogens. The ratio was then multiplied by 10^{-6} and the ratios summed. If the sum of the ratios was greater than 5×10^{-5}, the value indicates that remediation may be necessary to achieve EPA's target risk range. Typically, the basis for comparison is a risk level of 10^{-4}. However, the Region 3 RBCs do not account for dermal exposure. If risk levels exceeded 5×10^{-5} but were less than 10^{-4}, risk management was used to determine if there is a significant carcinogenic risk at the site.

1.6.2.3 Groundwater Protection Screening

Soil concentrations were compared to groundwater protection values. The maximum site soil concentrations were compared to EPA Region 3 soil screening levels for the migration from soil to groundwater. The values corresponding to a Dilution Attenuation Factor (DAF) of 20 was used. If the maximum detected concentration does not exceed the groundwater protection value, the site poses no significant impact to groundwater. If the maximum detected concentration exceeds the groundwater protection value, a more detailed review of the site would be warranted. Specifically, the quantity of soil containing the contaminants at the maximum detected concentrations was evaluated. A review of the distribution and results of the sampling was also conducted to determine whether the data collectively suggest an unacceptable risk. Comparing the average concentration to the groundwater protection value

was one approach. If the average concentration exceeded the groundwater protection value, a more detailed assessment was considered.



SOURCE: BASEMAP IS A PORTION OF THE USGS BELTSVILLE, MD QUAD (O37035E.TIF, 7.5' SERIES, PHOTOREVISED 1979).

DRAWN BY J. BELLONE	DATE 7/22/99	Tetra Tech NUS, Inc.	CONTRACT NUMBER 4246 / OWNER NO. 0839
CHECKED BY R. KOTUN	DATE 3/04/04	SITE VICINITY MAP FORMER NSWC WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 1 - 1 / REV 0

P:\GIS\WHITEOAK\74271000.APR LOCATION MAP LAYOUT 2 3/04/04 AJ

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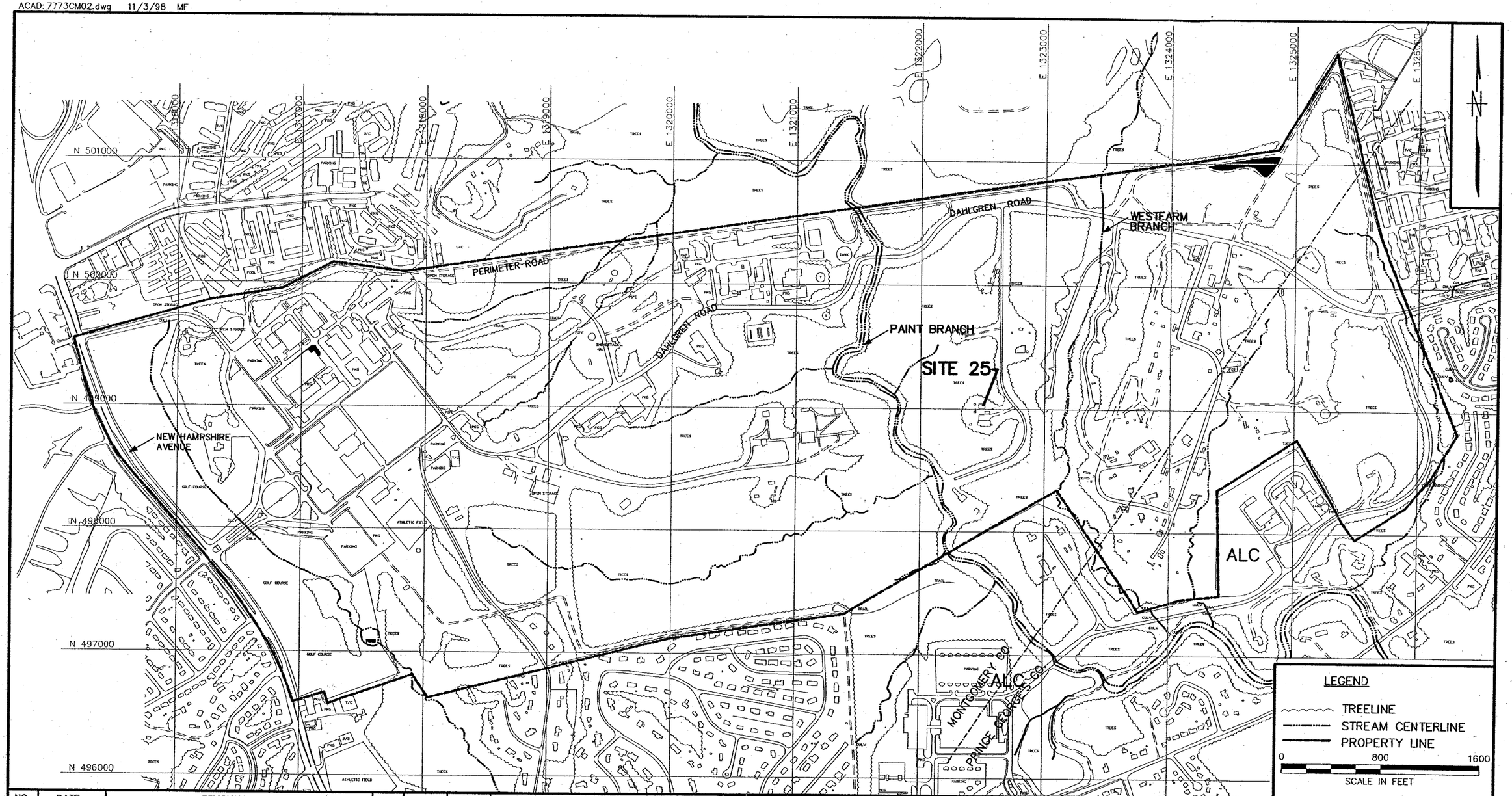

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DM DATE 6/9/04
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

SITE LOCATION MAP
SITE 25
FORMER NSWC-WHITE OAK, SILVER SPRING, MARYLAND

CONTRACT NO. 4246
OWNER NO.
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 1-2
REV. 0

FORM CADD NO. SOUTH_BH.DGN - REV 0 - 02/11/97

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2.0 RISK EVALUATION

2.1 BACKGROUND

SWMU 45—Building 613 High Energy Material Process Development (Site 25), located in the south-central portion of the former NSWC—White Oak, was used as a small-scale explosive processing facility. Site 25, the sump and overflow pipe, accepted explosives-contaminated washdown wastewater and solvents on an as-needed basis. The unit consisted of a 3-foot by 3-foot by 3-foot concrete sump (SWMU 45A) with a 4-inch polyvinyl chloride (PVC) overflow pipe (SWMU 45B) that discharged directly to the soil at the base of a slope behind the building. Sludge from the sump was removed monthly. Following removal, the sump was cleaned with an air vacuum and then rinsed with clean water. The unit operated between 1965 and 1989. After closure, the sump was removed and the pipes were reported cleaned and plugged.

An explosives survey was conducted at this site (TtNUS, 2000) during which samples of surface soil, subsurface soil, and drainage swale sediments were collected and field screened for explosives. Based on the field screening of these samples, one soil sample and one sediment sample were analyzed for explosives and Target Compound List (TCL) volatiles, semivolatiles, pesticides, and polychlorinated biphenyls (PCBs) in a fixed-based laboratory. Aroclor-1248 was detected at a concentration of 8.9 mg/kg in the sediment sample (SD-613-1). The data are presented in Appendix A. No other significant contamination was detected.

In June 2003, biased surface soil sampling surrounding the contaminated sediment sample was conducted to delineate the nature and extent of PCB contamination (Figure 2-1). Results of this sampling indicated that PCB concentrations were elevated to the south of this sample. Based on these results, it was concluded that additional samples would be collected to further delineate the nature and extent of PCB contamination. Soil contaminated with PCBs at concentrations greater than 1 mg/kg would be removed and verification samples would be collected from the removal areas to determine if the removal action level of 1 mg/kg was attained.

2.2 ENVIRONMENTAL SETTING

2.2.1 Topography

SWMU 45 was a building with floor drains that discharged directly to the soil south of the building. The building lied in a wooded area with the land gradually sloping to the southwest toward Paint Branch.

2.2.2 Surface Water

The nearest surface water body is Paint Branch, located approximately 500 feet southwest of the site. The drainage swale, located south of the former building, ended outside the building at a drain field. During a rain event, precipitation at SWMU 45 either infiltrates into the soil or runs off to the southwest toward Paint Branch.

2.2.3 Geology/Soils

Based on soil sampling at the site, soil consisted of varying amounts of sand, silt, and clay with abundant quartz pebbles and cobbles. SWMU 45 lies within the 300/600 Area of the former NSWC-White Oak. Generalized data regarding the 300 Area soil conditions are available in the Site 9 RCRA Facility Investigation (RFI) (TtNUS 2000).

2.2.4 Hydrogeology

No wells were installed during the investigation at SWMU 45. The assumed groundwater flow direction is to the southwest toward Paint Branch, although without sufficient monitoring well control, an exact determination of the potentiometric surface could not be made. Groundwater monitoring at other sites at the former NSWC-White Oak confirms the assumption that local groundwater flow mimics the site topography.

2.3 FIELD INVESTIGATION ACTIVITIES

Biased sampling surrounding the sediment sample was conducted to delineate the nature and extent of PCB contamination in June 2003. Surface soil samples surrounding this location were collected at distances approximately 25 feet to the north, south, east, and west. Three additional surface soil samples were collected south of the eastern, western, and southern samples (Figure 2-1). Because PCBs are considered to be relatively immobile, subsurface sampling was not proposed. In the sample collected 25 feet south of the sediment sample, Aroclor-1248 was detected at a concentration of 1500 mg/kg (SS-613-106); 25 feet south of that sample Aroclor-1248 was detected at a concentration of 90 mg/kg (SS-613-108). In the sample collected 25 feet east of SD-613-1, Aroclor-1248 was detected at a concentration of 1.4 mg/kg (SS-613-107).

In January 2004, additional samples were collected and analyzed using field test kits to delineate the extent of PCB contamination. When field test kits indicated that PCB concentrations exceeded 1 mg/kg, additional samples surrounding the contaminated sample were collected. The locations of these samples are also presented on Figure 2-1. The results of the field test kit analyses were confirmed through

laboratory analysis. In addition to the previously identified areas of contamination, the areas surrounding samples 45-SS-116 and 45-SS-121 marginally exceeded the remedial action level of 1 mg/kg.

Removal of soil surrounding these areas of contamination was conducted by the Remedial Action Contractor (RAC). Verification sampling was conducted to ensure that PCB concentrations in these areas are now less than 1 mg/kg and that no further soil excavation would be required. Within each excavation area identified in Figure 2-1, six grab samples were collected and composited for analysis in accordance with the Verification Sampling and Analysis Plan (VSAP) (TtNUS 2004). The two composite samples (45-SS-201 and 45-SS-202) had no positive detections of PCBs.

2.4 DATA AND RISK-BASED SCREENING EVALUATION

This section provides the data and evaluation of soil at SWMU 45 - Building 613. Potential site-related contaminants include PCBs. This screening evaluation is based on the following samples:

- 17 surface soil samples
- 2 composite soil samples from the excavation areas

Samples that were analyzed but removed during the excavation are not included in this evaluation.

Soil concentrations that exceeded the Region 3 RBC for residential soil are discussed in the following sections. Field data and chemical analyses are presented in Appendix A.

2.4.1 Data and Risk-Based Screening Evaluation of Soil Contamination

Positive analytical results and summary statistics for soil samples are provided in Tables 2-1 and 2-2, respectively. Soil samples were collected and analyzed for PCBs. The soil data are presented in Appendix A.

Based on the fixed-based laboratory results, concentrations of Aroclor-1248 and Aroclor-1254 exceeded the screening levels for residential soil in the soil samples. Concentrations of all PCBs were less than the industrial RBCs. The results are shown on Figure 2-1.

Aroclor-1248 was detected in 2 of 20 samples (45SS201 and SS613-102), and concentrations exceeded the residential RBC in both samples. Aroclor-1254 was detected in 5 of 20 samples and exceeded the residential RBC in three samples (45SS113, 45SS117, and 45SS123).

Risk ratios were developed for SWMU 45 as shown on Table 2-3. The total cancer risk was 3.7×10^{-6} for a residential receptor, which is less than the screening level of 5×10^{-5}. Therefore, there is not a significant carcinogenic risk associated with soil at SWMU 45.

2.4.2 Groundwater Protection Screening for Soil

Soil concentrations were compared to groundwater protection criteria as shown on Table 2-4. Aroclor-1248 (SS613-102) and Aroclor-1254 (45SS123) concentrations exceeded EPA Region 3 soil to groundwater protection criteria in one sample each. The average concentration of all Aroclors was less than the soil to groundwater protection criteria.

2.4.3 Ecological Risk Evaluation

Soil concentrations in samples collected after the removal of soil was compared to the site specific basewide risk based levels developed in the Basewide Ecological Risk Assessment (TtNUS, 2001). Concentrations of total PCBs in all samples were less than the soil screening level of 2.4 mg/kg and the sediment screening level of 1.0 mg/kg. Therefore, the site is unlikely to pose a significant impact to ecological receptors.

2.5 CONCLUSIONS AND RECOMMENDATIONS

2.5.1 Conclusions

Site 25 was screened to determine if significant PCB contamination remained in soil at the site. Although PCBs were detected in soil in excess of screening criteria, human health risks have been calculated and are within the acceptable range.

2.5.2 Recommendations

Due to the lack of significant contamination identified at Site 25, no further action is recommended.

TABLE 2-1

SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SOIL
SWMU 45 - BUILDING 613 (SITE 25)
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

LOCATION:	45SS109	45SS110	45SS111	45SS112	45SS112	45SS113	45SS114	45SS117	45SS118	45SS119	45SS120	45SS122
SAMPLE:	45SS109	45SS110	45SS111	45SS112	45SS112-D	45SS113	45SS114	45SS117	45SS118	45SS119	45SS120	45SS122
DEPTH INTERVAL (FEET):	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE:	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04
Pesticides/PCBs (ug/kg)												
AROCLOR-1248	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U	38 U
AROCLOR-1254	36 U	38 U	41	42 U	36 U	330	36 U	350	36 U	36 U	39 U	38 U
AROCLOR-1260	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U	38 U

TABLE 2-1

SUMMARY OF POSITIVE ANALYTICAL RESULTS FOR SOIL
SWMU 45 - BUILDING 613 (SITE 25)
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

LOCATION:	45SS123	45SS124	45SS201	45SS201	45SS202	SS613-101	SS613-102	SS613-104	SS613-105
SAMPLE:	45SS123	45SS124	45SS201	45SS201-D	45SS202	SS613-101	SS613-102	SS613-104	SS613-105
DEPTH INTERVAL (FEET):	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE:	01/14/04	01/14/04	02/04/04	02/04/04	02/04/04	06/24/03	06/24/03	06/24/03	06/24/03
Pesticides/PCBs (ug/kg)									
AROCLOR-1248	35 U	36 U	320	360	38 U	42 U	570	52 U	46 U
AROCLOR-1254	610	72	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1260	130 J	36 U	40 U	40 U	38 U	320	46 U	52 U	46 U

TABLE 2-2

OCCURRENCE, DISTRIBUTION, AND SELECTION OF COPCS FOR CHEMICALS DETECTED IN SOIL
SWMU 45 - BUILDING 613 (SITE 25)
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MINIMUM QUALIFIER	MAXIMUM DETECTED CONCENTRATION	MAXIMUM QUALIFIER	RANGE OF NON-DETECTS	LOCATION OF MAXIMUM CONCENTRATION	REGION III RBC FOR RESIDENTIAL SOIL(1)	REGION III RBC FOR INDUSTRIAL SOIL(1)	AVERAGE BACKGROUND CONCENTRATION	RETAINED AS RESIDENTIAL COPC (2)	RETAINED AS INDUSTRIAL COPC (2)
Pesticides/PCBs (ug/kg)												
Aroclor-1248	2/20	360		570		35 - 52	SS613-102	320 C	1400 C	NA	Yes	No
Aroclor-1254	5/20	41		610		36 - 52	45SS123	320 C	1400 C	NA	Yes	No
Aroclor-1260	2/20	130	J	320		35 - 52	SS613-101	320 C	1400 C	NA	No	No

1 - USEPA Region III Risked-Based Concentration Table, April 14, 2004 (Cancer Risk = 1E-6).
2 - For carcinogens, chemical is retained as a COPC if the maximum detected concentration exceeds its RBC.
C - Carcinogenic.

Associated Samples:

45SS109	45SS117	45SS201
45SS110	45SS118	45SS201-D
45SS111	45SS119	45SS202
45SS112	45SS120	SS613-101
45SS112-D	45SS122	SS613-102
45SS113	45SS123	SS613-104
45SS114	45SS124	SS613-105

TABLE 2-3

SCREENING RISK ANALYSIS - SOIL
SWMU 45 - BUILDING 613 (SITE 25)
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

PARAMETER	FREQUENCY OF DETECTION	MAXIMUM DETECTED CONCENTRATION	MAXIMUM QUALIFIER	REGION III RBC FOR RESIDENTIAL SOIL(1)	REGION III RBC FOR INDUSTRIAL SOIL(1)	AVERAGE BACKGROUND CONCENTRATION	RESIDENTIAL		INDUSTRIAL		TARGET ORGAN
							CANCER RISK	HAZARD INDEX	CANCER RISK	HAZARD INDEX	
Pesticides/PCBs (ug/kg)											
Aroclor-1248	6/25	570	J	320 C	1400 C	NA	1.8.E-06	--	(2)	(2)	Cancer
Aroclor-1254	7/25	610		320 C	1400 C	NA	1.9.E-06	--	(2)	(2)	Cancer

Total Cancer Risk 3.7.E-06

1 - USEPA Region III Risked-Based Concentration Table, April 14, 2004.
(Cancer Risk = 1E-6).
2 - The maximum detected concentration of all chemicals were less than the industrial RBCs.
Therefore, no COPCs were identified for the industrial land use scenario.

TABLE 2-4

MIGRATION TO GROUNDWATER - SOIL
SWMU 45 - BUILDING 613 (SITE 25)
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

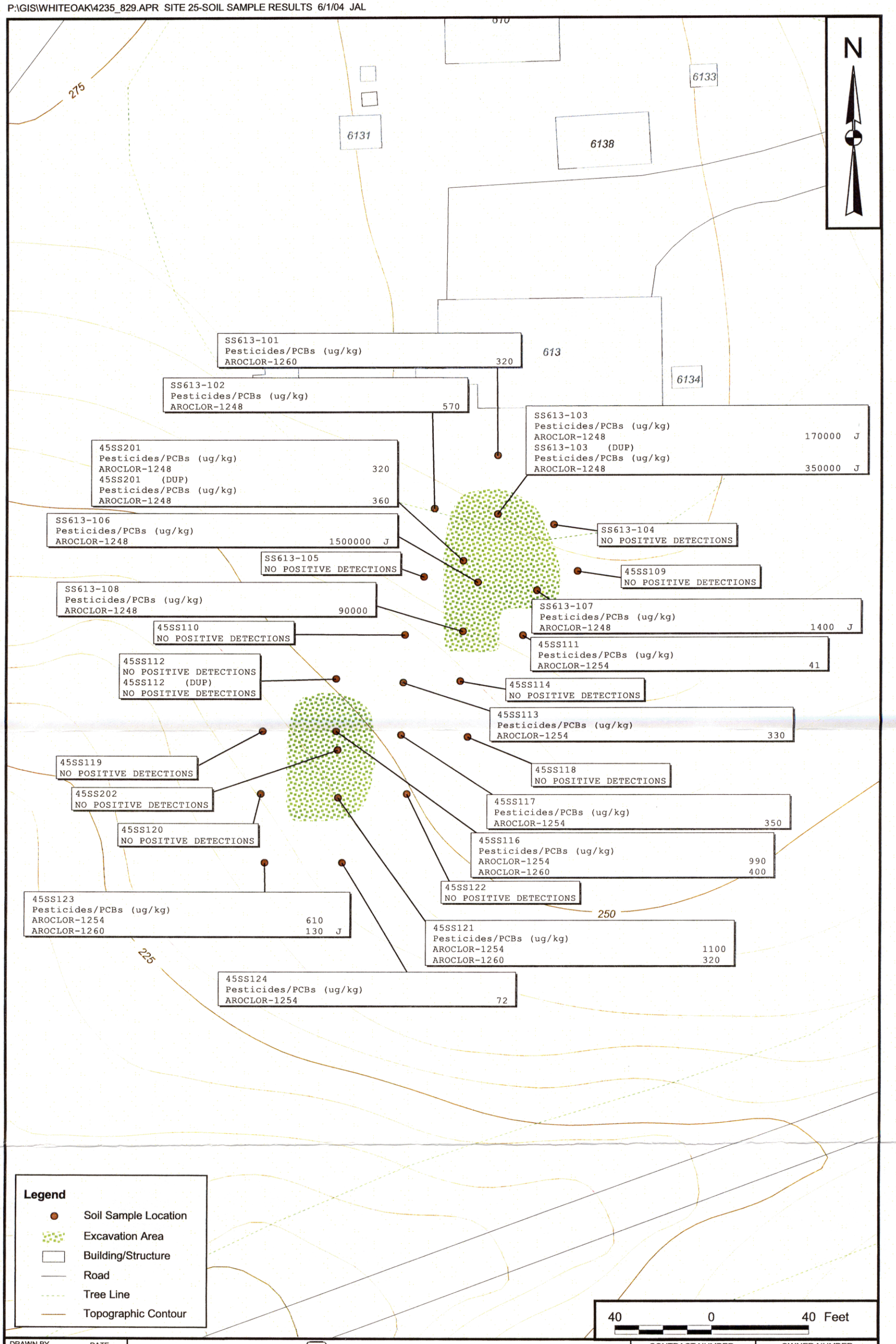
PARAMETER	FREQUENCY OF DETECTION	MINIMUM DETECTED CONCENTRATION	MINIMUM QUALIFIER	MAXIMUM DETECTED CONCENTRATION	MAXIMUM QUALIFIER	AVERAGE OF ALL RESULTS	LOCATION OF MAXIMUM CONCENTRATION	AVERAGE BACKGROUND CONCENTRATION	EPA REGION III SOIL TO GROUNDWATER (1)	EXCEED MAXIMUM CONC.	EXCEED AVERAGE CONC.
Pesticides/PCBs (ug/kg)											
Aroclor-1248	2/20	360		570		64	SS613-102	NA	410	Yes	No
Aroclor-1254	5/20	41		610		85	45SS123	NA	410	Yes	No
Aroclor-1260	2/20	130	J	320		40	SS613-101	NA	410	No	No

1 - USEPA Region III Risked-Based Concentration Table, April 14, 2004 (DAF = 20).

Associated Samples:

45SS109	45SS117	45SS201
45SS110	45SS118	45SS201-D
45SS111	45SS119	45SS202
45SS112	45SS120	SS613-101
45SS112-D	45SS122	SS613-102
45SS113	45SS123	SS613-104
45SS114	45SS124	SS613-105

P:\GIS\WHITEOAK\4235_829.APR SITE 25-SOIL SAMPLE RESULTS 6/1/04 JAL



DRAWN BY J. LAMEY — DATE 5/20/04	Tetra Tech NUS, Inc.	CONTRACT NUMBER 4246	OWNER NUMBER —
CHECKED BY — DATE —	SOIL SAMPLE RESULTS SWMU 45 (SITE 25) FORMER NSWC WHITE OAK, MARYLAND	APPROVED BY —	DATE —
COST/SCHEDULE-AREA		APPROVED BY —	DATE —
SCALE AS NOTED		DRAWING NO. FIGURE 2-1	REV 0

REFERENCES

Tetra Tech NUS, Inc. (TtNUS), 2000. RCRA Facility Investigation for Sites 2, 3, 4, 7, 8, 9, and Paint Branch, Former Naval Surface Warfare Center (NSWC) White Oak, Silver Spring, Maryland.

Tetra Tech NUS, Inc. (TtNUS), 2001. Basewide Ecological Risk Assessment, Former Naval Surface Warfare Center (NSWC) White Oak. Silver Spring, Maryland.

Tetra Tech NUS, Inc. (TtNUS), 2003a. Work Plan for Site 25 Sampling, Building 613 (February), Memorandum from Ronald J. Kotun, Ph.D. to BCT.

Tetra Tech NUS, Inc. (TtNUS), 2003b. Work Plan for Site 25 Sampling Building 613 (October), Memorandum from Ronald J. Kotun, Ph.D. to BCT.

Tetra Tech NUS, Inc. (TtNUS), 2004. Verification Sampling and Analysis Plan for Site 25.

APPENDIX A

ANALYTICAL DATA

SWMU 45 - BUILDING 613 (SITE 25)
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

LOCATION:	45SS109	45SS110	45SS111	45SS112	45SS112	45SS113	45SS114	45SS117	45SS118	45SS119	45SS120
SAMPLE:	45SS109	45SS110	45SS111	45SS112	45SS112-D	45SS113	45SS114	45SS117	45SS118	45SS119	45SS120
DEPTH INTERVAL (FEET):	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE:	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04	01/13/04
PCB's (ug/kg)											
AROCLOR-1016	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U
AROCLOR-1221	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U
AROCLOR-1232	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U
AROCLOR-1242	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U
AROCLOR-1248	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U
AROCLOR-1254	36 U	38 U	41	42 U	36 U	330	36 U	350	36 U	36 U	39 U
AROCLOR-1260	36 U	38 U	36 U	42 U	36 U	36 U	36 U	35 U	36 U	36 U	39 U

TABLE A-1

SWMU 45 - BUILDING 613 (SITE 25)
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
FORMER NSWC WHITE OAK
SILVER SPRING, MARYLAND

LOCATION:	45SS122	45SS123	45SS124	45SS201	45SS201	45SS202	SS613-101	SS613-102	SS613-104	SS613-105
SAMPLE:	45SS122	45SS123	45SS124	45SS201	45SS201-D	45SS202	SS613-101	SS613-102	SS613-104	SS613-105
DEPTH INTERVAL (FEET):	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
SAMPLE DATE:	01/13/04	01/14/04	01/14/04	02/04/04	02/04/04	02/04/04	06/24/03	06/24/03	06/24/03	06/24/03
PCB's (ug/kg)										
AROCLOR-1016	38 U	35 U	36 U	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1221	38 U	35 U	36 U	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1232	38 U	35 U	36 U	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1242	38 U	35 U	36 U	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1248	38 U	35 U	36 U	320	360	38 U	42 U	570	52 U	46 U
AROCLOR-1254	38 U	610	72	40 U	40 U	38 U	42 U	46 U	52 U	46 U
AROCLOR-1260	38 U	130 J	36 U	40 U	40 U	38 U	320	46 U	52 U	46 U

APPENDIX B

DATA VALIDATION MEMORANDUM

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**R. KOTUN**	**DATE:**	**APRIL 7, 2004**
FROM:	**EDWARD SEDLMYER**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION – PCB CTO 839, NSWC WHITE OAK SDG C0036**		
SAMPLES:	16 / Soil		

45SS109	45SS110	45SS111
45SS112	45SS113	45SS114
45SS116	45SS117	45SS118
45SS119	45SS120	45SS121
45SS122	45SS123	45SS124
FD011301		

OVERVIEW

The sample set for CTO 839; SDG C0036, NSWC White Oak consists of sixteen (16) soil samples. All samples were analyzed for polychlorinated biphenyls (PCBs). One field duplicate pair was included in this SDG: (FD011301 / 45SS112).

The samples were collected by TetraTech NUS on January 13 and 14, 2004 and analyzed by Mitkem Corporation. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8082 analytical and reporting protocols.

The findings in this report are based upon a general review of all available data including: data completeness, holding times, initial / continuing calibrations, laboratory method blank results, surrogate spike, blank spike results, matrix spike/matrix spike duplicate results, field duplicates, compound identification, compound quantitation, and detection limits. Areas of concern are listed below.

Major Problems

- None.

Minor Problems

- The %D between analytical columns for the PCB analyses exceeded 25% for the positive results reported for aroclor-1260 in the following sample and the result has been qualified as estimated, "J":

Sample Number	Compound	% Difference	Qualification
45SS123	Aroclor-1260	37.5%	J

Notes

The laboratory reported the lower of the two column results. No action was taken on this basis.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Qualifications were made based percent difference between analytical columns.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (9/94) as modified by Region III and the NFESC guidelines "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)."

Edward Sedlmyer
TetraTech NUS

Edward Sedlmyer
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

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

PROJ_NO: 4246

SDG: C0036 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	45SS109
samp_date	1/13/2004
lab_id	C0036-01A
qc_type	NM
units	UG/KG
Pct_Solids	91.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	36	U	
AROCLOR-1260	36	U	

nsample	45SS110
samp_date	1/13/2004
lab_id	C0036-02A
qc_type	NM
units	UG/KG
Pct_Solids	86.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	38	U	
AROCLOR-1221	38	U	
AROCLOR-1232	38	U	
AROCLOR-1242	38	U	
AROCLOR-1248	38	U	
AROCLOR-1254	38	U	
AROCLOR-1260	38	U	

nsample	45SS111
samp_date	1/13/2004
lab_id	C0036-03A
qc_type	NM
units	UG/KG
Pct_Solids	92.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	41		
AROCLOR-1260	36	U	

nsample	45SS112	nsample	45SS113	nsample	45SS114
samp_date	1/13/2004	samp_date	1/13/2004	samp_date	1/13/2004
lab_id	C0036-04A	lab_id	C0036-05A	lab_id	C0036-06A
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/KG	units	UG/KG	units	UG/KG
Pct_Solids	77.0	Pct_Solids	90.0	Pct_Solids	92.0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	42	U	
AROCLOR-1221	42	U	
AROCLOR-1232	42	U	
AROCLOR-1242	42	U	
AROCLOR-1248	42	U	
AROCLOR-1254	42	U	
AROCLOR-1260	42	U	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	330		
AROCLOR-1260	36	U	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	36	U	
AROCLOR-1260	36	U	

PROJ_NO: 4246

SDG: C0036 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	45SS116
samp_date	1/13/2004
lab_id	C0036-07A
qc_type	NM
units	UG/KG
Pct_Solids	78.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	42	U	
AROCLOR-1221	42	U	
AROCLOR-1232	42	U	
AROCLOR-1242	42	U	
AROCLOR-1248	42	U	
AROCLOR-1254	990		
AROCLOR-1260	400		

nsample	45SS117
samp_date	1/13/2004
lab_id	C0036-08A
qc_type	NM
units	UG/KG
Pct_Solids	93.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	35	U	
AROCLOR-1221	35	U	
AROCLOR-1232	35	U	
AROCLOR-1242	35	U	
AROCLOR-1248	35	U	
AROCLOR-1254	350		
AROCLOR-1260	35	U	

nsample	45SS118
samp_date	1/13/2004
lab_id	C0036-09A
qc_type	NM
units	UG/KG
Pct_Solids	90.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	36	U	
AROCLOR-1260	36	U	

nsample	45SS119
samp_date	1/13/2004
lab_id	C0036-10A
qc_type	NM
units	UG/KG
Pct_Solids	91.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	36	U	
AROCLOR-1260	36	U	

nsample	45SS120
samp_date	1/13/2004
lab_id	C0036-11A
qc_type	NM
units	UG/KG
Pct_Solids	85.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	39	U	
AROCLOR-1221	39	U	
AROCLOR-1232	39	U	
AROCLOR-1242	39	U	
AROCLOR-1248	39	U	
AROCLOR-1254	39	U	
AROCLOR-1260	39	U	

nsample	45SS121
samp_date	1/13/2004
lab_id	C0036-12A
qc_type	NM
units	UG/KG
Pct_Solids	94.0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	35	U	
AROCLOR-1221	35	U	
AROCLOR-1232	35	U	
AROCLOR-1242	35	U	
AROCLOR-1248	35	U	
AROCLOR-1254	1100		
AROCLOR-1260	320		

PROJ_NO: 4246

SDG: C0036 MEDIA: SOIL DATA FRACTION: PEST/PCB

nsample	45SS122	nsample	45SS123	nsample	45SS124
samp_date	1/13/2004	samp_date	1/14/2004	samp_date	1/14/2004
lab_id	C0036-13A	lab_id	C0036-14A	lab_id	C0036-15A
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/KG	units	UG/KG	units	UG/KG
Pct_Solids	86.0	Pct_Solids	95.0	Pct_Solids	92.0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	38	U	
AROCLOR-1221	38	U	
AROCLOR-1232	38	U	
AROCLOR-1242	38	U	
AROCLOR-1248	38	U	
AROCLOR-1254	38	U	
AROCLOR-1260	38	U	

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	35	U	
AROCLOR-1221	35	U	
AROCLOR-1232	35	U	
AROCLOR-1242	35	U	
AROCLOR-1248	35	U	
AROCLOR-1254	610		
AROCLOR-1260	130	J	U

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	72		
AROCLOR-1260	36	U	

nsample	FD011301
samp_date	1/13/2004
lab_id	C0036-16A
qc_type	NM
units	UG/KG
Pct_Solids	92.0
DUP_OF:	45SS112

Parameter	Result	Val Qual	Qual Code
AROCLOR-1016	36	U	
AROCLOR-1221	36	U	
AROCLOR-1232	36	U	
AROCLOR-1242	36	U	
AROCLOR-1248	36	U	
AROCLOR-1254	36	U	
AROCLOR-1260	36	U	

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity