Section: 02.02
Site 20903-5640 (White Oak)
Doc. #: 0006
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N60921.AR.000196
NSWC WHITE OAK
5090.3a

Post-Removal Sampling and Analysis Plan for Sites 4 and 33

at the former Naval Surface Warfare Center White Oak

Silver Spring, Maryland

Engineering Field Activity Chesapeake
Naval Facilities Engineering Command

Contract Number N62472-90-D-1298

Contract Task Order 0304

April 1999

TETRA TECH NUS, INC.

Section 02.02
Site 20903-5640 (White Oak)
Doc. #: W/00035

00065

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PITT 04-9-227

April 28, 1999

Project Number 7773

Ms. Krista Grigg
Department of the Navy
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851 Secard Street, S.E.
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Reference: Clean Contract No. N62472-90-D-1298
Contract Task Order No. 0304

Subject: Final Post-Removal Sampling and Analysis Plan – Site 4 and Site 33
former Naval Surface Warfare Center - White Oak
Silver Spring, Maryland

Dear Ms. Grigg:

Enclosed find three copies of the Final Post-Removal Sampling and Analysis Plan (SAP) for Site 4 and Site 33 at the former Naval Surface Warfare Center - White Oak (NSWC-White Oak), Silver Spring, Maryland. The Post-Removal SAP includes brief discussions of the site histories and selected removal actions, the removal action goals, and the sampling and analytical procedures that will be used to verify the success of the removal actions. Comments received from members of the BCT on the draft document have been incorporated.

If you have any questions regarding this information, please call me at your earliest convenience at 412-921-8640.

Very truly yours,

Loraine M. Shipley

Loraine M. Shipley
Project Manager

LMS/gp
Enclosure

c: Mr. Roger Boucher, NORTHDIV (w/o enclosure)
Mr. John Trepanowski, P.E., TtNUS
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Project File 7773

039902/P

POST-REMOVAL SAMPLING AND ANALYSIS PLAN FOR SITES 4 AND 33

AT THE FORMER
NAVAL SURFACE WARFARE CENTER
WHITE OAK
SILVER SPRING, MARYLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Engineering Field Activity Chesapeake
Environmental Branch Code 18
Naval Facilities Engineering Command
Washington Navy Yard, Building 212
Washington, D.C. 20374-2121

Submitted by:
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CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 0304

APRIL 1999

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ACRONYMS

ALC	Adelphi Laboratory Center
B&R	Brown & Root
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-term Environmental Action Navy
COMAR	Code of Maryland Regulations
CTO	Contract Task Order
EE/CA	Engineering Evaluation/Cost Analysis
FSP	Field Sampling Plan
GSA	General Services Administration
HASP	Health and Safety Plan
IDW	Investigation-Derived Waste
IR	Installation Restoration
mg/kg	milligram/kilogram
NA	Not Applicable
NSWC	Naval Surface Warfare Center
OSWER	Office of Solid Waste and Emergency Response
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PRG	Preliminary Removal Goal
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAC	Remedial Action Contractor
RBC	Risk-based Concentration
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
TPH	Total Petroleum Hydrocarbon
TtNUS	Tetra Tech NUS, Inc.
U.S. EPA	United States Environmental Protection Agency
USNR	United States Naval Reserve
VOC	Volatile Organic Compound

1.0 INTRODUCTION AND PROJECT BACKGROUND

The Northern Division of the Naval Facilities Engineering Command issued Contract Task Order (CTO) 304 to Tetra Tech NUS, Inc. (TtNUS) (formerly Brown & Root [B&R] Environmental) under Comprehensive Long-term Environmental Action Navy (CLEAN) Contract No. N62472-90-D-1298. Under CTO 304, TtNUS performed an Engineering Evaluation/Cost Analysis (EE/CA) for the former Naval Surface Warfare Center (NSWC) White Oak, located in Silver Spring, Maryland.

The work is part of the Navy's Installation Restoration (IR) Program, which is designed to identify contamination of Navy and Marine Corps facilities resulting from past operations and to institute corrective measures, as needed. The Navy has determined that a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is appropriate for two sites at the former NSWC-White Oak. The EE/CA recommended non-time-critical removal actions to address contaminated soil and solid waste at Site 4 and an underground tank at Site 33. This Post-Removal Sampling and Analysis Plan (SAP) presents a plan to perform confirmatory sampling and analysis to verify that contaminated soil has been successfully removed as part of the removal actions.

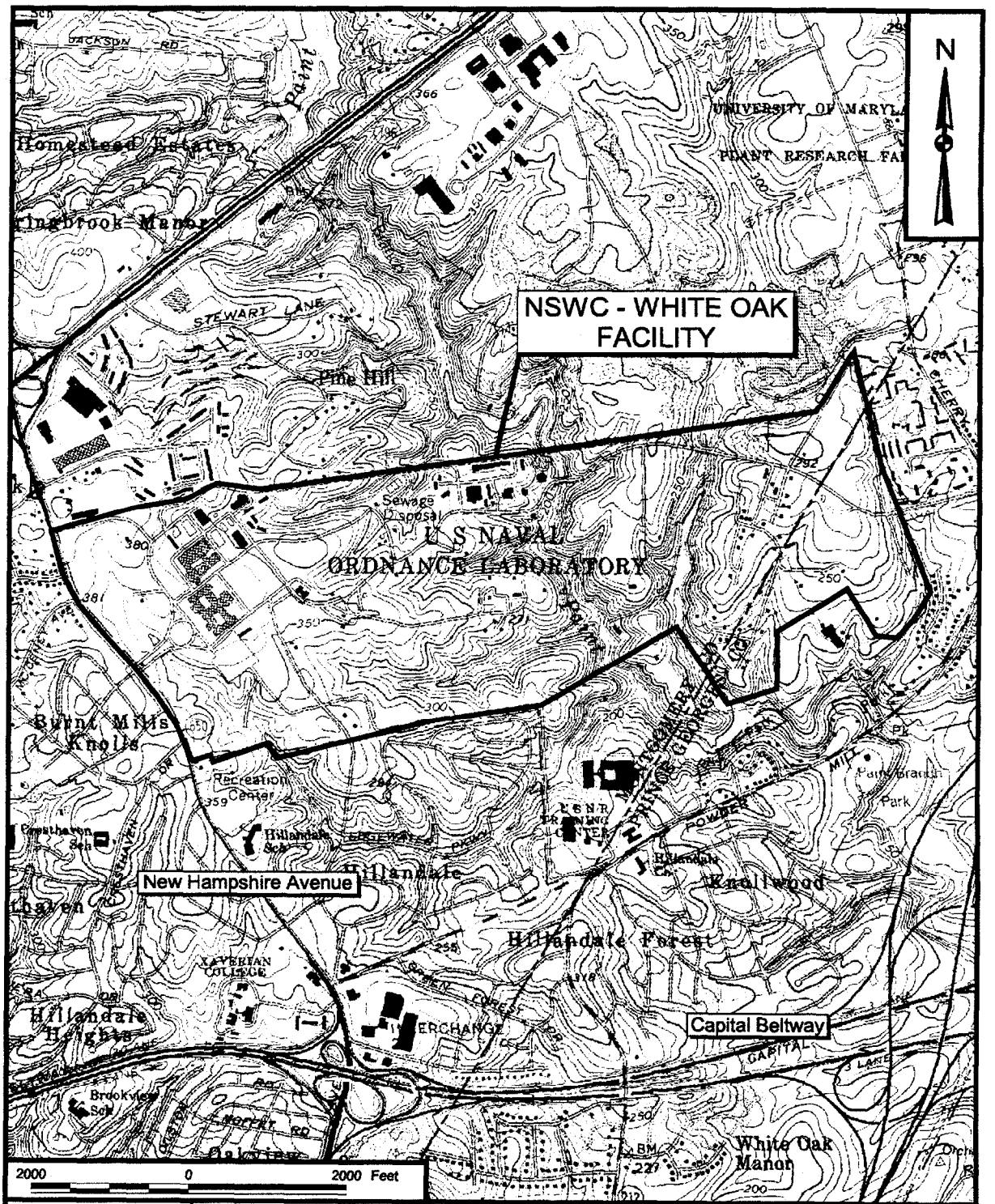
1.1 PROJECT BACKGROUND

NSWC-White Oak was a Navy-owned and -operated facility for naval surface warfare research. The facility is located approximately 5 miles north of Washington, D.C. off New Hampshire Avenue in Silver Spring, Maryland (see Figure 1-1), covers approximately 710 acres, and is located in both Prince George's and Montgomery Counties. Adjacent to the southern corner of the property is the U.S. Army's Adelphi Laboratory Center (ALC) and the United States Naval Reserve (USNR) Training Center. A mixture of residential, park, industrial, and commercial properties border the remainder of the facility. When the facility was closed, the property was transferred to the General Services Administration (GSA) and the U.S. Army. The GSA-managed property is now called the Federal Research Center at White Oak.

Figure 1-2 identifies the two sites addressed in this report, Site 4, the Chemical Burial Area, and Site 33, Building 25 Plating Shop Equalization Tank.

1.1.1 Site 4 – Chemical Burial Area

Site 4 is located south of Perimeter Road in the northeastern corner of the former NSWC-White Oak. The approximate site location is shown on Figure 1-2 and a site layout map is provided on Figure 1-3.



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MJJ	10/16/98		7773	0304
CHECKED BY	DATE	SITE VICINITY MAP SITE 4 AND SITE 33 SAP NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY	DATE
KMS	4/22/99		Lorraine M Sheehy	4/22/99
COST/SCHEDULE-AREA			APPROVED BY	DATE
SCALE			DRAWING NO.	REV
AS NOTED			FIGURE 1-1	0

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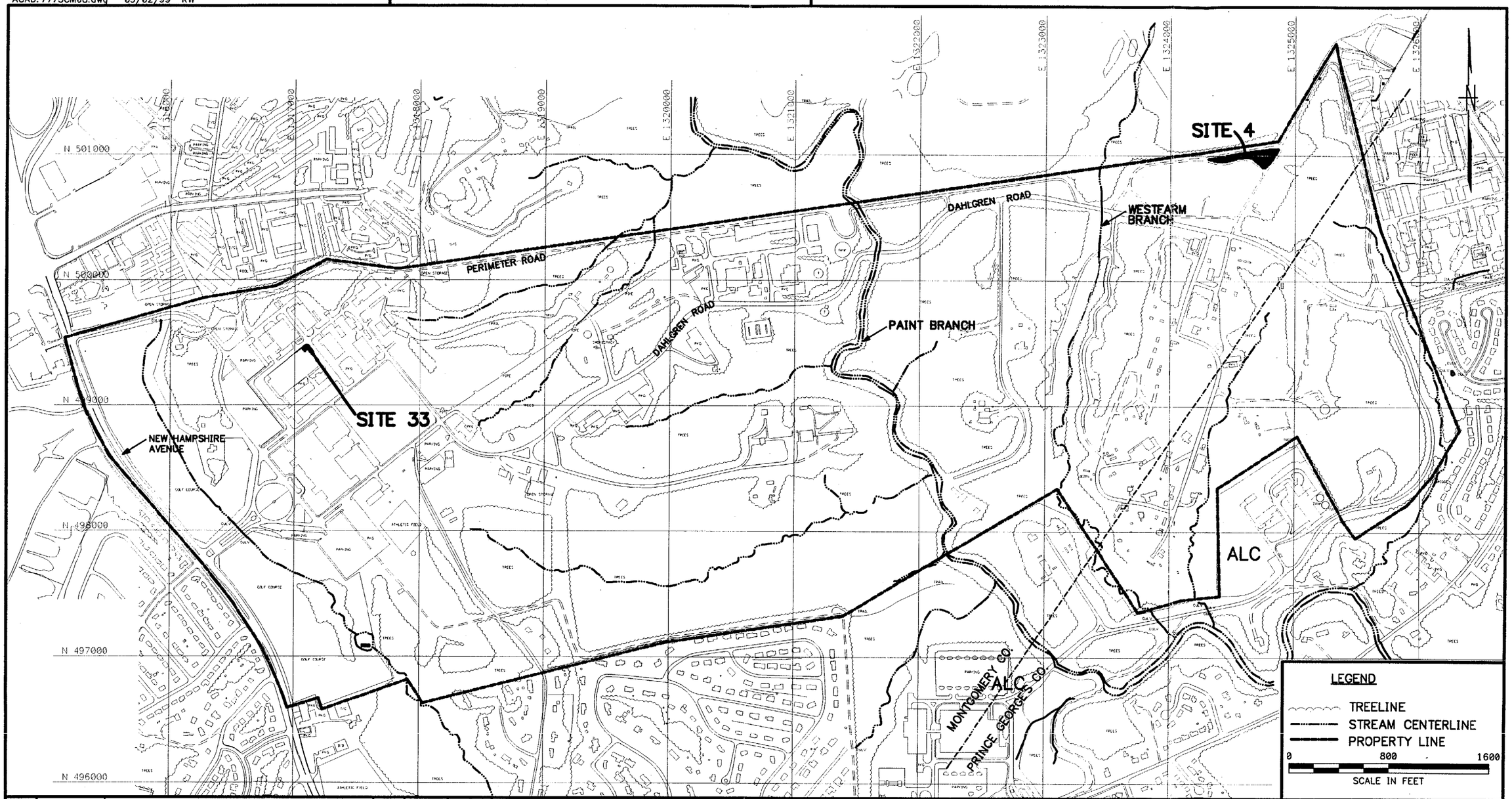

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SITE LOCATION MAP
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

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APPROVED BY Lorraine M. Sugley DATE 4/22/99
APPROVED BY DATE
DRAWING NO. FIGURE 1-2
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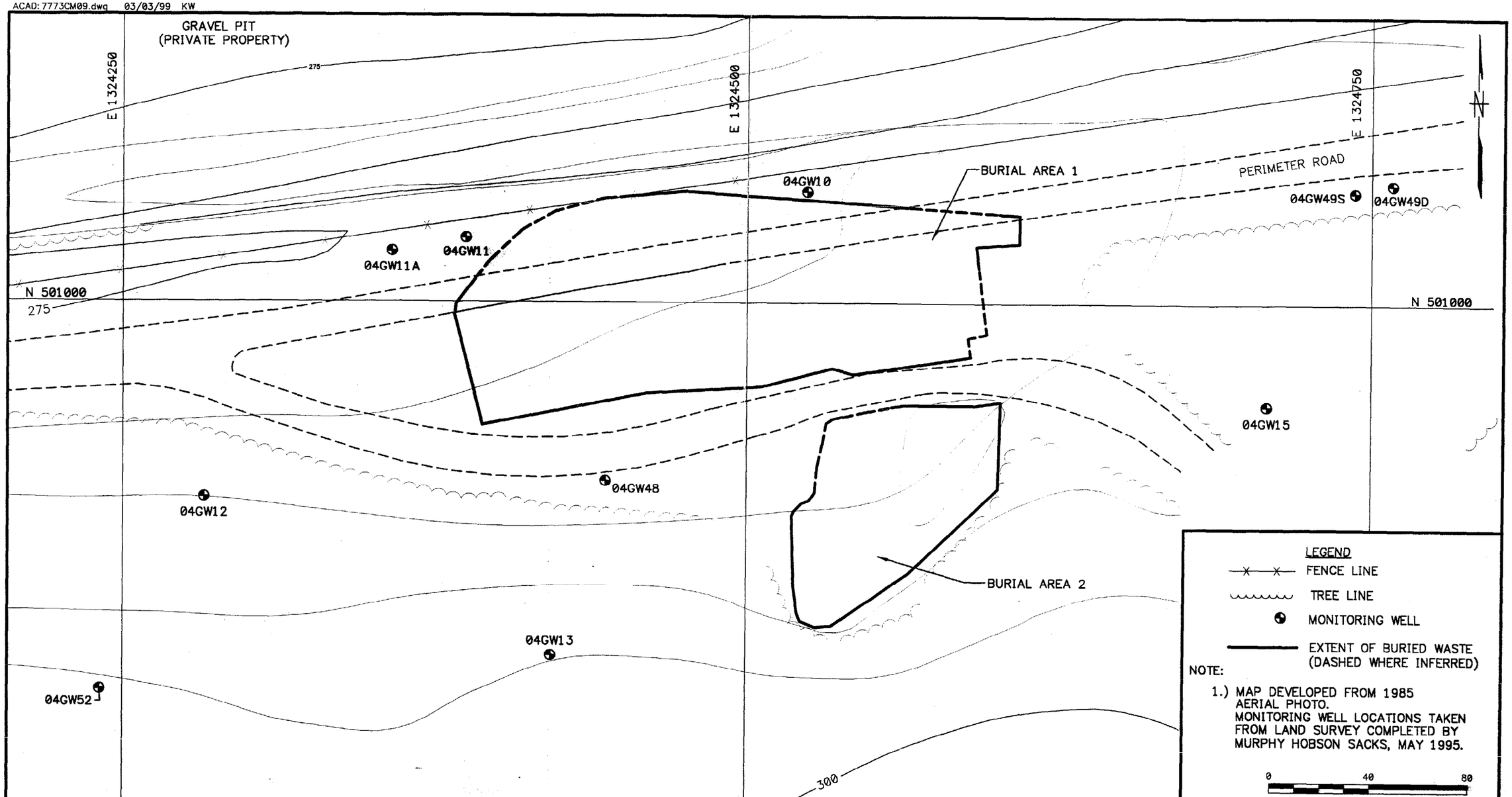

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Tetra Tech NUS, Inc.

EXTENT OF BURIED WASTE – SITE 4
SITE 4 AND SITE 33 SAP
NSWC–WHITE OAK, SILVER SPRING, MARYLAND

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REV. 0

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The overall area of the site is approximately 1.1 acres. Land north of the site is private property and is used as a quarry. An area in the southeastern corner of Site 4 was formerly used for telephone pole storage.

The site was used from the mid-1950s to the early 1970s to dispose of chemicals. Previous investigations of the site were based on the belief that four discrete trenches were used for disposal activities. Recent discussions with former NSWC-White Oak personnel, as well as additional investigation at the site, have determined that disposal of material at Site 4 was not confined to discrete trenches. In preparation for disposal, an area was excavated to approximate the amount of material to be disposed. The approximate boundary of waste is shown on Figure 1-3.

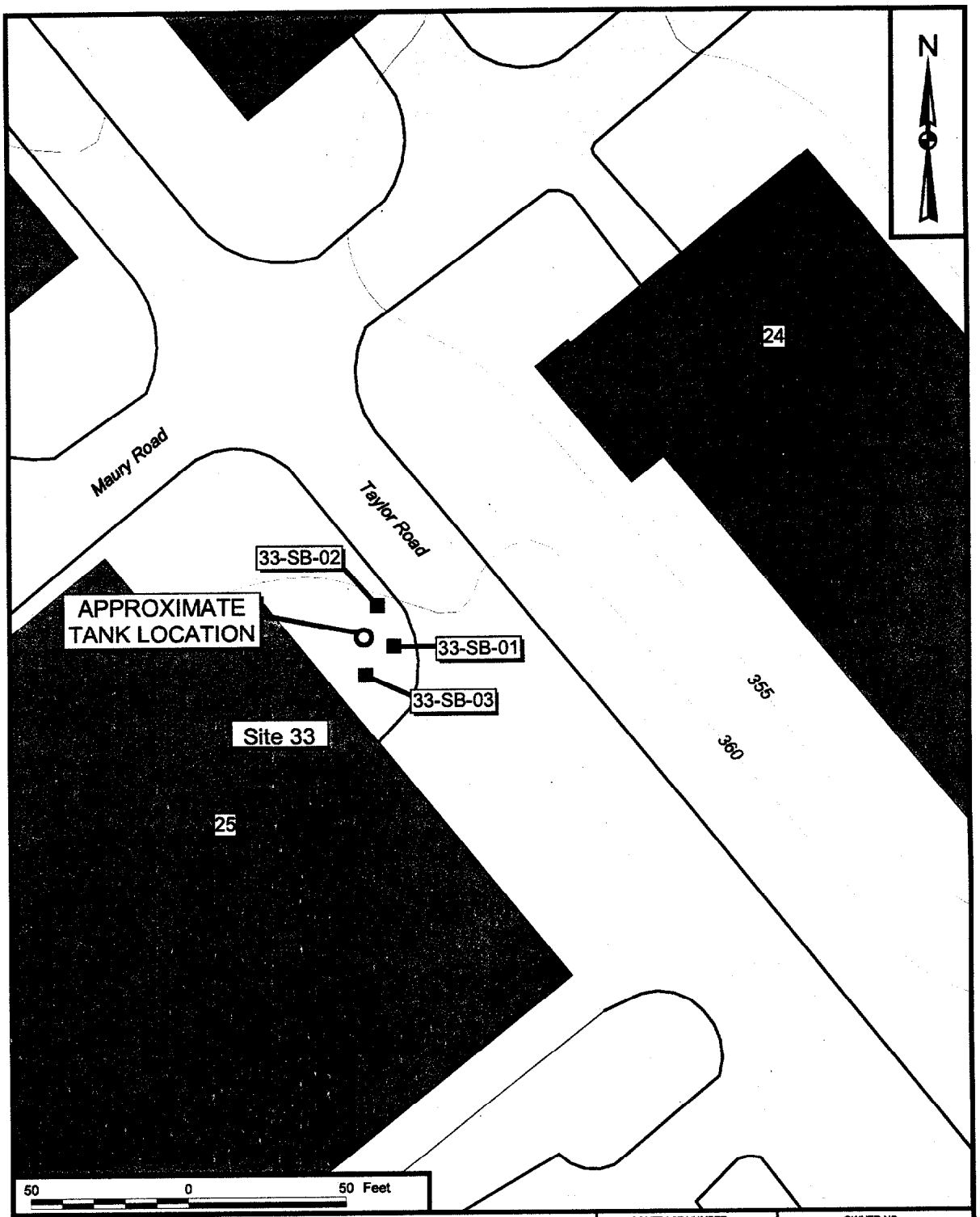
Wastes reportedly disposed at the site include acids, explosive compounds, kerosene, chlorinated solvents, and unidentified laboratory compounds. The total volume of waste disposed in the area was estimated to be between 400 and 600 cubic feet. Based on visual observations of waste and analytical results, approximately 6,900 cubic yards of soil and solid waste require remediation under this removal action. This volume was calculated by measuring the area shown on Figure 1-3 and multiplying by an average depth of waste. Depths used to calculate waste volume were 8 feet for the area north of Perimeter Road, 10 feet for all of Burial Area 1, including the material underlying Perimeter Road, and 8 feet for Burial Area 2. The waste is primarily domestic and construction debris, with a smaller fraction of chemical waste, solvents, and fuel-type materials (TtNUS, 1999).

The selected removal action for Site 4 includes excavation to the limits of waste identified on Figure 1-3 and off-site incineration or landfill disposal. The site will be backfilled to grade and vegetated.

1.1.2 Site 33 – Building 25, Plating Shop Equalization Tank

Site 33 is a tank located on the eastern side of the Building 25 Plating Shop, located in the northwestern portion of the facility. The tank is approximately 10 feet from Taylor Road and is a closed underground concrete tank measuring approximately 5 feet by 7 feet by 9 feet deep, with terra-cotta inlet and outlet pipes. The tank is covered by a metal lid and contains a weir. A site layout map is provided on Figure 1-4.

Use of the tank began in the late 1940s and continued until 1984 when operations in the Plating Shop ceased. The shop operations included electroplating, chemical etching and milling, anodizing, conversion coating, electroless plating, and circuit board manufacturing. The wastes generated in the shop consisted of rinse tank wastewater, plating bath wastes, sodium hydroxide cleaners, and cyanide stripper baths. Wastewater from the Plating Shop, containing chromium, cadmium, copper, lead, nickel, and cyanide,



DRAWN BY MJJ DATE 10/16/98	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7773	OWNER NO. 0304
CHECKED BY KMS DATE 4/22/99	SITE LAYOUT MAP SITE 33 - BLDG 25 PLATING SHOP EQUALIZATION TANK SITE 4 AND SITE 33 SAP NSWC - WHITE OAK SILVER SPRING, MARYLAND	APPROVED BY Lorraine M Sapley DATE 4/22/99	
COST/SCHEDULE-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 1-4	REV 0

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entered the tank via floor drains. The tank overflow was discharged to the facility's sanitary sewer system.

Under the selected removal action, approximately 1,050 gallons of water and sediment will be pumped out of the tank and disposed off site. The tank interior will be washed with a high-pressure water spray to remove residual dirt and sediment. The rinse water will also be collected and disposed off site. The tank will then be demolished and approximately 5 cubic yards of concrete will be disposed off site. Influent and effluent pipes will be sealed or removed, the site will be backfilled to grade, and vegetated (TtNUS, 1999).

1.2 SAP OBJECTIVE

The removal actions will be performed by the Naval Facilities Engineering Command Atlantic Division Remedial Action Contractor (RAC), OHM, beginning in May 1999. The RAC will be responsible for preliminary field analysis to confirm that grossly contaminated soil and solid waste have been removed. TtNUS will perform confirmatory sampling and analysis. The objective of this SAP is to identify sample locations and describe the procedures that TtNUS will use to obtain and analyze soil samples.

1.3 SAP ORGANIZATION

Section 1.0 presented the project background and the SAP objective. Section 2.0 provides a summary of the field operations, including the rationale for the confirmatory sampling methodology. Section 3.0 presents sampling procedures.

2.0 FIELD OPERATIONS

The RAC will perform preliminary field screening and analysis to make a determination regarding excavation of soil with significant levels of contamination. After the RAC has made the preliminary determination that an area of the excavation is complete, TtNUS will perform the initial round of confirmatory sampling and analysis in that area.

If the initial round of confirmatory sampling and analysis indicates that soil remaining at the site contains parameters at concentrations that are above the removal action goals, the RAC will perform additional excavation. TtNUS will then perform additional rounds of confirmatory sampling and analysis. However, subsequent samples will only be analyzed for those parameters that were found to be in excess of removal action goals in the previous round. The full suite of parameters will only be analyzed once. The process will continue until all parameters are detected at concentrations below the removal action goals. An exception to this procedure will be made in the event that additional excavation reveals stained soil or obvious waste material. In this event, soil and solid waste will be removed by the RAC. Confirmatory samples will be collected and analyzed for the full suite of parameters.

The initial round of confirmatory sampling and analysis will be performed in accordance with the procedures contained in Section 2.2. Additional sampling and analysis will be performed in accordance with Section 2.3.

2.1 SITE-SPECIFIC SAMPLING AND ANALYSIS

The Preliminary Removal Goals (PRGs) for Site 4 and Site 33 subsurface soil, provided in Table 2-1, are primarily United States Environmental Protection Agency (U.S. EPA) Region III industrial Risk-Based Concentrations (RBCs). Other standards have been used for parameters for which an RBC does not exist, specifically lead and total petroleum hydrocarbons (TPH). For inorganic analytes, the greater of the RBC concentration and basewide background concentration will be used as the PRG. Background concentrations for White Oak were presented in the Background Investigation Report (TtNUS, 1998). Background concentrations for inorganics in subsurface soil at White Oak are provided in Table 2-1.

Based on historic burial activities, analytes previously identified at the site, and contaminants of concern in the site groundwater, confirmatory samples from Site 4 will undergo analysis for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals plus cyanide, TCL pesticides and polychlorinated biphenyls (PCBs), explosives (Method 8330), TCL dioxins/furans, and TPH.

TABLE 2-1

REMOVAL ACTION PRGs
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 1 OF 2

Parameter	N/C [1]	Industrial RBC [2]	Background [3]
VOLATILES (mg/kg)			
1,1,1-Trichloroethane	N	4100	NA
1,1,2,2-Tetrachloroethane	C	29	NA
1,1,2-Trichloroethane	C	100	NA
1,2-Dichloroethane	C	63	NA
1,2-Dichloroethene (total)	N	1800	NA
2-Butanone	N	120000	NA
Acetone	N	20000	NA
Benzene	C	200	NA
Carbon Disulfide	N	20000	NA
Chlorobenzene	N	4100	NA
Chloroform	C	940	NA
Ethylbenzene	N	20000	NA
M+p-Xylenes	N	410000	NA
Methylene Chloride	C	760	NA
Styrene	N	41000	NA
Tetrachloroethene	C	110	NA
Toluene	N	41000	NA
Trichloroethene	C	520	NA
Xylenes, Total	N	410000	NA
SEMIVOLATILES (mg/kg)			
1,4-Dichlorobenzene	C	240	NA
2-Methylnaphthalene	N	4100	NA
2-Nitroaniline [4]	N	120	NA
Acenaphthene	N	12000	NA
Acenaphthylene [5]	N	4100	NA
Anthracene	N	61000	NA
Benzo(a)anthracene	C	7.8	NA
Benzo(a)pyrene	C	0.78	NA
Benzo(b)fluoranthene	C	7.8	NA
Benzo(g,h,i)perylene [5]	N	4100	NA
Benzo(k)fluoranthene	C	78	NA
Bis(2-Ethylhexyl)phthalate	C	410	NA
Carbazole	C	290	NA
Chrysene	C	780	NA
Di-n-butyl phthalate	N	20000	NA
Dibenzo(a,h)anthracene	C	0.78	NA
Dibenzofuran	N	8200	NA
Diethyl Phthalate	N	160000	NA
Fluoranthene	N	8200	NA
Fluorene	N	8200	NA
Indeno(1,2,3-cd)pyrene	C	7.8	NA
N-Nitrosodiphenylamine	C	1200	NA
Naphthalene	N	4100	NA
Pentachlorophenol	C	48	NA
Phenanthrene [5]	N	4100	NA
Phenol	N	120000	NA
Pyrene	N	6100	NA
PESTICIDES/PCBs (mg/kg)			
Aroclor-1260	C	2.9	NA

TABLE 2-1

REMOVAL ACTION PRGs
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND
PAGE 2 OF 2

Parameter	N/C [1]	Industrial RBC [2]	Background [3]
INORGANICS (mg/kg)			
Aluminum	N	200000	20961
Antimony	N	82	0.42
Arsenic	C	3.8	12.15
Barium	N	14000	40.09
Beryllium	N	4100	2.37
Cadmium	N	100	0.179
Calcium	NA	--	247
Chromium [6]	N	610	41.05
Cobalt	N	12000	16.6
Copper	N	8200	21.62
Cyanide	N	4100	--
Iron	N	61000	28681
Lead	N	1000 [7]	21.23
Magnesium	NA	--	2987
Manganese	N	4100	503
Mercury	N	20 [8]	0.051
Nickel	N	4100	13.84
Potassium	NA	--	2792
Selenium	N	100	2.73
Silver	N	100	0.096
Sodium	NA	--	69.4
Thallium	N	14	--
Vanadium	N	1400	44.31
Zinc	N	61000	84.2
EXPLOSIVES (mg/kg)			
1,3,5-Trinitrobenzene	N	6100	NA
1,3-Dinitrobenzene	N	20	NA
2,4,6-Trinitrotoluene	C	190	NA
2-Amino-4,6-dinitrotoluene [9]	N	410	NA
4-Nitrotoluene	N	2000	NA
HMX	N	10000	NA
RDX	C	52	NA
Tetryl	N	2000	NA
MISCELLANEOUS PARAMETERS (mg/kg)			
Total Petroleum Hydrocarbons (TPH)	NA	100 [10]	NA
Dioxin (TCDD)	C	0.000038	NA

1 Carcinogen/Noncarcinogen. Values for noncarcinogens were divided by a factor of 10.
2 USEPA Region III, October 1, 1998.
3 Background Concentrations for Subsurface Soil at NSWC-White Oak. (TtNUS, 1998).
4 Based on withdrawn RfD.
5 Value for naphthalene used.
6 Value for hexavalent chromium used.
7 Office of Solid Waste and Emergency Response (OSWER) Standard for Lead, industrial.
8 Value for methyl mercury used.
9 Value for 2,4-dinitrotoluene used.
10 This standard based on Maryland UST Closure Regulations (COMAR 26.10)
-- No value available.
NA Not applicable.

Samples from Site 33 will undergo analysis for TCL VOCs, TCL SVOCs, TAL metals plus cyanide, and TCL pesticides/PCBs. Specific analytical methods to be used during the confirmation sampling activities are provided in Table 2-2.

2.2 INITIAL SAMPLING AND ANALYSIS

The anticipated areas for the initial excavation at Site 4 are shown on Figure 1-3. The anticipated excavation area for Site 33 includes the tank and the soil immediately surrounding it. The actual excavation areas will be determined by the RAC, based on field conditions.

TtNUS will perform initial confirmatory sampling and analysis after preliminary field screening analysis by the RAC confirms that excavation of soil with gross contamination is complete. This preliminary screening will be by visual and/or other means. The following sections describe the sampling frequency for each site.

2.2.1 Site 4 – Chemical Burial Area

Non-bias confirmatory samples will be collected on a grid, using a random number generator to determine the sample location within the grid. The specific random number generator used will be determined prior to field work, based on what is available to the field personnel (i.e., electronic, pair of dice, charts).

A grid spacing of 30 feet by 30 feet (900 square feet) will be used across the bottom of the excavations. The estimated extent of waste material from Figure 1-3 is shown on Figure 2-1. The grid layout has been placed over the estimated extent of waste. Due to the irregular shape of the excavations, each grid section measures 900 square feet or less.

Each grid will be subdivided into 6-foot by 6-foot squares. A 900-square-foot grid would have 25 subdivisions. Grids measuring less than 900 square feet will have fewer than 25 subdivisions. Subdivision numbering will begin with 1 at the northwest corner and proceed across rows until every subdivision has a number. Figure 2-2 provides an enlargement of a portion of the grid shown on Figure 2-1 to illustrate how grids of varying sizes would be further subdivided and numbered for sample purposes. A random number generator will be used to select a number between 1 and 25 (or for the other grids shown on Figure 2-2, 1 and 9, 1 and 20). The sample will be collected from the corresponding 6-foot by 6-foot subdivision.

For the side walls, a grid measuring 50 feet long by the depth of the excavation will be used. Since the excavation depth is expected to be approximately 10 feet, these dimensions will result in an approximate 500-square-foot grid spacing. Each grid will be subdivided into 5-foot by 5-foot squares. A

TABLE 2-2

SUMMARY OF ANALYTICAL PROCEDURES
SITE 4 AND SITE 33 SAP
NSWC-WHITE OAK, SILVER SPRING, MARYLAND

Parameter	Preparation Method	Analytical Method
SOLID SAMPLES		
TCL Volatile Organics	OLM03.2	OLM03.2
TCL Semivolatile Organics	OLM03.2	OLM03.2
TAL Metals	ILM04.0	ILM04.0
TCL Pesticides/PCBs	OLM03.1	OLM03.1
Explosives	SW-8330	SW-8330
TCL Dioxins/Furans	EPA 8282A	-
Total Petroleum Hydrocarbons (TPH)	-	SW 846 418.1
AQUEOUS SAMPLES (TRIP BLANKS)		
TCL Volatile Organics	OLM03.2	OLM03.2

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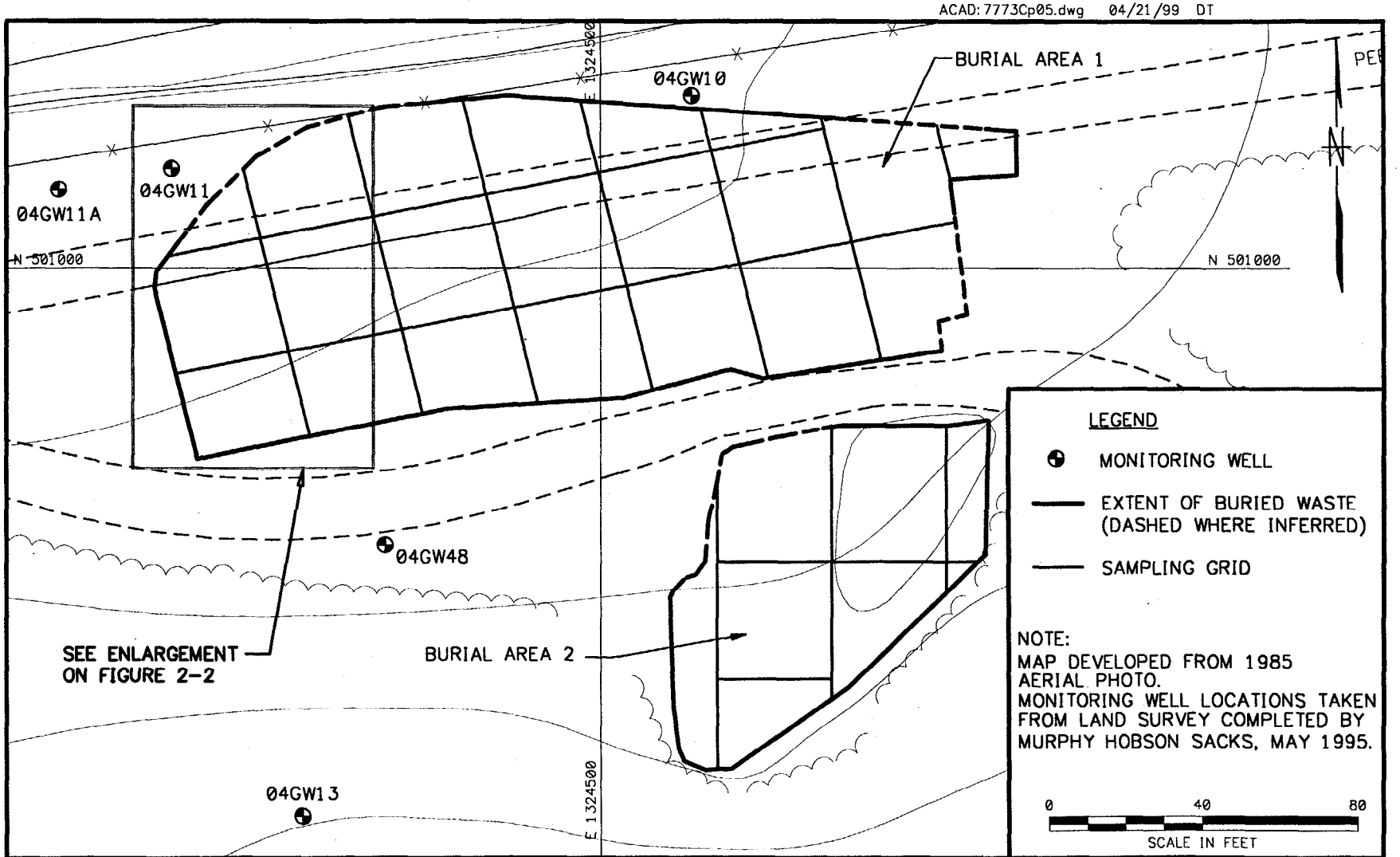
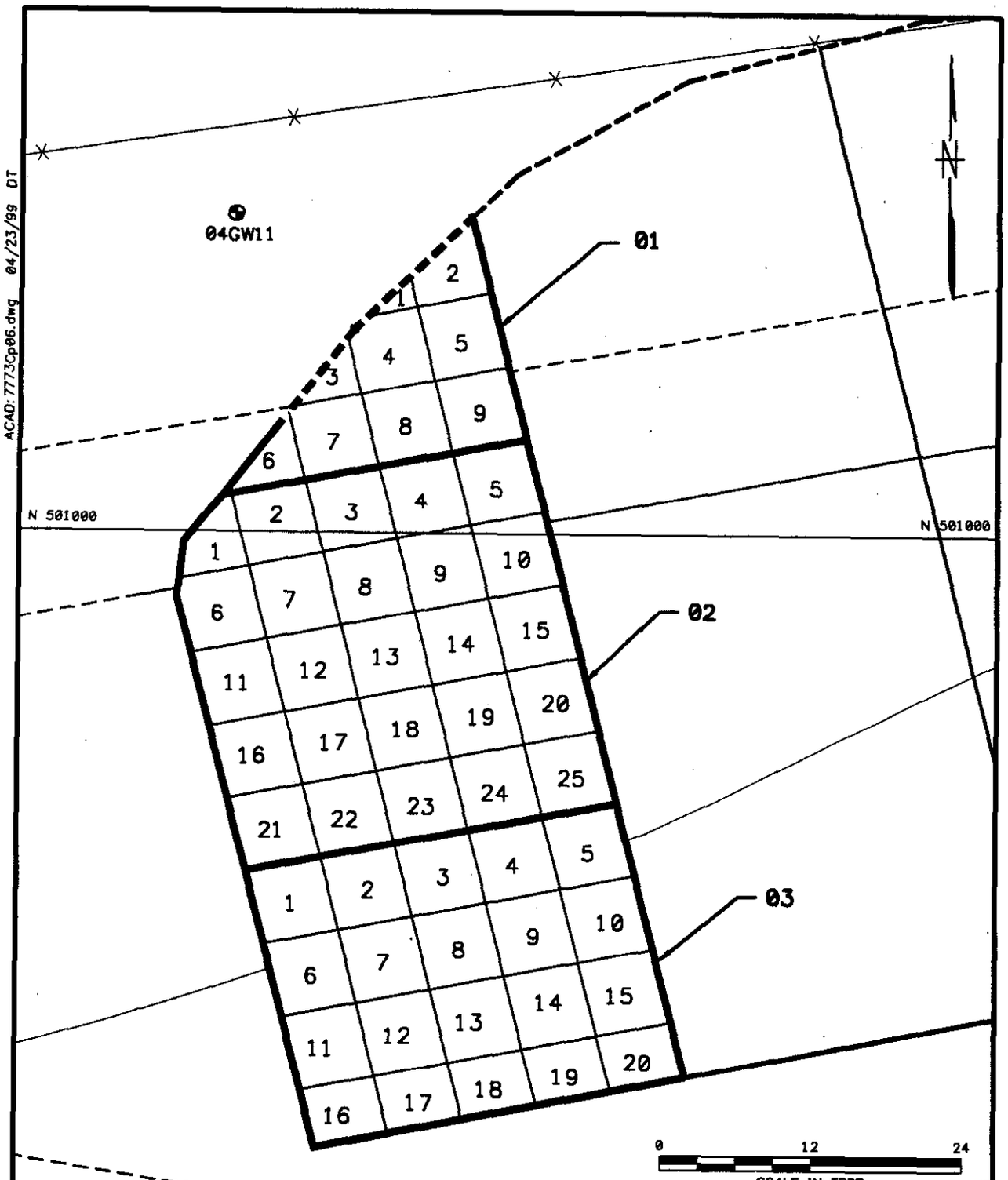


DRAWN BY DLT DATE 4/21/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY LMS DATE 4/22/99	SITE 4 CONFIRMATORY SAMPLING GRID LAYOUT SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY Loraine M Dupley DATE 4/22/99	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 2-1	REV. 0

FORM CADD NO. TtNUS_AH.DWG - REV 0 - 1/22/98



DRAWN BY DLT DATE 4/22/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY DATE 4/28/99	SITE 4 GRID SUBDIVISION NUMBERING SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY DATE 4/28/99	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 2-2	REV. 0

FORM CADD NO. T:NUS_AV.DWG - REV 0 - 1/22/98

500-square-foot grid would have 20 subdivisions. Irregularity in excavation depth will result in varying grid dimensions. The grid length used will always be 50 feet but shallower or deeper excavation depths will result in grid spacings that are smaller or larger than 500 square feet, respectively. Regardless of the grid size, the subdivisions will always measure 5 feet by 5 feet. Consequently a grid on the side wall could have more or fewer than 20 subdivisions.

For a 500-square-foot grid, the subdivisions will be numbered from 1 to 20, starting in the upper left-hand corner on the side walls and proceeding across rows until every subdivision has a number. A random number generator will be used to select a number between 1 and 20 for each grid section. The sample will be collected from the corresponding 5-foot by 5-foot subdivision.

Based on the extent of waste, approximately 50 samples will be collected using the grid spacing proposed here.

2.2.2 Site 33 – Building 25, Plating Shop Equalization Tank

Three samples will be collected for the initial confirmatory sampling effort. One sample each will be collected from beneath the tank inlet and outlet pipes, and from beneath the centerline of the tank.

2.3 ADDITIONAL SAMPLING AND ANALYSIS

The following procedures will be used to collect additional confirmatory samples at each site.

2.3.1 Site 4 - The Chemical Burial Area

Analytical results from the initial round of sampling will be used to determine if there is a need for additional excavation and subsequent sampling and analysis. If the concentration of a contaminant exceeds its PRG, then the Navy will direct the RAC to perform additional excavation in that area. Regardless of where within the grid the sample was collected, the sample results will apply to the entire grid area (up to 900 square feet).

The additional excavation will be performed across the entire grid section. The excavation depth shall be 1 foot. Following excavation, TtNUS will collect an additional soil sample, following the same procedure presented in Section 2.2.1. These samples will only be analyzed for those specific parameters found in excess of PRGs from the previous sampling event, with the exception noted in the introduction to Section 2.0. Excavation, sampling, and analysis will continue in this manner until no contaminants are detected at concentrations in excess of PRGs. Figure 2-3 provides a decision tree for the confirmatory sampling process.

2.3.2 Site 33 - Building 25, Plating Shop Equalization Tank

Analytical results from the initial round of sampling will be used to determine if there is a need for additional excavation and subsequent sampling and analysis. If the concentration of a contaminant exceeds its PRG, the Navy will direct the RAC to perform additional excavation in the vicinity of the sample location. Specific dimensions and depths of excavation will be determined in the field, based on the sample location, dimensions of the existing excavation, and proximity to surface features (i.e., buildings, roads).

Following excavation, TtNUS will collect an additional soil sample from the center of the newly excavated area. The sample will be analyzed for those specific parameters found in excess of PRGs from the previous sampling event. Excavation, sampling, and analysis will continue in this manner until no contaminants are detected at concentrations in excess of PRGs. Figure 2-3 provides a decision tree for the confirmatory sampling process.

2.4 HEALTH AND SAFETY

All field activities will be performed in accordance with the Master Health and Safety Plan (HASP), previously submitted and approved for White Oak (B&R Environmental, 1998a). In addition, the site-specific HASP developed for the Site 4 and Site 33 EE/CA field work will also be used (B&R Environmental, 1998b). A separate HASP will not be developed to support this field work.

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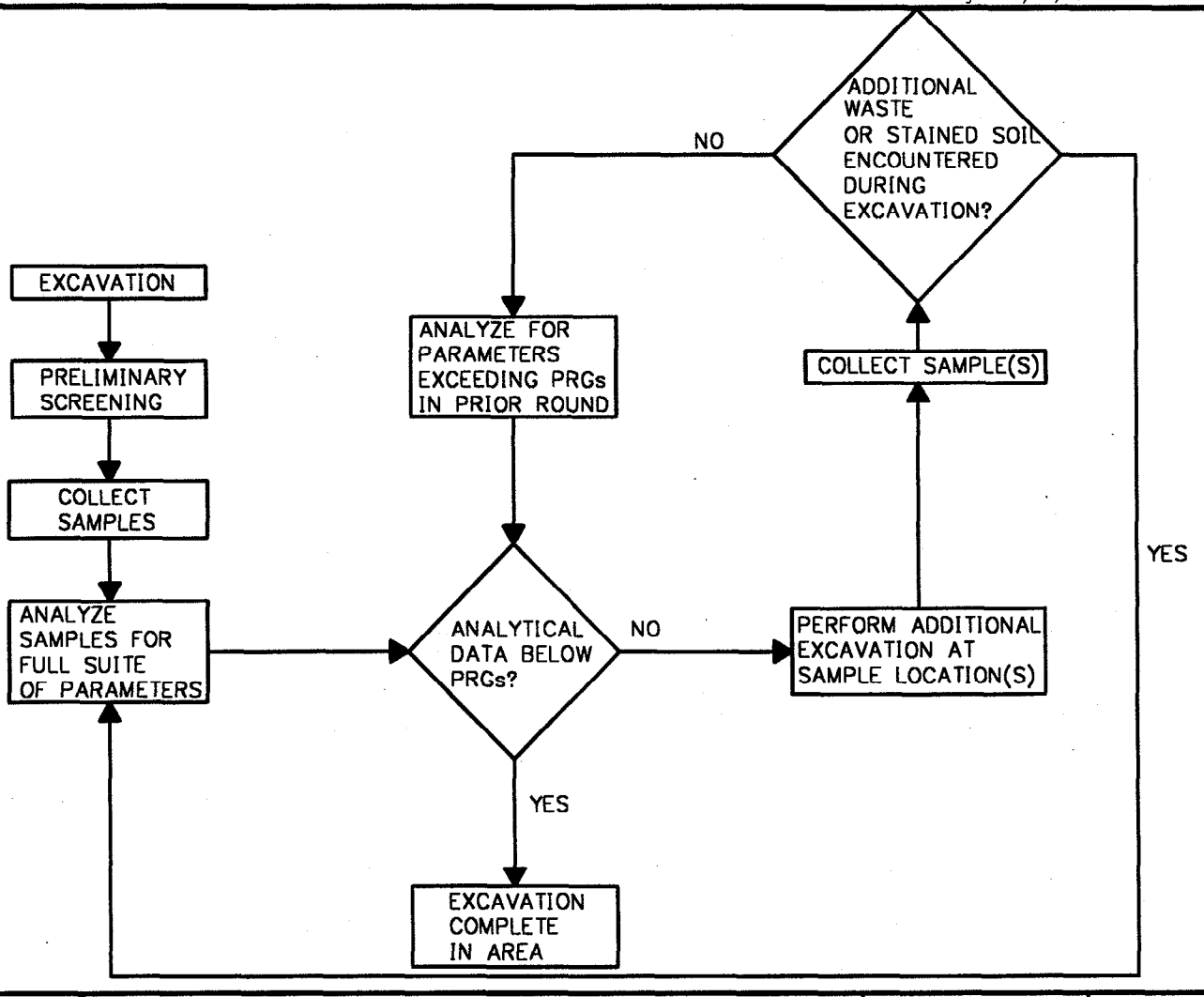

DRAWN BY KW DATE 3/2/99	Tetra Tech NUS, Inc.	CONTRACT NO. 7773	OWNER NO. 0304
CHECKED BY GMS DATE 4/28/99	CONFIRMATORY SAMPLING DECISION TREE SITE 4 AND SITE 33 SAP NSWC-WHITE OAK, SILVER SPRING, MARYLAND	APPROVED BY Lorraine M Shipley DATE 4/28/99	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE NOT TO SCALE		DRAWING NO. FIGURE 2-3	REV. 0

FORM CADD NO. TtNUS_AH.DWG - REV 0 - 1/22/98

3.0 SAMPLING PROCEDURES

All soil samples will be collected, handled, labeled, and shipped to the laboratory in accordance with the following procedures. Applicable field forms and Standard Operating Procedures (SOPs) can be found in the Master Work Plans for White Oak (B&R Environmental, 1998a).

3.1 CONFIRMATORY SOIL SAMPLING

At each sampling location, a volume of soil sufficient for the required analyses shall be obtained using a disposable polyethylene trowel. The sample will be placed in a jar and labeled. All samples will be submitted to a fixed-base laboratory for 7-day turn around analysis, except for TCL dioxins/furans, which will undergo 10-day turnaround analysis. This turnaround time for TCL dioxins/furans is the shortest technically feasible turnaround time. Seventy-two-hour rapid turnaround analysis may be required towards the end of the sampling activities. Turn-around times will be coordinated with the RAC, as needed. Standard method detection levels, identified in the Master Quality Assurance Project Plan (QAPP) for White Oak (B&R Environmental, 1998a), will be used during sample analysis.

Samples will be collected from the ground surface to a depth not exceeding 6 inches. Samples will be collected in accordance with procedures identified in Section 3.1.3 of the Master Field Sampling Plan (FSP) for White Oak (B&R Environmental, 1998a).

Labeled pin flags will mark the soil sample locations. These flags will not be disturbed until the analytical results confirm that an area is clean.

Due to the potential danger of entering the excavation to obtain soil samples, samples may be collected remotely by obtaining soil with the excavator bucket and then collecting the sample from the soil within the bucket. If adequate sloping of the sidewalls or other protection is provided (e.g., trench box or bracing), personnel will be permitted to enter the excavation to collect samples.

3.2 WASTE HANDLING

All disposable sampling equipment, disposable clothing, and other investigation-derived waste (IDW) will be collected by TtNUS and placed in plastic garbage bags. All bagged IDW will be disposed by the RAC.

3.3 RECORD KEEPING

All pertinent field data will be recorded on a Soil Sample Log Sheet and in the field logbook. Proper completion of sample log sheets is discussed in Section 2.0 of the Master FSP (B&R Environmental,

1998a). A sketch illustrating the approximate grid location will be included on the log sheet, as well as an indication of the total number of subdivisions in the grid and the subdivision that was sampled.

Figure 2-1 will also be used to keep track of the sample locations and their sequential numbering.

3.4 SAMPLE HANDLING

Sample handling includes procedures for sample identification, packaging, and shipping. Selecting sample containers and preservatives, and determining allowable holding times are also included. Sample handling and custody will be conducted in accordance with Sections 3.2 and 3.3 of the Master FSP for White Oak (B&R Environmental, 1998a).

Each sample collected will be assigned a unique tracking number. This 12-digit alphanumeric code will identify the sample location as follows.

NNNN	Site (0004 or 0033)
AA	Media (subsurface soil – SB)
NN	Sample Number (sequential ordering of samples collected, beginning with 01)
NN	Grid Subdivision (Site 4 only, 2-digit numeric indicator of the grid subdivision that was sampled)
NN	Sample Depth (2-digit numeric indicator of sample depth from grade)

For example, the first sample collected at Site 4 would have sample identification number 0004-SB-01. The number 15 would indicate that the sample was collected from the 15th subdivision. Assuming the sample is collected from the bottom of the excavation, which is 10 feet below grade, the depth indicator would be 10. The sample depth indicator may not be included for all samples. Therefore, the complete sample number would be 0004-SB-01-1510.

3.5 QUALITY CONTROL SAMPLES

Field Quality Control (QC) samples will be collected or generated during the sampling activities to assess the quality of the data resulting from field sampling and analytical programs. Trip blanks will be the only field QC samples collected during this sampling event. One trip blank will accompany each sample shipment potentially containing VOCs.

Disposable sampling equipment will be used for the sampling effort; therefore, rinsate and field blanks are not necessary. Since this is a confirmatory sampling event, field duplicate samples will not be collected.

Additional information regarding the field QC samples is provided in the Master QAPP for White Oak (B&R Environmental, 1998a).

REFERENCES

B&R Environmental (Brown & Root Environmental), 1998a. Master Work Plans for the Former Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. June.

B&R Environmental (Brown & Root Environmental), 1998b. Engineering Evaluation/Cost Analysis Work Plans for Site 4 and Site 33, Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. August.

TtNUS (Tetra Tech NUS, Inc.), 1998. Background Investigation Report for the Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. December.

TtNUS (Tetra Tech NUS, Inc.), 1999. Engineering Evaluation/Cost Analysis for Site 4 and Site 33 at the former Naval Surface Warfare Center, White Oak, Silver Spring, Maryland prepared for Engineering Field Activity Chesapeake, Naval Facilities Engineering Command. King of Prussia, Pennsylvania. January.

U.S. EPA (United States Environmental Protection Agency), Region III, 1998. Risk-Based Concentration Table. Philadelphia, Pennsylvania. October.