

**Work Plan**  
**for**  
**Site Screening Process Investigation**  
**at**  
**Site 2 - Waste Crankcase Oil Applied to**  
**Torrense Road**  
**Site 4 - Lloyd Road Oil Spills**  
**Site 23 - Hydraulic Oil Discharges from**  
**Extrusion Plant**

Naval District Washington,  
Indian Head  
Indian Head, Maryland



Naval Facilities Engineering Command  
Washington

Contract Number N62472-03-D-0057

Contract Task Order 0007

February 2005

**WORK PLAN  
FOR  
SITE SCREENING PROCESS INVESTIGATION**

**AT  
SITE 2 - WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD  
SITE 4 - LLOYD ROAD OIL SPILLS  
SITE 23 - HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT**

**NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
INDIAN HEAD, MARYLAND**

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

**Submitted to:  
Naval Facilities Engineering Command Washington  
1314 Harwood Street, SE  
Washington Navy Yard, D.C. 20374-5018**

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**CONTRACT NUMBER N62472-03-D-0057  
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## LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTAG	Biological Technical Assistance Group
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DOT	Department of Transportation
DQO	Data Quality Objective
EPA	United States Environmental Protection Agency
FFA	Federal Facility Agreement
FOL	field operations leader
FS	feasibility study
FSP	Field Sampling Plan
GPS	global positioning system
Hart	Fred C. Hart Associates, Inc.
IAS	Initial Assessment Study
IDW	investigation-derived waste
IHDIV-NSWC	Indian Head Division, Naval Surface Warfare Center
IR	Installation Restoration
IW18	Industrial Wastewater Outfall 18
MDE	Maryland Department of the Environment
NACIP	Naval Assessment for the Control of Installation Pollutants
NAD	North American Datum
NDW-IH	Naval District Washington, Indian Head
NPDES	National Pollutant Discharge Elimination System
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PPE	personal protective equipment
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
RBC	risk-based concentration
RI	remedial investigation
RPM	Remedial Project Manager
SOP	Standard Operating Procedure
SSL	soil screening level
SSP	Site Screening Process

TAL Target Analyte List  
TtNUS Tetra Tech NUS, Inc.  
USATHAMA United States Army Toxic and Hazardous Materials Agency

## **1.0 INTRODUCTION**

### **1.1 PURPOSE OF REPORT**

This Site Screening Process (SSP) Work Plan for an investigation at the Naval District Washington, Indian Head (NDW-IH) in Indian Head, Maryland was prepared by Tetra Tech NUS, Inc. (TtNUS) in response to Contract Task Order (CTO) 0007 under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057. The purpose of this Work Plan is to develop and describe the field sampling activities to be conducted at Site 2 – Waste Crankcase Oil Applied to Torrence Road, Site 4 – Lloyd Road Oil Spills, and Site 23 – Hydraulic Oil Discharges from Extrusion Plant.

### **1.2 SCOPE AND OBJECTIVE**

TtNUS has been tasked to develop this Work Plan to support the SSP at NDW-IH Installation Restoration (IR) Sites 2, 4, and 23. The objective of the SSP is to acquire sufficient data to assess the extent of environmental contamination and the associated risks to human health, welfare, and the environment. The data collected for the SSP are to be sufficient to provide the basis for a determination that either (1) a remedial investigation/feasibility study (RI/FS), FS, another investigation, and/or a removal action, as appropriate, be performed on the area addressed by the SSP or (2) the area does not pose a threat, or potential threat, to public health, welfare, or the environment and therefore the area should be removed from further study under the Federal Facility Agreement (FFA).

### **1.3 STATION BACKGROUND**

NDW-IH is located in northwestern Charles County, Maryland. As shown on Figure 1-1, NDW-IH is approximately 25 miles southwest of Washington, D. C. NDW-IH is a military facility consisting of the Main Area on the Cornwallis Neck Peninsula and the Annex on Stump Neck, which is located across Mattawoman Creek. The Stump Neck Annex is not contiguous with the Main Area and is operated by a tenant. As shown on Figure 1-2, the Main Area is bounded by the Potomac River to the northwest, west, and south, Mattawoman Creek to the south and east, and the Town of Indian Head to the northeast. The locations of the Sites 2, 4, and 23 are shown on Figure 1-2.

The primary mission the Indian Head Division, Naval Surface Warfare Center (IHDIV-NSWC), the main tenant of NDW-IH, is as follows:

- To provide services in energetics for all warfare centers through engineering, fleet and operational support, manufacturing technology, limited production, and industrial base support.

- To provide research, development, testing, and evaluation of energetic materials, ordnance devices and components, and other related ordnance engineering standards including chemicals, propellants and their propulsion systems, explosives, pyrotechnics, warheads, and simulators.
- To provide support to all warfare centers, military departments, and the ordnance industry for special weapons, explosive safety, and ordnance environmental issues.
- To execute other responsibilities assigned by the Commander of the IHDIV-NSWC.

#### **1.4 DATA QUALITY OBJECTIVES**

This Work Plan has been developed using the Data Quality Objective (DQO) process. The DQO process is a focused, iterative process for developing the data collection strategy to support decision making. The goal of the process is to conduct investigations in an efficient and effective manner without unnecessary precision and redundancy of data. The seven steps comprising this process are listed in Table 1-1 along with the sections of this Work Plan that address the steps.

#### **1.5 PROJECT ORGANIZATION**

The activities described in this Work Plan will be performed by TtNUS with support from the Navy. The Navy Remedial Project Manager (RPM) is:

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 E-mail: jorgensensa@ih.navy.mil

The TtNUS project organization chart is shown on Figure 1-3.

## **1.6 DOCUMENT ORGANIZATION**

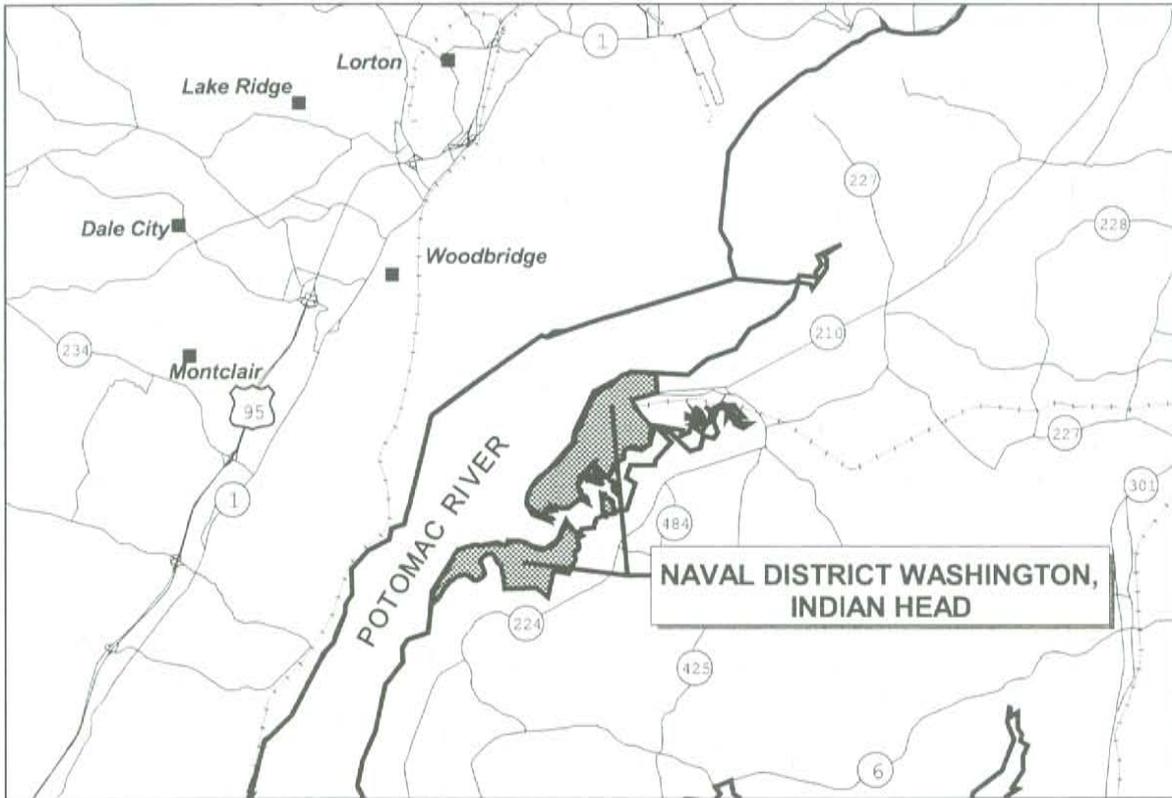
This Work Plan is intended for use in conjunction with the Master Plans for Installation Restoration Program Environmental Investigations at NDW-IH (TtNUS, 2004), which include the Master Work Plan, Master Field Sampling Plan (FSP), and Master Quality Assurance Project Plan (QAPP), each of which provide general information applicable to all sites at NDW-IH. This Work Plan includes site-specific information to be used for the SSP investigations at Sites 2, 4, and 23. Section 1.0 is the introduction to this site-specific Work Plan and describes the purpose of the document, outlines the scope and objectives of the work, summarizes the background of the Indian Head facility, explains how the DQO process is addressed in this Work Plan, and describes the project organization. Section 2.0 develops the rationale for and outlines the investigations to be implemented at Sites 2, 4, and 23. Section 3.0 describes the details regarding field operations, and Section 4.0 summarizes the sampling procedures. Appendix A contains the project-specific Health and Safety Plan, and Appendix B contains the project-specific QAPP.

**TABLE 1-1**

**INTEGRATION OF DQO PROCESS INTO SITE-SPECIFIC WORK PLAN  
SSP SITES 2, 4, AND 23  
NDW-IH, INDIAN HEAD, MARYLAND**

<b>DQO Step<sup>(1)</sup></b>	<b>Location in Work Plan Document</b>
1. State the Problem	Sections 2.3.1.1 (Site 2), 2.3.2.1 (Site 4), and 2.3.3.1 (Site 23)
2. Identify the Decision	Sections 2.3.1.2 (Site 2), 2.3.2.2 (Site 4), and 2.3.3.2 (Site 23)
3. Identify the Inputs to the Decision	Sections 2.3.1.3 (Site 2), 2.3.2.3 (Site 4), and 2.3.3.3 (Site 23)
4. Define the Boundaries of the Study	Sections 2.3.1.4 (Site 2), 2.3.2.4 (Site 4), and 2.3.3.4 (Site 23)
5. Develop a Decision Rule	Sections 2.3.1.5 (Site 2), 2.3.2.5 (Site 4), and 2.3.3.5 (Site 23)
6. Specify Tolerable Limits on Decision Efforts	QAPP (Appendix B)
7. Optimize the Design for Obtaining Data	Sections 2.3.1.6 (Site 2), 2.3.2.6 (Site 4), and 2.3.3.6 (Site 23); Tables 2-1 (Site 2), 2-2 (Site 4), and 2-3 (Site 25)

1 Source: EPA, 2000.



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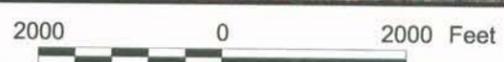
 Tetra Tech NUS, Inc.  
  
 FACILITY LOCATION MAP  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND

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APPROVED BY KCT	DATE 6/1/04
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**LEGEND**

- Approximate Site Boundary
- Waste Crankcase Oil Applied to Torrence Road
- Lloyd Road Oil Spill
- Hydraulic Oil Discharges from Extrusion Plant



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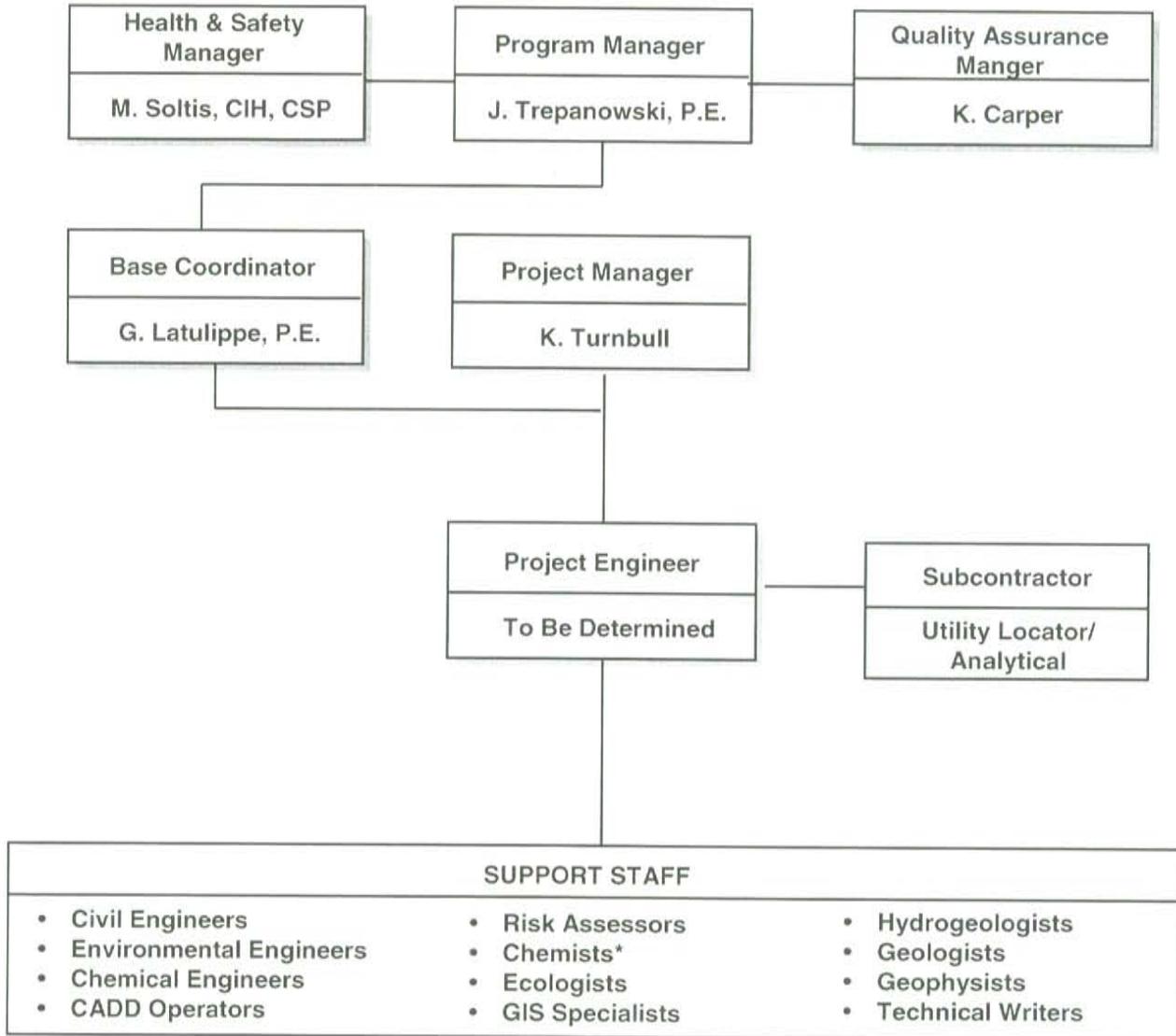
**Tetra Tech NUS, Inc.**

SITE LOCATION MAP  
 SSP SITES 2, 4 AND 23  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND

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FIGURE 1-3

TETRA TECH NUS PROJECT ORGANIZATION CHART  
 SITE SCREENING PROCESS WORK PLAN  
 SSP SITES 2, 4, AND 23  
 NDW, IH, INDIAN HEAD, MARYLAND



\* J. Samchuck will be responsible for data validation.

## 2.0 SSP INVESTIGATION RATIONALE

This section provides the rationale for development of the site-specific sampling activities for Sites 2, 4, and 23.

### 2.1 SITE BACKGROUND

#### 2.1.1 Site 2 - Crankcase Oil Applied to Torrense Road

Site 2 is located in the northern portion of the Main Area. Prior to 1965, waste oil from Transportation Branch buildings was reportedly applied to unpaved Torrense Road behind Building 290 (Public Works Department maintenance garage) for dust control. The waste oil consisted of crankcase, hydraulic, transmission, and motor oils. The amount of oil and frequency of application are not known. Torrense Road is now paved.

#### 2.1.2 Site 4 - Lloyd Avenue Oil Spills

Site 4 is located in the northern portion of the Main Area. Until early 1981, waste oil from Public Works maintenance operations was deposited in a dumpster. The waste oil consisted of fuel oil, motor oil, and kerosene. These wastes leaked from the dumpster on two or three occasions. The total volume of leakage was estimated at 50 to 100 gallons. An underground storage tank was installed to replace the dumpster. Waste oil is no longer stored in this area, and the tank has been removed.

#### 2.1.3 Site 23 - Hydraulic Oil Discharges from Extrusion Plant

Site 23 is located in the southern portion of the Main Area near Mattawoman Creek. From approximately 1943 to 1981, an unknown amount of hydraulic oil from press lines at Buildings 560 through 566 was discharged with wastewater used to cool pumps and press dies. Wastewater from these facilities was discharged to Mattawoman Creek via Industrial Wastewater Outfall 18 (IW18) through floor drains in the press buildings that are hard-piped to the outfall. The discharge from the outfall pipe flowed through a drainage swale for approximately 150 feet before entering Mattawoman Creek. An oil/water separator for this discharge was installed in 1981. The press line buildings no longer discharge to IW18 since the floor drains have been sealed. There are no longer any industrial wastewater discharges to IW18, and the outfall has been removed from the National Pollutant Discharge Elimination System (NPDES) permit. The quantity of hydraulic oil that was present in the wastewater is not known.

## **2.2 HISTORICAL ENVIRONMENTAL DATA**

### **2.2.1 Site 2 - Crankcase Oil Applied to Torrence Road**

No environmental sampling has been conducted at Site 2. The site was identified in the Initial Assessment Study (IAS) of the Naval Assessment for the Control of Installation Pollutants (NACIP) Program (Hart, 1983). The NACIP Program is the former name of the Navy IR Program, and the IAS is equivalent to the Preliminary Assessment (PA) portion of the IR Program. A site reconnaissance during the IAS indicated no signs of stressed vegetation or oil stains on the road or surfaces near the alleged oil application areas. However, a small quantity of oil was noted in standing water in the drainage ditch next to the road. Further study was not recommended in the IAS; however, the FFA determined that further investigation was necessary. In 1996, before the FFA was signed, the Navy, United States Environmental Protection Agency (EPA), and Maryland Department of the Environment (MDE) decided that this site will enter the SSP, which will provide for a second evaluation to confirm the presence or absence of contamination at the site and the need for further action.

### **2.2.2 Site 4 - Lloyd Avenue Oil Spills**

No environmental sampling has been conducted at Site 4. The site was identified in the IAS (Hart, 1983). A site reconnaissance during the IAS did not indicate any signs of spillage attributable to the dumpster storage operation. Further study was not recommended in the IAS; however, the FFA determined that further investigation was necessary. In 1996, before the FFA was signed, the Navy, EPA, and MDE decided that this site will enter the SSP, which will provide for a second evaluation to confirm the presence or absence of contamination at the site and the need for further action.

### **2.2.3 Site 23 - Hydraulic Oil Discharges from Extrusion Plant**

No environmental sampling has been conducted at Site 23. The site was identified in the IAS (Hart, 1983). A site reconnaissance conducted during the IAS indicated that the oil/water separator appeared to be working effectively and that there was no evidence of oil spillage or stressed vegetation at IW18. File searches during the IAS did not indicate any environmental contamination incidents attributable to the site. Further study was not recommended in the IAS; however, the FFA determined that further investigation was necessary. In 1996, before the FFA was signed, the Navy, EPA, and MDE decided that this site will enter the SSP, which will provide for a second evaluation to confirm the presence or absence of contamination at the site and the need for further action.

## **2.3 FIELD INVESTIGATION SCOPE DEVELOPMENT**

### **2.3.1 Site 2 - Crankcase Oil Applied to Torrense Road**

#### **2.3.1.1 Statement of the Problem**

An unknown quantity of waste oil was released at Site 2.

#### **2.3.1.2 Identify the Decision**

Sampling is needed to determine whether residual contamination exists in soil at Site 2 at concentrations that could pose potential risks to human health or the environment. The sampling results will be used to determine whether risks exist at levels that require initiation of a removal action (unacceptable), remedial investigation or further evaluation (potentially unacceptable), or no further action (acceptable).

#### **2.3.1.3 Inputs to the Decision**

Information required for the decision is the analytical results for the soil samples, which will be analyzed for polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals. These are the chemicals that may have been present in the waste oil applied at the site.

The analytical results will be compared to the following screening levels: EPA Region 3 soil risk-based concentrations (RBCs), EPA generic soil screening levels (SSLs) for inhalation, EPA Region 3 SSLs for migration to groundwater, EPA Region 3 Biological Technical Assistance Group (BTAG) soil screening levels, and facility background concentrations.

#### **2.3.1.4 Study Boundary**

The study area is the upper 1 foot of soil along a 1,000-foot long section of Torrense Road and its associated drainage swales. The potential contaminants associated with waste oil are relatively immobile in the environment, and the highest concentrations would be expected to be in the upper foot of soil.

#### **2.3.1.5 Decision Rule**

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests an imminent threat to human health or the environment, the site will be recommended for a removal action.

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests a potential threat to human health or the environment, the site will be

recommended for further evaluation. Risk screening evaluations will be conducted in an SSP Report to determine the magnitude of the potential threats. The screening evaluations may include comparison of detected concentrations to NDW-IH background levels, comparison of detected concentrations to human health and ecological screening levels, estimation of cancer and non-cancer risks for human receptors, and estimation of ecological risks.

If the maximum concentrations of all chemicals are below their corresponding screening levels, the site will be recommended for no further action.

#### **2.3.1.6 Sampling Design**

A judgmental sampling design, rather than a probabilistic (statistically-based) sampling design, is appropriate for the SSP evaluation. At the SSP stage (screening level), the primary goal is to determine whether there has been a release that requires additional action, investigation, or evaluation or whether no further action is required.

Five surface soil samples will be collected from the drainage swales or soil areas on each side of Torrense Road (10 total samples). Although waste oil was applied for dust control, the road is now paved; however, residual contamination may be present in drainage swales or other areas along the road.

All samples will be analyzed for PAHs, PCBs, and metals. These are the chemicals that could have been present in the waste oil.

Table 2-1 is a summary of the samples to be collected and associated laboratory analysis. The sample locations are shown on Figure 2-1.

### **2.3.2 Site 4 - Lloyd Avenue Oil Spills**

#### **2.3.2.1 Statement of the Problem**

Approximately 50 to 100 gallons of waste oil was released at Site 4.

#### **2.3.2.2 Identify the Decision**

Sampling is needed to determine whether residual contamination exists in soil at Site 4 at concentrations that could pose potential risks to human health or the environment. The sampling results will be used to determine whether risks exist at levels that require initiation of a removal action (unacceptable), remedial investigation or further evaluation (potentially unacceptable), or no further action (unacceptable).

### **2.3.2.3 Inputs to the Decision**

Information required for the decision is the analytical results for the soil samples, which will be analyzed for PAHs, PCBs, and metals. These are the chemicals that may have been present in the waste oil released at the site.

The analytical results will be compared to the following screening levels: EPA Region 3 soil RBCs, EPA generic SSLs for inhalation, EPA Region 3 SSLs for migration to groundwater, EPA Region 3 BTAG soil screening levels, and facility background concentrations.

### **2.3.2.4 Study Boundaries**

The study area includes the upper 1 foot of soil in an area of approximately 100 feet by 25 feet located downgradient of where the release reportedly occurred. The potential contaminants associated with waste oil are relatively immobile in the environment, and the highest concentrations would be expected to be in the upper foot of soil.

### **2.3.2.5 Decision Rule**

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests an imminent threat to human health or the environment, the site will be recommended for a removal action.

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests a potential threat to human health or the environment, the site will be recommended for further evaluation. Risk screening evaluations will be conducted in an SSP Report to determine the magnitude of the potential threats. The screening evaluations may include comparison of detected concentrations to NDW-IH background levels, comparison of detected concentrations to human health and ecological screening levels, estimation of cancer and non-cancer risks for human receptors, and estimation of ecological risks.

If the maximum concentrations of all chemicals are below their corresponding screening levels, the site will be recommended for no further action.

### **2.3.2.6 Sampling Design**

A judgmental sampling design, rather than a probabilistic (statistically-based) sampling design, is appropriate for the SSP evaluation. At the SSP stage (screening level), the primary goal is to determine

whether there has been a release that requires additional action, investigation, or evaluation or whether no further action is required.

Three surface soil samples will be collected downgradient of the suspected former dumpster location.

All samples will be analyzed for PAHs, PCBs, and metals. These are the chemicals that could have been present in the waste oil.

Table 2-2 is a summary of the samples to be collected and associated laboratory analysis. The sample locations are shown on Figure 2-2.

### **2.3.3 Site 23 - Hydraulic Oil Discharges from Extrusion Plant**

#### **2.3.3.1 Statement of the Problem**

An unknown quantity of hydraulic oil was released at Site 23 through former IW18.

#### **2.3.3.2 Identify the Decision**

Sampling is needed to determine whether residual contamination exists in soil/sediment in the drainage swale at Site 23 between the former IW18 outfall pipe and Mattawoman Creek at concentrations that could pose potential risks to human health or the environment. The sampling results will be used to determine whether risks exist at levels that require initiation of a removal action (unacceptable), remedial investigation or further evaluation (potentially unacceptable), or no further action (acceptable).

#### **2.3.3.3 Inputs to the Decision**

Information required for the decision is the analytical results for the soil samples, which will be analyzed for PAHs, PCBs, metals, and explosives. These are the chemicals that may have been present in the hydraulic oil and the wastewater discharge from IW18.

The analytical results will be compared to the following screening levels: EPA Region 3 soil RBCs, EPA generic SSLs for inhalation, EPA Region 3 SSLs for migration to groundwater, EPA Region 3 BTAG soil and sediment screening levels, and facility background concentrations.

#### **2.3.3.4 Study Boundaries**

The study area includes the upper 1 foot of soil/sediment in the drainage swale between the IW18 outfall pipe and Mattawoman Creek. The drainage swale is approximately 150 feet long. The potential

contaminants associated with the hydraulic oil and wastewater are relatively immobile in the environment, and the highest concentrations would be expected to be in the upper foot of soil.

#### **2.3.3.5 Decision Rules**

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests an imminent threat to human health or the environment, the site will be recommended for a removal action.

If the maximum concentration of any chemical exceeds its corresponding screening level at a concentration that suggests a potential threat to human health or the environment, the site will be recommended for further evaluation. Risk screening evaluations will be conducted in an SSP Report to determine the magnitude of the potential risks. The screening evaluations may include comparison of detected concentrations to NDW-IH background levels, comparison of detected concentrations to human health and ecological screening levels, estimation of cancer and non-cancer risks for human receptors, and estimation of ecological risks.

If the maximum concentrations of all chemicals are below their corresponding screening levels, the site will be recommended for no further action.

#### **2.3.3.6 Sampling Design**

A judgmental sampling design, rather than a probabilistic (statistically-based) sampling design, is appropriate for the SSP evaluation. At the SSP stage (screening level), the primary goal is to determine whether there has been a release that requires additional action, investigation, or evaluation or whether no further action is required.

Two surface soil/sediment samples will be collected from the drainage swale between the IW18 outfall pipe and Mattawoman Creek.

All samples will be analyzed for PAHs, PCBs, metals, and explosives. These are the chemicals that could have been present in the hydraulic oil or wastewater.

Table 2-3 is a summary of the samples to be collected and associated laboratory analysis. The sample locations are shown on Figure 2-3.

**TABLE 2-1**

**SAMPLING AND ANALYSIS SUMMARY  
SITE 2 – WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD  
NDW-IH, INDIAN HEAD, MARYLAND**

Location	Sample Number	Sample Depth (feet bgs)	Laboratory Analysis		
			PAHs	PCBs	TAL Metals
<b>Soil</b>					
S02SS001	S02SS0010001	0 to 1	X	X	X
S02SS002	S02SS0020001	0 to 1	X	X	X
S02SS003	S02SS0030001	0 to 1	X	X	X
S02SS004	S02SS0040001	0 to 1	X	X	X
S02SS005	S02SS0050001	0 to 1	X	X	X
S02SS006	S02SS0060001	0 to 1	X	X	X
S02SS007	S02SS0070001	0 to 1	X	X	X
S02SS008	S02SS0080001	0 to 1	X	X	X
S02SS009	S02SS0090001	0 to 1	X	X	X
S02SS010	S02SS0100001	0 to 1	X	X	X

bgs      Below ground surface.  
 PAH     Polynuclear aromatic hydrocarbons.  
 PCB     Polychlorinated biphenyls.  
 TAL     Target Analyte List.

**TABLE 2-2**

**SAMPLING AND ANALYSIS SUMMARY  
SITE 4 – LLOYD ROAD OIL SPILLS  
NDW-IH, INDIAN HEAD, MARYLAND**

Location	Sample Number	Sample Depth (feet bgs)	Laboratory Analysis		
			PAHs	PCBs	TAL Metals
<b>Soil</b>					
S04SS001	S04SS0010001	0 to 1	X	X	X
S04SS002	S04SS0020001	0 to 1	X	X	X
S04SS003	S04SS0030001	0 to 1	X	X	X

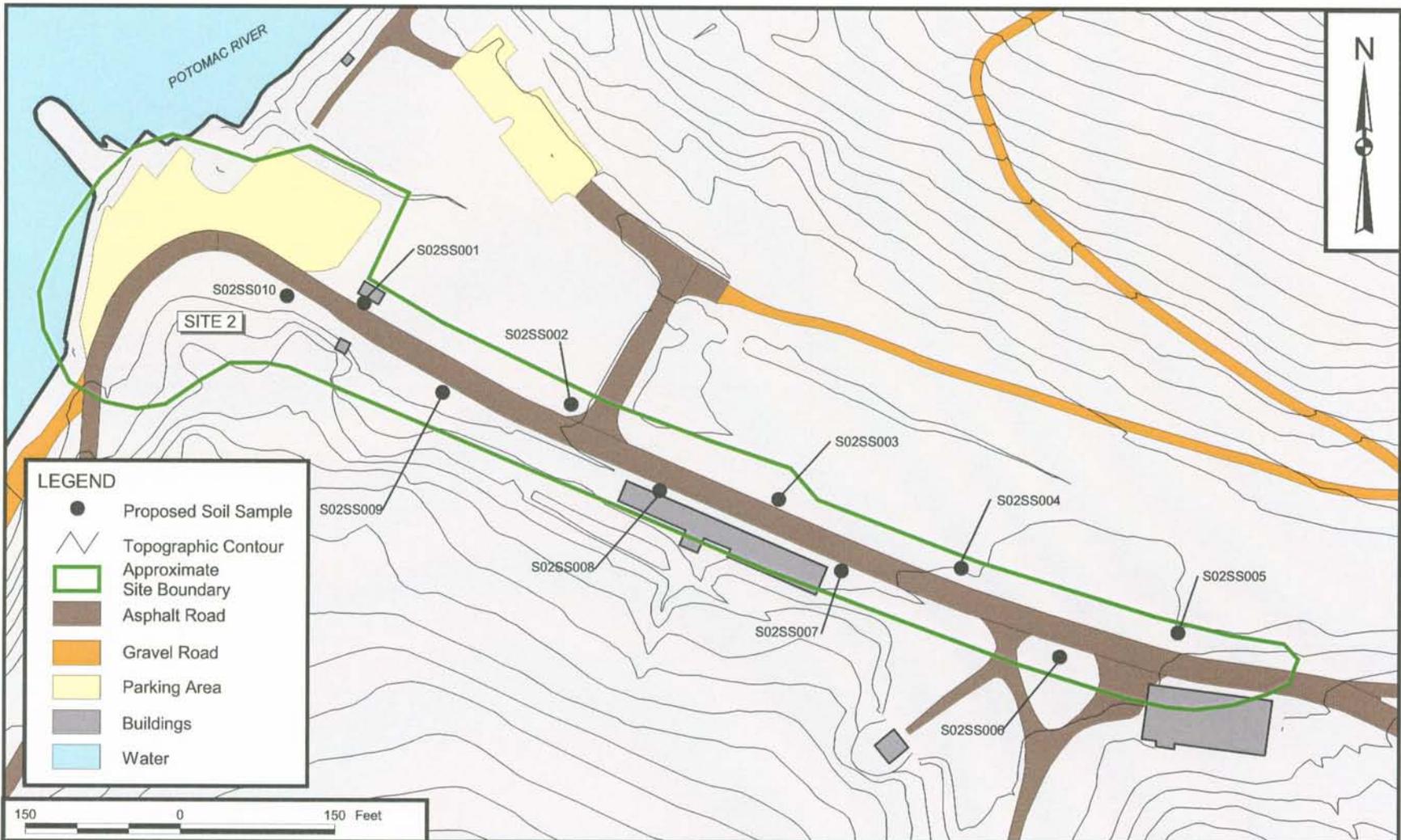
bgs Below ground surface.  
 PAH Polynuclear aromatic hydrocarbons.  
 PCB Polychlorinated biphenyls.  
 TAL Target Analyte List.

**TABLE 2-3**

**SAMPLING AND ANALYSIS SUMMARY  
 SITE 23 – HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT  
 NDW-IH, INDIAN HEAD, MARYLAND**

Location	Sample Number	Sample Depth (feet bgs)	Laboratory Analysis			
			PAHs	PCBs	Explosives	TAL Metals
<b>Sediment</b>						
S23SD001	S23SD0010001	0 to 1	X	X	X	X
S23SD002	S23SD0020001	0 to 1	X	X	X	X

bgs      Below ground surface.  
 PAHs    Polynuclear aromatic hydrocarbons.  
 PCBs    Polychlorinated biphenyls.  
 TAL      Target Analyte List.

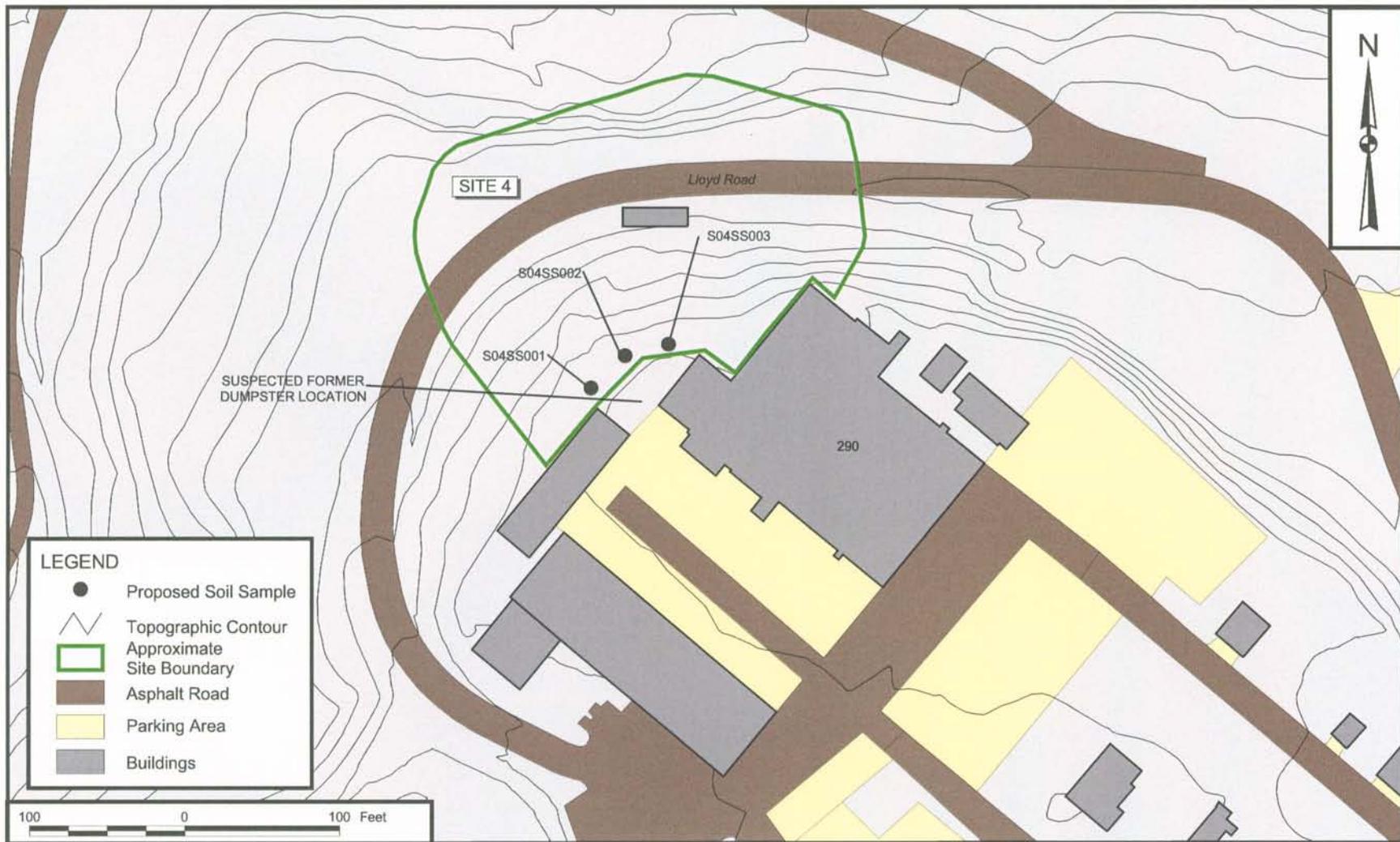


DRAWN BY K. PEILA	DATE 6/1/04
CHECKED BY KCT	DATE 6/1/04
COST/SCHEDULE-AREA	
SCALE AS NOTED	

**Tetra Tech NUS, Inc.**

**SSP SAMPLE LOCATIONS**  
**SITE 2 - WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD**  
**NAVAL DISTRICT WASHINGTON, INDIAN HEAD**  
**INDIAN HEAD, MARYLAND**

CONTRACT NUMBER 2194	OWNER NUMBER 0007
APPROVED BY KCT	DATE 6/1/04
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2-1	REV 0



**LEGEND**

- Proposed Soil Sample
- ~ Topographic Contour
- (Green) Approximate Site Boundary
- ▬ (Brown) Asphalt Road
- ▭ (Yellow) Parking Area
- ▭ (Grey) Buildings

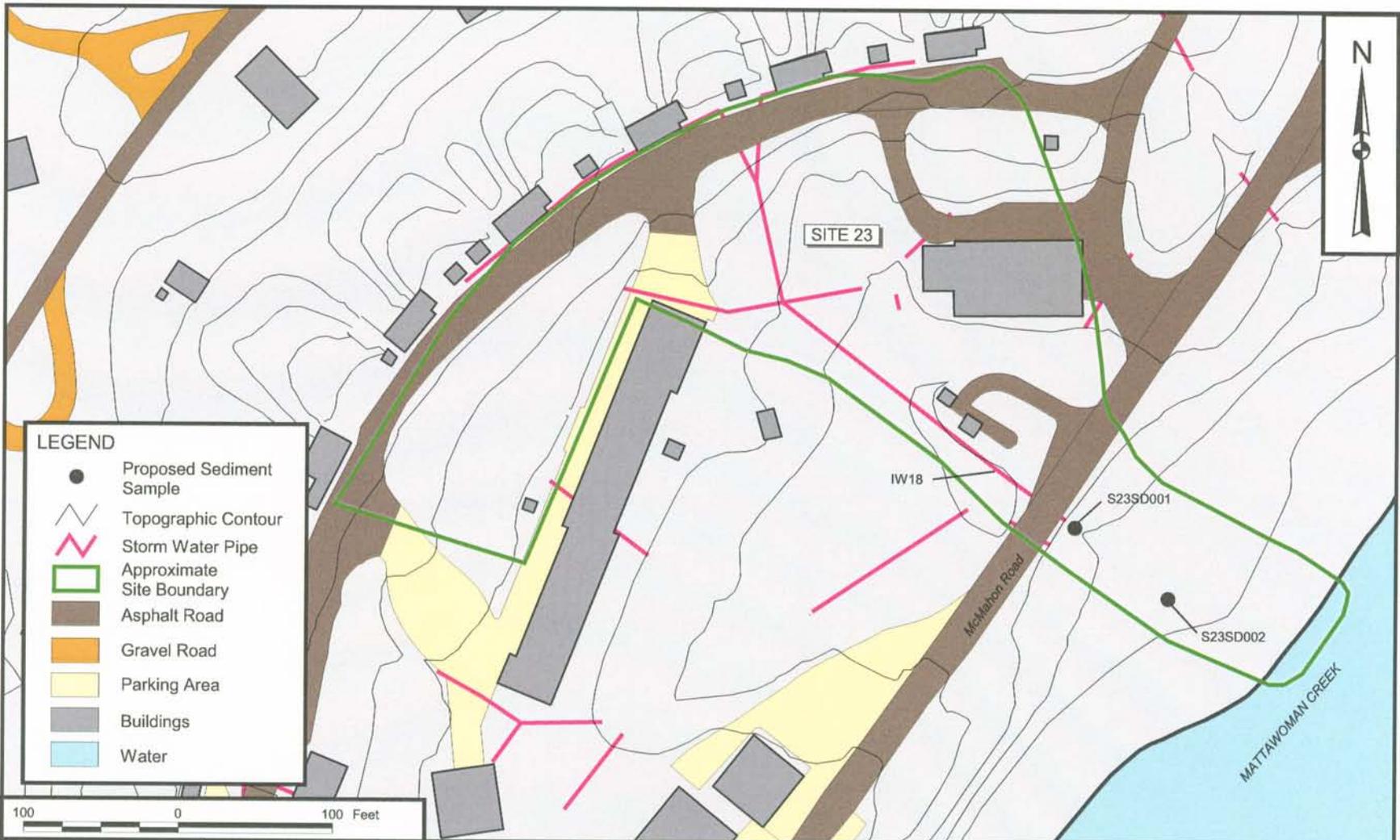


DRAWN BY	DATE
K. PEILA	6/1/04
CHECKED BY	DATE
K. TURNBULL	6/1/04
COST/SCHEDULE-AREA	
SCALE	
AS NOTED	

**Tetra Tech NUS, Inc.**

SSP SAMPLE LOCATIONS  
 SITE 4 - LLOYD ROAD OIL SPILLS  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND

CONTRACT NUMBER	OWNER NUMBER
2194	0007
APPROVED BY	DATE
KCT	6/1/04
APPROVED BY	DATE
—	—
DRAWING NO.	REV
FIGURE 2-2	0



DRAWN BY K. PEILA	DATE 6/1/04
CHECKED BY KCT	DATE 6/1/04
COST/SCHEDULE-AREA	
SCALE AS NOTED	

**Tetra Tech NUS, Inc.**

**SSP SAMPLE LOCATIONS**  
**SITE 23 - HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT**  
**NAVAL DISTRICT WASHINGTON, INDIAN HEAD**  
**INDIAN HEAD, MARYLAND**

CONTRACT NUMBER 2194	OWNER NUMBER 0007
APPROVED BY KCT	DATE 6/1/04
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2-3	REV 0

## **3.0 FIELD OPERATIONS**

A range of site evaluation techniques will be used to collect the data during the SSP investigations at Sites 2, 4, and 23. The Master FSP (TtNUS, 2004) and facility Standard Operating Procedures (SOPs) describe the general techniques used to collect the environmental samples and to document field activities.

This section provides specific field operations, methods, and procedures that will be conducted for this investigation.

### **3.1 MOBILIZATION/DEMobilIZATION**

During soil and sediment sampling, the field crew will consist of a field operations leader (FOL) and a qualified environmental technician. The FOL will be assigned the role of site safety officer for the field activities. Mobilization and demobilization operations will be performed as described in the Master FSP, Section 2.1.1. No work will commence without a Dig Permit from the Public Works Department and a Work Permit from the Safety Department.

The FOL will coordinate with facility personnel and with a TtNUS subcontractor for the utility clearance of soil sampling locations. Utility clearance may be required to obtain Dig and Work Permits.

Security badges will be required for all field crew members to gain access to the study area and will be obtained at the pass office (Building 1779). Prior to the arrival of the field crew at the facility main gate office, the TtNUS project manager will provide to the facility Environmental Division the TtNUS and subcontractor personnel information necessary to ensure that the security badges are obtained without delaying the project. This information will include the name, social security number, place of birth, date of birth, and citizenship for each individual and the name of the company for which they work.

The field crew will be required to attend a hazard control briefing administered by the Environmental Division Point of Contact.

### **3.2 SITE RESTORATION**

If required as a result of the soil and sediment sampling activities during the field investigation, site restoration will be performed in accordance with procedures provided in Section 2.1.2 of the Master FSP.

### **3.3 DECONTAMINATION**

Decontamination procedures will be conducted during the field investigation in accordance with procedures provided in Section 2.11 of the Master FSP and facility SOP SA-7.1.

### **3.4 INVESTIGATION-DERIVED WASTE HANDLING**

The handling and disposal of investigation-derived waste (IDW) at the facility are discussed in detail in Section 2.12 of the Master FSP. The IDW to be produced during this investigation includes decontamination fluids, personal protective equipment (PPE), and miscellaneous trash.

#### **3.4.1 Decontamination Fluids**

Fluids generated during the decontamination of sampling equipment will be containerized in Department of Transportation (DOT)-approved drums separately from solid materials for subsequent disposal in accordance with Master FSP Section 2.12. The drums will be DOT 1A1, Steel Drums with Non-Removable Heads.

#### **3.4.2 Personal Protective Equipment and Miscellaneous Trash**

PPE and any miscellaneous trash will be disposed in accordance with Master FSP Section 2.12.

### **3.5 SURVEYING**

TiNUS personnel will survey the soil and sediment sampling locations in accordance with Master FSP Section 2.9. Horizontal locations will be surveyed to Maryland State Plane coordinates [North American Datum (NAD) 1983] using a global positioning system (GPS) survey. Vertical elevations will not be necessary.

## 4.0 FIELD SAMPLING PROCEDURES

This section describes the procedures for sampling and sample handling.

### 4.1 SAMPLING PROCEDURES

This section describes the field sampling procedures for the SSP investigations at Sites 2, 4, and 23. General field sampling procedures are described in the Master FSP and facility SOPs.

#### 4.1.1 Surface Soil Sampling

Surface soil samples will be collected using procedures described in Master FSP Section 3.1.3 and facility SOP SA-1.3.

#### 4.1.2 Sediment Sampling

Sediment samples will be collected using procedures described in Master FSP Section 3.1.3 and facility SOP SA-1.3 for surface soil. The sediment sampling locations are expected to be dry because they are in a drainage swale rather than in a stream.

#### 4.1.3 Quality Assurance/Quality Control Samples

To assure that data obtained during the investigation are accurate, various quality assurance/quality control (QA/QC) requirements have been established for fieldwork, laboratory analysis of collected samples, and validation of analytical results obtained from the laboratory. Detailed information regarding this subject is presented in the Master QAPP. Information relevant to this work is presented in the site-specific QAPP in Appendix B.

The field QC samples consist of field duplicates, field blanks, and equipment (rinsate) blanks. Each of these types of field QC samples will undergo the same preservation, analysis, and reporting procedures as the related environmental samples. A detailed description of each type of sample is presented in the Master QAPP in Section 3.6. The frequencies and types of field QA/QC samples to be collected for this investigation are as follows:

Type of Sample	Collection Frequency
Field Duplicate	1 per 10 samples per medium
Field Blank	1 per source per sampling event
Equipment Rinsate Blank	1 per 20 per sampling equipment

The QC that measures the laboratory needs to follow are outlined in detail during the procurement process.

Validation of the analytical results is discussed in detail in Section 9.0 of the Master QAPP. One hundred percent of the data for the SSP investigation activities shall be validated in a limited fashion. The validation will be formulated to address only gross non-compliances resulting in the rejection of data and the elimination of false positives in accordance with the United States EPA National Functional Guidelines for Organic and Inorganic Data Review (1993 and 1994), as described in Section 9.2 in the Master QAPP.

## **4.2 SAMPLE HANDLING**

This section details sample-handling procedures including field-related considerations concerning sample containers, preservatives, and allowable holding times for requested analyses. In addition, sample identification, packaging, and shipping are addressed in this section.

### **4.2.1 Field Documentation**

Field documentation will be conducted as described in the Master FSP Section 3.2.1 and facility SOP SA-6.3. Completed chain-of-custody forms will be faxed to the TtNUS project manager on a daily basis.

### **4.2.2 Sample Nomenclature**

Each sample collected will be assigned a unique sample tracking number consisting of a 12-digit alphanumeric code conforming to facility SOP CT-04. Any other pertinent information regarding sample identification will be recorded in the field logbooks and on the sample log sheets.

The alphanumeric code to be used in the sample identification system is as follows:

#### Character Type:

A	=	Alpha
N	=	Numeric
E	=	Either alpha or numeric

(ANN)	(AA)	(EEE)	(NN)	(NN)
[Site]	[Sample Type]	[Location]	[Depth]	[Round]

No dashes are to be used in the sample number.

Site: S02, S04, or S23

Sample Type:

SS = Surface soil sample  
SD = Sediment sample

This field may also be used for QA/QC designation:

FB = Field blank  
FD = Field duplicate  
RB = Rinsate blank

Sample Location:

EEE = Assigned number for each sample location of a particular medium; QA/QC samples will be numbered sequentially in the order of collection beginning with 001.

The first rinsate blank collected during the first field effort at Site 2 would be labeled as follows:

S02RB0010001

Sample Depth:

NN = Numbered sequentially in the order the sample is collected from a single location and representing a unique sampling depth at that location starting with 00.

Sampling Round:

NN = The sampling round can range from 01 to 99.

Field duplicate samples will be reported blind to the laboratory. The three-digit sample location identifier field will be assigned with the designation DUP. The sample depth field will be assigned the duplicate

number collected for that specific matrix. The time designated on the sample label and chain-of-custody form shall be 0000 hours. The location at which the duplicate is collected will be noted on the sample log sheet and in the field notebook.

For example, the first surface soil duplicate sample collected during the first field effort at Site 2 would be labeled as follows:

S02SSDUP0101

Additional guidance is provided in the facility SOP CT-04.

#### **4.2.3 Sample Containers, Preservatives, and Holding Times**

EPA User's Guide to the Contract Laboratory Program (1986) and the Federal Register (October 26, 1984) address the topics of containers and sample preservations. Table 4-1 provides a summary of the analyses, methodologies, bottle requirements, preservation requirements, and holding times for the sampling to be submitted for fixed-base laboratory analysis.

#### **4.2.4 Sample Packaging and Shipping**

Samples will be packaged in accordance with the Master FSP Section 3.2.4 and facility SOP SA-6.1. When the samples are containerized, they will be placed on ice in a cooler and, within a reasonable period of time, delivered to a local Federal Express office. Sample containers provided by the laboratory are pre-preserved. The FOL will be responsible for completion of the following forms:

- Sample labels
- Chain-of-custody forms
- Chain-of-custody labels

#### **4.3 SAMPLE CUSTODY**

Custody of samples must be maintained and documented at all times. Chain of custody begins with the collection of the samples in the field. The Master FSP Section 3.3 and facility SOP SA-6.3 provide additional guidance for sample custody procedures.

TABLE 4-1

SUMMARY OF FIXED-BASE LABORATORY ANALYSES, METHODOLOGIES, BOTTLE REQUIREMENTS,  
PRESERVATION REQUIREMENTS, AND HOLDING TIMES  
NDW-IH, INDIAN HEAD, MARYLAND

Analysis	Analytical Method	Quantity of Samples <sup>(1)</sup>	Quantity of Containers per Sample	Container Type	Preservation Requirements	Holding Times <sup>(2)</sup>
<b>SOIL/SEDIMENT</b>						
PAHs	SW-846 8310	15	1	8-oz. wide-mouth glass	Cool to 4°C	14 days to extraction; 40 days after extraction
PCBs	SW-846 8082	15	1	8-oz. wide-mouth glass with Teflon liner	Cool to 4°C	14 days to extraction; 40 days after extraction
Explosives	SW-846 8330	2	1	8-oz. wide-mouth glass	Cool to 4°C	14 days to extraction; 40 days after extraction
Nitroglycerin	SW-846 8332	2	1	8-oz. wide-mouth glass	Cool to 4°C	14 days to extraction; 40 days after extraction
Nitrocellulose/ Nitroguanidine	USATHAMA	2	1	8-oz. wide-mouth glass	Cool to 4°C	14 days to extraction; 40 days after extraction
TAL Metals	CLP SOW ILM04.1	15	1	8-oz. wide-mouth glass	Cool to 4°C	6 months to analysis

CLP Contract Laboratory Program.  
 PAHs Polynuclear aromatic hydrocarbons  
 PCBs Polychlorinated biphenyls.  
 SOW Statement of Work.  
 TAL Target Analyte List.  
 USATHAMA United States Army Toxic and Hazardous Materials Agency.

- 1 Number does not include QA/QC samples to be analyzed.  
 2 All holding times are determined from date of collection.

## REFERENCES

EPA (United States Environmental Protection Agency), 1986. User's Guide to the Contract Laboratory Program. Office of Emergency and Remedial Response, Washington, D.C.

EPA, 1993. USEPA National Functional Guidelines for Inorganic Data Review as modified for use in USEPA Region 3.

EPA, 1994. USEPA National Functional Guidelines for Organic Data Review as modified for use in USEPA Region 3.

EPA, 2000. Guidance for the Data Quality Objective Process, EPA QA/G-4. EPA/600/R-96/055, Washington, D.C.

Hart (Fred C. Hart Associates, Inc.), 1983. Initial Assessment Study, Naval Ordnance Station, Indian Head, Maryland. New York, New York.

TtNUS (Tetra Tech NUS, Inc.), 2004. Master Plans for Installation Restoration Program Environmental Investigations at Naval District Washington, Indian Head, Indian Head, Maryland. King of Prussia, Pennsylvania.

**APPENDIX A**

**PROJECT-SPECIFIC HEALTH AND SAFETY PLAN**

**Health and Safety Plan**  
for  
**Site Screening Process Investigation**  
at  
**Site 2 – Waste Crankcase Oil Applied to  
Torrense Road**  
**Site 4 – Lloyd Road Oil Spills**  
**Site 23 – Hydraulic Oil Discharges from  
Extrusion Plant**

**Naval District Washington**  
**Indian Head**

Indian Head, Maryland



**Naval Facilities**  
**Engineering Command Washington**  
Northern Division Contract No. N62472-03-D-0057  
Contract Task Order 0007

February 2005

HEALTH AND SAFETY PLAN  
FOR

SITE 2 – WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD  
SITE 4 – LLOYD ROAD OIL SPILLS  
SITE 23 – HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT

NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
INDIAN HEAD, MARYLAND

COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:

Naval Facilities Engineering Command Washington  
1314 Harwood Street, S.E.  
Washington, D.C. 20374-5018

Submitted by:

Tetra Tech NUS, Inc.  
600 Clark Avenue, Suite 3  
King of Prussia, PA 19406-1433

NORTHERN DIVISION CONTRACT NO. N62472-03-D-0057  
CONTRACT TASK ORDER 0007

February 2005

PREPARED UNDER THE SUPERVISION OF:



---

KIM TURNBULL  
PROJECT MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMITTAL BY:



---

MATTHEW M. SOLTIS, CIH, CSP  
CLEAN HEALTH & SAFETY MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA

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## **1.0 INTRODUCTION**

The objective of this Health and Safety Plan (HASP) is to provide the minimum safety practices and procedures for Tetra Tech NUS, Inc. (TtNUS) and subcontractor personnel engaged in the Site Screening Process Investigation that is to be conducted at Site 2 - Waste Crankcase Oil Applied to Torrense Road, Site 4 - Lloyd Road Oil Spills and Site 23 - Hydraulic Oil Discharges from Extrusion Plant at the Naval District Washington, Indian Head (NDW-IH), Indian Head, Maryland.

In order to accomplish the objective, this HASP has been constructed using the latest available information regarding known or suspected chemical contaminants and potential and foreseeable physical hazards associated with the proposed work at the sites identified at the NDW-IH. This HASP has been designed to be used in accordance with the TtNUS Health and Safety Guidance Manual. The Guidance Manual provides detailed information pertaining to procedures to be performed on site as directed by the HASP, as well as TtNUS standard operating procedures. Both the HASP and the Health and Safety Guidance Manual must be present at the site to comply with the requirements stipulated in the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.120.

This HASP has been written to support proposed tasks and techniques associated with the scope of work as presented in Section 4.0. Should the proposed work site conditions and/or suspected hazards change, or if new information becomes available, this document will be modified. Changes to the HASP will be made with the approval of the TtNUS CLEAN Health and Safety Manager (HSM) and the Project Manager (PM). The PM will notify the affected personnel of the changes.

The elements of this HASP are in compliance with the requirements established by OSHA 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER).

### **1.1 AUTHORITY**

This Contract Task Order (CTO) 0007 and the requirements set forth represent an integral part of an overall effort conducted under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Northern Division Naval Facilities Engineering Command, as defined under Contract No. N62472-03-D-0057.

### **1.2 KEY PROJECT PERSONNEL AND ORGANIZATION**

This section defines responsibility for site safety and health for TtNUS and subcontractor employees engaged in on site activities. Personnel assigned to these positions shall exercise the primary

responsibility for the on site health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures.

- The TtNUS Project Manager (PM) is responsible for the overall direction and implementation of health and safety for this project.
- The TtNUS Field Operations Leader (FOL) is responsible for implementation of this HASP with the assistance of an appointed Site Safety Officer (SSO). The FOL manages field activities, executes the work plan, and enforces safety procedures, as applicable to the work plan.
- The SSO supports site activities by advising the FOL on the aspects of health and safety on site. These duties may include the following:
  - Coordinates health and safety activities with the FOL.
  - Selects, inspects, implements, and maintains personal protective equipment.
  - Establishes work zones and control points.
  - Directs and assists in the development of decontamination areas and procedures.
  - Implements air monitoring program in support of on site activities.
  - Verifies training and medical status of on site personnel status in relation to site activities.
  - Implements hazard communication, respiratory protection, and other associated safety and health programs, as necessary.
  - Provides site-specific training for on site personnel.
- Compliance with these requirements is monitored by the Project Health and Safety Officer (PHSO) and is coordinated through the Health and Safety Manager.

**1.3 SITE INFORMATION AND PERSONNEL ASSIGNMENTS**

**Site Name:** Naval District Washington  
Indian Head (NDW-IH)

**Address:** Indian Head, Maryland

**Site Point of Contact:** Shawn Jorgensen

**Phone Number:** (301) 744-2263

**Scheduled Activities:** Site Screening Process Investigation (See Section 4.0)

**Proposed Dates of Work:** Winter/Spring 2005

**Project Team:**

**TtNUS Management Personnel:**

**Discipline/Tasks Assigned:**

Kim C. Turnbull  
TBD  
TBD  
Matthew M. Soltis, CIH, CSP  
TBD  
James K. Laffey

Project Manager (PM)  
Field Operations Leader (FOL)  
Field Geologist  
Health and Safety Manager (HSM)  
Site Safety Officer (SSO)  
Project Health and Safety Officer (PHSO)

**Non-TtNUS Personnel**

**Affiliation/Discipline/Tasks Assigned**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Hazard Assessment (for purposes of 29 CFR 1010.132) for HASP preparation has been conducted by:  
James K. Laffey

## 2.0 EMERGENCY ACTION PLAN

### 2.1 INTRODUCTION

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. Site activities will be coordinated with the client contact, Shawn Jorgensen. In the event of an emergency which cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Based on this determination, TtNUS and subcontractor personnel will not provide emergency response support beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. Navy contact Shawn Jorgensen will be notified anytime outside response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(l)(1)(ii).

TtNUS will, through necessary services, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations such as confined space entry
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures as necessary

### 2.2 EMERGENCY PLANNING

Through the initial hazard/risk assessment effort, it is anticipated that emergencies resulting from chemical, physical, or fire hazards are unlikely given the nature of site activities.

Nonetheless, to minimize and eliminate the potential for any emergency situations, emergency planning activities will include the following (which are the responsibility of the FOL):

- Coordinating with Base Fire Protection and Emergency Services to notified of scheduled events and activities.
- Establishing and maintaining information at the project staging area (support zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

The TtNUS FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. This information is provided in Table 6-1. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by periodic site surveys to identify any situation predisposed to an emergency. The FOL will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings will be documented by the FOL in the site logbook, however, site personnel will be responsible for reporting hazardous situations.

Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow TtNUS to initiate necessary control measures. However, if the FOL determines that control measures are not sufficient to eliminate the hazard, TtNUS will withdraw from the site and notify the appropriate response agencies listed in Table 2-1.

### **2.3.2 Prevention**

TtNUS and subcontractor personnel will minimize the potential for emergencies by following this HASP, the Health and Safety Guidance Manual, and applicable OSHA regulations. Periodic site surveys of work areas and correction of any identified deficiencies prior to the commencement of that day's activities by the FOL will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

### **2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to the following: severe weather conditions; fire or explosion; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the TtNUS FOL. Safe places of refuge will be identified prior to the commencement of site activities by the FOL and will be conveyed to personnel as part of the pre-activities briefing session. This information will be reiterated during daily safety meetings and indicated on the Safe Work Permits. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the TtNUS FOL or the on-site Incident Commander of the Emergency Response Team. The FOL will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The FOL will document the names of personnel onsite (on a daily basis) in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site and away from water bodies.

## **2.5 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES**

TtNUS personnel will likely be working in close proximity to each other during planned site activities. Site personnel will initiate emergency notification to onsite personnel by voice commands, hand signals, vehicle horns, or line of site communication to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, radios will be used to communicate emergency situations and request assistance. The Fire Department will provide rescue services, if needed, during confined space entry operations. The details for notification must be documented in the permit.

If an emergency warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via appropriate and/or available communication method (hand signals, voice commands, etc.).
- Report to the designated refuge point.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (serving as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL will enact emergency notification procedures to secure additional assistance in the following manner:

Contact pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

**2.6 EMERGENCY CONTACTS**

Prior to initiating field activities, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

**TABLE 2-1  
EMERGENCY REFERENCE  
SITE 42 – INDIAN HEAD DIVISION - NSWC**

<b>AGENCY</b>	<b>TELEPHONE</b>
EMERGENCY (fire, ambulance, rescue, police)	911
Site Point of Contact Shawn Jorgensen	(301) 744-2263
Navy Remedial Project Manager Joeseeph Rail	(202) 685-3279
Hospital: Civista Medical Center	(301) 609-4000
Hospital: Southern Maryland Hospital	(301) 868-8000
National Capital Poison Center	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
TtNUS, Pittsburgh Office	(412) 921-7090
Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Manager Kim C. Turnbull	(412) 921-8945
Project Health and Safety Officer James K. Laffey	(412) 921-8678

## 2.7 EMERGENCY ROUTES TO HOSPITALS

The closest hospital to the NDW-IH is the Civista Medical Center in La Plata, Maryland. The alternate hospital is Southern Maryland Hospital in Clinton, Maryland. Maps showing the proximity of the NDW-IH to both of the hospitals are included as Figure 2-1 and 2-1A. Directions and maps to both Civista Medical Center and Southern Maryland Hospital are provided below:

**Civista Medical Center**  
701 East Charles Street,  
La Plata, MD 20646  
(301) 609-4000

Exit the facility and proceed South on Bensville Road (Rt. 228) for approximately 3 miles. At the junction of Bensville and Billingsley Road take a left onto Billingsley Road. Proceed on Billingsley Road for approximately 5 miles to the junction of Route 301. Proceed South on Route 301 to La Plata, Maryland (approximately 6 miles). The hospital is on the right, about 1/2 block past the railroad tracks.

**Southern Maryland Hospital**  
7503 Surratts Road  
Clinton, Maryland 20735  
(301) 868-8000

Exit the facility proceed North on Bensville Road (Rt. 228) for approximately 1 mile. Take a left onto Bealle Hill Road and proceed North for approximately 1.5 miles. At the junction of Rt. 373 turn right onto Rt. 373. Follow until intersection with Branch Ave. (MD Route 5). Turn left on Branch Ave., right on Surratts Road. The hospital is just past the Colony South Hotel.

**FIGURE 2-1**  
**Route To Civista Medical Center**

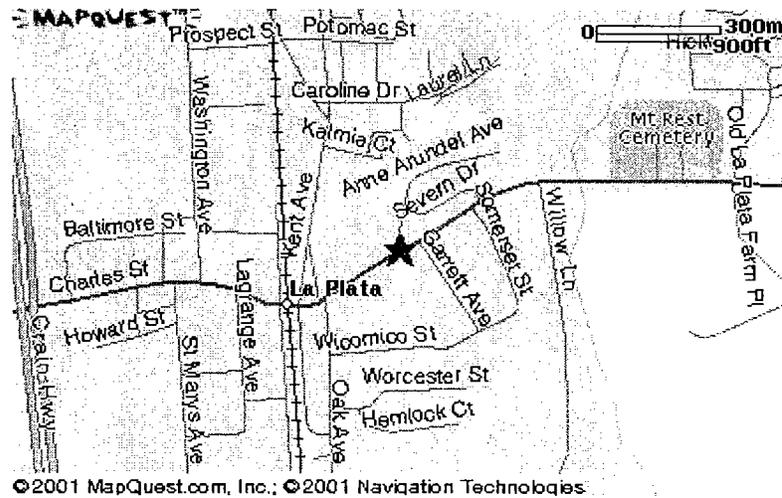
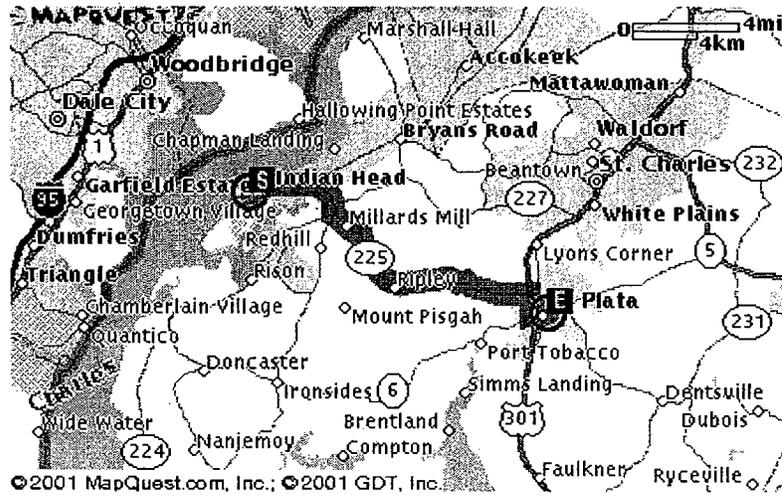
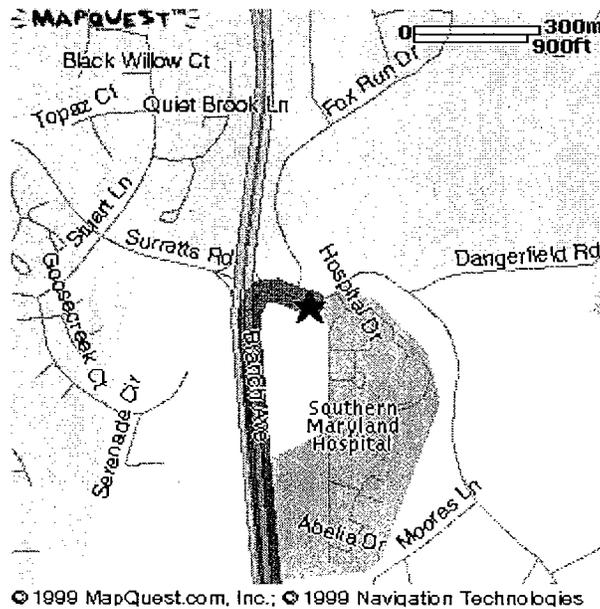
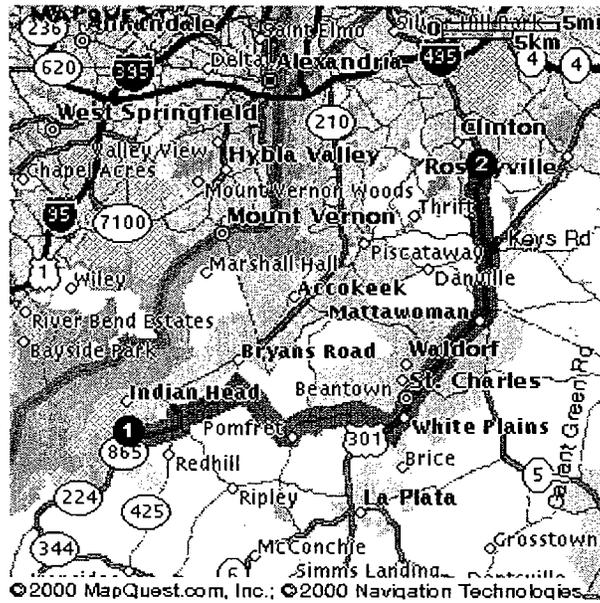


Figure 2-1.1

Route To Southern Maryland Hospital Center



## **2.8 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT**

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-2.

## **2.9 INJURY AND ILLNESS REPORTING**

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical service personnel. This information is listed on Medical Data Sheets filed onsite (see Attachment II) If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel. As soon as possible, Navy contact Shawn Jorgensen must be informed of any incident or accident that requires medical attention.

## **2.10 PPE AND EMERGENCY EQUIPMENT**

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and a fire extinguisher will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office or site vehicle. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

## FIGURE 2-2 EMERGENCY RESPONSE PROTOCOL

The purpose of this protocol is to provide guidance for the medical management of injury situations.

In the event of a personnel injury or accident:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the injured person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. WorkCare physicians will monitor the care of the victim. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 and enter Extension 109 or follow the voice prompt for after hours and weekend notification and be prepared to provide the following:
  - Any known information about the nature of the injury.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the involved Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) and Human Resources Department (Marilyn Duffy) at 1-800-245-2730.

As data is gathered and the scenario becomes more clearly defined, this information should be forwarded to WorkCare. WorkCare will compile the results of data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. A personalized letter describing the individual findings/results will accompany this generalized summary. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-2 (continued)**  
**WORKCARE**  
**POTENTIAL EXPOSURE REPORT**

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_

Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Company Name: \_\_\_\_\_

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid      Liquid      Gas      Fume      Mist      Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

How long did individual work in area before signs/symptoms developed? \_\_\_\_\_

Was protective gear being used? If yes, what was the PPE? \_\_\_\_\_

Was their skin contact? \_\_\_\_\_

Was the exposing agent inhaled? \_\_\_\_\_

Were other persons exposed? If yes, did they experience symptoms? \_\_\_\_\_

**III. Signs and Symptoms (check off appropriate symptoms)**

**Immediately With Exposure:**

Burning of eyes, nose, or throat	Chest Tightness / Pressure
Tearing	Nausea / Vomiting
Headache	Dizziness
Cough	Weakness
Shortness of Breath	

**Delayed Symptoms:**

Weakness	Loss of Appetite
Nausea / Vomiting	Abdominal Pain
Shortness of Breath	Headache
Cough	Numbness / Tingling

**IV. Present Status of Symptoms (check off appropriate symptoms)**

Burning of eyes, nose, or throat	Nausea / Vomiting
Tearing	Dizziness
Headache	Weakness
Cough	Loss of Appetite
Shortness of Breath	Abdominal Pain
Chest Tightness / Pressure	Numbness / Tingling
Cyanosis	

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: \_\_\_\_\_ Worsened: \_\_\_\_\_ Remained Unchanged: \_\_\_\_\_

**V. Treatment of Symptoms (check off appropriate response)**

None: \_\_\_\_\_ Self-Medicating: \_\_\_\_\_ Physician Treated: \_\_\_\_\_

### **3.0 SITE BACKGROUND**

#### **3.1 FACILITY HISTORY**

The NDW-IH is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, DC. The NDW-IH is a military facility consisting of the main area on the Cornwallis Neck Peninsula and the Annex on Stump Neck. The main area is bounded by the Potomac River to the northwest, west, and south, Mattawoman Creek to the south and east, and the town of Indian Head to the northeast. Stump Neck Annex is located across Mattawoman Creek. The Stump Neck Annex is not contiguous with the main area and is operated by a tenant. The primary mission of NDW-IH is to provide services in energetics, ordnance devices and components, and other related ordnance engineering standards, including chemicals, propellants, and their propulsion systems, explosives, pyrotechnics, warheads, and simulators. The United States Environmental Protection Agency (EPA) added NDW-IH to the National Priorities List (NPL) in September 1995, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. There are 48 sites at the main facility currently included in the NDW-IH Installation Restoration (IR) Program. Activities conducted under this HASP will occur at Sites 2, 4 & 23.

#### **3.2 SITE 2 – WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD**

Site 2 is located in the northern portion of the Main Area. Prior to 1965, waste oil from Transportation Branch buildings was reportedly applied to unpaved Torrense Road behind Building 290 (Public Works Department maintenance garage) for dust control. The waste oil consisted of crankcase, hydraulic, transmission, and motor oils. The amount of oil and frequency of application are not known. Torrense Road is now paved.

#### **3.3 SITE 4 – LLOYD AVENUE OIL SPILLS**

Site 4 is located in the northern portion of the Main Area. Until early 1981, waste oil from Public Works maintenance operations was deposited in a dumpster. The waste oil consisted of fuel oil, motor oil, and kerosene. The wastes leaked from the dumpster on two or three occasions. The total volume of leakage was estimated at 50 to 100 gallons. An underground storage tank was installed to replace the dumpster. Waste oil is no longer stored in this area, and the tank has been removed.

#### **3.4 SITE 23 – HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT**

Site 23 is located in the southern portion of the Main Area near Mattawoman Creek. From approximately 1943 to 1981, an unknown amount of hydraulic oil from press lines at Buildings 560 through 566 was

discharged with waste water used to cool pumps and press dies. Wastewater from these facilities was discharged to Mattawomen Creek via Industrial Wastewater Outfall 18 through floor drains in the press buildings that are hard-piped to the outfall. The discharge from the outfall pipe flowed through a drainage swale for approximately 150 feet before entering Mattawomen Creek. An oil/wastewater separator for this discharge was installed in 1981. The press line buildings no longer discharge to IW18 since the floor drains have been sealed. There are no longer any industrial wastewater discharges to IW 18. The quantity of hydraulic oil in the wastewater is not known.

## 4.0 SCOPE OF WORK

This section of the HASP addresses proposed activities that are to be conducted at Sites 2, 4 & 23. Table 5-1, provides information related to each of these tasks that are to be performed as part of the scope of work. If other tasks, other than those identified, are to be performed at the site, this HASP will be modified. Specific tasks to be performed include:

- Mobilization/demobilization
- Multi-media sampling
  - Surface Soil
  - Sediment Soil
- Decontamination of sampling equipment

Table 5-1, provides information related to each of these tasks that are to be performed as part of the scope of work. If other tasks, other than those identified, are to be performed at the site, this HASP will be modified.

## **5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION**

Table 5-1 of this section summarizes the potential hazards, by task, and their associated control measures for the work addressed by this site specific HASP. This table is intended to assist project personnel in the recognition of hazards and recommended procedures necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which personal protective equipment (PPE) and decontamination procedures to be used, as well as, appropriate air monitoring techniques and other requirements/restrictions. The evaluation of each task provides detailed information including anticipated hazards, recommended control measures, air monitoring recommendations, required PPE, and decontamination measures. This table will be updated if the scope of work, contaminants of concern, or pertinent conditions change.

This HASP, including Table 5-1, are meant to be used in conjunction with the TtNUS Health and Safety Guidance Manual. This manual is designed to further explain supporting elements for any site-specific operations as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many of TtNUS's SOPs are also provided in the Guidance Manual.

Safe Work Permits will be issued (See Section 10.10 and Attachment III). The FOL and/or the SSO will use the elements defined in Table 5-1 as the primary reference. The Safe Work Permit is used to add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

### **5.1 GENERAL SAFE WORK PRACTICES**

In addition to the task-specific work practices identified on Table 5-1, follow these safe work practices when conducting work involving known and unknown site hazards. These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Eating, drinking, chewing gum or tobacco, or taking medication, is permitted in the support zone only.
- Smoking is prohibited within the NDW-IH restricted area

- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area. A thorough shower and washing must be conducted as soon as possible if excessive skin contamination occurs.
- Avoid contact with potentially contaminated substances by walking around puddles, pools, mud, or other such areas. Avoid, whenever possible, kneeling on the ground or leaning or sitting on equipment. Do not place monitoring equipment on potentially contaminated surfaces.
- Avoid contact with unknown or unidentified objects. Remember UXO concerns can still be an issue at this site. Pin Flag and seek assistance in the identification of any articles of this nature that may impact the established work area.
- Be familiar with and adhere to the instructions in the site-specific HASP.
- Be aware of the location of the nearest telephone and emergency telephone numbers.
- Only approved communication devices (including cell phones) are permitted within the NDW-IH restricted area.
- Attend briefings on anticipated hazards, equipment requirements, Safe Work Permits, emergency procedures, and communication methods before going on site.
- Rehearse unfamiliar operations prior to implementation.
- Maintain visual contact with each other and with other on-site team members by remaining in close proximity in order to assist each other in case of emergency.
- Establish appropriate Safety Zones including Support, Contamination Reduction, and Exclusion Zones.
- Minimize the number of personnel and equipment in contaminated areas (such as the Exclusion Zone). Non-essential vehicles and equipment should remain within the Support Zone.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the Site Safety Officer (SSO).

- Observe coworkers for signs of toxic exposure and heat or cold stress.
- Inform co-workers of potential symptoms of illness, such as headaches, dizziness, nausea, or blurred vision.

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**TABLE 5-1  
TASKS/HAZARDS/CONTROL MEASURES  
BUILDING 126  
NAVAL DISTRICT WASHINGTON INDIAN HEAD, MARYLAND**

Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions of the FOL or SSO require)</i>	Decontamination Procedures
Mobilization/ Demobilization	<p><i>Physical hazards</i></p> <ol style="list-style-type: none"> <li>1) Lifting (strain/muscle pulls)</li> <li>2) Pinches and compressions</li> <li>3) Slips, trips, and falls</li> <li>4) Vehicular and foot traffic</li> </ol> <p><i>Natural hazards</i></p> <ol style="list-style-type: none"> <li>5) Insect/animal bites and stings, poisonous plants, etc.</li> <li>6) Inclement weather</li> </ol>	<ol style="list-style-type: none"> <li>1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</li> <li>2) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points.</li> <li>3) Preview work locations for unstable/uneven terrain.</li> <li>4) All activities are to be conducted consistent with the site traffic and speed requirements.</li> <li>5) Avoid nesting areas, use repellents. Report potential hazards to the Site Safety Officer (SSO). Follow guidance presented in Section 4 of the Health and Safety Guidance Manual.</li> <li>6) Suspend or terminate operations until directed otherwise by SSO.</li> </ol>	Visual observation of work practices by the SSO to minimize potential physical hazards (i.e., improper lifting, unsecured loads, etc.).	<p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Steel toe safety shoes or boots</li> <li>- <i>Safety glasses</i></li> <li>- <i>Hardhat (when overhead hazards exists, or identified as an operation requirement)</i></li> <li>- <i>Reflective vest for high traffic areas</i></li> </ul>	Not required
Decontamination of Sampling Equipment	<p><i>Chemical hazards</i></p> <ol style="list-style-type: none"> <li>1) Potential contaminants of concern include waste oils, kerosene and other mineral based oils spilled or leaked over 24 year ago. None of the contaminants are anticipated to be present in concentrations that would present an inhalation hazard.</li> </ol> <p>Table 6-1 provides additional information about each of the identified contaminants of concern.</p> <p>Any compounds that may be present will be solid, in low quantities and non-volatile.</p> <ol style="list-style-type: none"> <li>2) Decontamination fluids – Liquinox (detergent), acetone or isopropanol</li> </ol> <p><i>Physical hazards</i></p> <ol style="list-style-type: none"> <li>3) Lifting (strain/muscle pulls)</li> <li>4) Slips, trips, and falls</li> </ol> <p><i>Natural hazards</i></p> <ol style="list-style-type: none"> <li>5) Inclement weather</li> </ol>	<ol style="list-style-type: none"> <li>1) and 2) Employ protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's Material Safety Data Sheets (MSDS) for any decontamination fluids used onsite. These must be used in well-ventilated areas, such as outdoors. Use appropriate Personal Protective Equipment (PPE) as identified on MSDS. All chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5).</li> <li>3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes.</li> <li>4) Preview work locations for unstable/uneven terrain.</li> <li>5) Suspend or terminate operations until directed otherwise by SSO.</li> </ol>	Not Required	<p>For sampling equipment (trowels, bailers, etc.), the following PPE is required</p> <p>Consult MSDS for PPE guidance. Otherwise, observe the following.</p> <p>Level D Minimum requirements -</p> <ul style="list-style-type: none"> <li>- Standard field attire (Long sleeve shirt; long pants)</li> <li>- Steel toe safety shoes or boot</li> <li>- Nitrile outer gloves</li> <li>- Safety glasses</li> </ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.</p> <p>MSDS for any decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).</p> <p>All equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site.</p> <p>The Field Operations Leader (FOL) or the SSO will be responsible for evaluating equipment arriving on-site and leaving the site. No equipment will be authorized access or exit without this evaluation.</p>
Surface soil and sediment sampling using hand tools	<p><i>Chemical Hazards</i></p> <ol style="list-style-type: none"> <li>1) Potential contaminants of concern include waste oils, kerosene and other mineral based oils spilled or leaked over 24 year ago. None of the contaminants are anticipated to be present in concentrations that would present an inhalation hazard.</li> </ol> <p>Any compounds that may be present will be solid, in low quantities and non-volatile.</p> <ol style="list-style-type: none"> <li>2) Transfer of contamination into clean areas</li> </ol> <p><i>Physical hazards</i></p> <ol style="list-style-type: none"> <li>3) Lifting (strain/muscle pulls)</li> <li>4) Pinches and compressions</li> <li>5) Slips, trips, and falls</li> <li>6) Water hazards</li> </ol> <p><i>Natural hazards</i></p> <ol style="list-style-type: none"> <li>7) Insect/animal bites and stings, poisonous plants, etc.</li> <li>8) Inclement weather</li> </ol>	<ol style="list-style-type: none"> <li>1) Use avoidance, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.).</li> <li>2) Decontaminate all equipment and supplies between sample locations and prior to leaving the site.</li> <li>3) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques.</li> <li>4) Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points.</li> <li>5) Preview work locations for unstable/uneven terrain</li> <li>6) Wear appropriate clothing for the task (rubber boots, hip waders, etc.). If the potential for drowning exists, use US Coast Guard approved personal floatation devices. The area contains varying amounts of standing water. The ground in some areas may be very soft or slippery. Whenever possible avoid potential hazardous areas (swamps, area of mud, etc.).</li> <li>7) Avoid nesting areas, use commercially available repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual.</li> <li>8) Suspend or terminate operations until directed otherwise by the SSO.</li> </ol>	<p><b>Elevated airborne concentrations impacting the field crews or downwind receptors are not anticipated to occur during proposed site activities.</b></p> <p>Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p>	<p>Level D protection will be utilized for the initiation of all sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"> <li>- Standard field attire (Sleeved shirt; long pants)</li> <li>- Steel toe safety shoes or boots</li> <li>- Safety glasses</li> <li>- Surgical style gloves (<i>double-layered if necessary</i>)</li> <li>- <i>Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</i></li> </ul> <p><b>Note:</b> The Safe Work Permit for this task (see Attachment III) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> will consist of a removal and disposal of non-reusable PPE (gloves, coveralls, etc., as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"> <li>- Equipment drop</li> <li>- Outer coveralls, boot covers, and/or outer glove removal (as applicable)</li> <li>- Removal, segregation, and disposal of non-reusable PPE in bags/containers provided</li> <li>- Soap/water wash and rinse of reusable PPE (e.g., hardhat) if potentially contaminated</li> <li>- Wash hands and face, leave contamination reduction zone.</li> </ul>

## 6.0 HAZARD ASSESSMENT

This section provides information regarding the chemical and physical hazards associated with the proposed work sites including Sites 2, 4 & 23 of the NDW-IH and the activities that are to be conducted as part of the scope of work. Table 6-1 provides various information related to the chemical contaminants that may be present at the site. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are also discussed in that table.

### 6.1 CHEMICAL HAZARDS

The potential health hazards associated with Sites 2, 4, & 23 include inhalation, ingestion, and dermal contact with various contaminants which may be present at the site in the soil. While no environmental sampling has been conducted at these sites, site reconnaissance indicated the following:

- Site 2 - Small quantities of oil in standing water
- Site 4 – No signs of spillage attributable to the dumpster storage operation
- Site 23 – No evidence of spillage or stressed vegetation

Historical data identifies waste oils, kerosene and other mineral based oils as contaminants of concern that could be potentially hazardous to human health. Information on the toxicological, chemical, and physical properties of other potential contaminants of concern is addressed in Table 6-1 of this HASP. It is anticipated that the greatest potential for exposure to site contaminants is during activities in which contact with potential contaminated media exists (soil boring, monitoring well installations, sampling activities, etc.).

### 6.2 PHYSICAL HAZARDS

In addition to the chemical hazards discussed above, the following physical hazards may be present during the performance of site activities.

- Slips, trips, and falls.
- Inclement weather.
- Natural hazards (contact with poisonous plants and disease carrying animals and insects).

**TABLE 6-1  
CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA  
NAVAL DISTRICT WASHINGTON, INDIAN HEAD, SITES 2, 4 & 23**

Substance	CAS No.	Air Monitoring/Sampling Information	Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information	
Kerosene Fuel Oil No. 1 Range Oil JP-8	8008-20-6	Not known for kerosene. However, naphthalene and 2-methoxy ethanol are readily detected by a PID)	NIOSH Method 1550 for naphthalene is recommended for sampling for kerosene. This method involves using a 2-section sorbent tube packed with coconut shell charcoal sorbent medium, which is analyzed via GC-FID	None specified for JP-8 or kerosene  Naphthalene: OSHA PEL=10 ppm as a TWA NIOSH REL=10 ppm as a TWA, STEL=15 ppm	None specified for kerosene.  Naphthalene: Odor threshold 0.64-1.02 ppm  Naphthalene odor characteristics: tar/creosote/mothballs  2-methoxyethanol: Odor thresholds and characteristics not reported by AIHA	Characteristics vary by fuel blending and grade (e.g., impurities and additives)  Flash Pt: 100°F, 38°C Boiling Pt: 320°F, 160°C Melting Pt: -58°F, -50°C Vapor Density: >1 - 5 Vapor Density: <5 @ 20°C SG: 0.81 Solubility in water: Negligible (>0.1%) Appearance and Odor: Clear white liquid with kerosene odor Avoid contact with heat, sparks and flame Avoid contact with strong oxidizing agents	Overexposure to this substance may result in irritation to the eyes, skin, and respiratory tract. May cause, headache, dizziness, and other CNS effect.
Waste Oils Mineral oil	N.E. 8012-95-1 for mineral oil	Varies between fractions however waste oils tend to be less volatile. The FID tends to handle the longer chained aliphatic hydrocarbons more efficiently than its PID counterpart and would be selected as the instrument of choice.	Sampling and analytical protocol shall be in accordance with NIOSH Method #5026 is the recommended method for mineral oil mist.	ACGIH; NIOSH: 5 mg/m <sup>3</sup> (Oil mists); 10 mg/m <sup>3</sup> STEL  OSHA: 5 mg/m <sup>3</sup> (Oil mists)	Non-volatile substance, therefore no respiratory protection is required. In an aerosol form dust and mist respirator would be considered acceptable for up to 500 mg/m <sup>3</sup> .  Recommended gloves: Any glove suitable to prevent skin contact (Nitrile has been the one most widely used for the other substances, and will be acceptable).	Boiling Pt: 680°F; 360°C Melting Pt: Not available Solubility: Insoluble Flash Pt: 275-500°F; 135-260°C depends on the distillation fraction LEL/LFL: Not available UEL/UFL: Not available Vapor Density: Not available Vapor Pressure: <0.5 mmHg Specific Gravity: 0.90 Incompatibilities: None reported Appearance and odor: Colorless, oily, with an odor of burned lubricating oil.	Minor irritation to the eyes, skin, and respiratory system.

These physical hazards and their applicability to each site task are discussed in detail in Table 5-1. Additionally, each of these physical hazards is discussed in detail in the T1NUS Health and Safety Manual.

### **6.2.1 Slip, Trip and Fall Hazards**

Various potential slip, trip, and fall hazards may be encountered during the performance of planned site activities. These hazards are associated with working out doors where uneven or wet terrain may be encountered, or near the edge of bodies of water, as well as on boat decks and docks. To minimize the potential for worker injury from these hazards, the following requirements must be observed:

- Maintain proper housekeeping in work areas.
- Preview and inspect work areas to identify and eliminate slip, trip, or fall hazards. In outdoor locations, pay particular attention to sink holes or other depressions that may be encountered.
- Any work that is to be done on structures that are more than 6-feet above floor or ground level will require fall protection training and the use of 100% fall protection equipment.
- Cover, guard, barricade, and/or place warning postings over/at holes or openings that personnel may fall or step into.
- For traversing steep, slippery, or sloped terrain establish rope ladders to control ascent and descent to sampling areas or use alternative pathways.
- Maintain 5 foot distance from excavation.

### **6.2.2 Strains/Muscle Pulls**

To prevent injuries due to improper lifting and carrying methods observe the following:

- Estimate the weight and configuration of the load (i.e., is it bulky or hard to safely grasp/lift/control). If it appears to be too heavy or bulky to safely handle alone, either use a mechanical lifting device or obtain help from another employee to lift the load. The use of mechanical lifting devices is always preferable over manual lifting.
- Bend at the knees (not at the waist) when attempting a lift.

- Get a firm hold is obtained, and keep the load as close to the body as possible.
- Lift the load using your legs, and not the back.
- Avoid turning or twisting while holding a load.
- Preview the path of travel to identify and eliminate tripping hazards.
- Do not carry loads that obstruct the line of sight.
- When setting a load down use the leg muscles and do not bend at the waist.
- Divide heavier loads into smaller amounts.

### **6.3 NATURAL HAZARDS**

Insect/animal bites and stings, poisonous plants, and inclement weather are natural hazards that may be present given the location of activities to be conducted. In general, avoidance of areas of known infestation or growth will be the preferred exposure control for insects/animals and poisonous plants. Specific discussion on principle hazards of concern follows:

#### **6.3.1 Insect Bites and Stings**

Insect bites and stings are difficult to control given the climate and environmental setting of NDW-IH. However, in an effort to minimize this hazard the following control measures will be implemented where possible.

- Commercially available bug sprays and repellents will be used whenever possible – Pesticides analytical screening includes chlordane, endrin, lindane, methoxychlor, toxaphene and heptachlor. Commercially available repellants may be used. Products such as DEET should not be applied directly to the skin due to potential irritation. This product, when permitted for use, should be applied over clothing articles.
- Where possible, loose-fitting and light-colored clothing with long sleeves should be worn. This will also aid in insect control by providing a barrier between the field person and the insects and to provide easy recognition of crawling insects against the lighter background. Pant legs should be secured to the work-

boots using duct tape to prevent access by ticks. Mosquito nets are also recommended for use when commercially available repellents are not permitted.

- Clothing/limited body checks for ticks and other crawling insects should be conducted upon exiting heavily vegetated areas. Workers should perform a more detailed check of themselves when showering in the evening. Ticks prefer moist areas of the body (arm-pits, genitals, etc.) and will migrate to those locations.
- The FOL/SSO will preview access routes and work areas in an effort to identify physical hazards including nesting areas in and around the work sites. These areas will be flagged and communicated to site personnel.
- The FOL/SSO must determine if site personnel (through completion of Medical Data Sheets), suffer allergic reactions to bee and other insect stings and bites. Field crew members who are allergic to bites should have their emergency kit containing antihistamine and a preloaded syringe of epinephrine readily available.

Any allergies (insect bites, bee stings, etc.) must be reported on the Medical Data Sheet and to the SSO.

### **Tick-Borne Disease**

During warm months (spring through early fall), tick-borne lyme disease may pose a potential health hazard in Maryland which is listed as an area for lyme disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). Performing frequent body checks will prevent the tick from attaching for the long term. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures, and symptoms of exposure consult the health and safety guidance manual.

### **Mosquito-Borne Illness**

The Maryland Department of Health is urging people to take precautions to avoid potentially dangerous mosquitoes. Mosquitoes in Maryland may carry diseases including St. Louis encephalitis, Eastern Equine encephalitis, La Crosse encephalitis and West Nile virus.

The Maryland Department of Health, along with a variety of agencies, routinely conducts testing in mosquitoes and birds to monitor for possible mosquito-borne viruses. Mosquitoes become infected after

biting infected birds. The symptoms for mosquito-borne illnesses may include headache, moderate to high fever, stiff neck and confusion. In serious cases coma, seizures or paralysis can result. Symptoms usually appear between 5 to 15 days after exposure to infected mosquitoes. Mosquito-borne illnesses may be mild or serious and can lead to death.

Precautions include:

- Limit outdoor activities during peak mosquito times – at dusk and dawn.
- Avoid standing water
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Apply insect repellent according to manufacturers instruction to exposed skin.
- Spray clothing with repellents containing permethrin or DEET
- Mosquitoes may bite through thin clothing.
- An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide).
- Avoid products containing more than 30% DEET.

### **6.3.2 Snakes and Other Wild Animals**

Indigenous animals including snakes (only two poisonous and approximately 27 non-poisonous varieties in Maryland), raccoons, and other animals native to the region may be present at the site. These animals may be encountered if work locations encroach on nesting or territories claimed by these animals.

There are two poisonous snakes indigenous to the State of Maryland, the Northern Copperhead and the Timber Rattlesnake. Only the Northern Copperhead is indigenous to this part of the state. It is important to remember that snakes are rarely aggressive towards humans. If you encounter a snake simply maintain a safe distance and move away from it, or allow it to move away.

### **6.3.3 Poisonous Plants**

Various plants which can cause allergic reactions may be encountered during field work. These include, poison ivy, poison oak, and poison sumac. Contact with these plants may occur when clearing vegetation for access to work areas, or as a result of movement through these plants. An irritating, allergic reaction can occur after direct contact with the plant or indirect contact through some piece of equipment or clothing article. Oils are transferred from the plant to exposed skin, clothing, or piece of equipment. The degree of the irritating, allergic reaction can vary significantly from one person to the next.

Protective measures to control and minimize the effects of this hazard may include, but not be limited to, the following:

- Identify plants for field personnel.
  - Poison Ivy - Characterized by climbing vines, three leaf configuration ovate to elliptical in shape, deep green leaves with a reddish tint, greenish flowers, and white berries.
  - Poison Sumac - Characterized as a tall bush of the sumac family bearing compound leaves (7-13 entire leaflets), branched from a central axis, drooping, with axillary clusters of white fruit: However, these white fruits and berries may exist only during pubescent stages.
  - Poison oak - Characterized as similar to poison ivy consisting of a shrub, stems erect, 0.3 to 2.0 meters tall, leaflets consist of broad thick lobes coarsely serrated configuration, denser at the base, less so than the top.
- Protective measures may include wearing disposable garments such as Tyvek when clearing brush. These may be carefully removed and disposed of along with any oils accumulated from the plants.
- Personal Hygiene - The oils obtained from the plants will only elicit an allergic response when the person's bare skin layer is contacted. This can be aggravated when skin pores are open (perspiring), or through breaks in the skin such as cuts, nicks, scratches, etc. This can also be accomplished when using excessively hot water for cleaning the skin, which also causes pores to open. Prior to break time, lunchtime, etc. personnel should wash with cool water and soap to remove as much of the oils as possible. In heavily vegetated areas of these plants, additional measures including barrier creams and blocks may be used to prevent the oils from accessing and penetrating the skin.

These plants present an airborne sensitization hazard when burned. This is not to occur as part of this scope of work and therefore will not be addressed.

#### **6.3.4 Inclement Weather**

Project tasks under this Scope of Work will be performed outdoors and near water. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

## 7.0 AIR MONITORING

Historical documentation indicates that potential contaminants of concern were last spilled or leaked in 1981. At Site 2, Torrense Road is now paved. At Site 4 waste oil is no longer stored in the area and the tank has been removed. At Site 23 there are no longer any discharges to IW 18 and the outfall has been removed from the National Pollutant Discharge Elimination System. As a result direct reading instruments will not be required to monitor worker exposures at the site.

However, potential site contaminants may be bound to airborne particulates generated during intrusive activities. Visible dust is detected at a concentration of approximately  $2.0 \text{ mg/m}^3$ . This provides ample warning and will be used as an action level to control airborne dusts before exposure becomes a concern.

Should site conditions change to warrant air monitoring, as determined by the FOL and/or SSO, this HASP will be modified accordingly and personnel will be trained on the need for and use of direct reading instrument(s).

## **8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS**

### **8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING**

This section is included to specify health and safety training and medical surveillance requirements for both TtNUS and subcontractor personnel participating in site activities.

#### **8.1.1 Requirements for TtNUS Personnel**

TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NDW-IH facility. Additionally, TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training in the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120 (e)(4) will be required for site supervisory personnel.

Documentation of TtNUS introductory, supervisory, and refresher training as well as site-specific training will be maintained at the project. Copies of certificates or other official documentation will be used to fulfill this requirement.

#### **8.1.2 Requirements for Subcontractors**

TtNUS subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120 (e). Additionally, personnel who have had the introductory training more than 12 months ago, are required to have 8 hours of refresher training meeting the requirements of 29 CFR 1910.120 (e)(8) prior to performing field work at the NDW-IH facility if required. TtNUS subcontractors must certify that each employee has had such training by sending TtNUS a letter, on company letterhead, containing the information in the example letter provided as in Figure 8-1 and by providing copies of certificates for subcontractor personnel participating in site activities.

**FIGURE 8-1**  
**OSHA TRAINING CERTIFICATION**

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Kim C. Turnbull  
Project Manager  
Tetra Tech NUS, Inc.  
661 Andersen Drive  
Pittsburgh, Pennsylvania 15220

Subject: HAZWOPER Training

Dear Mr. Turnbull:

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with the applicable occupational safety and health regulations, including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 1926.

I also understand that Title 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response," requires appropriate level of training for certain employees engaged in hazardous waste operations. In this regard, I hereby state that the following employees have had 40 hours of introductory hazardous waste site training or equivalent work experience as requested by 29 CFR 1910.120(e) and have had 8 hours of refresher training as applicable and as required by 29 CFR 1910.120(e)(8) and that site supervisory personnel have had training in accordance with 29 CFR 1910.120(e)(4).

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555

Sincerely,

(Name and Title of Company Officer)

Enclosed: Training Certificates

## **8.2 SITE-SPECIFIC TRAINING**

TtNUS will provide site-specific training to TtNUS employees and subcontractor personnel who will perform work on this project. Site-specific training will also be provided to other personnel (U.S. Department of Defense, EPA, etc.) who may enter the site to perform functions that may or may not be directly related to site operations. Site-Specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review of the use of Safe Work Permits

Site-specific documentation will be established through the use of Figure 8-2. Site personnel and visitors must sign this document upon receiving site-specific training.

## **8.3 MEDICAL SURVEILLANCE**

### **8.3.1 Medical Surveillance Requirements for TtNUS Personnel**

TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program and will be medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained in the TtNUS Pittsburgh office and made available, as necessary.



### **8.3.2 Medical Surveillance Requirements for Subcontractors**

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 shall be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" (See Figure 8-3) with a letter, on company letterhead, containing the information in the example letter presented in Figure 8-4 of this HASP.

### **8.3.3 Other Requirements for Field Personnel**

Each field team member (including subcontractors) and visitors entering the Exclusion Zone(s) shall be required to complete and submit a copy of Medical Data Sheet found in the TtNUS Health and Safety Guidance Manual. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

## **8.4 SUBCONTRACTOR EXCEPTIONS**

Subcontractors who will not enter the Exclusion Zone during intrusive operations, and whose activities involve no potential for exposure to site contaminants, will not be required to meet the requirements for training/medical surveillance other than those stated for site-specific training (See Section 8.2).

**FIGURE 8-3**  
**SUBCONTRACTOR MEDICAL APPROVAL FORM**

For employees of \_\_\_\_\_  
Company Name

Participant Name: \_\_\_\_\_ Date of Exam: \_\_\_\_\_

**Part A**

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f), and was found to be medically -
  - ( ) qualified to perform work at the NDW-IH including Sites 2, 4 & 23
  - ( ) not qualified to perform work at the NDW-IH including Sites 2, 4 & 23 and,
  
2. Undergone a physical examination in accordance with OSHA 29 CFR 1910.134(b)(10) and was found to be medically -
  - ( ) qualified to wear respiratory protection
  - ( ) not qualified to wear respiratory protection
  
3. My evaluation has been based on the following information, as provided to me by the employer.
  - ( ) A copy of OSHA Standard 29 CFR 1910.120 and appendices.
  - ( ) A description of the employee's duties as they relate to the employee's exposures.
  - ( ) A list of known/suspected contaminants and their concentrations (if known).
  - ( ) A description of any personal protective equipment used or to be used.
  - ( ) Information from previous medical examinations of the employee that is not readily available to the examining physician.

**Part B**

I, \_\_\_\_\_, have examined \_\_\_\_\_  
Physician's Name (print) Participant's Name (print)

and have determined the following information:

**FIGURE 8-3**  
**SUBCONTRACTOR MEDICAL APPROVAL FORM**  
**PAGE TWO**

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Recommended limitations upon the employee's assigned work:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NDW-IH at Sites 2, 4 & 23, this participant

- may
- may not

perform his/her assigned task.

Physician's Signature \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

NOTE: Copies of test results are maintained and available at:

\_\_\_\_\_  
Address

**FIGURE 8-4**  
**MEDICAL SURVEILLANCE LETTER**

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Kim C. Turnbull  
Project Manager  
Tetra Tech NUS, Inc.  
Foster Plaza 7, 661 Andersen Drive  
Pittsburgh, Pennsylvania 15220

Subject: Medical Surveillance for Naval District Washington, Indian Head

Dear Mr. Turnbull:

As an officer of XYZ Corporation, I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR), Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response: Final Rule." I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive- and negative- pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the NDW-IH Site 42 work site.

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555.

Sincerely,

(Name and Title of Company Officer)

## **9.0 SITE CONTROL**

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is anticipated that a three-zone approach will be used during work at this site, including an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize potentials for the spread of contaminants and to protect individuals who are not cleared to enter the work areas.

### **9.1 EXCLUSION ZONE**

The Exclusion Zone will be considered the area of the site of known or suspected contamination. It is not anticipated that significant amounts of surface contamination are in the proposed work areas of this site. It is anticipated that this will remain so until/unless contaminants are brought to the surface by intrusive activities. The Exclusion Zone for this project will be limited to the area where active work is being performed plus an established safety zone of a 5 foot radius surrounding the sample collection point.

### **9.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. This area will also serve as a focal point in supporting Exclusion Zone activities. This area will be delineated using barrier tape, cones, and postings to inform and direct facility personnel. Decontamination will be conducted at a central location. Equipment potentially contaminated will be bagged and taken to that location for decontamination.

### **9.3 SUPPORT ZONE**

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The Support Zones will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

### **9.4 SAFE WORK PERMITS**

Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used is illustrated in Figure

9-1. Partially completed Permits for the work to be performed are included in Attachment III. The daily meetings conducted at the site will further support these work permits. This effort will ensure site-specific considerations and changing conditions are incorporated into the planning effort. Permits will require the signature of the FOL and SSO. Use of these permits will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The work permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

**FIGURE 9-1  
SAFE WORK PERMIT**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

I. Work limited to the following (description, area, equipment used): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

II. Primary Hazards: Potential hazards associated with this task include \_\_\_\_\_  
 \_\_\_\_\_

III. Field Crew: \_\_\_\_\_

IV. On-site Inspection conducted  Yes  No Initials of Inspector \_\_\_\_\_ TINUS  
 Equipment Inspection required  Yes  No Initials of Inspector \_\_\_\_\_ TINUS

V. Protective equipment required  Level D  Level B   
 Level C  Level A   
 Respiratory equipment required Yes  Specify on the reverse  
 No

Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Primary Route(s) of Exposure/Hazard: \_\_\_\_\_  
 \_\_\_\_\_

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

**VII. Additional Safety Equipment/Procedures**

Hard-hat .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls	<input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type - _____).....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe Work shoes or boots..	<input type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers	<input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Other .....	<input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: \_\_\_\_\_  
 \_\_\_\_\_

**VIII. Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. Additional Permits required (Hot work, confined space entry, excavation etc.).....  Yes  No  
 If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412) 921-7090

X. Special instructions, precautions: \_\_\_\_\_  
 \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

## 9.5 SITE VISITORS

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by TtNUS
- Regulatory personnel (DOD, OSHA, DEP, etc.)
- Northern Division Navy Personnel
- Other authorized visitors

It is not anticipated that this operation will result in a large number of site visitors. However, as some visitors can reasonably be expected, the following requirements will be enforced:

- Site visitors will be routed to the FOL, who will sign them in to the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), who they represent, and purpose for the visit.
- Site visitors will be required to produce the necessary information supporting clearance onto the site. This includes information attesting to applicable training (40-hours of HAZWOPER training required for Northern Division Navy personnel) and medical surveillance, as stipulated in Section 8 of this document. In addition, to enter the site's operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this document.

**NOTE: Site visitors will be escorted while at the site.**

Following this, the site visitor will be permitted to enter the site and applicable operational areas. Visitors are required to observe the protective equipment and site restrictions in effect at the area of their visit. Visitors not meeting the requirements as stipulated in this plan for site clearance will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause onsite activities to be terminated until that visitor can be removed. Removal of unauthorized visitors will be accomplished with support from the NDW-IH contact, if necessary.

## 9.6 SITE SECURITY

Site security will be accomplished using TtNUS field personnel. TtNUS will retain complete control over active operational areas. Exclusion Zone barriers, and any existing barriers at the site will be used to restrict the general public. The second line of security will take place at the work site referring interested parties to the FOL or designee. The FOL will serve as a focal point for non-project interested parties, and serve as the final line of security and the primary enforcement contact.

#### **9.7 SITE MAP**

Once the areas of contamination, access routes, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. When possible, these maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

#### **9.8 BUDDY SYSTEM**

Personnel engaged in on-site activities will practice the "buddy system" to ensure the safety of personnel involved in this operation.

#### **9.9 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

TtNUS and subcontractor personnel will provide MSDSs for the chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location (i.e., temporary office) and will be available for anyone to review upon request.

#### **9.10 COMMUNICATION**

As personnel will be working in proximity to one another during field activities, a supported means of communication between field crews members will not be necessary. External communication will be accomplished by using the telephones at predetermined and approved locations. External communication will primarily be used for the purpose of resource and emergency resource communications. Prior to the commencement of activities, the FOL will determine and arrange for telephone communications.

## **10.0 SPILL CONTAINMENT PROGRAM**

### **10.1 SCOPE AND APPLICATION**

It is not anticipated that bulk hazardous materials (over 55-gallons) will be handled at any given time, or that any cylinders or containers will be unearthed, as part of this scope of work. It is also not anticipated that such spillage of Investigative Derived Wastes (IDW) would constitute a danger to human health or the environment. However, as the job progresses, the potential may exist for accumulating (IDW) such as decontamination fluids, soil cuttings, and purge and well development waters, in a central staging area. Once these fluids and other materials have been characterized, they can be removed from this area and properly disposed.

### **10.2 POTENTIAL SPILL AREAS**

Potential spill areas will be periodically monitored in an ongoing attempt to prevent and control further potential contamination of the environment.

It is anticipated that the IDW generated as a result of this scope of work will be containerized, labeled, and staged to await further analyses. The results of these analyses will determine the method of disposal.

### **10.3 LEAK AND SPILL DETECTION**

During coring operations absorbent socks will be placed around coring location to contain water run-off.

To establish an early detection of potential spills or leaks, a periodic walk-around by the personnel staging or disposing of drums or in the resource deployment area will be conducted during working hours to visually determine that storage vessels are not leaking. If a leak is detected, the contents will be transferred, using a hand pump, into a new vessel. The leak will be collected and contained using absorbents such as Oil-Dry, vermiculite, or sand, which are stored at the vulnerable areas in a conspicuously marked drum. This used material, too, will be containerized for disposal pending analysis. Inspections will be documented in the project logbook.

It is not anticipated that any cylinders or containers will be unearthed during site activities. Should a cylinder or container be uncovered, however, work will immediately be stopped and personnel will retreat to a safe area until directed by the FOL or SSO.

#### **10.4 PERSONNEL TRAINING AND SPILL PREVENTION**

Personnel will be instructed in the procedures for incipient spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and the SSO will serve as the Spill Response Coordinators for this operation, should the need arise.

#### **10.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the minimum equipment that may be maintained (depending on anticipated need) at the staging areas for the purpose of supporting this Spill Prevention/Containment Program.

- Sand; clean fill, vermiculite, or other non-combustible absorbent (Oil-dry)
- Drums (55-gallon U.S. DOT 17-E or 17-H)
- Shovels, rakes, and brooms
- Absorbent Socks (for water containment during coring operations)

##### **10.5.1 PPE for Spill Control**

Minimal PPE for spill control will be employed as needed. These materials may include:

- Nitrile work and inner gloves
- Tyvek coveralls
- Hard Hat
- Steel toed shoes with neoprene boot covers

#### **10.6 SPILL CONTROL PLAN**

This section describes the procedures the TiNUS field crewmembers will use upon the detection of a spill or leak.

- Notify the SSO or FOL immediately upon detection of a leak or spill. Activate emergency alerting procedures for that area to remove non-essential personnel.
- Employ the personal protective equipment stored at the staging area. Take immediate actions to stop the leak or spill by plugging or patching the container or raising the leak to the highest point in the vessel. Spread the absorbent material in the area of the spill, covering it completely.

- Transfer the material to a new vessel; collect and containerize the absorbent material. Label the new container appropriately. Await analyses for treatment and disposal options.
- Re-containerize spills, including top cover impacted by the spill. Await test results for treatment or disposal options.

It is not anticipated that a spill will occur that the field crew cannot handle. Should this occur, notification of the appropriate Emergency Response agencies will be carried out by the FOL or SSO in accordance with the procedures discussed in Section 2.0 of this HASP.

## 11.0 CONFINED-SPACE ENTRY

Personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces. A confined space is defined as an area that has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, manholes, sewers, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

Additionally, a Permit-Required Confined Space may also have one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly caving walls or by a floor that slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space operations, consult the Health and Safety Guidance Manual or call the HSM. Any activity that may be considered a confined-space entry shall require modifications of this HASP and shall result in the immediate notification of the Project Health and Safety Officer. This determination shall be made by the FOL and SSO.

## 12.0 MATERIALS AND DOCUMENTATION

The TiNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets (multiple copies)
- Material Safety Data Sheets for the chemicals brought on site, including decon solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (See Attachment VI)
- Training/Medical Surveillance Documentation Form (Blank) (multiple copies)
- Emergency Reference Information (Section 2.0, extra copy for posting)

### 12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting of these documents is not feasible (such as no office trailer), these documents should be filed in a transportable file container and immediately accessible. The file should remain in the FOL's possession.

**Chemical Inventory Listing (posted)** - This list represents the chemicals brought on site, including decontamination solutions, sample preservatives, fuel, calibration gases, etc.. This list should be posted in a central area.

**Material Safety Data Sheets (MSDSs) (maintained)** - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for

substances employed on site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

**The OSHA Job Safety & Health Protection Poster (posted)** - This poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaced, altered, or covered by other material. See Attachment VI of this HASP.

**Site Clearance (maintained)** - This is found within the training section of the HASP (See Figure 8-1). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance and indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

**Emergency Phone Numbers and Directions to the Hospital(s) (maintained)** - This list of emergency numbers and hospital directions will be maintained at phone communications points and in each site vehicle.

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by onsite personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. A copy of this sheet or a wallet card will be given to personnel to be carried on their person.

**Investigative Derived Waste Inventory Log (maintained)** – The FOL and/or the SSO shall log collected containers of IDW. An updated inventory will be submitted to the Base POC at the termination of each shift.

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
CSE	Confined Space Entry
CSP	Certified Safety Professional
CTO	Contract Task Order
dBA	Decibels average
DOD	Department of Defense
DOT	Department of Transportation
DPT	Direct Push Technology
EPA	Environmental Protection Agency
eV	electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
HSA	Hollow Stem Auger
HSM	Health and Safety Manager
IDW	Investigative Derived Waste
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
N/A	Not Available
NDW-IH	Naval District Washington, Indian Head
NIOSH	National Institute Occupational Safety and Health
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PE	Professional Engineer
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
RAC	Remedial Action Contractor

SOP	Standard Operating Procedure
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TBD	To Be Determined
TtNUS	Tetra Tech NUS, Inc.
TWA	Time Weighted Average
UEL	Upper Explosive Limit
UST	Underground Storage Tank
UV	Ultraviolet

# **ATTACHMENT I**

## **INJURY/ILLNESS PROCEDURE AND REPORT FORM**

## TETRA TECH NUS, INC.

### INJURY/ILLNESS PROCEDURE WORKER'S COMPENSATION PROGRAM

---

#### WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS AS A RESULT OF YOUR EMPLOYMENT:

- Stop work as needed to ensure no further harm is done.
- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room. Check with your office location or project health and safety plan for specific instructions.
- If incident involves an injury, illness, or chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Duffy at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours of the injury. You will be required to complete an Injury/Illness Report. You may also be required to participate in a more detailed investigation with the Health Sciences Department.
- In the event of a serious near-miss incident, a "Serious Near Miss Report" (Form AR-2, available online at <https://go2.tetrattech.com> under "Departments", "Health and Safety", "Accident Reporting Procedures", hyperlink for "Serious Near Miss Report") must be completed and faxed to the Corporate Health and Safety Manager within 48 hours.
- If further medical treatment is needed, our insurance carrier, ACE, will provide information on the authorized providers customized to the location of the injured employee. You can find this information by accessing the website of ACE's claims handler, ESIS, at : [www.esis.com](http://www.esis.com). These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work.

#### ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:

Contact your local Human Resources representative (Marilyn Duffy), Corporate Health and Safety Manager (Matt Soltis), or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries pay premiums on behalf of their employees. This program is based on a no-fault system, and benefits are provided for covered events as an exclusive remedy to the injured employee regardless of fault. The types of injuries or illnesses covered and the amount of

benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

**WHO IS COVERED:**

All employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits from the first day of work. All employees must follow the above injury/illness reporting procedures. If you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.

Consultants, independent contractors, and employees of subcontractors and employees from temporary employment agencies are not covered by Tetra Tech's Worker's Compensation plan.

**WHAT IS COVERED:**

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT

To: \_\_\_\_\_  
Subsidiary Health and Safety Representative

Prepared by: \_\_\_\_\_

cc: \_\_\_\_\_  
Workers Compensation Administrator

Position: \_\_\_\_\_

Project name: \_\_\_\_\_

Office: \_\_\_\_\_

Project number: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Fax number: \_\_\_\_\_

**Information Regarding Injured or Ill Employee**

Name: \_\_\_\_\_

Office: \_\_\_\_\_

Home address: \_\_\_\_\_

Gender: M  F  No. of dependents: \_\_\_\_\_

Marital status: \_\_\_\_\_

Home telephone number: \_\_\_\_\_

Date of birth: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Social security number: \_\_\_\_\_

Department: \_\_\_\_\_

Date of Accident: \_\_\_\_\_

Time of Accident: \_\_\_\_\_ a.m.  p.m.

Time Employee Began Work: \_\_\_\_\_

Check if time cannot be determined

**Location of Incident**

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

Was place of accident or exposure on employer's premises? Yes  No

**Information About the Incident**

**What was the employee doing just before the incident occurred?** Describe the activity as well as the tools, equipment, or material the employee was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from hand sprayer"; "Daily computer key-entry"

**What Happened?** Describe how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Information About the Incident (Continued)

What was the injury or illness? Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

Describe the Object or Substance that Directly Harmed the Employee: Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes [ ] No [ ] Date of death: \_\_\_\_\_

Was employee performing regular job duties? Yes [ ] No [ ]

Was safety equipment provided? Yes [ ] No [ ] Was safety equipment used? Yes [ ] No [ ]

Note: Attach any police reports or related diagrams to this report.

Witness (Attach additional sheets for other witnesses.)

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Medical Treatment Required? [ ] Yes [ ] No [ ] First aid only

Name of physician or health care professional: \_\_\_\_\_

If treatment was provided away from the work site, provide the information below.

Facility name: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Was the employee treated in an emergency room? [ ] Yes [ ] No

Was the employee hospitalized over night as an in-patient? [ ] Yes [ ] No

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

Corrective Action(s) Taken by Unit Reporting the Accident:

Corrective Action Still to be Taken (by whom and when):

Name of Tetra Tech employee the injury or illness was first reported to: \_\_\_\_\_

Date of Report: \_\_\_\_\_ Time of Report: \_\_\_\_\_

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

Printed Name of Injured Employee

Telephone Number

Signature of Injured Employee

Date

The signatures provided below indicate that appropriate personnel have been notified of the incident.

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



TETRA TECH, INC.

ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)

**To Be Completed by the Subsidiary Health and Safety Representative**

**Classification of Incident:**

Injury     Illness

**Result of Incident:**

- First aid only
- Days away from work
- Remained at work but incident resulted in job transfer or work restriction
- Incident involved days away and job transfer or work restriction
- Medical treatment only

No. of days away from work \_\_\_\_\_

Date employee left work \_\_\_\_\_

Date employee returned to work \_\_\_\_\_

No. of days placed on restriction or job transfer: \_\_\_\_\_

OSHA Recordable Case Number \_\_\_\_\_

**To Be Completed by Human Resources**

Social security number: \_\_\_\_\_

Date of hire: \_\_\_\_\_ Hire date for current job: \_\_\_\_\_

Wage information: \$ \_\_\_\_\_ per  Hour  Day  Week  Month

Position at time of hire: \_\_\_\_\_

Current position: \_\_\_\_\_ Shift hours: \_\_\_\_\_

State in which employee was hired: \_\_\_\_\_

Status:  Full-time     Part-time    Hours per week: \_\_\_\_\_    Days per week: \_\_\_\_\_

Temporary job end date: \_\_\_\_\_

**To Be Completed during Report to Workers Compensation Carrier**

Date reported: \_\_\_\_\_ Reported by: \_\_\_\_\_

Confirmation number: \_\_\_\_\_

Name of contact: \_\_\_\_\_

Field office of claims adjuster: \_\_\_\_\_

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

**ATTACHMENT II**

**MEDICAL DATA SHEET**

**MEDICAL DATA SHEET**

This Medical Data Sheet must be completed by all on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project \_\_\_\_\_

Name \_\_\_\_\_ Home Telephone \_\_\_\_\_

Address \_\_\_\_\_

Age \_\_\_\_\_ Height \_\_\_\_\_ Weight \_\_\_\_\_

Name of Next Kin \_\_\_\_\_

Drug or other Allergies \_\_\_\_\_

Particular Sensitivities \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

Provide a Checklist of Previous Illnesses or Exposure to Hazardous Chemicals \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What medications are you presently using? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Do you have any medical restrictions? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name, Address, and Phone Number of personal physician: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I am the individual described above. I have read and understand this HASP.

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

**ATTACHMENT III**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
SITES 2, 4 & 23  
NDW-IH INDIAN HEAD, MARYLAND**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. **Work limited to the following (description, area, equipment used):** Mobilization/Demobilization and non hazardous waste related tasks
- II. **Primary Hazards:** Potential hazards associated with this task include lifting; pinches and compression; slip, trip, and fall hazards, vehicle and foot traffic; and natural hazards.

III. **Field Crew:** \_\_\_\_\_

IV. **On-site Inspection conducted**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS

V. **Protective equipment required** **Respiratory equipment required**  
 Level D  Level B  Yes  Specify on the reverse  
 Level C  Level A  No

Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
None Anticipated	_____	_____	_____
_____	_____	_____	_____

**Primary Route(s) of Exposure/Hazard:** Contaminants are not anticipated to be encountered during these tasks. Refer to manufacturer MSDS to determine necessary protective measures for any chemical brought on site in support of site activities.

**(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)**

VII. **Additional Safety Equipment/Procedures**

Hard-hat.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades.....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls	<input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type - _____) .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe Work shoes or boots ..	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers	<input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest.....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher.....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other.....	<input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: PPE selection is largely dependent upon conditions and tasks being performed. Other PPE items (work gloves, hard hats, hearing protection, rain gear, rubber boots, etc.) may be required.

VIII. **Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.) .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IX. **Additional Permits required (Hot work, confined space entry, excavation etc.)** .....  Yes  No  
*If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

X. **Special instructions, precautions:** Use safe lifting practices identified in Table 5-1 and avoid contact with media that may be contaminated. Inspect the site and identify and potential physical/natural hazards, (pits, holes, steep terrain, objects, debris, etc.).

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SITES 2, 4 & 23  
NDW-IH INDIAN HEAD, MARYLAND**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. Work limited to the following (description, area, equipment used):** Multi media sampling including surface soil and sediment
- II. Primary Hazards:** Potential hazards associated with this task include noise; lifting; pinches and compressions; slips, trips, and falls; vehicular and foot traffic and natural hazards.

**III. Field Crew:** \_\_\_\_\_

**IV. On-site Inspection conducted**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS

**V. Protective equipment required**  Level D  Level B   
 Level C  Level A   
**Respiratory equipment required** Yes  Specify on the reverse  
 No

Modifications/Exceptions: \_\_\_\_\_

<b>VI. Chemicals of Concern</b>	<b>Hazard Monitoring</b>	<b>Action Level(s)</b>	<b>Response Measures</b>
<u>Waste oils, kerosene and other mineral based oils</u>	<u>Visual</u>	<u>Visual observation of dust</u>	<u>Use area wetting methods</u>

**Primary Route(s) of Exposure/Hazard:** Contaminants are not anticipated to be present at concentrations that pose a health threat to site workers.

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

**VII. Additional Safety Equipment/Procedures**

Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Radio/Cellular Phone..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Splash suits/coveralls <input type="checkbox"/> Yes <input type="checkbox"/> No	Gloves (Type – <u>Nitrile surgical style</u> ) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No
Steel toe work shoes or boots... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Chemical Resistant Boot Covers <input type="checkbox"/> Yes <input type="checkbox"/> No
High Visibility vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No	Tape up/use insect repellent..... <input type="checkbox"/> Yes <input type="checkbox"/> No
First Aid Kit..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire Extinguisher..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Safety Shower/Eyewash..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other..... <input type="checkbox"/> Yes <input type="checkbox"/> No

Modifications/Exceptions: PPE selection is largely dependent upon conditions and tasks being performed. Other PPE items (hard hats, hearing protection, rain gear, rubber boots, etc.) may be required.

**VIII. Site Preparation**

	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Identified and Isolated (Splash and containment barriers).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IX. Additional Permits required** (Hot work, confined space entry, excavation etc.).....  Yes  No  
*If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

**X. Special instructions, precautions:** Use safe lifting practices identified in Table 5-1 and avoid contact with media that may be contaminated. Inspect the site and identify and potential physical/natural hazards, (pits, holes, steep terrain, objects, debris, etc.).

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SITES 2, 4 & 23  
NDW-IH INDIAN HEAD, MARYLAND**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

- I. Work limited to the following (description, area, equipment used):** Decontamination of sampling equipment.
- II. Primary Hazards:** Potential hazards associated with this task include lifting; noise; flying projectiles; vehicle and foot traffic; slip, trip, and fall hazards, and natural hazards.
- III. Field Crew:** \_\_\_\_\_
- IV. On-site Inspection conducted**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS  
**Equipment Inspection required**  Yes  No Initials of Inspector \_\_\_\_\_ TtNUS

- V. Protective equipment required**  Level D  Level B   
 Level C  Level A
- Respiratory equipment required** Yes  Specify on the reverse  
 No
- Modifications/Exceptions: \_\_\_\_\_

VI. Chemicals of Concern	Hazard Monitoring	Action Level(s)	Response Measures
<u>Waste oils, kerosene and other mineral based oils</u>	<u>Visual</u>	<u>Visual observation of dust</u>	<u>Use area wetting methods</u>
_____	_____	_____	_____

**Primary Route(s) of Exposure/Hazard:** Contaminants are not anticipated to be present at concentrations that pose a health threat to site workers.

(Note to FOL and/or SHSO: Each item in Sections VII, VIII, and IX must be checked Yes, No, or NA)

- VII. Additional Safety Equipment/Procedures**
- |  |  |
|--|--|
| Hard-hat..... <input type="checkbox"/> Yes <input type="checkbox"/> No                               | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No                          |
| Safety Glasses ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No             | Safety belt/harness ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                                 |
| Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No                | Radio/Cellular Phone..... <input type="checkbox"/> Yes <input type="checkbox"/> No                                 |
| Splash Shield..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No               | Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No   |
| Splash suits/coveralls <input type="checkbox"/> Yes <input type="checkbox"/> No                      | Gloves (Type - <u>Nitrile surgical style</u> ) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Impermeable apron..... <input type="checkbox"/> Yes <input type="checkbox"/> No                      | Work/rest regimen ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                                   |
| Steel toe Work shoes or boots .. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Chemical Resistant Boot Covers <input type="checkbox"/> Yes <input type="checkbox"/> No                            |
| High Visibility vest..... <input type="checkbox"/> Yes <input type="checkbox"/> No                   | Tape up/use insect repellent ..... <input type="checkbox"/> Yes <input type="checkbox"/> No                        |
| First Aid Kit ..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No              | Fire Extinguisher..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                         |
| Safety Shower/Eyewash..... <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No       | Other..... <input type="checkbox"/> Yes <input type="checkbox"/> No  |
- Modifications/Exceptions: PPE selection is largely dependent upon conditions and tasks being performed. Other PPE items (hard hats, hearing protection, rain gear, rubber boots, etc.) may be required. Face shields are required when operating pressure washers.

- VIII. Site Preparation**
- |   |                              |                             |                             |
|---|------------------------------|-----------------------------|-----------------------------|
| Utility Locating and Excavation Clearance completed.....                                    | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Established/Traffic Control Barricades/Signs in Place ..... | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>    |
| Physical Hazards Identified and Isolated (Splash and containment barriers).....             | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>    |
| Emergency Equipment Staged (Spill control, fire extinguishers, first aid kits, etc.).....   | <input type="checkbox"/>     | <input type="checkbox"/>    | <input type="checkbox"/>    |

- IX. Additional Permits required (Hot work, confined space entry, excavation etc.)** .....  Yes  No  
*If yes, SHSO to complete or contact Health Sciences, Pittsburgh Office (412)921-7090*

- X. Special instructions, precautions:** Use safe lifting practices identified in Table 5-1 and avoid contact with media that may be contaminated. Inspect the site and identify and potential physical/natural hazards, (pits, holes, steep terrain, objects, debris, etc.).

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**ATTACHMENT IV**  
**OSHA JOB SAFETY POSTER**

# You Have a Right to a Safe and Healthful Workplace. IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.



The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at [www.osha.gov](http://www.osha.gov). If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

## 1-800-321-OSHA [www.osha.gov](http://www.osha.gov)

**APPENDIX B**

**PROJECT-SPECIFIC QUALITY ASSURANCE PROJECT PLAN**

**(To be used in conjunction with the Master Quality Assurance Project Plan)**

**QUALITY ASSURANCE PROJECT PLAN  
FOR  
SITE SCREENING PROCESS INVESTIGATION**

**AT  
SITE 2 - WASTE CRANKCASE OIL APPLIED TO TORRENSE ROAD  
SITE 4 - LLOYD ROAD OIL SPILLS  
SITE 23 - HYDRAULIC OIL DISCHARGES FROM EXTRUSION PLANT**

**NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
INDIAN HEAD, MARYLAND**

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

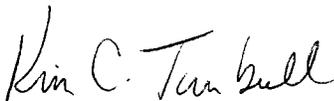
**Submitted to:  
Naval Facilities Engineering Command Washington  
1314 Harwood Street, SE  
Washington Navy Yard, D.C. 20374-5018**

**Submitted by:  
Tetra Tech NUS, Inc.  
600 Clark Avenue, Suite 3  
King of Prussia, Pennsylvania 19406-1433**

**CONTRACT NUMBER N62472-03-D-0057  
CONTRACT TASK ORDER 0007**

**FEBRUARY 2005**

**PREPARED UNDER THE DIRECTION OF:**



---

**KIM C. TURNBULL  
PROJECT MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA**

**APPROVED FOR SUBMISSION BY:**



---

**KELLY A. CARPER  
QUALITY ASSURANCE MANAGER  
TETRA TECH NUS, INC.  
KING OF PRUSSIA, PENNSYLVANIA**

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1-1 Analytical Detection Limits versus Criteria
---

## LIST OF ACRONYMS AND ABBREVIATIONS

CLEAN	Comprehensive Long-Term Environmental Action Navy
CLP	Contract Laboratory Program
CRDL	Contract Required Detection Limit
CTO	Contract Task Order
DQO	Data Quality Objective
EPA	United States Environmental Protection Agency
FOL	Field Operations Leader
LCS	laboratory control sample
MDL	method detection limit
mg/kg	milligram per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NDW-IH	Naval District Washington, Indian Head
PARCC	precision, accuracy, representativeness, comparability, and completeness
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PQL	practical quantitation limit
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
%R	percent recovery
RDL	required detection limit
RPD	relative percent difference
RPM	Remedial Project Manager
SOP	Standard Operating Procedure
SOW	Statement of Work
SSP	Site Screening Process
TAL	Target Analyte List
TNT	trinitrotoluene
TtNUS	Tetra Tech NUS, Inc.
USATHAMA	United States Army Toxic and Hazardous Materials Agency
µg/kg	microgram per kilogram

# 1.0 PROJECT DESCRIPTION

## 1.1 INTRODUCTION

This project-specific Quality Assurance Project Plan (QAPP) for a Site Screening Process (SSP) investigation at the Naval District Washington, Indian Head (NDW-IH), Indian Head, Maryland, was prepared by Tetra Tech NUS, Inc. (TtNUS) in response to Contract Task Order (CTO) 0007 under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-03-D-0057.

This document is intended to be used in conjunction with the accompanying Work Plan for Site Screening Process Investigations (SSP Work Plan) and the Master QAPP (TtNUS, 2004) and is limited to the sections and information specific to Site 2 – Waste Crankcase Oil Applied to Torrence Road, Site 4 – Lloyd Road Oil Spills, and Site 23 – Hydraulic Oil Discharges from Extrusion Plant.

### 1.1.1 Overall Project Objectives

The Master QAPP provides general quality assurance (QA) guidelines common to multiple site investigations to be conducted at the facility. It outlines QA issues for what are expected to be the most common types of field efforts and analyses during environmental investigations. Specific project objectives are identified in the project-specific work plans. Additional QA issues are addressed in addenda to the Master QAPP as necessary and are to be provided as appendices to the project-specific work plans.

Important companion documents to the Master QAPP and the project-specific work plan include the Master Plans for Installation Restoration Program Environmental Investigations (TtNUS, 2004), which includes facility Standard Operating Procedures (SOPs).

### 1.1.2 QAPP Preparation Guidelines

This project-specific QAPP and accompanying SSP Work Plan have been prepared to be used in conjunction with the Master QAPP to fulfill the general requirements outlined in United States Environmental Protection Agency (EPA) Requirements for Quality Assurance Project Plans, EPA QA/R-5 (EPA, 2001) and Guidance for Quality Assurance Project Plans, EPA QA/G-5 (EPA, 2002).

## **1.2 FACILITY DESCRIPTION**

A facility description, including the location and general description, history, land use, water sources and usage, population, physiography and topography, geology, soils, hydrogeology, hydrology, ecology, and meteorology, is provided in the Master Work Plan.

## **1.3 PROJECT TARGET PARAMETERS AND INTENDED DATA USES**

This section discusses typical laboratory analytical information to be generated during the course of the SSP investigations at Sites 2, 4, and 23.

Laboratory parameters will include polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), explosives, and Target Analyte List (TAL) metals and cyanide. Table 1-1 provides summaries of all target laboratory analytes and associated required detection limits (RDLs).

## **1.4 DATA QUALITY OBJECTIVES**

Data Quality Objectives (DQOs) are discussed in the SSP Work Plan.

## **1.5 SAMPLE NETWORK DESIGN AND RATIONALE**

Sample network design and rationale are provided in the SSP Work Plan.

## **1.6 PROJECT SCHEDULE**

The project schedule has not been determined to date and will be provided as an addendum to the SSP Work Plan.

TABLE 1-1

ANALYTICAL DETECTION LIMITS VERSUS CRITERIA - SOLID SAMPLE MATRIX (MG/KG)  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND  
 PAGE 1 OF 3

Chemical	Laboratory Detection Limits <sup>(1)</sup>		EPA Region III Soil RBC <sup>(2)</sup>		EPA Generic SSL Inhalation <sup>(3)</sup>	EPA Region III SSLs Migration to Groundwater <sup>(2)</sup>		EPA Region III BTAG Screening Levels <sup>(4)</sup>	
	MDL/IDL	CRDL/ PQL	Industrial	Residential		DAF = 1	DAF = 20	Soil	Sediment
<b>PAHs - SW-846 8310</b>									
ACENAPHTHENE	TBD	0.3	61000	4700		5.2	100	0.1	0.016
ACENAPHTHYLENE	TBD	0.3	61000 <sup>(5)</sup>	4700 <sup>(5)</sup>		5.2	100	0.1	0.044
ANTHRACENE	TBD	0.3	310000	23000		23	470	0.1	0.0853
BENZO(A)ANTHRACENE	TBD	0.3	3.9	0.87		0.073	1.5	0.1	0.261
BENZO(A)PYRENE	TBD	0.1	0.39	0.087		0.019	0.37	0.1	0.43
BENZO(B)FLUORANTHENE	TBD	0.3	3.9	0.87		0.23	4.5	0.1	3.2
BENZO(G,H,I)PERYLENE	TBD	0.3	31000 <sup>(6)</sup>	2300 <sup>(6)</sup>				0.1	0.67
BENZO(K)FLUORANTHENE	TBD	0.3	39	8.7		2.3	45	0.1	
CHRYSENE	TBD	0.3	390	87		7.3	150	0.1	0.384
DIBENZO(A,H)ANTHRACENE	TBD	0.1	0.39	0.087		0.07	1.4	0.1	0.0634
FLUORANTHENE	TBD	0.3	41000	3100		310	6300	0.1	0.6
FLUORENE	TBD	0.3	41000	3100		6.8	140	0.1	0.019
INDENO(1,2,3-CD)PYRENE	TBD	0.3	3.9	0.87		0.64	13	0.1	0.6
NAPHTHALENE	TBD	0.3	20000	1600	170	0.0077	0.15	0.1	0.16
PHENANTHRENE	TBD	0.3	31000 <sup>(6)</sup>	2300 <sup>(6)</sup>				0.1	0.24
PYRENE	TBD	0.3	31000	2300		34	680	0.1	0.665
<b>TCL PCBs - SW-846 8082</b>									
AROCLOR-1016	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1211	TBD	0.067	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1232	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1242	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1248	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1254	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
AROCLOR-1260	TBD	0.033	1.4 <sup>(7)</sup>	0.32 <sup>(7)</sup>		0.021 <sup>(7)</sup>	0.41 <sup>(7)</sup>	0.1 <sup>(7)</sup>	0.023 <sup>(7)</sup>
<b>TAL Metals (plus Cyanide) - CLP ILM04.1</b>									
ALUMINUM	TBD	40.0	1000000	78000	6860000			1	
ANTIMONY	TBD	4.0	410	31		0.66	13	0.48	150
ARSENIC	TBD	2.0	1.9	0.43	745	0.0013	0.026	328	8.2
BARIUM	TBD	40.0	72000	5500	686000	110	2100	440	
BERYLLIUM	TBD	1.0	2000	160	1330	58	1200	0.02	
CADMIUM	TBD	1.0	510 <sup>(8)</sup>	39 <sup>(9)</sup>	1780	1.4 <sup>(10)</sup>	27 <sup>(10)</sup>	2.5	1.2
CALCIUM	TBD	1000							
CHROMIUM (TOTAL)	TBD	2.0	3100 <sup>(11)</sup>	230 <sup>(12)</sup>	267 <sup>(13)</sup>	2.1 <sup>(13)</sup>	42 <sup>(20)</sup>	0.0075	81 <sup>(14)</sup>
COBALT	TBD	10.0	20000	1600	1140			100	
COPPER	TBD	5.0	41000	3100		530	11000	15	34
CYANIDE	TBD	1.0	20000	1600		7.4	150	0.005	
IRON	TBD	20.0	310000	23000				12	
LEAD	TBD	1.0	800 <sup>(15)</sup>	400 <sup>(16)</sup>				0.01	46.7
MAGNESIUM	TBD	1000						4400	
MANGANESE	TBD	3.0	20000 <sup>(17)</sup>	1600 <sup>(18)</sup>	68600	48 <sup>(19)</sup>	950 <sup>(19)</sup>	330	
MERCURY	TBD	0.03	310 <sup>(20)</sup>	23 <sup>(20)</sup>	2.9			0.058	0.15
NICKEL	TBD	8.0	20000	1600				2	20.9
POTASSIUM	TBD	1000							
SELENIUM	TBD	1.0	5100	390		0.95	19	1.8	
SILVER	TBD	2.0	5100	390		1.6	31	0.00001	1

TABLE 1-1

ANALYTICAL DETECTION LIMITS VERSUS CRITERIA - SOLID SAMPLE MATRIX (MG/KG)  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND  
 PAGE 2 OF 3

Chemical	Laboratory Detection Limits <sup>(1)</sup>		EPA Region III Soil RBC <sup>(2)</sup>		EPA Generic SSL Inhalation <sup>(3)</sup>	EPA Region III SSLs Migration to Groundwater <sup>(2)</sup>		EPA Region III BTAG Screening Levels <sup>(4)</sup>	
	MDL/IDL	CRDL/ PQL	Industrial	Residential		DAF = 1	DAF = 20	Soil	Sediment
<b>TAL Metals (plus Cyanide) - CLP ILM04.1</b>									
SODIUM	TBD	1000							
THALLIUM	TBD	2.0	72	5.5		0.18	3.6	0.001	
VANADIUM	TBD	10.0	1000	78		37	730	0.5	
ZINC	TBD	4.0	310000	23000		680	14000	10	150
<b>Explosives - SW-846 8330</b>									
1,3,5-TRINITROBENZENE	TBD	0.25	31000	2300					
1,3-DINITROBENZENE	TBD	0.25	100	7.8		0.0018	0.037		
2,4,6-TRINITROTOLUENE (TNT)	TBD	0.25	95 <sup>(21)</sup>	21 <sup>(21)</sup>					
<b>Explosives - SW-846 8330 (Continued)</b>									
2,4-DINITROTOLUENE	TBD	0.25	2000	160		0.029	0.57		
2,6-DINITROTOLUENE	TBD	0.26	1000	78		0.012	0.25		
2-AMINO-4,6-DINITROTOLUENE	TBD		200	16					
2-NITROTOLUENE	TBD	0.25	12	2.8					
3-NITROTOLUENE	TBD	0.25	20000	1600					
4-AMINO-2,6-DINITROTOLUENE	TBD								
4-NITROTOLUENE	TBD	0.25	170	38					
HMX	TBD	2.2	51000	3900					
NITROBENZENE	TBD	0.26	510	39	91	0.0012	0.023		
RDX	TBD	1	26	5.8					
TETRYL	TBD	0.65	10000	780					
<b>Explosives - USATHAMA</b>									
NITROCELLULOSE	TBD								
NITROGUANIDINE	TBD								
<b>Explosives - SW-846 8332</b>									
NITROGLYCERIN	TBD	5	200	46					

BTAG	Biological Technical Assistance Group	IDL	Instrument Detection Limit	SSL	Soil Screening Level
CLP	Contract Laboratory Program	MDL	Method Detection Limit	TAL	Target Analyte List
CRDL	Contract Required Detection Limit	OSWER	Office of Solid Waste and Emergency Response	TBD	To Be Determined
DAF	Dilution Attenuation Factor	PQL	Practical Quantitation Limit	TCL	Target Compound List
EPA	Environmental Protection Agency	RBC	Risk-Based Concentration	USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
		RfD <sub>o</sub>	Oral Reference Dose		

Blank cells indicate criterion is not available.  
 The CRDL/PQL and specific criterion/standard are shaded if the CRDL/PQL exceeds the criteria/standard.

- MDLs will be provided when a laboratory is selected.
- EPA, Region III, 2004.
- EPA, 2004.
- EPA Region III, 1995.
- The value for acenaphthene has been used as a surrogate for acenaphthylene.
- The value for pyrene has been used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
- Total for all PCB congeners (Aroclors) is presented.
- The RBC for industrial land use calculated using the RfDo for cadmium water is presented. The RBC for industrial land use calculated using the RfDo for cadmium food is 1000 mg/kg.
- The RBC for residential land use calculated using the RfDo for cadmium water is presented. The RBC for residential land use calculated using the RfDo for cadmium food is 78 mg/kg.

TABLE 1-1

ANALYTICAL DETECTION LIMITS VERSUS CRITERIA - SOLID SAMPLE MATRIX (MG/KG)  
 NAVAL DISTRICT WASHINGTON, INDIAN HEAD  
 INDIAN HEAD, MARYLAND  
 PAGE 3 OF 3

Chemical	Laboratory Detection Limits <sup>(1)</sup>		EPA Region III Soil RBC <sup>(2)</sup>		EPA Generic SSL Inhalation <sup>(3)</sup>	EPA Region III SSLs Migration to Groundwater <sup>(2)</sup>		EPA Region III BTAG Screening Levels <sup>(4)</sup>	
	MDL/IDL	CRDL/ PQL	Industrial	Residential		DAF = 1	DAF = 20	Soil	Sediment

- 10 The RBC for cadmium water is presented. The RBC based on cadmium food is 2.7 for a DAF of 1 and 55 for a DAF of 20.
- 11 The RBC for industrial land use for hexavalent chromium is presented. The RBC for industrial land use for trivalent chromium is 1,500,000 mg/kg.
- 12 The RBC for residential land use for hexavalent chromium is presented. The RBC for residential land use for trivalent chromium is 120,000 mg/kg.
- 13 Screening criteria for hexavalent chromium is presented.
- 14 Hexavalent chromium.
- 15 Recommended soil screening level for industrial land use. Value was developed using the USEPA Technical Review Workgroup adult exposure to lead model (EPA, 1996b).
- 16 OSWER soil screening level for residential land use (EPA, 1994a).
- 17 The RBC for industrial land use calculated using the RfDo for manganese nonfood is presented. The RBC for industrial land use calculated using the RfDo for manganese food is 140,000 mg/kg.
- 18 The RBC for residential land use calculated using the RfDo for manganese nonfood is presented. The RBC for residential land use calculated using the RfDo for manganese food is 11,000 mg/kg.
- 19 The SSL for nonfood is presented. The SSL based on food is 330 for a DAF of 1 and 6700 for a DAF of 20.
- 20 The value for mercuric chloride have been used as a surrogate for mercury.
- 21 10 percent of noncarcinogenic RBC is less than the carcinogenic RBC.

## 2.0 PROJECT ORGANIZATION

The project organization for the investigation activities is project specific and is provided in the project-specific Work Plan in Section 1.3. Personnel expected to be involved with the investigation activities at a programmatic level for the foreseeable future include the Navy Remedial Project Manager (RPM), the Facility Point of Contact, and the TtNUS Program Manager and Quality Assurance Manager, as follows:

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Mr. John Trepanowski, P.E.  
Program Manager  
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Ms. Kelly Carper  
Quality Assurance Manager  
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(412) 921-7273  
(412) 921-4040 (FAX)

### **3.0 QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA**

The overall QA objective for this project is to develop and implement procedures for field sampling, chain of custody, laboratory analysis, and reporting that will provide results that will be evaluated in the SSP Report to determine what, if any, future actions would be needed for Sites 2, 4, and 23. Specific procedures for sampling, chain of custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control (QC), audits, preventive maintenance of field equipment, and corrective action are described in other sections of the Master QAPP.

The PARCC parameters (precision, accuracy, representativeness, comparability, and completeness) are qualitative and/or quantitative statements regarding the quality characteristics of the data used to support project objectives and ultimately, environmental decisions. These parameters are discussed in the remainder of this section. Specific routine procedures used to assess the quantitative parameters (precision, accuracy, and completeness) are provided in Section 12.0 of the Master QAPP.

#### **3.1 PRECISION**

##### **3.1.1 Definition**

Precision is a measure of the amount of variability and bias inherent in a data set. Precision describes the reproducibility of measurements of the same parameter for samples under similar conditions. The equation for determining precision is provided in Section 12.2 of the Master QAPP.

##### **3.1.2 Field Precision Objectives**

Field duplicate precision monitors the consistency with which environmental samples were obtained and analyzed. Field duplicate results for solid matrix samples are considered to be precise if the relative percent difference (RPD) is less than or equal to 50 percent. Field precision is assessed through the collection and measurement of field duplicates at a rate of 1 duplicate per 10 environmental samples or one duplicate per sampling day per matrix, whichever is greater.

##### **3.1.3 Laboratory Precision Objectives**

Laboratory precision QC samples are analyzed at a frequency of 5 percent (i.e., 1 QC sample per 20 environmental samples). Laboratory precision is measured via comparison of calculated RPD values and Precision Control Limits specified in the analytical method or by the laboratory's QA/QC Program.

The following analyses will be completed for environmental samples collected during the SSP investigations for Sites 2, 4, and 23:

- PAHs via SW-846 Method 8310.
- PCBs via SW-846 Method 8082.
- TAL metals (plus cyanide) via Contract Laboratory Program (CLP) Statement of Work (SOW) ILM04.1.
- Explosives via SW-846 Methods 8330 and 8332 and United States Army Toxic and Hazardous Materials Agency (USATHAMA) methods.

Precision for PAH, PCB, and explosives analyses will be measured via the RPDs for matrix spike (MS)/matrix spike duplicate (MSD) samples. Precision for inorganic analyses will be measured via RPDs for laboratory duplicates. RPDs should be statistically derived at the analytical laboratory. These limits will be provided in each analytical data package.

## **3.2 ACCURACY**

### **3.2.1 Definition**

Accuracy is the degree of agreement between two results that include an observed value and an accepted reference value. The equation for determining accuracy is provided in Section 12.1 of the Master QAPP.

### **3.2.2 Field Accuracy Objectives**

Accuracy in the field is assessed through the use of field and equipment blanks and is ensured through adherence to all sample handling, preservation, and holding time requirements.

### **3.2.3 Laboratory Accuracy Objectives**

Accuracy in the laboratory is measured through the comparison of a spiked sample result against a known or calculated value expressed as a percent recovery (%R). Percent recoveries are derived from the analysis of known amounts of compounds spiked into deionized water [i.e., laboratory control sample (LCS) analysis], or into actual samples (i.e., surrogate or MS analysis). These analyses measure the accuracy of laboratory operations as affected by matrix. LCS and/or MS analyses are performed with a frequency of 1 per 20 associated samples of like matrix. Surrogate spike analysis is performed for all organic analyses. Laboratory accuracy is assessed via comparison of calculated %R values with Accuracy Control Limits specified in the analytical method or by the contracted laboratory QA/QC Program.

Accuracy for PAH, PCB, and explosives analyses will be measured via the %R values for surrogate spikes and MS/MSDs. Accuracy for metals and cyanide analyses will be measured via %R values for the MS and LCS. QC limits for matrix and surrogate spike recoveries are statistically derived by the analytical laboratory and will be provided in each analytical data package.

### **3.3 COMPLETENESS**

#### **3.3.1 Definition**

Completeness is a measure of the amount of usable, valid, analytical data obtained compared to the amount expected to be obtained. Completeness is typically expressed as a percentage.

The ideal objective for completeness is 100 percent (i.e., every sample planned to be collected is collected, every sample submitted for analysis yields valid data). However, samples can be rendered unusable during shipping or preparation (e.g., bottles broken or extracts accidentally destroyed); errors can be introduced during analysis (e.g., loss of instrument sensitivity, introduction of ambient laboratory contamination), or strong matrix effects can become apparent (e.g., extremely low MS recovery). These instances result in data that do not meet QC criteria. Based on these considerations, 95 percent is considered an acceptable target for data completeness. If critical data points are lost, resampling and/or reanalysis may be required.

#### **3.3.2 Field Completeness Objectives**

Field completeness is a measure of the amount of valid field measurements obtained from all of the field measurements taken in the project. The equation for completeness is presented in Section 12.3 of the Master QAPP. Field data completeness for the SSP investigation activities for Sites 2, 4, and 23 is expected to be 95 percent.

#### **3.3.3 Laboratory Completeness Objectives**

Laboratory completeness is a measure of the amount of valid laboratory measurements obtained from all of the laboratory measurements made in support of a given project. The equation for completeness is presented in Section 12.3 of the Master QAPP. Laboratory completeness for the SSP investigation activities for Sites 2, 4, and 23 is expected to be at least 95 percent.

One hundred percent of the data for the SSP investigation activities will be validated in a limited fashion. The validation will be formulated to address only gross non-compliances resulting in the rejection of data and the elimination of false positives. CLP data will be validated in accordance with the EPA National

Functional Guidelines for Inorganic Data Review as modified for use by Region 3 (1993) unless dictated otherwise by project-specific DQOs. One hundred percent of the non-CLP data (i.e., PAHs, PCBs, and explosives) will be validated in accordance with method-specific requirements and the EPA National Functional Guidelines for Organic Data Review as modified for use by Region 3 (1994b) to the extent practicable. Data rejected as a result of the validation process will be treated as incomplete data.

### **3.4 REPRESENTATIVENESS**

#### **3.4.1 Definition**

Representativeness is an expression of the degree to which the data accurately and precisely depict the actual characteristics of a population or environmental condition existing at an individual sampling point. Use of standardized sampling, handling, analytical, and reporting procedures ensures that the final data accurately represent actual site conditions.

#### **3.4.2 Measures to Ensure Representativeness of Field Data**

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the SSP Work Plan is followed and that the sampling techniques detailed are used.

#### **3.4.3 Measures to Ensure Representativeness of Laboratory Data**

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample holding times, and analyzing field duplicate samples.

### **3.5 COMPARABILITY**

#### **3.5.1 Definition**

Comparability is defined as the confidence with which one data set can be compared to another (e.g., between sampling points, between sampling events). Comparability is achieved by using standardized sampling and analysis methods and data reporting formats including use of consistent units of measure and reporting of solid matrix sample results on a dry-weight basis (when practicable). Additionally, consideration is given to seasonal conditions and other environmental variations that could influence data results.

### **3.5.2 Measures to Ensure Comparability of Field Data**

Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the SSP Work Plan is followed and that proper sampling techniques are used.

### **3.5.3 Measures to Ensure Comparability of Laboratory Data**

Analytical data will be comparable when similar sampling and analytical methods are used and documented. Results will be reported in units that ensure comparability with current State and federal standards and guidelines. PAHs and PCBs will be reported in micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) for solid samples. Metals and explosives will be reported as milligrams per kilogram ( $\text{mg}/\text{kg}$ ) for solid samples. Detection/reporting limits are discussed in Section 1.0 of this project-specific QAPP.

## **3.6 LEVEL OF QUALITY CONTROL EFFORT**

Equipment blank, field blank, method blank, duplicate, and MS samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs.

External QC samples (i.e., field QC samples) consist of field duplicates, field blanks, and equipment (rinsate) blanks. Each of these types of field QC samples undergoes the same preservation, analysis, and reporting procedures as the related environmental samples. Each type of field QC is discussed below.

Field duplicates are either two samples collected independently at a sampling location or a single sample homogenized and split into two portions. Field duplicates are collected and analyzed for chemical constituents to measure the precision of the sampling and analysis methods employed. The general level of the QC effort will be one field duplicate for every 10 or fewer investigative samples or one duplicate per matrix per sampling day, whichever is greater.

Field blanks (ambient condition blanks) consisting of distilled water will be submitted to the laboratories to provide the means to assess the quality of the data resulting from the field sampling program. Field blank samples are analyzed to check for background contamination at the facility (e.g., vapors or exhaust fumes) that may cause sample contamination. Field blanks will be collected based on conditions at the time of sampling at the discretion of the Field Operations Leader (FOL), with a minimum of one field blank collected per site.

Equipment (rinsate) blanks are obtained under representative field conditions by collecting the rinse water generated by running analyte-free water through sample collection equipment after decontamination and

prior to use. One rinsate blank will be collected per each type of sampling equipment used (e.g., hand tools) per day that sampling is conducted at a minimum frequency of 10 percent. A sampling event is matrix specific; therefore, an equipment blank must be collected for each matrix sampled. If pre-cleaned, dedicated, or disposable sampling equipment is used, one rinsate blank must be collected as a "batch blank." Rinsate blanks are analyzed for the same chemical constituents as the associated environmental samples.

Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures. Laboratory duplicate samples are analyzed for inorganic parameters to check for sampling and analytical reproducibility. MS samples provide information about the effect of the sample matrix on the digestion and measurement methodology. All MSs for organic analyses are performed in duplicate and are hereinafter referred to as MS/MSD samples. One MS/MSD will be analyzed for every 20 or fewer investigative samples. MS/MSD samples are investigative samples. Soil and sediment MS/MSD samples require no extra volume.

The level of QC effort for testing of metals will conform to the CLP SOW ILM04.1. The level of QC effort for testing of PAHs, PCBs, and explosives will conform to the requirements listed in the analytical method.

## 4.0 SAMPLING PROCEDURES

Field sampling procedures for NDW-IH remedial investigation activities are discussed in detail in the facility SOPs. Specific sampling information contained in the facility SOPs and provided in the project-specific Work Plan is as follows:

- Field sampling by matrix
- Field QC sample collection/preparation procedures
- Sample containers, preservatives, and volume requirements
- Decontamination procedures
- Sample packaging and shipping procedures
- Mobilization/demobilization
- Soil and sediment sampling procedures
- Surveying
- Waste handling
- QC sample procedures
- Field measurements/screening
- Preventive maintenance procedures/schedule
- Sample disposal

## 5.0 CUSTODY PROCEDURES

Refer to Section 5.0 of the Master QAPP (TtNUS, 2004).

## **6.0 CALIBRATION PROCEDURES AND FREQUENCIES**

Calibrations for the laboratory analyses detailed in the accompanying SSP Work Plan will be performed in accordance with laboratory SOPs.

## 7.0 ANALYTICAL AND MEASUREMENT PROCEDURES

Refer to Section 7.0 of the Master QAPP (TtNUS, 2004).

### 7.1 LABORATORY ANALYTICAL AND MEASUREMENT PROCEDURES

The analytes for the SSP investigations will be analyzed in accordance with the following analytical procedures:

- PCBs – SW-846 8082.
- TAL Metals – CLP SOW ILM04.1
- PAHs – SW-846 8310
- Explosives – SW-846 8330, SW-846 8332, and USATHAMA methods

#### 7.1.1 List of Project Target Compounds and Detection Limits

A complete list of the target compounds/analytes and required quantitation and detection limits is provided in Table 1-1. Data generated through the use of the CLP SOWs will be reported to the Contract Required Detection Limit (CRDL) for inorganic analyses. Analytes that are positively identified and quantified at concentrations less than the CRDLs will be reported as specified in the CLP SOW. All environmental data generated through the use of non-CLP protocols will be reported to the practical quantitation limit (PQL) for the particular analyte. The PQL is an expression of the method detection limit (MDL) with consideration given to required adjustments to ensure that the precision and accuracy requirements of the method are attainable.

All solid sample results will be reported on a dry-weight basis except for explosives. Quantitation and detection limits will also be adjusted, as necessary, based on dilutions and sample volume. Results for explosives are reported on a wet-weight basis for safety reasons.

#### 7.1.2 List of Associated Quality Control Samples

In addition to the field QC samples (duplicates, rinsate blanks, etc.) discussed in Section 3.0 of the Master QAPP, laboratory QC samples including MS/MSD samples, method blanks, preparation blanks, etc. will be analyzed as required by the analytical methods to be used. Laboratory QC samples are discussed in additional detail in Section 8.0 of the Master QAPP.

## 8.0 INTERNAL QUALITY CONTROL CHECKS

Refer to Section 8.0 of the Master QAPP (TtNUS, 2004).

## 9.0 DATA REDUCTION, VALIDATION, AND REPORTING

Refer to Section 9.0 of the Master QAPP (TtNUS, 2004).

## 10.0 PERFORMANCE AND SYSTEM AUDITS

Refer to Section 10.0 of the Master QAPP (TtNUS, 2004).

## 11.0 PREVENTIVE MAINTENANCE PROCEDURES

Refer to Section 11.0 of the Master QAPP (TiNUS, 2004).

## **12.0 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS**

Refer to Section 12.0 of the Master QAPP (TtNUS, 2004).

## 13.0 CORRECTIVE ACTION

Refer to Section 13.0 of the Master QAPP (TINUS, 2004).

## 14.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Refer to Section 14.0 of the Master QAPP (TINUS, 2004).

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