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CONTAMINATION ASSESSMENT PLAN FOR SITE ASSESSMENT AT SITE 351 DAY TANK
SPILL NS MAYPORT FL
7/1/2005
TETRA TECH NUS

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-94-D-0888



Contamination Assessment Plan for Site Assessment at Site 351 (Day Tank Spill)

Naval Station Mayport
Mayport, Florida

Contract Task Order 0386

July 2005



Southern Division

Naval Facilities Engineering Command

2155 Eagle Drive

North Charleston, South Carolina 29406

**CONTAMINATION ASSESSMENT PLAN
FOR SITE ASSESSMENT
AT SITE 351
(DAY TANK SPILL)**

**NAVAL STATION MAYPORT
MAYPORT, FLORIDA**

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

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

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

**CONTRACT NUMBER N62467-94-D-0888
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JULY 2005

PREPARED UNDER THE SUPERVISION OF:

APPROVED FOR SUBMITTAL BY:



**MARK PETERSON, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
JACKSONVILLE, FLORIDA**



**DEBRA M. HUMBERT
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

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ACRONYMS

bls	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CAP	Contamination Assessment Plan
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
DPT	Direct Push Technology
EDB	1,2-dibromoethane
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida Petroleum Range Organics
MTBE	Methyl Tertiary Butyl Ether
NAPL	Non-Aqueous Phase Liquid
NAVSTA	Naval Station
Navy	United States Navy
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
SAR	Site Assessment Report
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
VOHs	Volatile Organic Halocarbons

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Contamination Assessment Plan (CAP) for Site 351 at Naval Station (NAVSTA) Mayport, Mayport, Florida. This CAP was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command under Contract Task Order (CTO) 0386, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888.

The CAP provides the rationale and methodology for performing field activities to characterize soil and groundwater conditions at the referenced site. The objective of the proposed field investigations is to determine the extent of soil and/or groundwater impacts by previous operations at the sites. The data collected during the Site 351 investigation will be used to prepare a Site Assessment Report (SAR) and subsequent corrective action documents, if required, in accordance with Chapter 62-770.600, Florida Administrative Code (FAC). The investigation will characterize site conditions from which to base future courses of action.

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and is approximately 12 miles to the east northeast of downtown Jacksonville and adjacent to the town of Mayport. The Station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the Station and the St. Johns River.

Site 351 is the location of a July 1999 diesel fuel release. The source of the discharge was reported to be an underground line. In response to the spill, approximately seven tons of soil were excavated and transported off-site for treatment, and approximately 1,200 gallons of non-aqueous phase liquid (NAPL) were recovered between July and August 1999. Since that time, TtNUS has conducted a site assessment, and several aggressive fluid vapor recovery events were conducted. A second release in the location of a sump associated with this system was discovered in March 2004. Monitoring of the groundwater and NAPL recovery associated with these two spills is on-going.

A separate spill from a day tank located more than 75 feet from the original spill location was discovered in February 2005. This CAP describes the investigation of the day tank spill and follow up investigation of the sump release.

2.0 OBJECTIVE AND SCOPE OF PROPOSED ASSESSMENT

The objectives of the proposed assessment described in this plan are as follows:

- Determine the horizontal and vertical extent of soil and groundwater impacts at both the 2004 and 2005 spill areas.
- Determine groundwater flow direction at Site 351 in the area of the day tank spill and report on tidal influences.
- Provide data for a SAR to be completed in accordance with Chapter 62-770, FAC.

The investigations will meet the requirements of Chapter 62-770.600, FAC, for completion of a SAR. This shall include gathering information to support a “No Further Action” proposal, Natural Attenuation Monitoring Plan, or Remedial Action Plan as required.

The work in the following sections will be completed in accordance with the Florida Department of Environmental Protection’s (FDEP) Standard Operating Procedures.

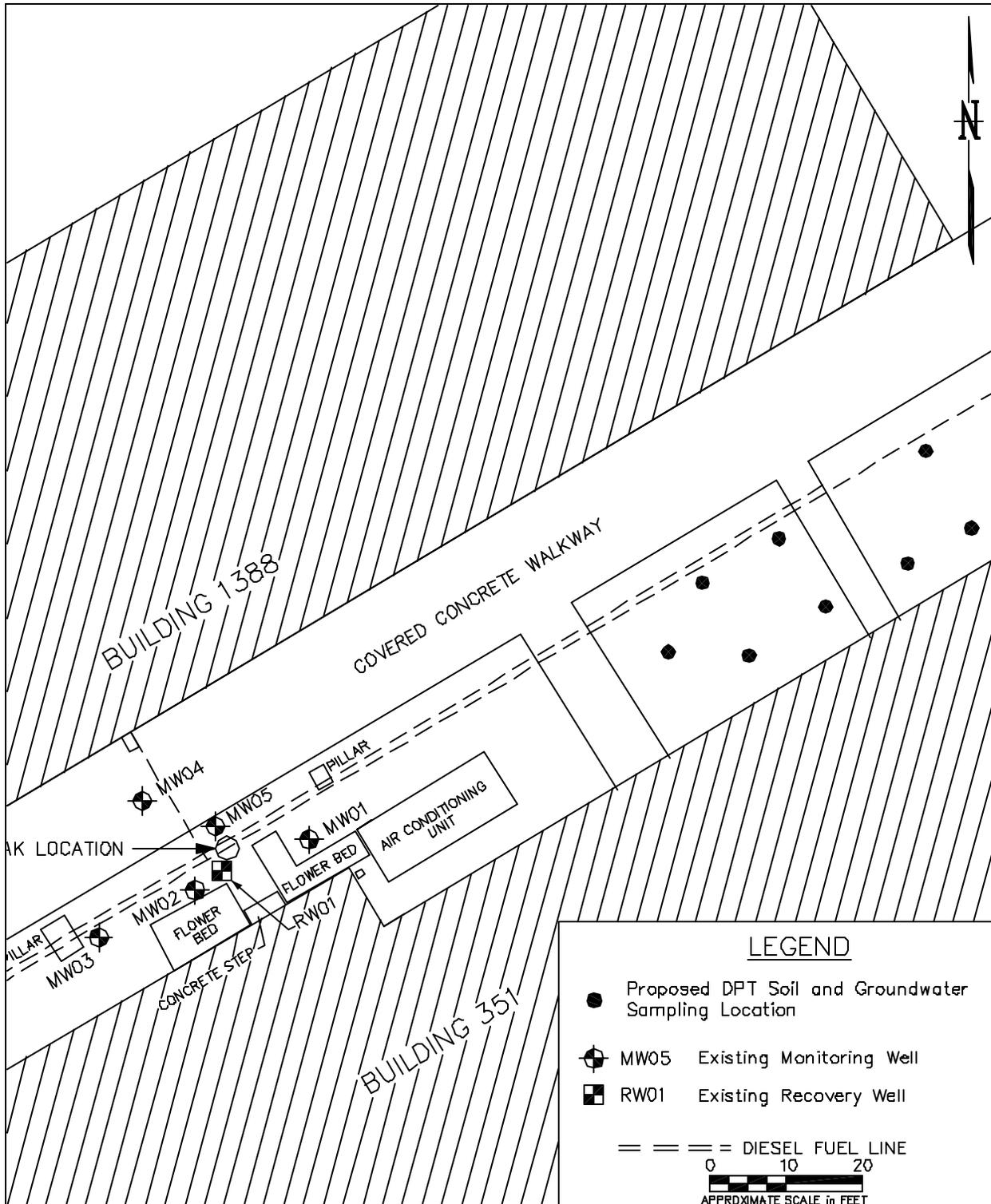
2.1 GROUNDWATER AND SOIL ASSESSMENT

The assessment will be conducted in the following three separate events at the sites:

- Marking of intrusive locations for utility clearance, including presumed soil excavation areas.
- Utilizing direct push technology (DPT) for the installation of piezometers and the advancement of soil borings for the collection of soil and groundwater samples.
- Utilizing DPT for the installation of permanent monitoring wells based on the results of the initial DPT assessment.

2.1.1 Initial DPT Sampling

Following completion of the utility clearance by Base personnel, DPT will be used to advance soil borings and collect soil and groundwater samples. It is estimated that eight soil borings will be advanced initially; additional borings will be advanced as necessary to complete horizontal and vertical delineation. The initial locations are based on the reported location of the spill and are shown on Figure 2-1.



LEGEND

- Proposed DPT Soil and Groundwater Sampling Location
- ⊕ MW05 Existing Monitoring Well
- ⊞ RW01 Existing Recovery Well
- == DIESEL FUEL LINE

0 10 20
APPROXIMATE SCALE in FEET

DRAWN BY LLK	DATE 7/12/05
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

PROPOSED DPT SAMPLE LOCATIONS
CONTAMINATION ASSESSMENT PLAN
FOR SITE ASSESSMENT
SITE 351
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 00130	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-1	REV. 0

Groundwater samples will be collected from each of the borings utilizing low flow sampling techniques, typically from the upper 5 feet of the surficial aquifer. The samples will be analyzed by an on-site mobile laboratory for benzene, toluene, ethylbenzene, and xylene (BTEX) and naphthalene to provide initial groundwater screening data. Groundwater from existing wells will also be analyzed.

Soil samples will be collected from each boring beginning at approximately 6 inches below land surface (bls) and continuously in 2 foot intervals to the saturated zone. During the previous site assessments, groundwater was encountered at approximately 5 to 6 feet bls. Each sample will be visually inspected for evidence of petroleum staining or free product. Soil samples collected during this effort will be field screened using an organic vapor analyzer (OVA). A soil-boring log will be maintained for each location and will include the OVA data. Three soil samples from the event will be sent to a fixed-base laboratory for analysis of volatile organic compounds (VOCs); BTEX including methyl tertiary butyl ether (MTBE); polynuclear aromatic hydrocarbons (PAHs) (includes 1-methylnaphthalene; 2-methylnaphthalene; and the 16 method-listed PAHs included in Table A of Chapter 62-770, FAC); and total recoverable petroleum hydrocarbons (TRPH). These samples will represent areas with high, medium, and low OVA screening values per Chapter 62-770.600(4)(f)(1), FAC.

Table 2-1 shows the anticipated on-site mobile and fixed-base laboratory analyses associated with this phase of the assessment.

2.1.2 Monitoring Well Installation

Based on the results of the initial DPT sampling, permanent monitoring wells will be installed. These wells will be installed to confirm the horizontal and vertical delineation of groundwater impact at the site. An estimated total of two shallow monitoring wells will be installed at the site. These monitoring wells will be installed in areas in which groundwater impact was observed as well as areas that will provide delineation in the presumed upgradient and downgradient locations. These 2-inch diameter wells will be installed using DPT and will be screened from approximately 3 feet bls to 13 feet bls. One deep well will be installed based on mobile laboratory results of samples collected during DPT. The deep well shall contain 5 feet of screen, will be utilized for vertical delineation.

Following installation, the wells will be developed per Navy specifications, and top-of-casing elevations and locations will be surveyed by a Professional Land Surveyor. The depth to groundwater in each well will then be measured from the top-of-casing using an electronic water level indicator. This data will be used in conjunction with depth to groundwater data from the existing wells at the site for the determination of groundwater flow direction. Aquifer testing and a tidal survey will not be necessary to determine aquifer characteristics since extensive aquifer data for NAVSTA Mayport has been obtained.

This data will be

**Table 2-1
DPT Assessment Sample Summary**

Contamination Assessment Plan, Site 351
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method ⁽¹⁾	Environmental Samples	Disposal Samples ⁽²⁾	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER – VIA ON-SITE MOBILE LABORATORY						
BTEX/ Naphthalene	SW-846 USEPA 8260B	Minimum of 13	0	2	1	Minimum of 11
SOIL						
BTEX/MTBE	SW-846 USEPA 8260B	3	1	1	0	5
PAHs ⁽³⁾	SW-846 USEPA 8310	3	1	1	0	5
TRPH	FL-PRO	3	1	1	0	5
Metals (Disposal) ⁽⁴⁾	SW846 USEPA 6010B	0	1	1	0	2

Notes:

⁽¹⁾ Method referenced reflects FDEP requirements.

⁽²⁾ Disposal sample numbers are based upon disposing of 55-gallon drums of soil (one composite sample per site). Soil analytical for volatile organics, PAHs, and TRPH (collected from environmental samples) will be used to characterize soil for proper disposal. In accordance with Chapter 62-713, FAC, additional discrete and composite samples will be collected for VOHs and metals, respectively, from the soil investigation derived waste generated in order to complete the soil characterization for proper disposal.

⁽³⁾ Includes 1-methylnaphthalene, 2-methylnaphthalene, and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.

⁽⁴⁾ Total analyses for arsenic, cadmium, chromium, and lead.

USEPA = United States Environmental Protection Agency

FL-PRO = Florida Petroleum Range Organics

referenced and used as appropriate. TtNUS will utilize existing information on potable wells to complete the potable well survey.

Groundwater samples will then be collected from new wells utilizing low flow sampling techniques and sent to a fixed-base laboratory for analysis of VOCs; BTEX including MTBE; PAHs (includes 1-methylnaphthalene; 2-methylnaphthalene; and the 16 method-listed PAHs included in Table A of Chapter 62-770, FAC); volatile organic halocarbons (VOHs); 1,2-dibromoethane (EDB); total lead; and TRPH.

Table 2-2 shows the anticipated fixed-base laboratory analyses associated with this phase of the assessment.

**Table 2-2
Monitoring Well Sample Summary**

Contamination Assessment Plan, Site 351
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method ⁽¹⁾	Environmental Samples	Disposal Samples ⁽²⁾	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER						
BTEX/MTBE / VOHs	SW-846 USEPA 8260B	3*	1	1	1	7
PAHs ⁽³⁾	SW-846 USEPA 8310	3*	1	1	0	6
Lead, total	SW-846 USEPA 6010B	3*	1	1	0	6
EDB	USEPA 504.1	3*	1	1	0	6
TRPH	FL-PRO	3*	1	1	0	6

Notes:

- ⁽¹⁾ Method referenced reflects FDEP requirements.
- ⁽²⁾ Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water.
- ⁽³⁾ Includes 1-methylnaphthalene, 2-methylnaphthalene, and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.
- * Existing wells will be analyzed via the mobile laboratory.

Following the initial groundwater sampling, the newly installed monitoring wells will be included in the next four rounds of quarterly groundwater monitoring and sampling conducted at Site 351. The sampling conducted in each round will be the same as summarized in Table 2-2.

Bottle ware, preservation, and holding time requirements for the analytical methods associated with this project are summarized in Table 2-3.

**Table 2-3
Bottle Ware, Preservation, and Holding Time Summary**

Contamination Assessment Plan, Site 351
Naval Station Mayport
Mayport, Florida

Analyte	Analytical Method	Bottle Ware	Preservation	Holding Time
GROUNDWATER				
BTEX/MTBE/ VOHs	SW-846 USEPA 8260B	2 x 40 milliliter glass volatile vial	Add HCl to pH<2; 4 degrees Celsius	14 days
PAHs	SW-846 USEPA 8310	1 liter amber glass	Add NaOH; 4 degrees Celsius	Extr. – 7 days Analysis – 40 days
Lead, total	SW-846 USEPA 6010B	500 milliliter HDPE	4 degrees Celsius	180 days
EDB	USEPA 504.1	40 milliliter glass volatile vial	Add HCl to pH<2; 4 degrees Celsius	28 days
TRPH	FL-PRO	1 liter glass	Add H ₂ SO ₄ to pH<2; 4 degrees Celsius	28 days
SOIL				
BTEX/MTBE	SW-846 USEPA 8260B	3 x 5 grams EnCore Sampler	4 degrees Celsius	Lab pres. – 48 hours Analysis – 14 days
PAHs	SW-846 USEPA 8310	8 ounce Clear wide mouth glass	4 degrees Celsius	Extr. – 7 days Analysis – 40 days
TRPH	FL-PRO	4 ounce Clear wide mouth glass	4 degrees Celsius	28 days
Metals	SW846 USEPA 6010B	4 ounce Clear wide mouth glass	4 degrees Celsius	180 days

Notes:

HCl = Hydrogen Chloride
NaOH = Sodium Hydroxide
HDPE = High Density Polyethylene
H₂SO₄ = Sulfuric Acid
Extr. = Extraction
Pres. = Preservation