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CONFIRMATORY SAMPLING WORK PLAN FOR SITE INVESTIGATION AT AREA OF CONCERN F NS MAYPORT FL

4/1/2008

TETRA TECH NUS

Comprehensive **L**ong-term **E**nvironmental **A**ction **N**avy

CONTRACT NUMBER N62467-04-D-0055

Confirmatory Sampling Work Plan
for
Area of Concern (AOC) F

Naval Station Mayport
Mayport, Florida

Contract Task Order 0050

April 2008

NAVFAC Naval Facilities Engineering Command
Southeast
2155 Eagle Drive
North Charleston, South Carolina 29406

TETRA TECH NUS, Inc.

CONFIRMATORY SAMPLING WORK PLAN
FOR
AREA OF CONCERN (AOC) F

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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

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CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0050

APRIL 2008

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PROFESSIONAL CERTIFICATION

Confirmatory Sampling Work Plan
Area of Concern (AOC) F
Naval Station Mayport
Mayport, Florida

This Confirmatory Sampling Work Plan for Area of Concern (AOC) F was prepared in general accordance with the State of Florida Standard Operating Procedures under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the plan was prepared. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.

Mark Peterson, P.G.
Florida License Number PG-0001852

4/23/08
Date

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FIGURE

ACRONYMS

AOC	Area of Concern
bls	below land surface
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Constructors, Inc.
CLEAN	Comprehensive Long-term Environmental Action Navy
CSR	Confirmatory Sampling Report
CSWP	Confirmatory Sampling Work Plan
CTO	Contract Task Order
°C	degrees Celsius
DI	deionized
DPT	direct-push technology
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida Petroleum Range Organics
FOL	field operations leader
GAG	gasoline analytical group
IDW	investigation derived waste
KAG	kerosene analytical group
MSDS	Material Safety Data Sheet
NAVFAC SE	Naval Facilities Engineering Command Southeast
NAVSTA	Naval Station
Navy	United States Navy
NTU	Nephelometric turbidity unit
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
QC	quality control
RCRA	Resource, Conservation, and Recovery Act
SCTL	Soil Cleanup Target Level
SOP	Standard Operating Procedure
TOM	task order manager
TRPH	total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

1.1 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Confirmatory Sampling Work Plan (CSWP) for Area of Concern (AOC) F at Naval Station (NAVSTA) Mayport, Mayport, Florida. This CSWP was prepared for the United States Navy (Navy), Naval Facilities Engineering Command Southeast (NAVFAC SE) under Contract Task Order (CTO) 0078, for the Comprehensive Long-term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055.

This CSWP is designed to guide soil and groundwater assessments at AOC F in the location of a release of Butimastic No. 50, a petroleum-based epoxy coating product, which leaked onto the soil. The area of investigation centers on an area measuring 115 feet by 30 feet within the Satellite 2 Parking Lot, which is a unpaved limestone-covered parking area. The entire parking area measures approximately 240 feet by 165 feet with an unpaved surface which is accessed by Patrol Road. Future courses of action will be based on the results of soil and groundwater analyses.

1.2 OBJECTIVE

This CSWP provides the rationale and methodology for performing field activities to characterize soil and groundwater conditions at the referenced site. The objective of the field investigation is to determine the extent of soil and groundwater adversely impacted by Butimastic No. 50. The data collected during the investigation will be used to prepare an AOC F Confirmatory Sampling Report (CSR). The AOC F CSR will assimilate information from the investigation and provide a characterization of site conditions for which to base future courses of action.

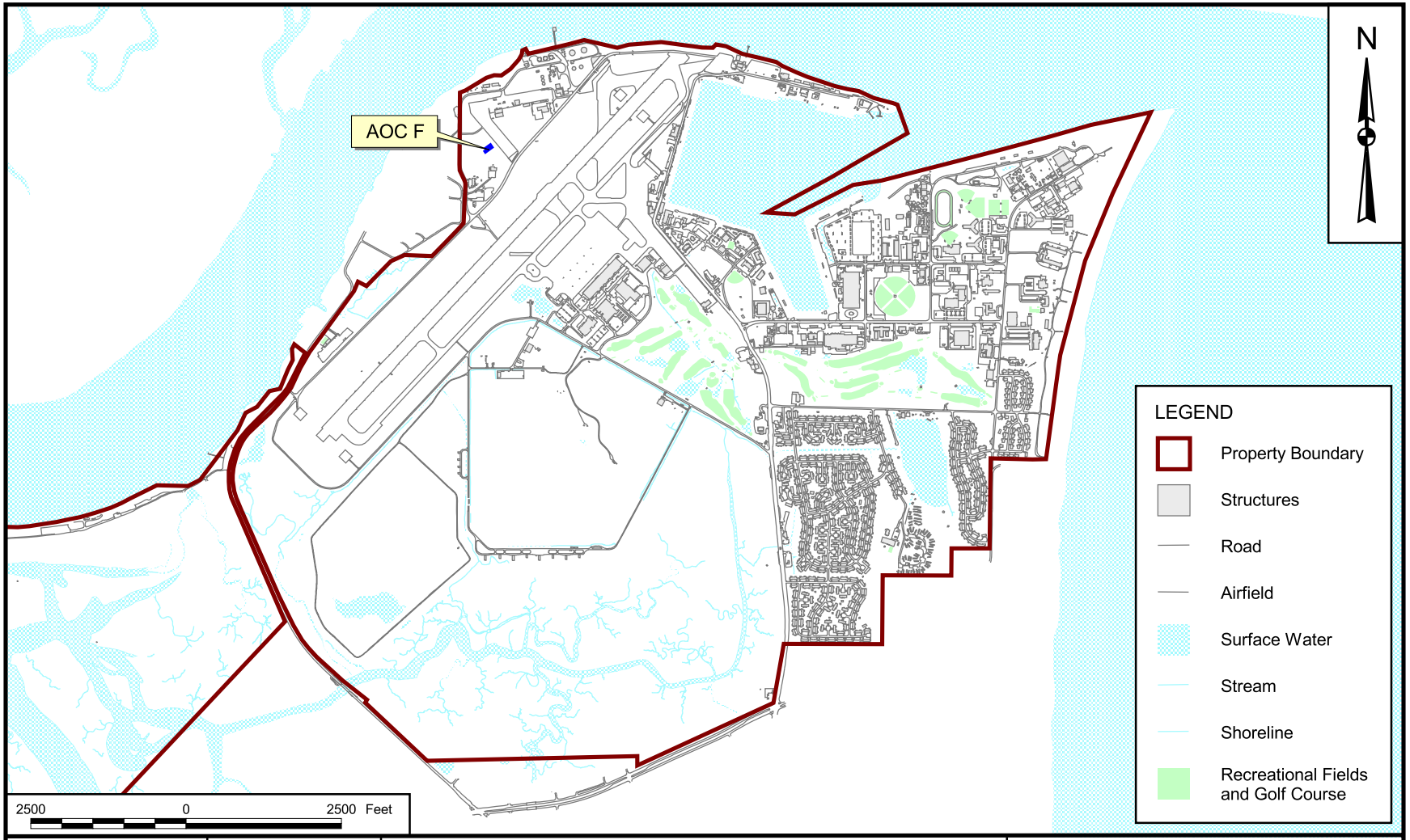
The objectives of the AOC F CSWP are as follows:

- Determine vertical and horizontal extent of soil impacts.
- Determine the extent of groundwater impacts through the installation of monitoring wells, if needed.
- Results of the investigation will be compiled in a CSR complete with recommendations for future courses of action, if needed.

2.0 SITE DESCRIPTION

NAVSTA Mayport is located within the incorporated 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. A site location map depicting the location of the site in relation to the rest of the base is presented as Figure 2-1.

The focus of the AOC F investigation is a portion of an unpaved parking area measuring 115 feet by 30 feet within the Satellite 2 Parking Lot, which is a unpaved limestone-covered parking area measuring approximately 240 feet by 165 feet. The parking lot was used for overflow parking. The site is located in the northwestern region of NAVASTA Mayport 1000 feet east of the flight line and 320 feet north of Building 48A at the contractor inspection area. A site map depicting the Satellite 2 Parking Lot and AOC F within the parking area is presented as Figure 2-2.



DRAWN BY J. ENGLISH	DATE 01/10/08
CHECKED BY D. SIEFKEN	DATE 01/10/08
COST/SCHEDULE-AREA	
SCALE AS NOTED	

NAVFAC

SITE LOCATION MAP
AOC F
CONTAMINATION SAMPLE WORK PLAN
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NUMBER CTO 0050	
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2-1	REV 0

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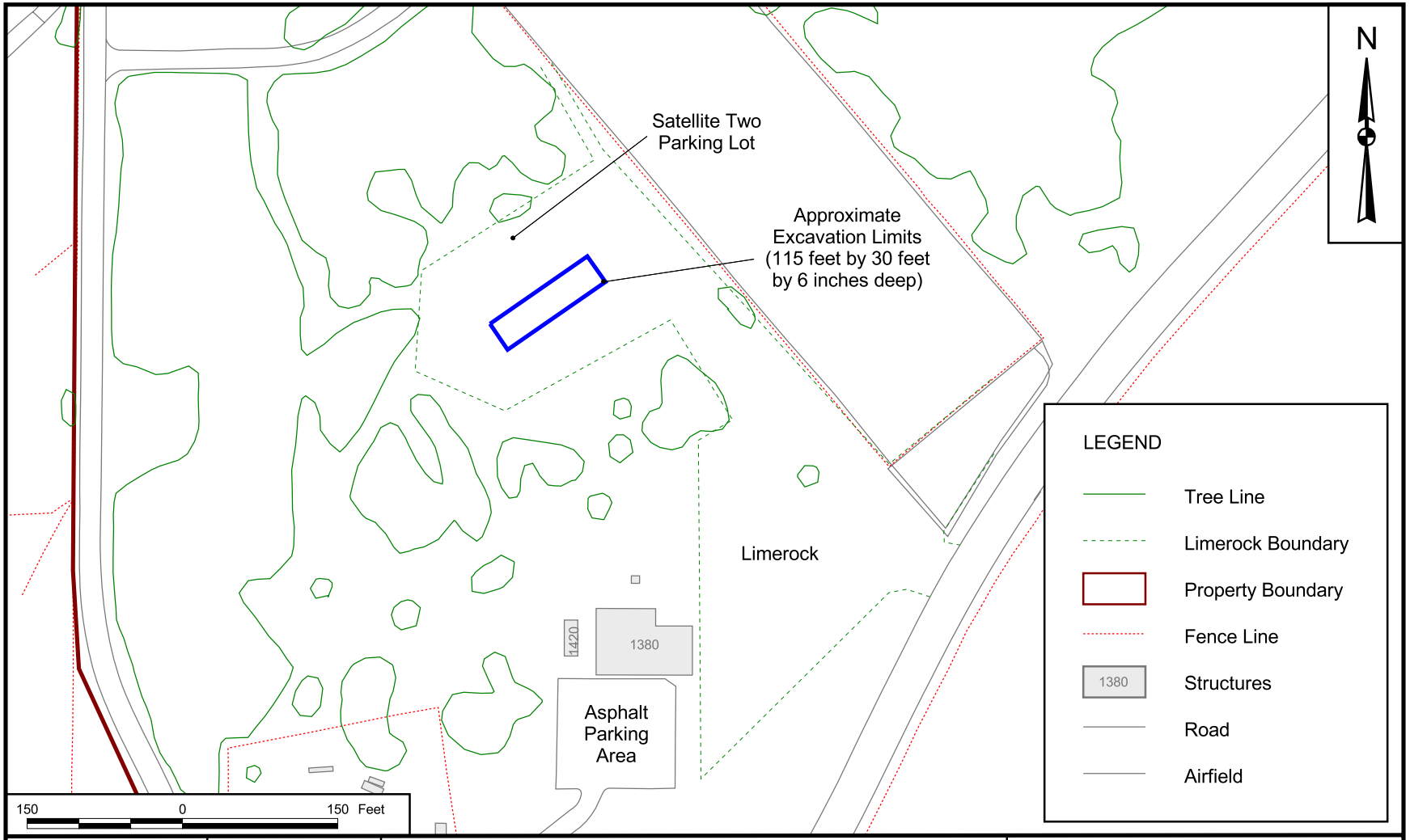


DRAWN BY J. ENGLISH DATE 01/10/08	NAVFAC	SITE MAP AOC F CONTAMINATION SAMPLE WORK PLAN NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 0050
CHECKED BY D. SIEFKEN DATE 01/10/08			APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-2 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\AOC_F.APR SITE LAYOUT 01/10/08 JEE

3.0 SITE HISTORY

During the spring of 2006, a contractor was tasked with the disposal of ship camels, structures used to separate large vessels. During the demolition of the camels, Butimastic No. 50, a petroleum-based epoxy coating used on the interior of the ship camels, was released onto the ground. The area of investigation centers on an area measuring 115 feet by 30 feet within the Satellite 2 Parking Area, which is an unpaved limestone-covered parking area. The entire parking area measures approximately 240 feet by 165 feet with an unpaved access road providing access from Patrol Road.

CH2M HILL Constructors, Inc. (CH2M HILL) was contracted by NAVFAC SE to perform an Interim Source Removal at the Satellite 2 Parking Lot. On July 6, 2006, the initial confirmatory sampling event was conducted that facilitated the collection of samples from the visually identified area of impacted soil at a depth of 0 to 6 inches. Because of a laboratory error, the volatile organic compound (VOC) samples were required to be recollected on July 11, 2006. Soil analysis used to define the spill area was petroleum based gasoline analytical group (GAG)/kerosene analytical group (KAG) (VOCs, polynuclear aromatic hydrocarbons [PAHs], and total recoverable petroleum hydrocarbons [TRPH]). Based on the sample results, total xylenes exceeded the Leachability SCTL, and TRPH exceeded the direct exposure-residential and leachability criteria based on SCTLs. Based on the SCTL exceedances, the area visually identified as impacted by Butimastic No. 50 was removed from an area measuring 115 feet by 30 feet and excavated to a total depth of 6 inches for disposal at a licensed facility. Excerpts from the CH2M HILL Interim Source Removal Report are provided in Appendix A.

On July 25, 2006, a second sampling event was conducted for the purpose of verifying vertical and horizontal impacts. Six soil samples were collected 10 feet out from the edge of the excavation at a depth of 0 to 6 inches for laboratory analysis for GAG/KAG constituents. One of the six samples exceeded the soil SCTL leachability criteria for total xylenes and ethylbenzene. Two additional samples were collected from the base of the excavation at a depth of 1.5 feet below land surface. One of the two samples exceeded the leachability SCTLs for total xylenes. Pages from the CH2M HILL Interim Source Removal Report are presented as Appendix A.

On January 23, 2007, during a NAVSTA Mayport Partnering Team meeting discussion, it was determined that the site that was originally assessed under the underground storage tank program was to be reassigned as a Resource, Conservation, and Recovery Act (RCRA) site under the Base Installation Restoration Program. The decision was based on regulator input that Butimastic No 50 contained non-petroleum based constituents. Based on these recommendations, a CSWP was prepared.

4.0 OBJECTIVE AND SCOPE OF INVESTIGATION

This CSWP provides the rationale and methodology for performing field activities to characterize soil and groundwater conditions at the referenced site. The objective of the field investigation is to determine the extent of soil and groundwater adversely impacted by Butimastic No. 50. The data collected during the investigation will be used to prepare an AOC F CSR. The AOC F CSR will assimilate information from the investigation and provide a characterization of site conditions for which to base future courses of action.

The objectives of the AOC F CSWP are as follows:

- Determine the vertical and horizontal extent of soil impacts.
- Determine the extent of groundwater impacts through the installation of monitoring wells.
- The results of the investigation will be compiled in a CSR complete with recommendations for future courses of action, if needed.

4.1 MOBILIZATION

Field mobilization activities will take place on the first day of each phase of work and will include travel and on-site preparatory activities. These activities will include the marking of sample locations; utility clearance; and receiving, storage, and testing of field equipment.

4.1.1 Utility Clearance

Base personnel will support utility clearance at all required locations, and associated activities will be performed in accordance with TtNUS Standard Operating Procedure (SOP) HS-1.0. Existing records will be reviewed for each intrusive sample location, and each location will be cleared with magnetic location devices.

Sunshine State One-Call of Florida (1-800-432-4770) will be contacted to mark all known utilities in the vicinity of sampling and drilling locations.

Prior to beginning work that penetrates land surface, a dig permit is required to be obtained from the Engineering Division of the Public Works Department. Contact personnel for obtaining a dig permit is Wayne Purifoy at (904) 270-5207, extension 128. The field operations leader (FOL) may be requested to accompany Base utility clearance personnel to the site to review any restrictions to drilling and monitoring well installation activities. A copy of a dig permit is provided in Appendix B.

4.2 SOIL AND GROUNDWATER INVESTIGATION

4.2.1 Analysis Methods

The laboratory methods selected for the analysis of soil samples were derived from known released compounds as recorded on the Butimastic No. 50 material safety data sheet (MSDS). A copy of the Butimastic No. 50 MSDS is provided as Appendix C. Compounds listed on the MSDS that represent potential environmental impacts include such compounds as coal tar pitch, compounds mixed with coal tar, toluene, benzene, naphthalene, xylene, and ethylbenzene. The listed MSDS compounds and the laboratory method capable of detecting the select compound are presented as Table 4-1. All compounds listed on Table 4-1 are listed in Chapter 62-777 of the Florida Administrative Code (FAC) or are recorded with the Code of Federal Regulation (CFR) in the Appendix IX list of constituents. Indene, which is listed on the Butimastic No. 50 MSDS sheet and is a petroleum compound, is not listed in Chapter 62-777, FAC, or recorded in the CFR Appendix IX list of constituents and, therefore, will not be a listed constituent for analysis. Indene is a semivolatile hydrocarbon known as indonaphthene, Chemical Abstracts Service Number 95-13-6. To verify the potential presence of indene, a similar semivolatile compound, naphthalene, which is listed on the Butimastic No. 50 MSDS sheet and is being analyzed using United States Environmental Protection Agency (USEPA) Method 8270, will be considered for this investigation as a possible indicator for indene (indonaphthene).

Table 4-1
MSDS Compounds Versus Laboratory Method Analysis

AOC F Confirmatory Sampling Work Plan
Naval Station Mayport
Mayport, Florida

MSDS Compound	USEPA Methods			
	8260	8270	8-RCRA Metals	TRPH
Coal Tar Pitch		x	x	x
Coal Tar Creosote		x	x	x
Coal Tar Distillate		x	x	x
Toluene	x			
Xylenes	x			
Benzene	x			
Naphthalene		x		

Notes:
8260 - Aromatic and halogenated volatile organics
8270 - Semivolatiles
8-RCRA Metals - Arsenic, lead, barium, mercury, cadmium, selenium, chromium, silver
TRPH - C8 to C-40

Other compounds, such as talc and clay, are part of Butimastic No. 50. Talc and clay are perceived as having a limited to no potential for environmental impacts given they are bound with the coal tar during the manufacturing process. Possible impacts, although highly unlikely, from talc and clay may include metals. For the reason of low potential environmental impacts, talc and clay were not added to Table 4-1, although their means of potentially impacting the spill area will be assessed through the analysis of the 8-RCRA metals.

The soil samples from the known release area will be sampled to determine the constituents present. Based on the initial findings, step-out samples used for delineation purposes will be analyzed for only the soil exceedances which originated from the source area. The sample location and thought process for sample locations is provided below in Section 4.2.2.

4.2.2 Soil Investigation

The locations for the sample collections will be based on field observations, historical documentation, and laboratory analysis. Initially, the sample locations will be based on the field observations and historical laboratory analysis results documented in the CH2M HILL Interim Source Removal Report. Although the analysis methods analyzed during the CH2M HILL assessment (GAG/KAG) tested for similar but fewer constituents when compared to the CFR Appendix IX analysis methods selected using process knowledge, the following general assumptions can be made:

- Horizontal – Impacted soil in excess of soil SCTLs extend greater than 10 feet beyond the boundary of the excavation.

- Vertical – Impacted soil in excess of soil SCTLs is verified to 1.5 foot below land surface (bls).

Based on information generated during the CH2M HILL interim removal, soil impacts are present at the base of the excavation (to a depth of 0.5 foot bls) and extend 10 feet beyond the excavated area. The initial three soil borings of this assessment will be completed equally spaced lengthwise along the long axis of the floor of the rectangular excavation. The three borings within the excavated area will be collected at the floor of the excavation and at 2-foot intervals extending to 1 foot above the capillary region of the surficial aquifer. Samples will be collected in accordance with Florida Department of Environmental Protection (FDEP) SOPS; Chapter 62-780, FAC; and for the CFR Appendix IX analysis which excluded certain analysis by process knowledge and includes the following laboratory method analysis:

- USEPA Method 8260, aromatic and halogenated hydrocarbons

- USEPA Method 8270, semi-volatile organic compounds (bases and neutrals)
- USEPA Method 6010, 8-RCRA Metals
- Florida Petroleum Range Organics (FL-PRO) by Method FL-PRO

Sample constituents from these three sample borings in excess of the SCTLs will be used to establish the baseline of laboratory constituents from which to delineate the surrounding area and also determine the depth of impacts.

The first phase of step-out samples will extend 25 feet from the perimeter of the rectangular excavation and include 8 samples locations; three samples locations per side on the long axis of the excavation, and one sample per side on the short axis. Figure 4-1 depicts the first round of proposed soil delineation sample locations. The sample depths will be determined based on the sample results of the three baseline sample locations collected from the center of the excavation. General sample intervals will be 0 to 0.5 foot, 0.5 foot to 2 feet, and 2 to 4 feet depending on Phase I results.

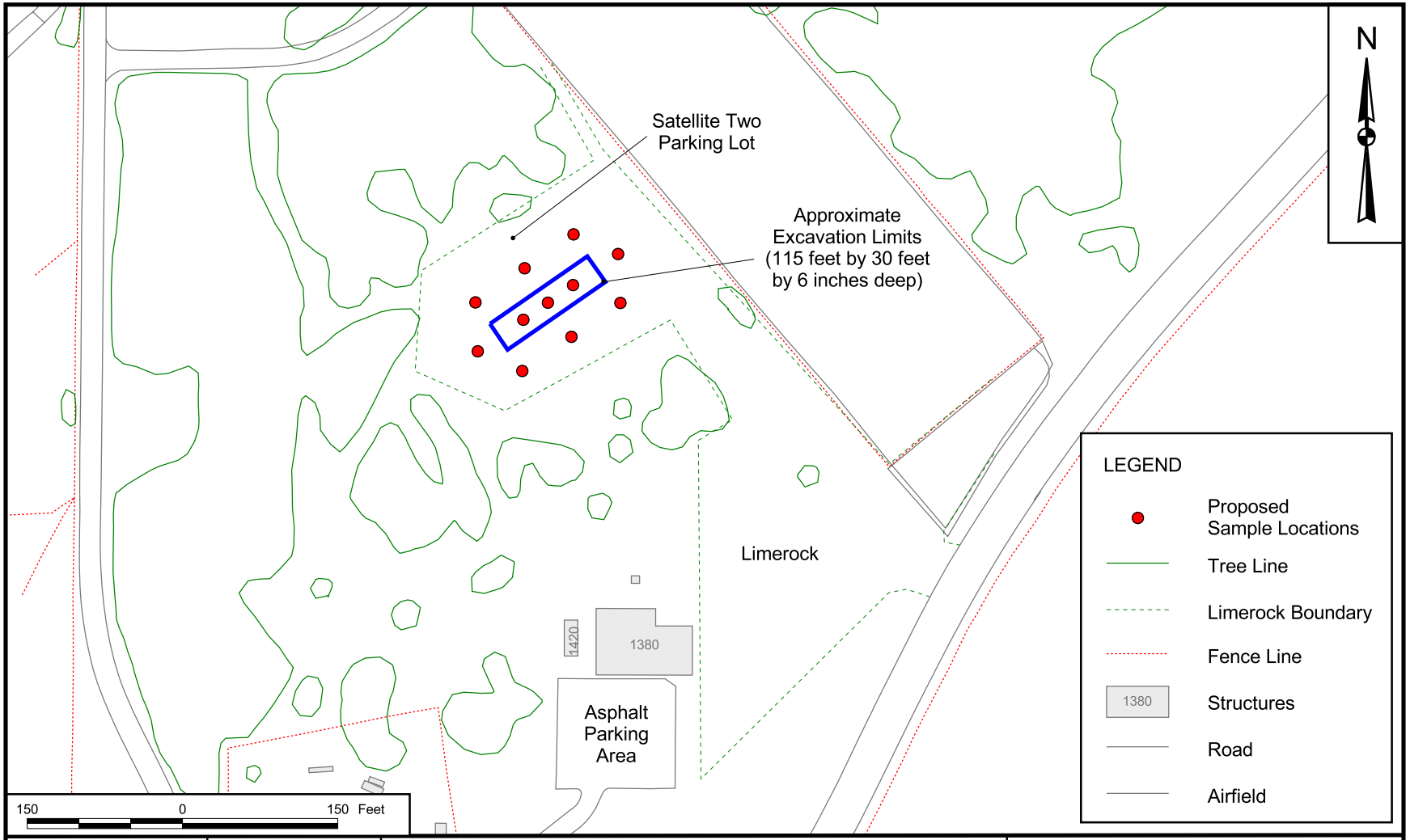
Multiple sampling phases are assumed to be required to complete the confirmation sampling at AOC F. Sample locations shall be equal distance apart to ensure greatest coverage and collected using a hand auger advanced to one foot above the top of the water table or capillary region.

The hand auger will be cleaned with Liquinox, isopropanol, and deionized (DI) water between sample locations. All personnel coming in contact with the samples will wear latex gloves and change gloves between sample locations to help minimize cross contamination. All decontamination water shall be containerized for disposal. Once collected, the sample shall be place on ice in preparation for transport to ENCO Laboratories.

One macrocore lithologic sample will be collected prior to installation of the monitoring well to ensure no confining layer is breached. A TtNUS site representative will obtain the soil logs from the drilling operations and log the soils at the site.

4.2.3 Groundwater Investigation

Groundwater sample locations will be based on site lithology and soil laboratory results of the assessment. The groundwater methods selected for analysis will be based on the soil constituents identified in excess of soil leachability concentrations and process knowledge. If the soil impacts do not extend to the groundwater, groundwater sampling would not be required. However, if soil impacts are identified above leachability SCTL values, multiple monitoring wells will be installed and sampled.



DRAWN BY J. ENGLISH DATE 01/10/08		PROPOSED SOIL SAMPLE LOCATION MAP AOC F CONTAMINATION SAMPLE WORK PLAN NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 0050
CHECKED BY D. SIEFKEN DATE 01/25/08			APPROVED BY — DATE —
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 4-1 REV 0

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Groundwater is expected to be encountered at a depth of 6 feet to 7 feet bls, and monitoring wells, if required, are to be installed by a direct-push technology (DPT) drill rig.

4.3.3.1 Well Construction, Development, and Sampling

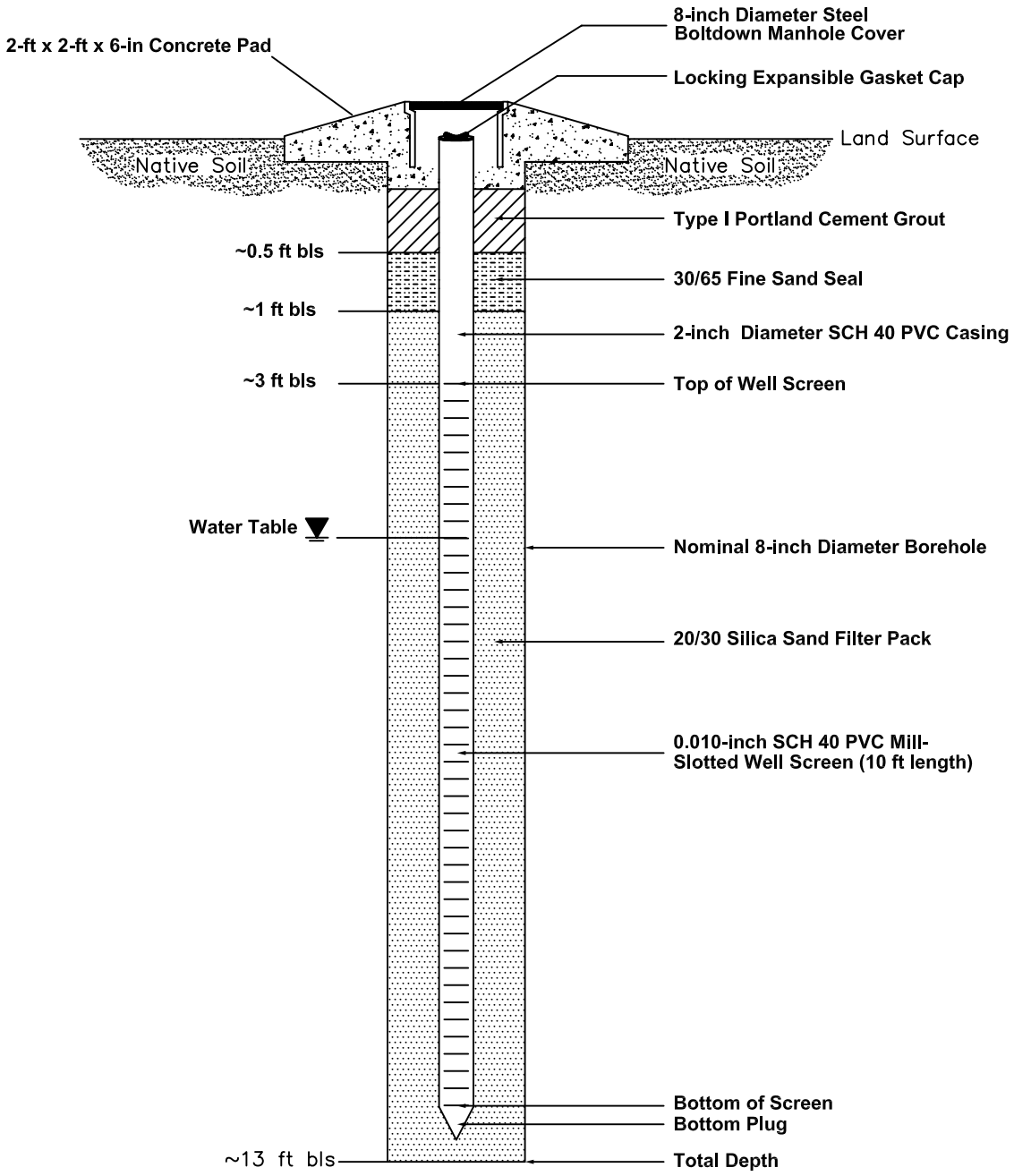
The drilling subcontractor, prior to initiation of drilling activities, will obtain well installation permits as necessary. Permanent monitoring wells, if required, will be constructed using 1.25-inch to 2.0-inch diameter schedule 40 polyvinyl chloride (PVC) screen and riser into the borehole created by hollow augers or rods. The shallow wells will consist of 10 feet of 0.010-inch slotted pipe (well screen) and a deep well, if needed, will be fitted with 5 feet 0.010-inch slotted pipe with a section of solid PVC riser fitted to the top of the screen and a steel man hole and well cap to protect and seal the well. Standard silica sand (20/30) will be used to surround the well screen. Just above the top of the filter pack will be a fine sand (30/65) seal, 0.5 foot for shallow wells and 2.0 feet for deep wells, with Type I and II Portland cement grout seals extending to the steel manhole. The total depth of a deep well is projected to be 40 feet bls with shallow wells being approximately 13 feet bls.

Soil boring logs to be used to describe site condition are provided in Appendix B, and a schematic diagram showing details of a typical shallow well is provided as Figure 4-2.

Once installed, a period of 24 hours will pass prior to beginning to develop each well and is to be developed until the water was virtually clear. All development water and decontamination water generated during well construction and development will be containerized for disposal in 55-gallon steel drums.

4.3.3.3 Well Development

A boring log, monitoring well sheet, and certificate of conformance will be maintained for each permanent and temporary well installation (see Appendix B). Once installed, the wells will be developed per Navy specifications. The permanent monitoring wells will be developed no sooner than 24 hours after placement of grout to remove fine sediment from around the screened interval of the well. Permanent and temporary monitoring wells will be developed by bailing and purging or by pumping as determined by the field geologist. Field parameters (pH, temperature, turbidity, and specific conductance) will be measured at equally-spaced timed intervals during well development. Wells will be developed a maximum of 1 hour or until the field measurements become stable and the development water is visibly clear.



DRAWN BY JCF DATE 1/10/08		TYPICAL MONITORING WELL DESIGN CONTAMINATION SAMPLING WORK PLAN AOC F NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 0050
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED–AREA			APPROVED BY DATE
SCALE NOT TO SCALE	NAVFAC		DRAWING NO. FIGURE 4–2 / REV. 1

Water quality stabilization will be determined using the following criteria:

- Temperature ± 0.2 degrees Celsius (°C)
- pH ± 0.2 standard units
- Specific conductivity ± 5 percent of reading

Field development data will be maintained on a Monitoring Well Development Record (see Appendix B). No sooner than 24 hours after development, groundwater samples will be collected from monitoring wells in accordance with FDEP SOPs. Synoptic water levels and total well depths will be measured and recorded on a Groundwater Level Measurement Sheet (see Appendix B).

4.3.3.3 Groundwater Sampling

The wells will be purged using a peristaltic pump using low flow quiescent purging techniques per FDEP SOPs. The data will be recorded on a groundwater sampling sheet (see Appendix B). Depending on the groundwater parameters, up to five well volumes may be purged. If wells are purged dry with less than three well volumes removed, the water level in the well will be allowed to recover enough to collect five field readings (pH, temperature, turbidity, dissolved oxygen, and specific conductance) prior to collecting a water sample. If the well does not purge dry using the low flow purging technique, groundwater characteristics will be taken in 2- to 10-minute intervals, depending on the flow rate. Stabilization will be defined according to the following scenarios:

1) When purging a well that has a partially submerged well screen, a minimum of one well volume will be purged prior to collecting measurements of field parameters listed below. If the well screen is fully submerged, then a minimum of one volume of the pump, associated tubing, and flow cell will be purged prior to collecting field parameters listed below. Purging will be considered complete when three consecutive measurements of the field parameters are within the desired limits as shown below.

    - Temperature ± 0.2 °C
    - pH ± 0.2 Standard Units
    - Specific Conductivity ± 5 percent of reading
    - Dissolved oxygen is not greater than 20 percent of saturation at the field measured temperature
    - Turbidity is not greater that 20 Nephelometric Turbidity Units (NTUs)

2) When purging a well and Scenario I is impossible to achieve, three consecutive measurements of the following parameters are required:

- Dissolved oxygen ± 0.2 milligrams per liter or 10 percent, whichever is greater
- Temperature ± 0.2 °C
- pH ± 0.2 Standard Units
- Specific Conductivity ± 5 percent of reading
- Turbidity ± 5 NTUs or 10 percent, whichever is greater

If stabilization is not achieved, five screen volumes must be removed prior to samples being collected in the appropriate sample containers.

4.2.4 Well Surveying

The monitoring wells installed as required during the site assessment will be surveyed by a Florida licensed land surveyor. Horizontal datum should be surveyed in feet relative to the Florida State Plane Coordinate System, Florida State Plane East, North American Datum 1983 (NAD83) and shall be third order in accuracy. The horizontal survey should include any prominent site features (i.e., well and sample locations, road intersections, paved areas, etc.). Vertical datum should be referenced to North American Vertical Datum 1988 (NAVD88) with ground elevations accurate to 0.1 foot.

4.3 SAMPLE HANDLING

Sample handling includes the selection of sample containers, preservatives, allowable holding times, and the analyses requested. Sample handling procedures will be in accordance with FDEP SOP 001/01 FS1000 and FS2200. Holding times vary from 48 hours to 180 days. A table of analysis, methods numbers, preservative, and holding time is provided as Table 4-2. Once obtained, the samples are to be placed on ice within 15 minutes of collection and cooled to 4 °C.

4.4 SAMPLE PACKAGING, SHIPPING, AND NOMENCLATURE

Samples will be packaged and shipped in accordance with FDEP SOPs. The FOL will be responsible for completing the following forms when samples are collected for shipping:

- Sample labels
- Chain-of-Custody labels
- Appropriate labels applied to shipping coolers
- Chain-of-Custody forms
- Federal Express Air Bills

Table 4-2
Summary of Fixed-Base Laboratory Analytical Methods

AOC F Confirmatory Sampling Work Plan
Naval Station Mayport
Mayport, Florida

GROUNDWATER					
Analysis	**Analytical Method**	**Sample Volume[1]**	**Bottleware**	**Preservation[2]**	**Holding Time[3]**
VOCs Aromaitc and halogenated	SW-846 8260B	3 x 40 mL	Glass Vial Teflon-lined septum cap	HCl to pH < 2 Cool to 4° C Zero headspace	14 days to analysis
SVOCs both base and neutrals	SW-846 8270C	2 x 1 L	Amber Glass Teflon-lined cap	Cool to 4° C	7 days to extraction Analysis within 40 days
TRPH	Florida Pro Method	2 x 1 L	Amber Glass Teflon-lined cap	H_2SO_4 to pH < 2 Cool to 4° C	7 days to extraction Analysis within 40 days
8-RCRA Metals	SW-846 6010/B 7000A Series	1 - 500 mL (Total)	Polyethylene Bottle Plastic cap and liner	HNO_3 to pH < 2 For dissolved - filter prior to preservation	6 months, except mercury which requires 28 days to analysis

SOIL					
Analysis	**Analytical Method**	**Sample Volume[1]**	**Bottleware**	**Preservation**	**Holding Time[3]**
VOCs	SW-846 5035/8260B	3x 40 mL	Glass Vial Teflon-lined septum cap	2 x40 mL water 1x40 mL alcohol vial (4)	48 hours to preservation; 14 days to analysis
TRPH	FL-PRO	8-oz glass jar teflon-lined lid	Glass jar Teflon-lined cap	Cool to 4° C	14 days to extraction; 40 days to analysis
SVOC	SW-846 8270C	4 ounce clear wide mouth jar	Glass jar Teflon-lined cap	Cool to 4° C	14 days to extraction, analysis within 40
8-RCRA	SW-846 6010/B 7000A Series	4 ounce clear wide mouth jar	Glass jar Teflon-lined cap	Cool to 4°C	6 months, except mercury which requires 28 days to analysis

Notes:

1 - Sample volume may vary based upon the laboratory.

2- HCl - Hydrochloric acid; H_2SO_4 - Sulfuric acid; HNO_3 - Nitric acid

3 - Holding times are measured from the date and time of sample collection.

4 - Cool to 4 degrees Celsius.

Each sample will be assigned a unique sample identification number. The unique label system established for this sampling event is as follows:

Sample identification nomenclature is designed to help differentiate the samples, allowing a quick reference to the Navy base, sample location, medium, location, and depth when applicable. All sample identification's shall have a prefix (MPT) to designate which Navy base the samples are collected, and soil and groundwater designations will be noted by a SS or MW following the base identification. Soil samples will follow a sequential number pattern which notes the boring number followed by sample depth.

Example: MPT AOCF-SS 01-04

This example is representative of a sample collected from the first soil boring, and collected at a depth of 4 feet bls. For soil samples, the sequence number will be representative of the lower depth of the soil sample (e.g., a soil sample collected from the 3- to 4-foot interval of a soil boring will have a sequence number of 4).

Groundwater samples will be sampled from monitoring wells with next identification noting the well sampled.

Example: MPT AOCF- MW01

This groundwater sample is representative of a sample collected from well MW01.

4.5 SAMPLE CUSTODY

The chain-of-custody begins with the release of the empty sample bottles from the laboratory and must be documented and maintained from that point forward. To maintain custody of the sample bottles or samples, they must be in someone's physical possession, in a locked room or vehicle, or sealed with an intact custody seal. When the possession of the bottles or samples is transferred from one person to another, it will be documented in the field logbook and on the chain-of-custody. Custody of samples must be maintained and documented at all times. FDEP SOP 001/01 FS 1000 and TtNUS SOP SA-6.3 provide a description of the chain-of-custody procedures to be followed. The FOL will be responsible for completion of the following forms when samples are collected for shipping:

1. Sample labels
2. Chain-of-custody labels

3. Appropriate labels applied to shipping coolers
4. Chain-of-custody forms
5. Federal Express air bills

All samples are to be shipped to ENCO Laboratories located at 4801 Executive Park Court in Jacksonville, Florida, (904) 297-3007.

4.6 QUALITY CONTROL SAMPLES

Quality Control (QC) samples will be collected during the soil and groundwater assessment event in general accordance with FDEP SOP 001/01 FQ1000: Field Quality Control Requirements. Appropriate documentation of QC samples will be collected or generated during environmental sampling activities. QC samples will be collected in accordance with the requirements established during the Plan of Action negotiations. The total number of QC and laboratory samples required will be monitored by the Assistant Task Order Manager (TOM), David Siefken. A minimum one sample each for all analyzed parameters will be collected during the first sample event.

Equipment Rinsate and Field Blanks – Equipment blanks are required for sampling equipment used during the investigation. At least one blank is required and then every five percent of soil samples collected.

Matrix Spike /Matrix Spike Duplicate – At lease one sample or five percent of all samples in a sample set.

4.6.1 Record Keeping

In addition to chain-of-custody records associated with sample handling, packaging, and shipping, certain standard forms will be completed for sample description and documentation. These shall include sample log sheets (for soil samples), daily activities record (for subcontractors), and logbooks.

The FOL will maintain a bound/weatherproof field notebook. The FOL, or designee, will record pertinent information related to sampling or field activities. This information may include sampling time, weather conditions, unusual events (e.g., well tampering), field measurements, site visitors, descriptions of photographs, etc. At the completion of field activities, the FOL shall submit to the TtNUS TOM all field records, data, field notebooks, logbooks, chain-of-custody receipts, sample log sheets, daily logs, etc.

4.6.2 Investigation Derived Waste Management

Purge water and decontamination water will be collected and containerized in Department of Transportation approved (Specification 17C) 55-gallon drums. Each drum will be sealed, labeled, and transported to a pre-designated staging area designated by NAVSTA Mayport personnel (behind Building 1613) located within NAVSTA Mayport pending groundwater analytical results. All decontamination materials generated during the site investigation will be containerized for proper disposal. It is the responsibility of TtNUS to set up a contract with a licensed contractor for disposal of the investigation derived waste (IDW) following completion of the field sampling. Appropriate IDW documentation will be maintained in the project field log book. In addition to documenting the IDW in the field log book, an IDW management sheet will be filled for each drum stored at Building 1613, and a copy of this sheet will be provide to Diane Racine, NAVSTA Mayport, upon completion of field activities. See Appendix B for a copy of the IDW management sheet.

4.6.3 Equipment Calibration

The field instruments such as the water quality multimeter and turbidity meter will be calibrated daily and/or according to FDEP SOPs FT1000: General Field Testing and Measurement.

Calibration will be documented on an Equipment Calibration Log. During calibration, an appropriate maintenance check will be performed on each piece of equipment. If damaged or defective parts are identified during the maintenance check and it is determined that the damage could have an impact on the instrument's performance, the instrument will be removed from service until defective parts are repaired or replaced. A copy of the field calibration sheet is included in Appendix B.

4.7 DECONTAMINATION

The equipment involved in field sampling activities will be decontaminated prior to and during sampling activities in accordance to FDEP SOP FC1000.

All sampling and downhole drilling equipment will be cleaned and decontaminated prior to use and after each subsequent use. Non-disposable equipment used for collecting samples will be decontaminated prior to beginning field sampling and between sample locations. A decontamination pad will be constructed in an area relatively level. The pad will be bermed and lined with plastic so as not to leak. Racks used to hold equipment during cleaning should be high enough to prevent the equipment from being splashed. After cleaning, equipment will only be handled by personnel wearing clean gloves to

prevent recontamination. The following is a description of the materials to be used in the decontamination process and the procedures to be used for the specific types of equipment.

Specifications for Cleaning Materials:

1. Soap will be a standard phosphate-free laboratory detergent (e.g., Liquinox®).
2. Solvent will be pesticide-grade isopropanol.
3. Tap water may be from any municipal water system.
4. Analyte-free DI water should contain no detectable heavy metals or other inorganic constituents.

Procedures for Sampling Equipment:

1. Remove all soils to the extent possible.
2. Through a combination of scrubbing using soap and/or steam cleaning remove visible dirt/soils.
3. Rinse with tap water.
4. Rinse equipment with pesticide grade isopropanol. PVC or plastic items should not be solvent rinsed.
5. Rinse thoroughly with DI water.
6. To the extent possible allow components to air dry.
7. If the device is to be used immediately, screen with a photoionization detector/flame ionization detector to ensure all solvents (if they were used) and trace contaminants have been adequately removed.
8. Remove from the decontamination area and cover with clean plastic. If equipment is to be stored overnight, it will be wrapped in aluminum foil and covered with clean, unused plastic.

Procedures for Water Level Meter:

1. Wash with soap and tap water.
2. Rinse with tap water.
3. Rinse with DI water.

Procedures for Submersible Well Development Pump:

1. Scrub the exterior of the pump, electrical cord, and hose using a brush, soap, and tap water.
2. Rinse with tap water.
3. Rinse with DI water.
4. Place the equipment in a clean plastic bag.

Procedures for Pumps Designed to be Disassembled for Field Cleaning:

1. Disassemble the check valve assembly.
2. Scrub all components with a brush, soap, and tap water.

3. Rinse with DI water.
4. Reassemble.

Procedures for Downhole Drilling Equipment:

1. Steam clean with soap and high-pressure hot water. If necessary, use a brush to remove particulate matter not removed by steam cleaning.
2. Rinse thoroughly with tap water.
3. Remove from the decontamination pad and cover with clean, unused plastic. If the equipment will be stored overnight, secure the plastic to ensure that it stays in place.

4.8 FIELD DOCUMENTATION

Field documentation for this assessment will include field logbooks, field log forms, location and sample identification nomenclature, and sample labels.

In addition to chain-of-custody records associated with sample handling, packaging, and shipping, certain standard forms will be completed for sample description and documentation. Dedicated field logbooks will be used to record pertinent field activities. The TOM's name, FOL's name, project name and location, and project number will be recorded on the inside of the front cover of all logbooks. Entries will be recorded with waterproof, non-erasable ink. Each page of the logbook will be numbered and dated. All logbook entries must be legible and contain accurate and complete information about an individual's project activities. At the end of all entries for a particular day, or a particular event if appropriate, the investigator will draw a diagonal line across the page below the last entry and initial indicating the conclusion of entries. All entries will be objective, factual, and free of personal feelings. Corrections will be made by drawing a single line through the error and entering the correct data. All corrections will be initialed and dated.

4.9 DEMOBILIZATION

Demobilization will occur at the conclusion of all other field activities related to this investigation. Activities to occur during this phase include the installation of well tags on the new monitoring wells, return of all rental field equipment, verification of proper IDW documentation and staging by the FOL, and securing of the site.

4.10 SITE MANAGEMENT AND BASE SUPPORT

TtNUS will perform this project with support from the Navy. This section of the CSWP describes the project contacts, support personnel, project milestones, and time frames of all major events.

Throughout the duration of the investigation activities, work at NAVSTA Mayport will be coordinated through NAVFAC SE, FDEP, and NAVSTA Mayport personnel. The primary contacts are as follows:

1. NAVFAC SE
   Ms. Adrienne Wilson
   PO Box 190010
   North Charleston, SC 29419-9010
   (843) 820-5582

2. FDEP
   Mr. John Winters
   2600 Blair Stone Road
   Tallahassee, FL 32399
   (850) 245-8999

3. NAVSTA Mayport Environmental Department
   Ms. Diane Racine
   P.O. Box 280067
   Mayport, FL 32228-0067
   (904) 270-6730, extension 208

NAVSTA Mayport personnel will provide the following support functions:

- Assist TtNUS in locating underground utilities prior to the commencement of drilling operations.

- Provide existing engineering plans, drawings, diagrams, files, etc. to facilitate evaluation of the sites under investigation.

- Provide all historical data, background geological and hydrogeological information, and initial site investigation documents.

NAVSTA Mayport personnel will aid in arranging the following:

- Personnel identification badges, vehicle passes, and/or entry permits.

- A supply (e.g., fire hydrant, stand pipe, etc.) of large quantities of potable water for equipment cleaning, sampling, etc.

The project will be staffed with personnel from the TtNUS' Jacksonville, Florida office. During field activities, TtNUS will provide an FOL who is familiar with the scope of work to be completed and requirements of working at NAVSTA Mayport. Additionally, TtNUS will supply one DPT rig and a TtNUS field crew to supervise drilling activities and sample the groundwater monitoring wells.

Mr. Mark Peterson is the TOM for CTO 0050 and will be the primary point of contact for the Station and the FOL. He is responsible for cost and schedule control as well as technical performance. Mr. Peterson will provide senior level review and oversight during field activities.

4.10.1 Contingency Plan

In the event of problems that may be encountered during site activities, the TtNUS TOM will be notified immediately, followed by the NAVFAC SE point of contact, and the NAVSTA Mayport point of contact. The TOM will determine a course of action so as to not interfere with the schedule or budget. Contingency plans will be approved through the NAVFAC SE point of contact before being enacted.

5.0 LABORATORY ANALYSIS

The laboratory analysis method of the soil samples were derived from known release compounds as recorded on the Butimastic No. 50 MSDS sheet provided as Appendix C. Petroleum-based compounds identified on the MSDS sheet and each analysis used to sample for these compounds in the field are discussed in Section 4.2.2. The soil samples from the known release area will be analyzed to determine the constituents present. Based on these findings step-out samples used for delineation purposes will be analyzed for only the soil exceedances which originated from the source area.

Groundwater samples will be analyzed for the constituents of concern detected above the SCTLs during the soil quality investigation discussed in Section 4.2.2 of this report. The laboratory analytical methods proposed for the detection of the known release compounds as recorded on the MSDS sheet for Butimastic No. 50 are shown in Table 4-1 of Section 4.2.1.

6.0 REPORTING

A CSR detailing the findings of this assessment will be submitted to FDEP on behalf of the Navy following completion of the field work. The CSR will use Chapter 62-777, FAC, contamination criteria to determine action levels of potential contaminants. Based on these results recommendations will be provided.

7.0 PROPOSED SCHEDULE

Field activities include soil sampling, monitoring well installation and development, groundwater sampling, surveying, and IDW management. Work will begin based on access to the site and completion of planning documents. The projected month to begin work in the field is March 2008 and will take approximately 5 months to complete. The following is the anticipated schedule for activities associated with this investigation:

- Utility Clearances 2 days
- Driller Coordination and Mobilization 1 day
- Soil Investigation 1 day per event
- Monitoring Well Installation and Development 3 days
- Monitoring Well Sampling 2 days
- Analysis of Samples 45 days per event
- IDW Management/Disposal 70 days from start of DPT sampling
- CSR 45 days after receiving all soil and groundwater data

It is currently anticipated that tasks for this project will be completed with limited delays occurring during transition between tasks. However, delays during task transition are possible.

Assuming that nothing unusual is discovered during this scope of work for assessment activities, once the fieldwork is complete and the laboratory analytical data is received and processed, the CSR will be prepared.

REFERENCES

FDEP (Florida Department of Environmental Protection), 2005a. Petroleum Contamination Site Cleanup Criteria, Chapter 62-770, Florida Administrative Code, April 17, 2005.

FDEP, 2005b. Contaminated Site Cleanup Criteria, Chapter 62-680, Florida Administrative Code, April 17, 2005

FDEP, 2004. Standard Operating Procedures for Field Activities DEP-SOP-001/01, February 1, 2004.

APPENDIX A

EXCERPTS FROM CH2M HILL INTERIM SOURCE REMOVAL REPORT

Interim Source Removal Report
Soil Excavation at Satellite Two Parking Lot

Naval Station Mayport
Mayport, Florida

Contract No. N62467-01-D-0331
Contract Task Order No. 0051

Submitted to:

U.S. Naval Facilities
Engineering Command Southeast

Prepared by

CH2MHILL

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

October 2006

Interim Source Removal Report
Soil Excavation at Satellite Two Parking Lot

Naval Station Mayport
Mayport, Florida

Contract No. N62467-01-D-0331
Contract Task Order No. 0051

Prepared by

115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

October 2006

Prepared/Approved By:

Michael Halil, Project Manager — October 23, 2006 Date

Approved By:

Scott Smith, Program Manager — October 23, 2006 Date

Client Acceptance:

U.S. Navy Responsible Authority — Date

PROFESSIONAL CERTIFICATION

The contractor, CH2M HILL Constructors, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data, delivered herewith under Contract No. N62467-01-D-0331, Contract Task Order No. 0051 is complete and accurate and complies with all requirements of this contract and standard professional practices at the time the submittal was prepared.

DATE: 10-20-06

NAME AND TITLE OF CERTIFYING OFFICIAL: Michael D. Halil

Michael D. Halil, P.E.
Project Manager
Professional Engineer Number 0000058049
Expiration Date: February 28, 2007

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- Transportation and Disposal Log
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- Tar Coating Material Safety Data Sheet (Bitumasic No. 50)
- Naval Station Mayport Excavation Permit
- Fill Material Certification

D **Laboratory Analytical Reports** (provided on CD)

Acronyms

bgs	below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CH2M HILL	CH2M HILL Constructors, Inc.
CTO	Contract Task Order
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FL-PRO	Florida Petroleum Range Organic
µg/L	microgram per liter
mg/kg	milligrams per kilogram
NAVFAC SE	U.S. Naval Facilities Engineering Command, Southeast
NAVSTA	Naval Station
PAHs	polynuclear aromatic hydrocarbons
QC	quality control
SCTLs	Soil Cleanup Target Levels
TCLP	toxicity characteristic leaching procedure
TRPH	total recoverable petroleum hydrocarbons

1.0 Introduction

CH2M HILL Constructors, Inc. (CH2M HILL) was contracted by the U.S. Naval Facilities Engineering Command, Southeast (NAVFAC SE) to perform soil excavation at Satellite Two Parking Lot located at Naval Station (NAVSTA) Mayport, Mayport, Florida, under Response Action Contract No. N62467-01-D-0331, Contract Task Order (CTO) No. 0051.

Soil excavation activities were completed as an Interim Source Removal in accordance with the Petroleum Contamination Site Cleanup Criteria, Chapter 62-770, Florida Administrative Code (FAC), Sections 62-770.160 and 62-770.300 (Florida Department of Environmental Protection [FDEP], 2005); the NAVSTA Mayport Basewide Work Plan (CH2M HILL, 1999); and the CTO No. 0051 Work Plan Addendum No. 06, Soil Excavation at Satellite Two Parking Lot (CH2M HILL, 2006).

1.1 Site Description

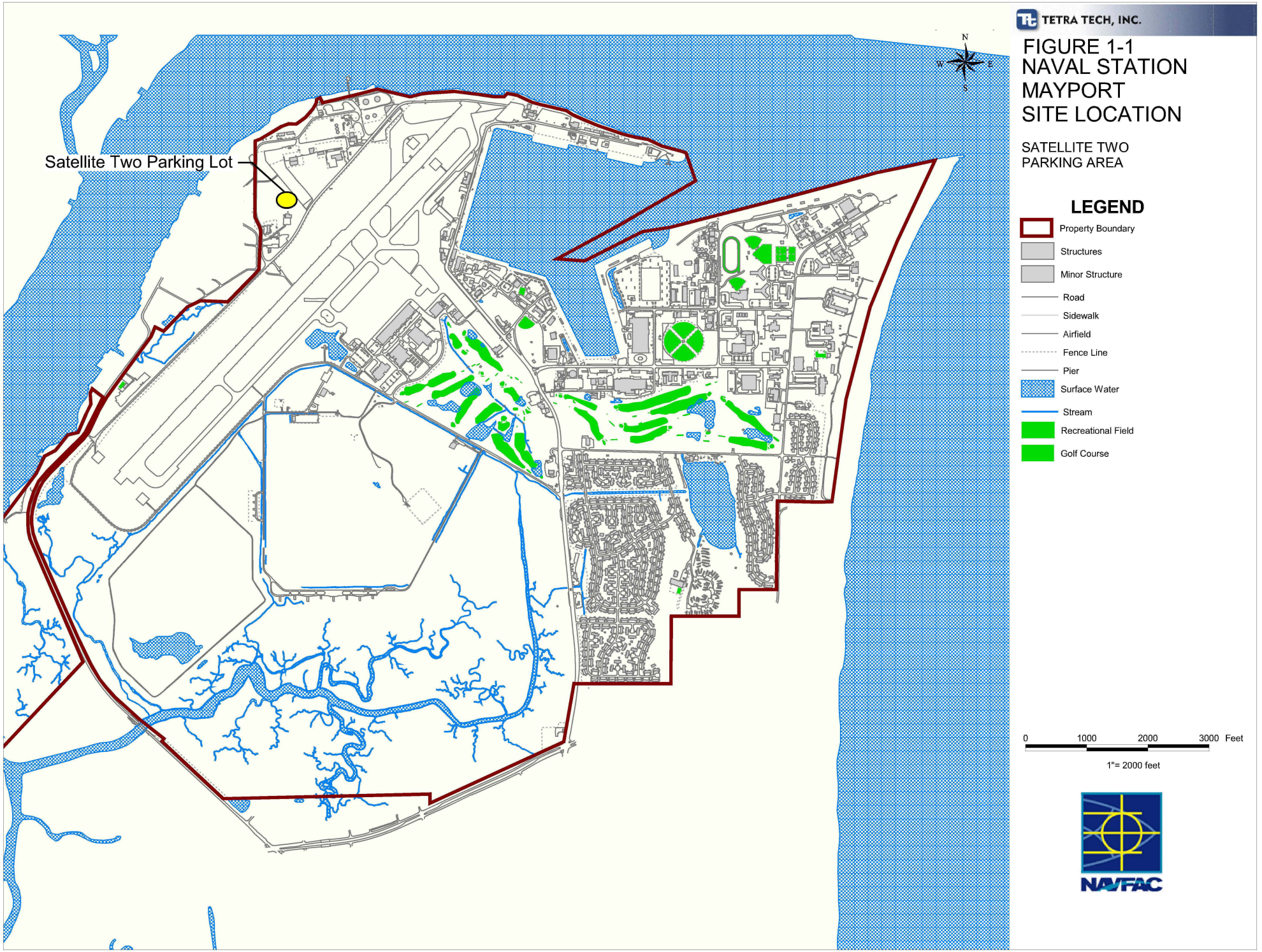
Satellite Two Parking Lot is located in the northwest section of NAVSTA Mayport adjacent to Patrol Road (Figure 1-1). The parking lot is covered with crushed limerock and soil with understory vegetation on the perimeter (Figure 1-2). Satellite Two Parking Lot is used infrequently as an overflow parking area and storage space for large equipment.

Ship camels, structures used to separate large vessels that are moored together, staged at Satellite Two Parking Lot were determined to be unusable. While dismantling the internal steel structures, tar coating that had not cured completely was encountered, resulting in a release (less than 25 gallons) to the ground. The tar coating is identified as Bitumastic No. 50 and is composed of various petroleum constituents. The material safety data sheet for the tar coating is provided in Appendix C. Heavy equipment ground the tar coating into the crushed limerock and soil during further camel dismantling. It was visually estimated by NAVSTA Mayport that tar coating mixed in with the crushed limerock and soil within an approximate 115-foot by 30-foot area to an approximate depth of 6 inches. The estimated impacted area is shown on Figure 1-2.

The tar coating release was discovered on March 20, 2006, with notifications to the FDEP and City of Jacksonville of the release completed by NAVSTA Mayport on March 21, 2006.

1.2 Project Objectives

The project objective specified in the CTO No. 0051 Work Plan Addendum No. 06 (CH2M HILL, 2006) was to excavate to completely remove tar coating-impacted crushed limerock and soil; transport and dispose of the excavated crushed limerock and soil; collect and laboratory analyze confirmatory soil samples to verify complete removal; and backfill, grade, and restore the excavated area. Achieving the project objective would fulfill the Interim Source Removal requirements specified in FAC 62-770.300.



TETRA TECH, INC.

FIGURE 1-1
NAVAL STATION MAYPORT SITE LOCATION

SATELLITE TWO PARKING AREA

LEGEND

- Property Boundary
- Structures
- Minor Structure
- Road
- Sidewalk
- Airfield
- Fence Line
- Pier
- Surface Water
- Stream
- Recreational Field
- Golf Course

0 1000 2000 3000 Feet

1"= 2000 feet

NAVFAC

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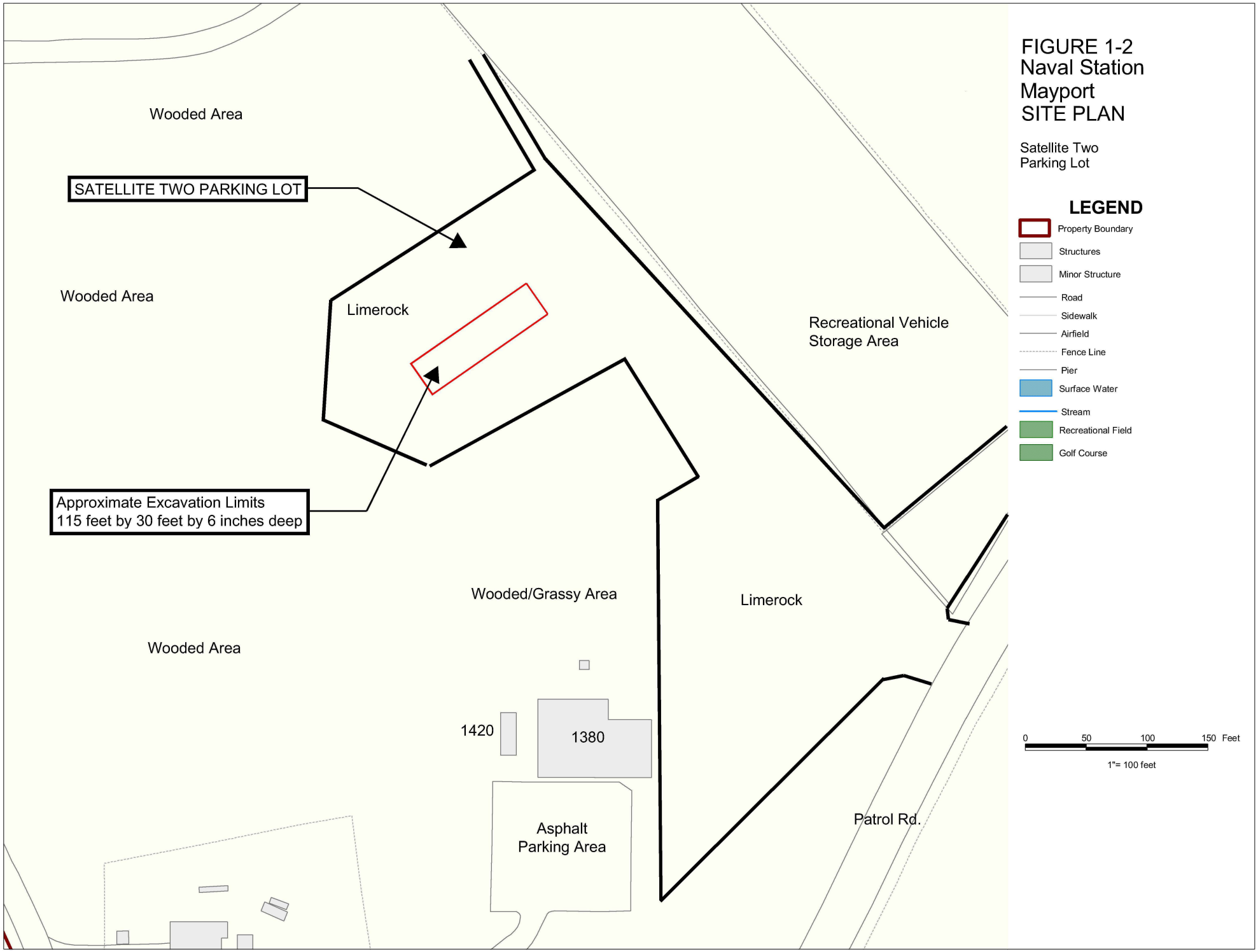

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2.0 Project Activities

Tar coating-impacted crushed limerock and soil excavation activities were completed on July 6, 11, and 25, 2006, and September 15, 2006. Additional task-specific details on the project schedule are included throughout this section.

CH2M HILL provided personnel for all field operations throughout the course of the project. CH2M HILL field staff included Project Superintendents, Quality Control (QC) Managers, Site Health and Safety Specialists, and Field Technicians. Details of daily project activities were maintained in the daily Contractor Production/QC Reports, field logbooks, and site field records. Photographs were taken throughout the project and representative photographs are provided in Appendix A.

2.1 Mobilization and Site Preparation

In preparation for site activities, an excavation permit was completed in accordance with facility procedures. Sunshine State One-call of Florida and NAVSTA Mayport Facilities Engineering Division conducted the utility locates for excavation permit completion. The excavation permit was completed from June 14, 2006 to July 6, 2006. A copy of the completed excavation permit is provided in Appendix C.

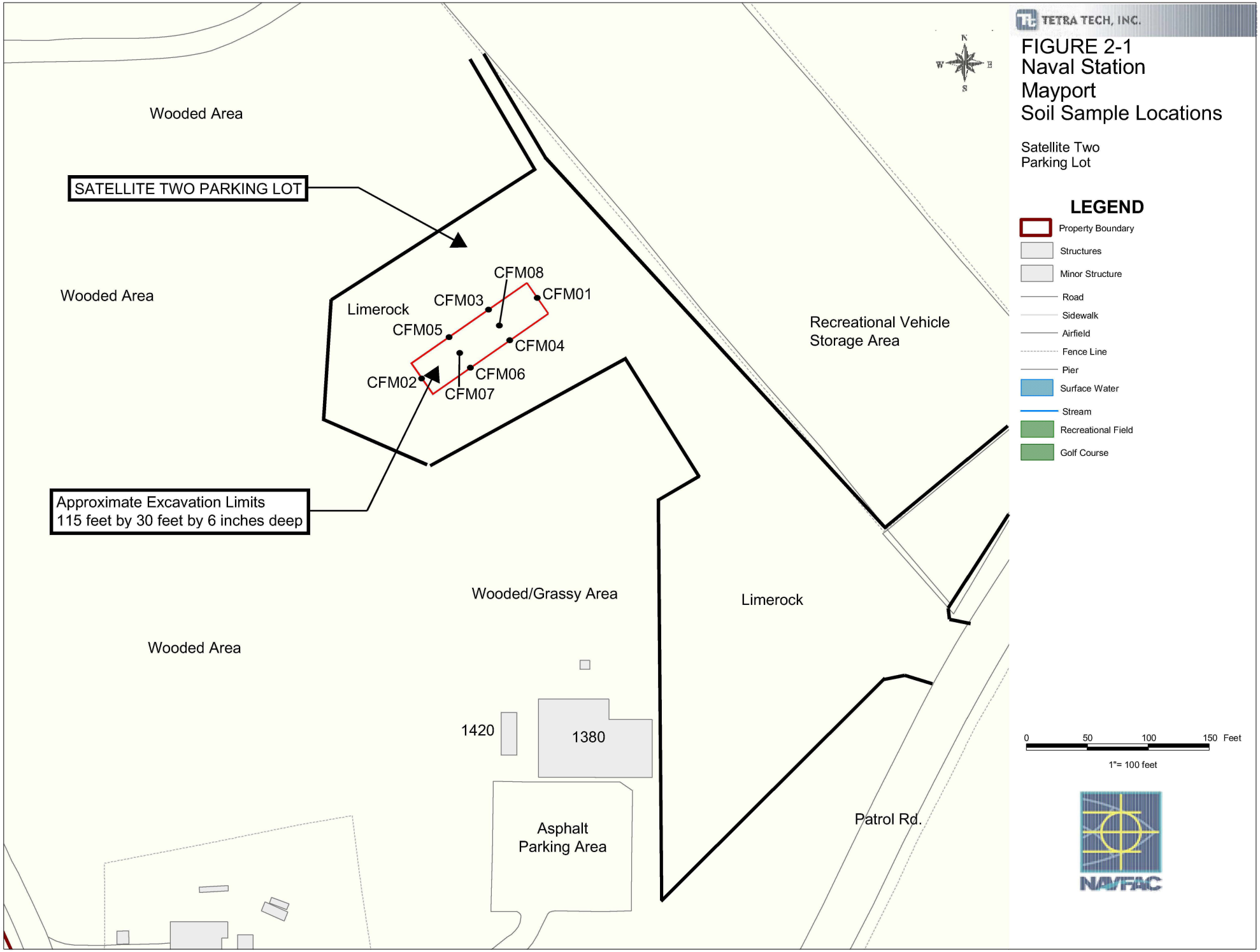
CH2M HILL completed mobilization and site preparation activities on July 6, 2006. This task consisted of mobilizing personnel and equipment, to include a rubber tire backhoe and bulldozer, to the work site; delineating the area of tar coating-impacted crushed limerock and soil for excavation based on a site visit with NAVSTA Mayport; establishing equipment and material laydown areas, to include constructing a stockpile area for the excavated material with plastic sheeting and sandbags; and receiving and staging 74 tons of Florida Department of Transportation (FDOT) CD01 26-100 crushed limerock fill material supplied by Conrad Yelvington Distributors, Inc.

2.2 Soil Excavation

On July 6, 2006, CH2M HILL completed excavation of the 115- by 30-foot tar coating-impacted crushed limerock and soil area to an approximate depth of 6 inches using a bulldozer and rubber tire backhoe. The heavy equipment used and methods to dismantle the camels created an uneven grade over the impacted area, which caused difficulties in verifying the excavation total depth; however, the excavated area and area surrounding the excavation were visually inspected by the Project QC Manager to confirm complete removal of tar coating-impacted crushed limerock and soil.

The excavated tar coating-impacted crushed limerock and soil was stockpiled in a lined and bermed area using the bulldozer and rubber tire backhoe, and covered with plastic sheeting while awaiting transportation for disposal.

The excavated area of tar coating-impacted crushed limerock and soil is shown on Figures 1-2, 2-1, and 2-2.



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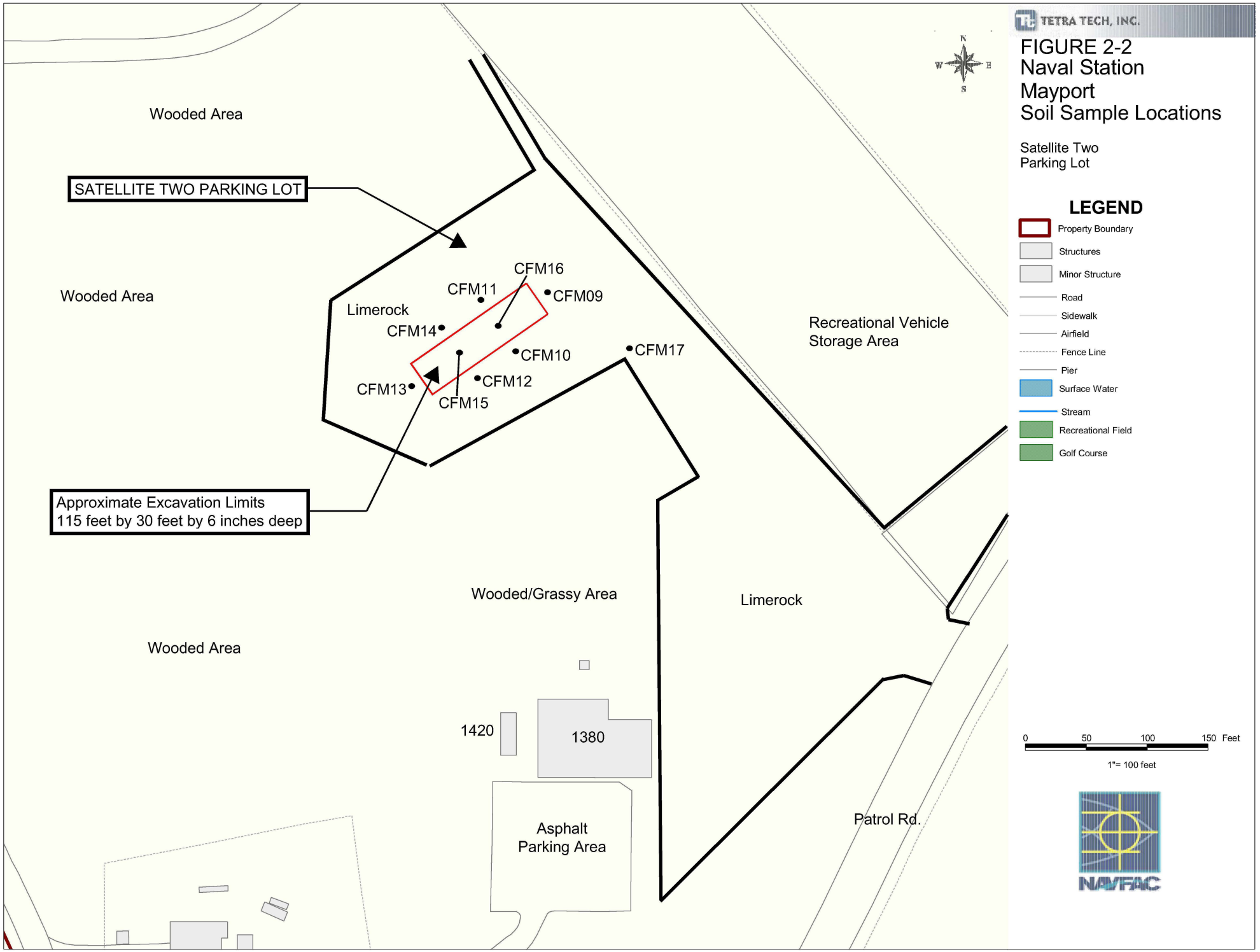

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2.3 Confirmatory Soil Sampling and Analyses

2.3.1 Confirmatory Soil Sampling and Analyses – Round 1

Following excavation, eight representative confirmatory soil samples were collected by CH2M HILL on July 6, 2006, to confirm the horizontal and vertical excavation extents. Two confirmatory soil samples, identified as CFM01 and CFM02, were collected for the excavation end walls at depths of 0 to 6 inches below ground surface (bgs); four confirmatory soil samples, identified as CFM03, CFM04, CFM05, and CFM06, were collected for the excavation side walls at depths of 0 to 6 inches bgs; and two confirmatory soil samples, identified as CFM07 and CFM08, were collected from the floor of the excavation. Since no "worst case" locations based on visual observation were identified, sample locations were evenly spaced across the excavation area. The confirmatory soil sample locations are shown on Figure 2-1.

Each confirmatory soil sample was analyzed by Empirical Laboratories, LLC. for the following parameters:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) SW-846 Method 8260B
- 16 listed polynuclear aromatic hydrocarbons (PAHs) with 1- and 2-methylnaphthalene by EPA SW-846 Method 8270C SIMS
- Total recoverable petroleum hydrocarbons (TRPH) by the Florida Petroleum Range Organics (FL-PRO) Method (Samples exceeding a concentration of 460 milligrams per kilogram [mg/kg] were further speciated into the following routinely supplied hydrocarbon ranges of >C8-C10, >C10-C12, >C12-C16, >C16-C22, and >C22-C36.)

Because of a laboratory error that resulted in improperly preserving the soil samples collected for BTEX analysis on receipt July 8, 2006, each soil sample location was re-sampled on July 11, 2006 for BTEX analysis by EPA SW-846 Method 8260B. The confirmation soil sample analytical results compared to FDEP Direct Exposure-Residential, Direct Exposure-Commercial/Industrial, and Leachability based on Groundwater Criteria Soil Cleanup Target Levels (SCTLs) are listed in Tables 2-1 and 2-2. The laboratory analytical reports are provided in Appendix D.

Following is an evaluation of the confirmatory soil sample analytical results:

- Total xylene concentrations exceed the Leachability based on Groundwater Criteria SCTL in sample locations CFM03 and CFM07.
- TRPH concentrations exceed the Direct Exposure-Residential and Leachability based on Groundwater Criteria SCTLs in sample locations CFM03, CFM04, CFM05, and CFM07. TRPH concentrations are below the Direct Exposure-Commercial/Industrial SCTL in each sample location.

TABLE 2-1
Confirmation Soil Sample Analytical Summary - Round 1
Compared to Direct Exposure-Residential and Leachability based on Groundwater Criteria SCTLs

Parameter and Analysis		Location	CFM01	CFM02	CFM03	CFM04	CFM05	CFM06	CFM07	CFM08	CFM01	CFM02	CFM03	CFM04	CFM05	CFM06	CFM07	CFM08
		Sample ID	51CFM01S060706	51CFM02S060706	51CFM03S060706	51CFM04S060706	51CFM05S060706	51CFM06S060706	51CFM07S060706	51CFM08S060706	51CFM1BS060711	51CFM2BS060711	51CFM3BS060711	51CFM4BS060711	51CFM5BS060711	51CFM6BS060711	51CFM7BS060711	51CFM8BS060711
		Sample Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006
		Units in mg/kg																
	SCTL[1RES]	LGW																
FL-PRO																		
TRPH	460	340	170 JB	200 JB	**580 JB**	**2200 JB**	**2600 JB**	5.8 JB	**1900 JB**	24 JB	NA	NA	NA	NA	NA	NA	NA	NA
C10-C12	900	520	NA	NA	4.1 B	18 B	9.3 B	NA	16 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	1500	1000	NA	NA	20 B	65 B	61 B	NA	84 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C22	1300	3200	NA	NA	170 B	570 B	790 B	NA	530 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C22-C36	2300	25000	NA	NA	480 B	1500 B	**2400 B**	NA	1200 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C8-C10	460	340	NA	NA	18 B	200 B	39 B	NA	150 B	NA								
EPA SW-846 Method 8260B																		
Benzene	1.2	0.007	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.24 U	0.0046 U	0.005 U	0.0056 U	0.27 U	0.0052 U
Ethylbenzene	1500	0.6	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.53	0.0046 U	0.005 U	0.0056 U	0.15 J	0.0052 U
Toluene	7500	0.5	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.24 U	0.0046 U	0.005 U	0.0056 U	0.27 U	0.0052 U
Xylenes, total	130	0.2	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	4.6	0.0046 U	0.005 U	0.0056 U	1.5	0.0052 U
EPA SW-846 Method 8270C																		
1-methylnaphthalene	93	1.7	0.051 U	0.052 U	0.35	1.3	0.59	0.052 U	0.18	0.053 U	NA	NA	NA	NA	NA	NA	NA	NA
2-methylnaphthalene	210	0.9	0.074 J	0.021 U	0.54	2	0.96	0.021 U	0.3	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	2400	2.1	0.39 J	0.068 J	1.8	9.6 J	6.9 J	0.021 U	1.1	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	1800	29	0.02 U	0.021 U	0.021 U	0.021 U	0.02 U	0.021 U	0.02 U	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	21000	2700	0.69 J	0.15 J	2.3	11 J	7.3 J	0.021 U	1.4	0.024 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1.3	0.8	**3.3 J**	0.89	**5.9**	**34 J**	**27**	0.021 U	**4.4**	0.23 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.1	8	**3.7 J**	**1.2**	**5.7**	**30**	**24**	0.042 U	**4.3**	**0.31**	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1.3	2.6	**4.1 J**	1.2	**6.1**	**28 J**	**31**	0.042 U	**5**	0.33 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2500	35000	1.7 J	0.76 J	3 J	16 J	14 J	0.042 U	2.2	0.18 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	13	26	1.6 J	0.74 J	3.9	**21 J**	**14 J**	0.042 U	2.2	0.19 J	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	130	83	4.3 J	1.3	7.4	40	34	0.021 U	5.4	0.34 J	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.1	0.8	**0.52 J**	**0.2 J**	**0.86 J**	**4.2 U**	**4.4 J**	0.042 U	**0.7 J**	0.043 U	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	3200	1300	6 J	1.6	14	76	71	0.021 U	9.7	0.38	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	2600	170	0.4 J	0.083 J	1.6	10 J	6.2 J	0.021 U	0.95	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	1.3	7.2	**1.9 J**	0.74	**3.2 J**	**18 J**	**15 J**	0.021 U	**2.4**	0.17 J	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	55	1.3	0.032 J	0.021 U	0.24	1	0.4	0.021 U	0.12 J	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	2200	270	4 J	1	12	74	42	0.021 U	7.5	0.12 J	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2400	960	5.1 J	2	10	61	54	0.021 U	7.4	0.59	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
All concentrations reported in milligrams per kilogram (mg/kg)
SCTL[1RES] - Direct Exposure-Residential Soil Cleanup Target Level
LGW - Leachability based on Groundwater Criteria Soil Cleanup Target Level
NA - Not analyzed
U - The analyte was analyzed for, but not detected
J - Result is estimated
B - The analyte was detected in the associated method and/or calibration blank
UJ - Value non-detected estimated
JB - Estimated value and the analyte was detected in the associated method and/or calibration blank
Values Bolded Only are concentrations exceeding the Direct Exposure-Residential Soil Cleanup Target Level
Values Shaded Only are concentrations exceeding the Leachability based on Groundwater Criteria Soil Cleanup Target Level
Values Bolded and Shaded are concentrations exceeding both Direct Exposure-Residential and Leachability based on Groundwater Criteria Soil Cleanup Target Levels

TABLE 2-2
Confirmation Soil Sample Analytical Summary - Round 1
Compared to Direct Exposure-Commercial/Industrial and Leachability based on Groundwater Criteria SCTLs

Parameter and Analysis		Location	CFM01	CFM02	CFM03	CFM04	CFM05	CFM06	CFM07	CFM08	CFM01	CFM02	CFM03	CFM04	CFM05	CFM06	CFM07	CFM08
		Sample ID	51CFM01S060706	51CFM02S060706	51CFM03S060706	51CFM04S060706	51CFM05S060706	51CFM06S060706	51CFM07S060706	51CFM08S060706	51CFM1BS060711	51CFM2BS060711	51CFM3BS060711	51CFM4BS060711	51CFM5BS060711	51CFM6BS060711	51CFM7BS060711	51CFM8BS060711
		Sample Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006	7/11/2006
		Units in mg/kg																
	SCTL[1IND]	LGW																
FL-PRO																		
TRPH	2700	340	170 JB	200 JB	580 JB	2200 JB	2600 JB	5.8 JB	1900 JB	24 JB	NA	NA	NA	NA	NA	NA	NA	NA
C10-C12	5900	520	NA	NA	4.1 B	18 B	9.3 B	NA	16 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C12-C16	12000	1000	NA	NA	20 B	65 B	61 B	NA	84 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C16-C22	11000	3200	NA	NA	170 B	570 B	790 B	NA	530 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C22-C36	40000	25000	NA	NA	480 B	1500 B	2400 B	NA	1200 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
C8-C10	2700	340	NA	NA	18 B	200 B	39 B	NA	150 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
EPA SW-846 Method 8260B																		
Benzene	1.7	0.007	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.24 U	0.0046 U	0.005 U	0.0056 U	0.27 U	0.0052 U
Ethylbenzene	9200	0.6	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.53	0.0046 U	0.005 U	0.0056 U	0.15 J	0.0052 U
Toluene	60000	0.5	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	0.24 U	0.0046 U	0.005 U	0.0056 U	0.27 U	0.0052 U
Xylenes, total	700	0.2	NA	NA	NA	NA	NA	NA	NA	NA	0.0056 U	0.007 U	4.6	0.0046 U	0.005 U	0.0056 U	1.5	0.0052 U
EPA SW-846 Method 8270C																		
1-methylnaphthalene	510	1.7	0.051 U	0.052 U	0.35	1.3	0.59	0.052 U	0.18	0.053 U	NA	NA	NA	NA	NA	NA	NA	NA
2-methylnaphthalene	2100	0.9	0.074 J	0.021 U	0.54	2	0.96	0.021 U	0.3	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20000	2.1	0.39 J	0.068 J	1.8	9.6 J	6.9 J	0.021 U	1.1	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	20000	29	0.02 U	0.021 U	0.021 U	0.021 U	0.02 U	0.021 U	0.02 U	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	300000	2700	0.69 J	0.15 J	2.3	11 J	7.3 J	0.021 U	1.4	0.024 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	6.6	0.8	3.3 J	0.89	5.9	**34 J**	**27**	0.021 U	4.4	0.23 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.7	8	**3.7 J**	**1.2**	**5.7**	**30**	**24**	0.042 U	**4.3**	0.31	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	6.5	2.6	4.1 J	1.2	6.1	**28 J**	**31**	0.042 U	5	0.33 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	52000	35000	1.7 J	0.76 J	3 J	16 J	14 J	0.042 U	2.2	0.18 J	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	66	26	1.6 J	0.74 J	3.9	21 J	14 J	0.042 U	2.2	0.19 J	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	640	83	4.3 J	1.3	7.4	40	34	0.021 U	5.4	0.34 J	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.7	0.8	0.52 J	0.2 J	**0.86 J**	4.2 U	**4.4 J**	0.042 U	0.7 J	0.043 U	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	59000	1300	6 J	1.6	14	76	71	0.021 U	9.7	0.38	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	33000	170	0.4 J	0.083 J	1.6	10 J	6.2 J	0.021 U	0.95	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	6.6	7.2	1.9 J	0.74	3.2 J	**18 J**	**15 J**	0.021 U	2.4	0.17 J	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	300	1.3	0.032 J	0.021 U	0.24	1	0.4	0.021 U	0.12 J	0.021 U	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	36000	270	4 J	1	12	74	42	0.021 U	7.5	0.12 J	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	45000	960	5.1 J	2	10	61	54	0.021 U	7.4	0.59	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
All concentrations reported in milligrams per kilogram (mg/kg)
SCTL[1IND] - Direct Exposure-Commercial/Industrial Soil Cleanup Target Level
LGW - Leachability based on Groundwater Criteria Soil Cleanup Target Level
NA - Not analyzed
U - The analyte was analyzed for, but not detected
J - Result is estimated
B - The analyte was detected in the associated method and/or calibration blank
UJ - Value non-detected estimated
JB - Estimated value and the analyte was detected in the associated method and/or calibration blank
Values Bolded Only are concentrations exceeding the Direct Exposure-Commercial/Industrial Soil Cleanup Target Level
Values Shaded Only are concentrations exceeding the Leachability based on Groundwater Criteria Soil Cleanup Target Level
Values Bolded and Shaded are concentrations exceeding both Direct Exposure-Commercial/Industrial and Leachability based on Groundwater Criteria Soil Cleanup Target Levels

- PAH concentrations (various constituents) exceed the Direct Exposure-Residential SCTLs in sample locations CFM01, CFM02, CFM03, CFM04, CFM05, CFM07, and CFM08; exceed the Leachability based on Groundwater Criteria SCTLs in sample locations CFM01, CFM02, CFM03, CFM04, CFM05, and CFM07; and exceed the Direct Exposure-Commercial/Industrial SCTLs in sample locations CFM01, CFM02, CFM03, CFM04, CFM05, and CFM07.

2.3.2 Confirmatory Soil Sampling and Analyses – Round 2

Because of the FDEP SCTL exceedances in the first round of confirmatory soil samples, eight additional soil samples and one limerock background soil sample were collected by CH2M HILL on July 25, 2006, in an attempt to delineate the horizontal and vertical extents of tar coating-impacted crushed limerock and soil. Six soil samples, identified as CFM09, CFM10, CFM11, CFM12, CFM13, and CFM14, were collected on 10-foot step-outs from the excavation area at a depth of 0 to 6 inches bgs. Two soil samples, identified as CFM15 and CFM16, were collected at the locations of samples CFM07 and CFM08 at a depth of 1.5 feet bgs. The limerock background soil sample, identified as CFM17, was collected at a depth of 0 to 6 inches bgs. The second round of confirmatory soil sample locations are shown on Figure 2-2.

Each confirmatory soil sample was analyzed by Empirical Laboratories, LLC. for the following parameters:

- BTEX by EPA SW-846 Method 8260B
- 16 listed PAHs with 1- and 2-methylnaphthalene by EPA SW-846 Method 8270C SIMS
- TRPH by the FL-PRO Method (Samples exceeding a concentration of 460 mg/kg were further speciated into the following routinely supplied hydrocarbon ranges of >C8-C10, >C10-C12, >C12-C16, >C16-C22, and >C22-C36.)

The second round of confirmation soil sample analytical results compared to FDEP Direct Exposure-Residential, Direct Exposure-Commercial/Industrial, and Leachability based on Groundwater Criteria SCTLs are provided in Tables 2-3 and 2-4. The laboratory analytical reports are provided in Appendix D.

Following is an evaluation of the confirmatory soil sample analytical results:

- Total xylene concentrations exceed the Leachability based on Groundwater Criteria SCTL in sample locations CFM13 and CFM15.

- Ethylbenzene concentration exceeds the Leachability based on Groundwater Criteria SCTL in sample location CFM13.

- TRPH concentrations exceed the Direct Exposure-Residential and Leachability based on Groundwater Criteria SCTLs in sample locations CFM11 and CFM15. TRPH concentrations are below the Direct Exposure-Commercial/Industrial SCTL in each sample location.

TABLE 2-3

Confirmation Soil Sample Analytical Summary - Round 2

Compared to Direct Exposure-Residential and Leachability based on Groundwater Criteria SCTLs

Parameter and Analysis		Location	CFM09	CFM10	CFM11	CFM12	CFM13	CFM14	CFM15	CFM16	CFM17
		Sample ID	51CFM09S060725	51CFM10S060725	51CFM11S060725	51CFM12S060725	51CFM13S060725	51CFM14S060725	51CFM15S060725	51CFM16S060725	51CFM17S060725
		Sample Date	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006
		Units in mg/kg									
	SCTL[1RES]	LGW									
FL-PRO											
TRPH	460	340	100 B	23 B	**710 B**	13 JB	26 B	100 B	**830 B**	27 B	2.6 UJ
C8-C10	460	340	NA	NA	3.8 J	NA	NA	NA	19	NA	NA
C10-C12	900	520	NA	NA	2.8	NA	NA	NA	11	NA	NA
C12-C16	1500	1000	NA	NA	11 B	NA	NA	NA	54 B	NA	NA
C16-C22	1300	3200	NA	NA	290 J	NA	NA	NA	360 J	NA	NA
C22-C36	2300	25000	NA	NA	610 B	NA	NA	NA	680 B	NA	NA
EPA SW-846 Method 8260B											
Benzene	1.2	0.007	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.3 U	0.0043 U	2.5 U	0.005 U	0.0063 U
Ethylbenzene	1500	0.6	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.67	0.0043 U	2.5 U	0.005 U	0.0063 U
Toluene	7500	0.5	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.3 U	0.0043 U	2.5 U	0.005 U	0.0063 U
Xylenes, total	130	0.2	0.0053 U	0.0052 U	0.005 U	0.0058 U	5.2	0.0043 U	24	0.005 U	0.0063 U
EPA SW-846 Method 8270C											
1-methylnaphthalene	93	1.7	0.052 U	0.054 U	0.14 J	0.053 U	0.056 U	0.053 U	0.68	0.053 U	0.054 U
2-methylnaphthalene	210	0.9	0.05 J	0.022 U	0.16 J	0.021 U	0.022 U	0.021 U	0.63	0.021 U	0.022 U
Acenaphthene	2400	2.1	0.22 J	0.022 U	1.8	0.021 U	0.027 J	0.038 J	6 J	0.026 J	0.022 U
Acenaphthylene	1800	29	0.021 U	0.022 U	0.021 U	0.021 U	0.022 U	0.021 U	0.022 U	0.021 U	0.022 U
Anthracene	21000	2700	0.51 J	0.022 U	4.7 J	0.021 U	0.061 J	0.1 J	3.4	0.062 J	0.022 U
Benzo(a)anthracene	1.3	0.8	**3.4 J**	0.3	**28 J**	0.11 J	0.6	1.2	**17**	0.51	0.022 U
Benzo(a)pyrene	0.1	8	**3.8 J**	**0.46**	**37**	**0.18**	**1.4**	**2.1**	**19**	**0.54**	0.022 U
Benzo(b)fluoranthene	1.3	2.6	**4.7 J**	0.54	**41**	0.26	**1.4**	**3.9**	**22**	0.81	0.022 U
Benzo(g,h,i)perylene	2500	35000	1.4	0.18 J	15 J	0.062 J	0.5	0.97	9.3	0.15 J	0.022 U
Benzo(k)fluoranthene	13	26	2	0.38	**29 J**	0.14 J	0.66	1.3	10	0.39	0.022 U
Chrysene	130	83	5.1	0.42	34 J	0.18	0.93	1.9	20	0.71	0.022 U
Dibenz(a,h)anthracene	0.1	0.8	**0.55 J**	0.022 U	**4.9 J**	0.021 U	**0.18**	**0.3**	**1.1 U**	0.046 J	0.022 U
Fluoranthene	3200	1300	6.6	0.29	57	0.12 J	0.83	1.6	36	0.87	0.022 U
Fluorene	2600	170	0.21 J	0.022 U	1.5	0.021 U	0.026 J	0.036 J	3.5	0.021 U	0.022 U
Indeno(1,2,3-c,d)pyrene	1.3	7.2	**1.7**	0.19	**16 J**	0.082 J	0.59	1.1	**2.8**	0.18	0.022 U
Naphthalene	55	1.3	0.032 J	0.022 U	0.11 J	0.021 U	0.022 U	0.021 U	0.25	0.021 U	0.022 U
Phenanthrene	2200	270	4.4	0.065 J	34 J	0.033 J	0.34	0.78	26	0.55	0.022 U
Pyrene	2400	960	8.9	0.38	63	0.13 J	1	1.6	37	0.89	0.022 U

Notes:

All concentrations reported in milligrams per kilogram (mg/kg)

SCTL[1RES] - Direct Exposure-Residential Soil Cleanup Target Level

LGW - Leachability based on Groundwater Criteria Soil Cleanup Target Level

NA - Not analyzed

U - The analyte was analyzed for, but not detected

J - Result is estimated

B - The analyte was detected in the associated method and/or calibration blank

UJ - Value non-detected estimated

JB - Estimated value and the analyte was detected in the associated method and/or calibration blank

Values Bolded Only are concentrations exceeding the Direct Exposure-Residential Soil Cleanup Target Level

Values Shaded Only are concentrations exceeding the Leachability based on Groundwater Criteria Soil Cleanup Target Level

Values Bolded and Shaded are concentrations exceeding both Direct Exposure-Residential and Leachability based on Groundwater Criteria Soil Cleanup Target Levels

TABLE 2-4

Confirmation Soil Sample Analytical Summary - Round 2

Compared to Direct Exposure-Commercial/Industrial and Leachability based on Groundwater Criteria SCTLs

Parameter and Analysis		Location	CFM09	CFM10	CFM11	CFM12	CFM13	CFM14	CFM15	CFM16	CFM17
		Sample ID	51CFM09S060725	51CFM10S060725	51CFM11S060725	51CFM12S060725	51CFM13S060725	51CFM14S060725	51CFM15S060725	51CFM16S060725	51CFM17S060725
		Sample Date	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006	7/25/2006
		Units in mg/kg									
	SCTL[1IND]	LGW									
FL-PRO											
TRPH	2700	340	100 B	23 B	710 B	13 JB	26 B	100 B	830 B	27 B	2.6 UJ
C8-C10	2700	340	NA	NA	3.8 J	NA	NA	NA	19	NA	NA
C10-C12	5900	520	NA	NA	2.8	NA	NA	NA	11	NA	NA
C12-C16	12000	1000	NA	NA	11 B	NA	NA	NA	54 B	NA	NA
C16-C22	11000	3200	NA	NA	290 J	NA	NA	NA	360 J	NA	NA
C22-C36	40000	25000	NA	NA	610 B	NA	NA	NA	680 B	NA	NA
EPA SW-846 Method 8260B											
Benzene	1.7	0.007	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.3 U	0.0043 U	2.5 U	0.005 U	0.0063 U
Ethylbenzene	9200	0.6	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.67	0.0043 U	2.5 U	0.005 U	0.0063 U
Toluene	60000	0.5	0.0053 U	0.0052 U	0.005 U	0.0058 U	0.3 U	0.0043 U	2.5 U	0.005 U	0.0063 U
Xylenes, total	700	0.2	0.0053 U	0.0052 U	0.005 U	0.0058 U	5.2	0.0043 U	24	0.005 U	0.0063 U
EPA SW-846 Method 8270C											
1-methylnaphthalene	510	1.7	0.052 U	0.054 U	0.14 J	0.053 U	0.056 U	0.053 U	0.68	0.053 U	0.054 U
2-methylnaphthalene	2100	0.9	0.05 J	0.022 U	0.16 J	0.021 U	0.022 U	0.021 U	0.63	0.021 U	0.022 U
Acenaphthene	20000	2.1	0.22 J	0.022 U	1.8	0.021 U	0.027 J	0.038 J	6 J	0.026 J	0.022 U
Acenaphthylene	20000	29	0.021 U	0.022 U	0.021 U	0.021 U	0.022 U	0.021 U	0.022 U	0.021 U	0.022 U
Anthracene	300000	2700	0.51 J	0.022 U	4.7 J	0.021 U	0.061 J	0.1 J	3.4	0.062 J	0.022 U
Benzo(a)anthracene	6.6	0.8	3.4 J	0.3	**28 J**	0.11 J	0.6	1.2	**17**	0.51	0.022 U
Benzo(a)pyrene	0.7	8	**3.8 J**	0.46	**37**	0.18	**1.4**	**2.1**	**19**	0.54	0.022 U
Benzo(b)fluoranthene	6.5	2.6	4.7 J	0.54	**41**	0.26	1.4	3.9	**22**	0.81	0.022 U
Benzo(g,h,i)perylene	52000	35000	1.4	0.18 J	15 J	0.062 J	0.5	0.97	9.3	0.15 J	0.022 U
Benzo(k)fluoranthene	66	26	2	0.38	29 J	0.14 J	0.66	1.3	10	0.39	0.022 U
Chrysene	640	83	5.1	0.42	34 J	0.18	0.93	1.9	20	0.71	0.022 U
Dibenz(a,h)anthracene	0.7	0.8	0.55 J	0.022 U	**4.9 J**	0.021 U	0.18	0.3	1.1 U	0.046 J	0.022 U
Fluoranthene	59000	1300	6.6	0.29	57	0.12 J	0.83	1.6	36	0.87	0.022 U
Fluorene	33000	170	0.21 J	0.022 U	1.5	0.021 U	0.026 J	0.036 J	3.5	0.021 U	0.022 U
Indeno(1,2,3-c,d)pyrene	6.6	7.2	1.7	0.19	**16 J**	0.082 J	0.59	1.1	2.8	0.18	0.022 U
Naphthalene	300	1.3	0.032 J	0.022 U	0.11 J	0.021 U	0.022 U	0.021 U	0.25	0.021 U	0.022 U
Phenanthrene	36000	270	4.4	0.065 J	34 J	0.033 J	0.34	0.78	26	0.55	0.022 U
Pyrene	45000	960	8.9	0.38	63	0.13 J	1	1.6	37	0.89	0.022 U

Notes:

All concentrations reported in milligrams per kilogram (mg/kg)

SCTL[1IND] - Direct Exposure-Commercial/Industrial Soil Cleanup Target Level

LGW - Leachability based on Groundwater Criteria Soil Cleanup Target Level

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Values Bolded Only are concentrations exceeding the Direct Exposure-Commercial/Industrial Soil Cleanup Target Level

Values Shaded Only are concentrations exceeding the Leachability based on Groundwater Criteria Soil Cleanup Target Level

Values Bolded and Shaded are concentrations exceeding both Direct Exposure-Commercial/Industrial and Leachability based on Groundwater Criteria Soil Cleanup Target Levels

- PAH concentrations (various constituents) exceed the Direct Exposure-Residential SCTLs in sample locations CFM09 through CFM16; exceed the Leachability based on Groundwater Criteria SCTLs in sample locations CFM09, CFM11, CFM14, and CFM15; and exceed the Direct Exposure-Commercial/Industrial SCTLs in sample locations CFM09, CFM11, CFM13, CFM14, and CFM15.
- The limerock background sample showed concentrations below the FDEP Direct Exposure-Residential and Leachability based on Groundwater Criteria SCTLs.

Because of the FDEP SCTL exceedances in the second round of confirmatory soil samples, no additional soil sampling was completed.

2.4 Waste Disposal Characterization of Excavated Material

Waste characterization sampling was completed by CH2M HILL on July 6, 2006, to determine the necessary waste management and transportation and disposal requirements for the excavated tar coating-impacted crushed limerock and soil. One composite sample was collected from five representative locations within the excavated material stockpile and analyzed by Empirical Laboratories, LLC for the following parameters:

- Toxicity characteristic leaching procedure (TCLP) volatile organic compounds by EPA SW-846 Method 1311/8260B
- TCLP semi-volatile organic compounds by EPA SW-846 Method 1311/8270C
- TCLP pesticides by EPA SW-846 Method 1311/8081A
- Polychlorinated biphenyls by EPA SW-846 Method 8082
- TCLP herbicides by EPA SW-846 Method 1311/8151
- TCLP metals by EPA SW-846 Method 1311/6010B/7470A
- Corrosivity by EPA SW-846 Method 9045B
- Ignitability by EPA SW-846 Method 1010

Based on evaluation of the waste disposal characterization analytical results, the excavated material was characterized as non-hazardous petroleum-contaminated. The waste disposal characterization analytical results are summarized in Table 2-5 and the laboratory analytical reports are provided in Appendix D.

TABLE 2-5
Waste Disposal Characterization Analytical Summary

Parameter and Analysis	Station ID	51WC1S06
	Sample ID	51WC1S060706
	Sample Date	7/6/2006
	Unit	
EPA SW-846 Method 1010		
Ignitability	F	158
EPA SW-846 Method 1311/6010B		
Arsenic	g/L	30 U
Barium	g/L	50 U
Cadmium	g/L	10 U
Chromium, total	g/L	20 U

TABLE 2-5
Waste Disposal Characterization Analytical Summary

Parameter and Analysis	Station ID	51WC1S06
	Sample ID	51WC1S060706
	Sample Date	7/6/2006
	Unit	
Lead	g/L	15 U
Selenium	g/L	30 U
Silver	g/L	10 U
EPA SW-846 Method 1311/7470A		
Mercury	g/L	0.8 U
EPA SW-846 Method 1311/8081A		
Chlordane	mg/L	0.0005 U
Endrin	mg/L	0.0001 U
Gamma BHC (Lindane)	mg/L	0.0001 U
Heptachlor	mg/L	0.0001 U
Heptachlor Epoxide	mg/L	0.0001 U
Methoxychlor	mg/L	0.0001 UJ
Toxaphene	mg/L	0.01 U
EPA SW-846 Method 8082		
Aroclor-1016	g/kg	17 U
Aroclor-1221	g/kg	17 U
Aroclor-1232	g/kg	17 U
Aroclor-1242	g/kg	17 U
Aroclor-1248	g/kg	17 U
Aroclor-1254	g/kg	17 U
Aroclor-1260	g/kg	17 U
EPA SW-846 Method 1311/8151		
2,4-D (Dichlorophenoxyacetic Acid)	mg/L	0.005 UJ
Silvex (2,4,5-TP)	mg/L	0.001 UJ
EPA SW-846 Method 1311/8260B		
1,1-Dichloroethene	mg/L	0.01 U
1,2-Dichloroethane	mg/L	0.01 U
1,4-Dichlorobenzene	mg/L	0.01 U
Benzene	mg/L	0.01 U
Carbon tetrachloride	mg/L	0.01 U
Chlorobenzene	mg/L	0.01 U
Chloroform	mg/L	0.01 U
Methyl ethyl ketone (2-butanone)	mg/L	0.1 U
Tetrachloroethene (PCE)	mg/L	0.01 U
Trichloroethene (TCE)	mg/L	0.01 U
Vinyl chloride	mg/L	0.02 U

TABLE 2-5
Waste Disposal Characterization Analytical Summary

Parameter and Analysis	Station ID	51WC1S06
	Sample ID	51WC1S060706
	Sample Date	7/6/2006
	Unit	
EPA SW-846 Method 1311/8270C		
2,4,5-Trichlorophenol	mg/L	0.05 U
2,4,6-Trichlorophenol	mg/L	0.05 U
2,4-Dinitrotoluene	mg/L	0.05 U
2-Methylphenol (o-Cresol)	mg/L	0.05 U
4-Methylphenol (p-Cresol)	mg/L	0.05 U
Hexachlorobenzene	mg/L	0.05 U
Hexachlorobutadiene	mg/L	0.05 U
Hexachloroethane	mg/L	0.05 U
Nitrobenzene	mg/L	0.05 U
Pentachlorophenol	mg/L	0.2 U
Pyridine	mg/L	0.2 U
EPA SW-846 Method 9045B		
pH	Units	**9.6**

Notes:
Values bold and shaded are hits.
U - The analyte was analyzed for, but not detected.
UJ - Value non-detected estimated.

2.5 Transportation and Disposal of Excavated Material

Prior to offsite disposal of the excavated tar coating-impacted crushed limerock and soil, a waste profile package was prepared and provided to Ms. Diane Racine, NAVSTA Mayport Environmental Protection Specialist, for approval and signature. Once waste profile approval was received, manifests were generated and provided to Ms. Racine for signature.

The excavated tar coating-impacted crushed limerock and soil, and stockpile cover, liner, and berm materials were loaded using a front-end loader into tandem trailer trucks on September 15, 2006, for transportation by Beaver Bulk Trucking to Waste Management-Chesser Island Road Landfill, Inc. for final disposal. Based on the non-hazardous waste manifests and truck weight tickets, 127.79 tons of non-hazardous tar coating-impacted crushed limerock and soil were transported for disposal. The Transportation and Disposal Log and copies of the waste disposal profile, certificate of disposal, non-hazardous waste manifests, and truck weight tickets are provided in Appendix B.

2.6 Backfill and Site Restoration

To be used as backfill for the excavated area, Conrad Yelvington Distributors, Inc. delivered 74 tons of FDOT CD01 26-100 crushed limerock on July 6, 2006. No certification of "clean"

fill was required; however, certification that the material was delivered direct from the quarry source is provided in Appendix C.

Because of the FDEP SCTL exceedances in the confirmatory soil samples, the excavated area was not backfilled with the crushed limerock and no significant grading or site restoration was completed to prevent contaminating uncontaminated or less contaminated areas of the site, and the uncontaminated fill material. This deviation from the scope of work was approved by Ms. Racine on September 15, 2006. The stockpiled crushed limerock was left onsite for use by NAVSTA Mayport.

2.7 Decontamination and Demobilization

Decontamination activities were completed by CH2M HILL for each day of site work, and included decontamination to remove all residual tar coating-impacted crushed limerock and soil that may be adhering to personnel or equipment as a result of excavation activities. Decontamination wastes were combined and transported and disposed of with the excavated material. Demobilization activities were also completed by CH2M HILL for each day of site work, and included removing all equipment, temporary facilities, and site controls, and any debris or solid waste material remaining from excavation activities was removed and properly disposed.

3.0 Conclusions and Recommendations

3.1 Site Status Summary

Tar coating-impacted crushed limerock and soil excavation activities were completed on July 6, 11, and 25, 2006, and September 15, 2006. As documented in this Interim Source Removal Report, CH2M HILL completed the following scope of work as outlined in the CTO No. 0051 Work Plan Addendum No. 06 (CH2M HILL, 2006):

- Completed mobilization and site preparation activities, to include completing the excavation permit; mobilizing the appropriate personnel, equipment, and materials to the work site; and establishing equipment and material laydown areas, to include constructing a stockpile area for the excavated material.
- Completed tar coating-impacted crushed limerock and soil excavation of the 115-foot by 30-foot impacted area to an approximate depth of 6 inches. The heavy equipment used and methods to dismantle the camels created an uneven grade over the impacted area, which caused difficulties in verifying the excavation total depth; however, the excavated area and area surrounding the excavation were visually inspected by the Project QC Manager to confirm complete removal of tar coating-impacted crushed limerock and soil. The excavated tar coating-impacted crushed limerock and soil was stockpiled while awaiting transportation for disposal.
- Completed confirmatory soil sampling and laboratory analyses, initially to confirm the excavation extents, and then to attempt to delineate the horizontal and vertical extents of tar coating-impacted crushed limerock and soil. Sixteen confirmatory soil samples and one limerock background sample were collected and analyzed for BTEX, 16 listed PAHs with 1- and 2-methylnaphthalene, and TRPH.
- Completed waste disposal characterization of the excavated tar coating-impacted crushed limerock and soil to determine the necessary waste management and transportation and disposal requirements. One composite sample from five representative locations was collected within the excavated material stockpile and laboratory analyzed. Based on evaluation of the waste disposal characterization analytical results, the excavated material was characterized as non-hazardous petroleum-contaminated.
- Completed waste profiling, manifesting, and transportation and disposal of 127.79 tons of non-hazardous tar coating-impacted crushed limerock and soil.
- Because of the FDEP SCTL exceedances in the confirmatory soil samples, the excavated area was not backfilled with the received crushed limerock and no significant grading or site restoration was completed to prevent contaminating uncontaminated or less contaminated areas of the site, and the uncontaminated fill material. This deviation from the scope of work was approved by Ms. Racine on September 15, 2006. The stockpiled crushed limerock was left onsite for use by NAVSTA Mayport.

- Completed decontamination to remove all residual tar coating-impacted crushed limerock and soil that may be adhering to personnel or equipment as a result of excavation activities. Decontamination wastes were combined and transported and disposed of with the excavated material.
- Completed demobilization activities, to include removing all equipment, temporary facilities, and site controls, and any debris or solid waste material remaining from excavation activities was removed and properly disposed.

3.2 Recommendations

The completed tar coating-impacted crushed limerock and soil excavation was completed as an Interim Source Removal in accordance with the Petroleum Contamination Site Cleanup Criteria, FAC 62-770.160 and FAC 62-770.300 (FDEP, 2005); the NAVSTA Mayport Basewide Work Plan (CH2M HILL, 1999); and the CTO No. 0051 Work Plan Addendum No. 06, Soil Excavation at Satellite Two Parking Lot (CH2M HILL, 2006).

The project objective, as specified in the CTO No. 0051 Work Plan Addendum No. 06 (CH2M HILL, 2006), to completely remove tar coating-impacted crushed limerock and soil was not achieved based on the FDEP SCTL exceedances in the confirmatory soil samples, and therefore, the Interim Source Removal requirements specified in FAC 62-770.300 were not fulfilled.

CH2M HILL recommends a Site Assessment be performed at the Satellite Two Parking Lot in accordance with FAC 62-770.600 to determine the nature and extent of petroleum contamination remaining at the site.

4.0 References

CH2M HILL Constructors, Inc. 1999. *Basewide Work Plan, Naval Station Mayport, Mayport, Florida*. May.

CH2M HILL Constructors, Inc. 2006. *Work Plan Addendum No. 06, Soil Excavation at Satellite Two Parking Lot, Naval Station Mayport, Mayport, Florida*. July.

Florida Department of Environmental Protection. 2005. *Florida Administrative Code, Chapter 62-770, Petroleum Contamination Site Cleanup Criteria*. April.

APPENDIX B

FIELD FORMS

Tetra Tech NUS, Inc.

DAILY ACTIVITIES RECORD

PROJECT NAME: _____ **PROJECT NUMBER:** _____

CLIENT: _____ **LOCATION:** _____

DATE: _____ **ARRIVAL TIME:** _____

Tt NUS PERSONNEL: _____ **DEPARTURE TIME:** _____

CONTRACTOR: _____ **DRILLER:** _____

ITEM	QUANTITY ESTIMATE	QUANTITY TODAY	PREVIOUS TOTAL QUANTITY	CUMULATIVE QUANTITY TO DATE

COMMENTS: _____

_____

_____

_____

APPROVED BY:

_____ _____

Tt NUS REPRESENTATIVE DRILLER

DATE: _____

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : _____ INSTRUMENT NAME/MODEL: _____

SITE NAME: MPT MANUFACTURER: _____

PROJECT No.: 112g00538 SERIAL NUMBER: _____

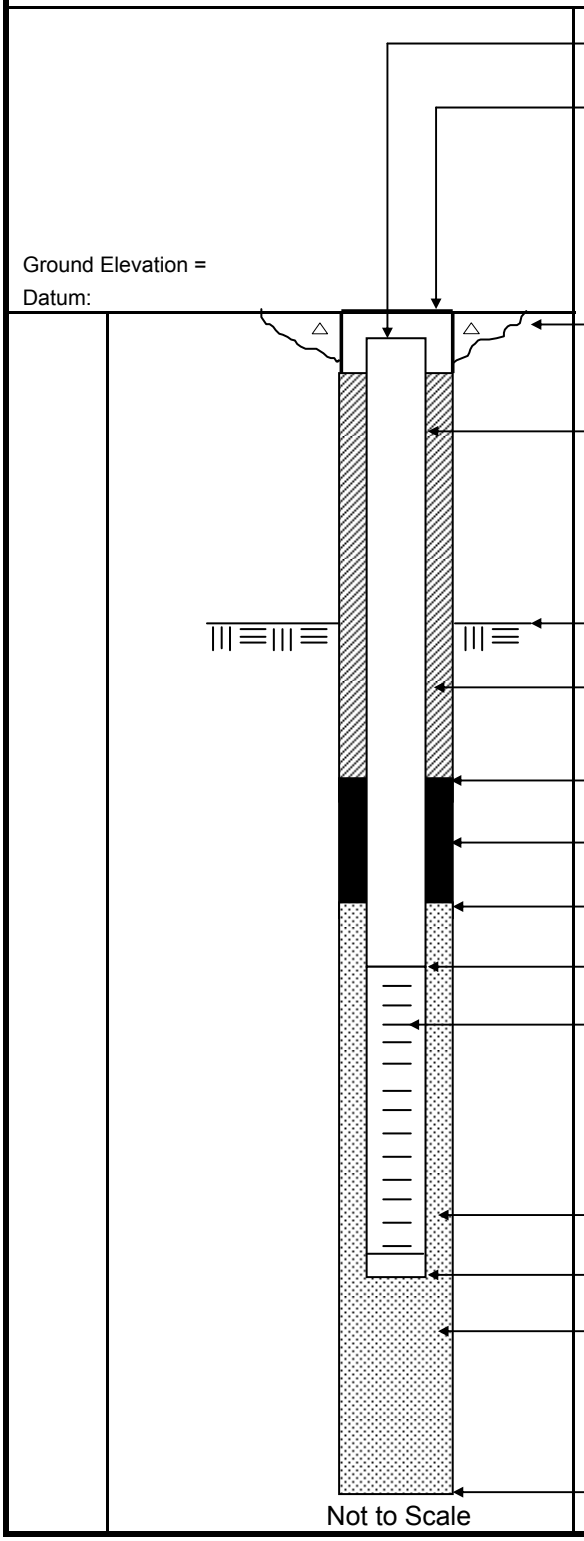
Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
				Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		

Tetra Tech NUS, Inc.

MONITORING WELL SHEET

WELL No.:

PROJECT:		DRILLING Co.:		BORING No.:	
PROJECT No.:		DRILLER:		DATE COMPLETED:	
SITE:		DRILLING METHOD:		NORTHING:	
GEOLOGIST:		DEV. METHOD:		EASTING:	



Elevation / Depth of Top of Riser: /

Elevation / Height of Top of Surface Casing: /

I.D. of Surface Casing:

Type of Surface Casing:

Type of Surface Seal:

I.D. of Riser:

Type of Riser:

Borehole Diameter:

Elevation / Depth Top of Rock: /

Type of Backfill:

Elevation / Depth of Seal: /

Type of Seal:

Elevation / Depth of Top of Filter Pack: /

Elevation / Depth of Top of Screen: /

Type of Screen:

Slot Size x Length:

I.D. of Screen:

Type of Filter Pack:

Elevation / Depth of Bottom of Screen: /

Elevation / Depth of Bottom of Filter Pack: /

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: /

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Site: _____ Depth to Bottom (ft.): _____ Project Name: _____
Well: _____ Static Water Level Before (ft.): _____ Project Number: _____
Date Installed: _____ Static Water Level After (ft.): _____ Site Geologist: _____
Date Developed: _____ Screen Length (ft.): _____ Drilling Co.: _____
Dev. Method: _____ Specific Capacity: _____
Pump Type: _____ Casing ID (in.): _____

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

SITE NAME: MAYPORT	SITE LOCATION: SITE	
WELL NO:	SAMPLE ID:	DATE:

PURGING DATA

WELL DIAMETER (in):	TOTAL WELL DEPTH (ft):	STATIC DEPTH TO WATER (ft):	WELL CAPACITY (gal/ft):

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable)

_____Liters

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable)

_____Liters

INITIAL PUMP OR TUBING DEPTH IN WELL (feet):	FINAL PUMP OR TUBING DEPTH IN WELL (feet):	PURGING INITIATED AT:	PURGING ENDED AT:	TOTAL VOLUME PURGED (Liters):

TIME	VOLUME PURGED (L)	CUMUL. VOLUME PURGED (L)	PURGE RATE (mLpm)	DEPTH TO WATER (ft)	pH	TEMP. (^{O}C)	COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTUs)	ORP (mV)	COLOR

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: TtNUS/	SAMPLER(S) SIGNATURES	SAMPLING INITIATED AT:	SAMPLING ENDED AT:
PUMP OR TUBING DEPTH IN WELL (feet):	SAMPLE PUMP FLOW RATE (mL per minute):	TUBING MATERIAL CODE: Teflon	
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (mL)	FINAL pH		
	3	CG	40 ml	HCL	40 ml		8260	SM
	1	AG	1L	--	1 L		8270	VT
	2	AG	1L	H2SO4	1L		TRPH	VT

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **PE** = Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING/PURGING EQUIPMENT CODES: **APP** = After Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **RFPP** = Reverse Flow Peristaltic Pump; **SM** = Straw Method (Tubing Gravity Drain); **VT** = Vacuum Trap; **O** = Other (Specify)

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAVSTA Mayport **Project No.:** 112G00538
Location: Building **Personnel:** T. Cottenoir
Weather Conditions: **Measuring Device:** Heron
Tidally Influenced: Yes _X_ No ___ **Remarks:**

Well or Piezometer Number MPT-	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	PID (ppm) BK/BH
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
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MW -								
MW -								
MW -								
MW -								
MW -								
MW -								
MW -								

ppm=parts per million; BK=background; and BH=borehole of the well.

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: _____
Project No.: _____

[] Surface Soil (SS)
[] Subsurface Soil (SU)
[] Sediment (SD)
[] Other: _____
[] QA Sample Type: _____

Sample ID No.: _____
Sample Location: _____
Sampled By: DS
C.O.C. No.: _____

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date:	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time:			
Method: grab			
Monitor Reading (ppm			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	LAB

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: _____ BORING No.: _____
PROJECT NUMBER: _____ DATE: _____
DRILLING COMPANY: _____ GEOLOGIST: _____
DRILLING RIG: _____ DRILLER: _____

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): ____

Remarks: _____

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Naval Station Mayport Investigative Derived Waste Drum Log

Contractor Company Name: _____

Individual Name: _____

Location Name: _____
(i.e. SWMU number, Bldg number)

Date of generation: _____

Expected date of results: _____

Drum Number: _____
(Use site # and unique drum number)

Type of Waste (i.e. drill cuttings, purge water)	**Quantity of Waste** (gals/lbs)	**Date**	**Individual's Initials/ Name**

Enclosure (1)

Revised 1/24/2006

EXCAVATION PERMIT REQUEST
Naval Station Mayport

PERMIT REQUEST NO. MYPT-10/08-000

1a. Name of Company:	**Date Requested:**		**Date Required:**
1b. Requestor:	**Phone:**	**Cell Phone:**	**Fax:**
E- Mail Address:			
1c. Government Issuing Agency: NS Mayport Public Work Engineering Office Building 1966:	**POC:** C. Wayne Purifoy (904) 5184 x 134		
2a. Project Title:	**Sub Contractor:** *(if different than 1a,1b)*		
2b. Scope of Excavation (Specify Purpose, Method, Length and Depth of Area- Attached Site-Map)			

3. Permit Request Approval prior to locate: (PW Engineering)
Name: C. Wayne Purifoy **Signature**_____ **Date:**
Comments: Contractor shall mark area of locate with white paint

4. Utility Organization Phone	**Ticket#**	**Name of Locator**	**Initial**	**Date**
4a. Primary Elec **JEA Bldg 12** (904) 270-5397 Water & Sewer				
4b. Secondary Elec **IAP Bldg 12** (904) 270-5347				
4c. Natural Gas **Sunshine State** 1-800-432-4770 Tel/Com **Sunshine State** 1-800-432-4770 CATV **Sunshine State** 1-800-432-4770				
4d. Gov Fiber-Optics NMCI Mayport **POC:** David Ludwig @ Bldg 12 (904) 270-5053 E-mail david.ludwig@nmci-isf.com				
4e.Gov Com-Cable GEMD Mayport POC Vern Benson Bldg 450 (904)270-6148 Vern.benson@navy.mil				
4f. PWO Environmental Div **POC** Cheryl Mitchell Bldg 2021 (904)270-6730 Cheryl.Mitchell@navy.mil				
4g. Navy owned –copper (phone cable: **POC** John Buettgen NAS JAX (904)542-4569				

5. Permit Request Approval after locate (PW Engineering)

Name: C. Wayne Purifoy Signature_____ Date:_____
Comments:
Is excavation within or near areas of contamination?

Contractor Supervisor / Representative:

Name:_____ Signature:_____ Date:_____

Note: Locators shall initial and date Excavation Permit Request when locates are complete: **Provide copy to PW Engineering, FAX (904) 270-5115, Attn : C. Wayne Purifoy or e-mail:** carey.purifoy@navy.mil

Note: Contractor shall mark areas with white paint identifying where locates are being requested, Provide Map of area where locates are to be performed.

Note: Locators shall call requestor (1b) to identify locations of excavation, drilling or boring when area is not clearly marked.

MONITORING WELL MATERIALS
CERTIFICATE OF CONFORMANCE

Well Designation:_____ Site Geologist: _____

Site Name: _____ Drilling Company: _____

Date Installed: _____ Driller:_____

Project Name: _____ Project Number: _____

Material	Brand/Description	Source/Supplier	Sample Collected ?
Well Casing			
Well Screen			
End Cap			
Drilling Fluid			
Drilling Fluid Additives			
Backfill Material			
Annular Filter Pack			
Bentonite Seal			
Annular Grout			
Surface Cement			
Protective Casing			
Paint			
Rod Lubricant			
Compressor Oil			

To the best of my knowledge, I certify that the above described materials were used during installation of this monitoring well.

Signature of Site Geologist:_____

APPENDIX C

BUTIMASTIC NO. 50 MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT: BITUMASTIC 50 (0025S5NL)
Date: 12/03/99 Replaces 09/21/99
(aka BITUMASTIC NO. 50)
CHEMTREC TRANSPORTATION EMERGENCY PHONE NO.: 800-424-9300
PITTSBURGH POISON CONTROL CENTER HEALTH EMERGENCY NO.: 412-681-6669

SECTION II - HAZARDOUS INGREDIENTS EXPOSURE LIMITS

CHEMICAL NAME	(A)	(B)	(C)	(D)	(E)
INDENE	95-13-6	20%	10 PPM	NE	NE
COAL TAR PITCH	65996-93-2	20%	0.2 MG/M3	NE	NE
COAL TAR CREOSOTE	8001-58-9	15%	0.2 MG/M3	NE	NE
TALC	14807-96-6	10%	2MG/M3	NE	NE
CLAY	71011-27-3	10%	NE	NE	NE
COAL TAR DISTILLATE	65996-79-4	10%	100PPM	NE	NE
TOLUENE	108-88-3	5%	50 PPM	150 PPM	NE
XYLENE	1330-20-7	5%	100 PPM	150 PPM	NE
BENZENE	71-43-2	2%	1 PPM	5PPM-15MIN	NE
NAPHTHALENE	91-20-3	2%	10 PPM	15 PPM	NE

HAZARDOUS INGREDIENTS	ADDITIONAL DATA	
CHEMICAL NAME	(F)	(G)
INDENE	NOT AVAILABLE	NO/NO/1
COAL TAR PITCH	NOT AVAILABLE	NO/NO/1,2
COAL TAR CREOSOTE	NOT AVAILABLE	NO/NO/1,2
TALC	NOT AVAILABLE	NO/NO
CLAY	NOT AVAILABLE	NO/NO
COAL TAR DISTILLATE	NOT AVAILABLE	NO/NO/NR/NO
TOLUENE	5.0 G/KG RAT ORAL, 14G/KG RABBIT DERMAL 8000 PPM/4HRS, RAT, INHALATION	NO/YES/1,2,3/ 1000#/U220
XYLENE	4300MG/KG RAT,ORAL 15000 PPM/4HRS RAT,INHALATION	NO/YES/1,2,3/ 1000#/U239
BENZENE	NOT AVAILABLE	YES/YES/1,2,3
NAPHTHALENE	NOT AVAILABLE	NO/YES/1

TABLE (A) CAS NUMBER (B) LESS THAN WT (C) TLV-TWA (D) STEL (E) CEILING (F) TOXICITY DATA (LD50/Route,LC50/Route) (G) SARA 302/SARA 313/ SARA 311-312 CATEGORIES/CERCLA. NE = not established, NR = not required, NO = no. Color Pigment Mixture may contain Iron Oxides, Titanium Dioxide, Carbon Black, and other particulates not otherwise regulated in varying amounts depending on color of product.

WHMIS CLASSIFICATION: B2 -- D2A -- D2B
HMIS/NFPA CLASSIFICATION: HEALTH 3, FLAMMABILITY 3, REACTIVITY 0, PERSONAL PROTECTION CODE G, NFPA FIRE FIGHTING PHASE 4

SECTION III - PHYSICAL DATA:

BOILING RANGE: 176F(80C)-424F(217C). VAPOR DENSITY: Heavier than air. EVAPORATION RATE: Slower than ether. VOLATILE BY WEIGHT 28 %. VOLATILE BY VOLUME: 39 %. PRODUCT WT/GAL: 11.1 LBS/U.S.GAL. 1.33 sp gr.

PRODUCT: BITUMASTIC 50 (0025S5NL)
Date: 12/03/99 Replaces 09/21/99

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

FLAMMABILITY CLASSIFICATION: FLASH POINT: 80 F(26C) (Setaflash) LEL 1.0 % UEL 7.1 %.
OSHA-FLAMMABLE LIQUID/OSHA/CLASS/1C, DOT-PAINT,3,UN1263,PGIII, CANADIAN TDGA: PAINT,3,UN1263,PGIII
EXTINGUISHING MEDIA: Dry Chemical, Foam, Carbon Dioxide, Water Fog.
FIRE AND EXPLOSION HAZARDS: Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use nonferrous tools and to wear conductive and non-sparking shoes.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate hazard area of unprotected personnel. Use a NIOSH approved self-contained breathing unit and complete body protection. Cool surrounding containers with water in case of fire exposure.

SECTION V - HEALTH HAZARD DATA:

INHALATION: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache or nausea. May cause nose and throat irritation.
CONTACT: May cause eye irritation. May cause skin irritation.
NOTICE: Contains COAL TAR CREOSOTE, BENZENE, INDENE, NAPTHALENE and COAL TAR PITCH which can cause cancer. Risk of cancer depends on duration and level of exposure. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: If you have a condition that could be aggravated by exposure to dust or organic vapors see a physician prior to use.
PRIMARY ROUTE(S) OF ENTRY: Inhalation, Dermal, Ingestion.
EMERGENCY FIRST AID PROCEDURES: When exposed always get medical attention.
EYE CONTACT: Flush with water for 15 minutes.
SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and clean before reuse.
INHALATION: Remove to fresh air. Provide oxygen if breathing is difficult. Use artificial respiration if not breathing. Get medical attention.
IF SWALLOWED: DO NOT INDUCE VOMITING!! Always get medical attention.

SECTION VI - REACTIVITY DATA:

STABILITY: This product is stable under normal storage conditions.
HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning

material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.
CONDITIONS TO AVOID: Heat, sparks, and open flames.
INCOMPATIBILITY: Avoid contact with strong oxidizing agents.

SECTION VII - SPILL OR LEAK PROCEDURES:

STEPS TO BE TAKEN IN CASE OF SPILL: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow safe handling and use guidelines in Section VIII. Contain and soak up residual with an absorbent (clay or sand). Take up absorbent material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section II for Sara Title III and CERCLA information.

SECTION VIII - SAFE HANDLING AND USE INFORMATION:

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines. (Section II). User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use.
VENTILATION: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).
SKIN AND EYE PROTECTION: Recommend impervious gloves, clothing and safety glasses with side shields or chemical goggles to avoid skin and eye contact. If material penetrates to skin, change gloves and clothing. Hypersensitive persons should wear gloves or use protective cream.
HYGIENIC PRACTICES: Wash with soap and water before eating, drinking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and pass through hazardous materials. Check shoes carefully after soaking before reuse.
APPLICATION: Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

SECTION IX - SPECIAL PRECAUTIONS:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep away from heat, sparks, open flame, and strong oxidizing agents. Keep containers closed. Store in cool, dry place with adequate ventilation. If pouring or transferring materials, ground all containers and tools.
OTHER PRECAUTIONS: Do not weld, heat, cut or drill on full or empty containers.

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages

incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

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