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RCRA FACILITY INVESTIGATION WORK PLAN FOR OILY WATER TREATMENT PLANT EFFLUENT PERCOLATION POND, OILY WASTE TREATMENT PLANT, AND WASTE OIL TANKS SOLID WASTE MANAGEMENT UNITS 8, 9 AND 51 (SWMU8) (SWMU9) (SWMU51)

NS MAYPORT FL

10/1/2007

TETRA TECH

Comprehensive Long-term Environmental Action Navy

CONTRACT NUMBER N62467-04-D-0055

RCRA Facility Investigation Work Plan
for
Oily Waste Treatment Plant Effluent Percolation Pond (SWMU 8), Oily Waste Treatment Plant (SWMU 9), and Waste Oil Tanks (SWMU 51)

Naval Station Mayport
Mayport, Florida

Contract Task Order 0033

October 2006 7

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

TETRA TECH NUS, Inc.

RCRA FACILITY INVESTIGATION
WORK PLAN
FOR
OILY WASTE TREATMENT PLANT EFFLUENT PERCOLATION POND (SWMU 8), OILY WASTE TREATMENT PLANT (SWMU 9), AND WASTE OIL TANKS (SWMU 51)

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

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Pittsburgh, Pennsylvania 15222

CONTRACT NUMBER N62467-04-D-0055
CONTRACT TASK ORDER 0033

OCTOBER 2006

PREPARED UNDER THE SUPERVISION OF:

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PROFESSIONAL CERTIFICATION

RCRA Facility Investigation Work Plan
Oily Waste Treatment Plant Effluent Percolation Pond (SWMU 8),
the Oily Waste Treatment Plant (SWMU 9), and the Waste Oil Tanks (SWMU 51)
Naval Station Mayport, Florida

This RCRA Facility Investigation Work Plan was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared in general conformance with the Requirements of Chapter 62-770, Florida Administrative Code. 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 A. Peterson

Mark Peterson, P.G.
Florida License Number PG-1852

10/12/06

Date

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TABLES

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ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
ASTM	American Society for Testing and Materials
bls	Below Land Surface
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	Constituent of Concern
CTO	Contract Task Order
°C	Degrees Celsius
DON	Department of the Navy, Southern Division
DPT	Direct-Push Technology
DQO	Data Quality Objective
ESA	Environmental Science Associates, Inc.
ESI	Expanded Site Investigation
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame-Ionization Detector
FOL	Field Operations Leader
ft	Foot or Feet
ft^2	Square Feet
GPS	Global Positioning Survey
HSA	Hollow-stem auguring
HSWA	Hazardous and Solid Waste Amendment of 1984
IAS	Initial Assessment Study
IDW	Investigative Derived Waste
MILCON	Military Construction
MW	Monitoring Well
NAVFAC SE	Naval Facilities Engineering Command Southeast
NAVSTA	Naval Station
Navy	United States Navy
NIRP	Navy Installation Restoration Program
NIST	National Institute of Standards and Testing
NPDES	National Pollutant Discharge Elimination System
OWTP	Oily Waste Treatment Plant
OVA	Organic Vapor Analyzer
PCB	Polychlorinated Biphenyls
POC	Point of Contact

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PVC	Polyvinyl Chloride
QAM	Quality Assurance Manager
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RPM	Remedial Project Manager
SB	Soil Boring
SCTL	Soil Cleanup Target Level
SOP	Standard Operating Procedure
SVOC	Semivolatile Organic Compounds
SWMU	Solid Waste Management Unit
TPH	Total Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
TOM	Task Order Manager
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for the Oily Waste Treatment Plant (OWTP) Effluent Percolation Pond [Solid Waste Management Unit (SWMU) 8], the OWTP (SWMU 9), and the Waste Oil Tanks (SWMU 51) located at the Naval Station (NAVSTA) Mayport, Florida (Figures 1-1 and 1-2). This RFI Work Plan has been prepared for the United States Navy (Navy) Naval Facilities Engineering Command Southeast (NAVFAC SE) under the Comprehensive Long-term Environmental Action Navy (CLEAN) IV Contract Number N62467-04-D-0055 Contract Task Order (CTO) 0033 for additional assessment of SWMUs 8, 9, and 51. This RFI Work Plan is designed to guide soil and groundwater assessments at and around SWMUs 8, 9, and 51.

This Work Plan consists of three sections. Section 1.0 is this introduction, which includes descriptions of the objective and scope, the project management organization, the field organization, and the project schedule. Section 2.0 provides descriptions and background information for each SWMU and also presents the sampling rationale. Section 3.0 details the field tasks and associated methodologies. The appendicies include Historical Information (Appendix A), Previous Regulator Comments (Appendix B) TtNUS Field Forms (Appendix C), and the NAVSTA Mayport Standard Operating Procedure (SOP) for Investigative Derived Waste (IDW) (Appendix D).

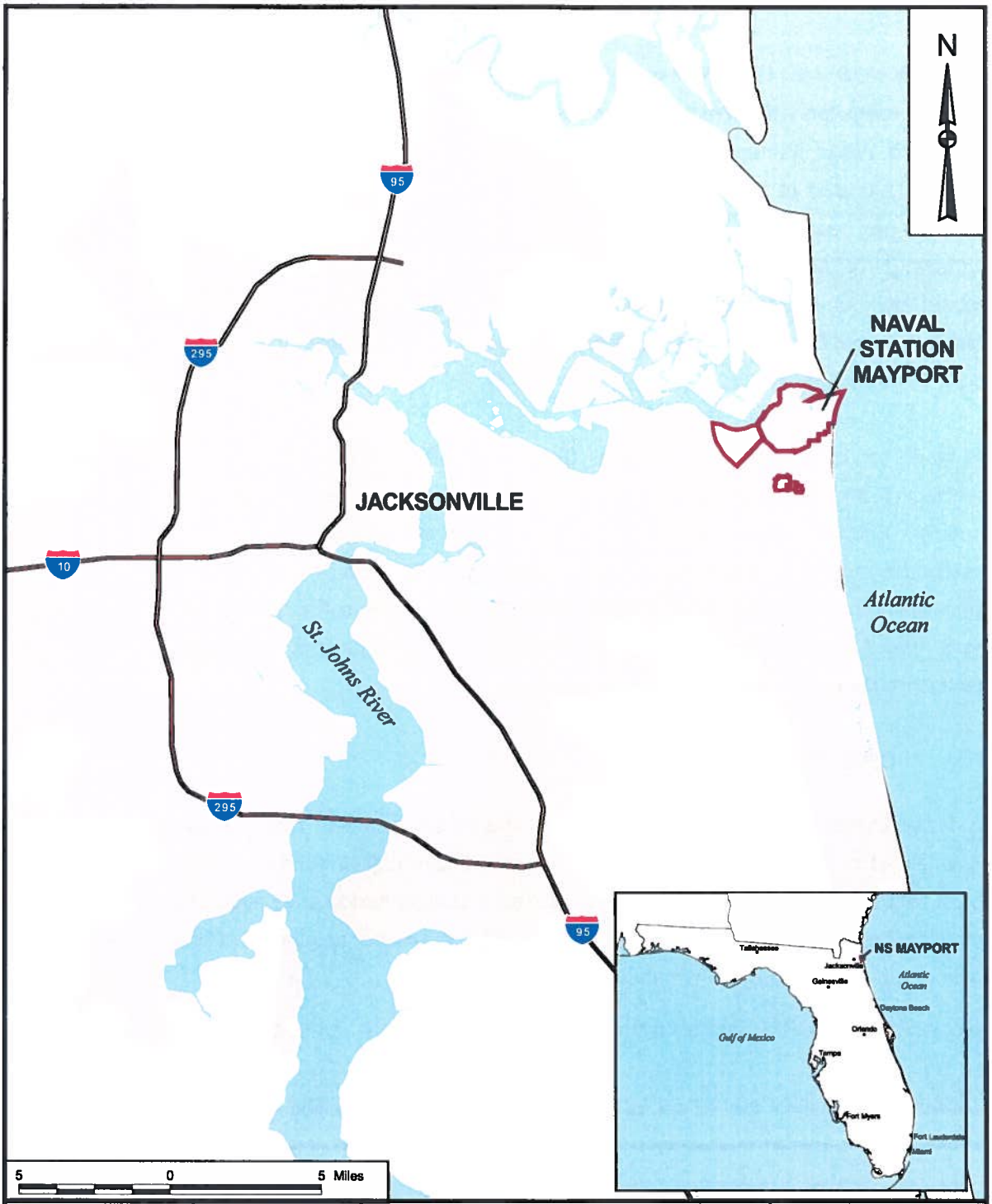
1.1 OBJECTIVES AND SCOPE

The overall objective of the RFI at SWMUs 8, 9, and 51 is to complete the characterization of the nature and extent of soil and groundwater contamination. If this objective can be accomplished during the subject field effort, risk assessment will be initiated, including the determination of possible pathways of contaminant release, the rate of migration of contaminant release, and the identification and assessment of associated risks to possible human and ecological receptors.

The objectives of the RFI activities proposed for soils at SWMUs 8, 9, and 51 include:

- Identify and define the extent of contaminated soils or identified potential source areas within SWMUs 8, 9, and 51 that exceed applicable Florida Department of Environmental Protection (FDEP) regulations [e.g., Florida Soil Cleanup Goals (2005), Chapter 62.777, Florida Administrative Code (FAC)].

- Collect supporting data to evaluate potential risk at the site.



DRAWN BY: C. FOSTER	DATE: 2/09/05	SITE LOCATION MAP NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER: 0033
CHECKED BY: L. ROBERTSON	DATE: 7/14/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 1 - 1 REV: 0

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NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	SCALE
							S. PAXTON	8/21/06	AS NOTED
							CHECKED BY	DATE	
							S. BALLARD	8/21/06	
							COST/SCHED-AREA		

NAVFAC

SITE VICINITY MAP
SWMUs 8, 9 AND 51
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	
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APPROVED BY	DATE
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FIGURE 1 - 2	0

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Not to Scale

NS MAYPORT

Tallahassee
Jacksonville
Gainesville
Daytona Beach
Orlando
Tampa
Gulf of Mexico
Atlantic Ocean
Fort Myers
Fort Lauderdale
Miami

St. John's River

SWMUs 8, 9, and 51

N

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The objectives of the RFI activities proposed for groundwater at SWMUs 8, 9, and 51 include:

- Characterize the extent of groundwater contamination that exceeds regulatory criteria [e.g., United States Environmental Protection Agency (USEPA) Maximum Contaminant Levels and Florida Groundwater Cleanup Target Levels].

- Collect supporting data to evaluate potential risk at the site.

The scope of work for the RFI includes draft and final Work Plan document preparations, monitoring well installations, soil and groundwater sampling, water-level measurements, and draft and final RFI Report preparations. Human health and ecological risk assessments will also be conducted and incorporated into the RFI Report provided that the subject investigation completes the delineation of potential soil and groundwater contamination. Historical results from investigations prior to the RFI will be qualitatively evaluated, comparing them with current investigation results for identification of trends in concentrations and comparing contaminant types. Results from the planned investigation discussed herein and previous RFI efforts, conducted from 1993 through 1994 will be evaluated quantitatively for risk assessment.

The purpose of this RFI Work Plan is to present the rationale and the specific tasks to achieve the objective of the RFI. This Work Plan is designed to provide direction for field and laboratory staff to ensure that specific procedures are properly implemented in a safe and scientifically defensible manner for RFIs. The Work Plan is designed to provide a logical rationale for the investigative approach based on known regional and site-specific background information.

1.2 PROJECT MANAGEMENT AND ORGANIZATION

TtNUS is responsible for the overall management of the project, including field sampling activities. Navy personnel will actively support the investigation and will coordinate with personnel from TtNUS during field activities. The responsible organizations and personnel involved in the management of the project are as follows:

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Task Order Manager (TOM)

At the direction of the RPM, TtNUS is responsible for the overall management and implementation for inspection of the contract field activities. Personnel from the Navy will be actively involved and will coordinate with TtNUS personnel in several areas. The authorities and organizational relationships of key personnel are depicted in Figure 1-3. Responsibilities of other key project personnel are discussed in the following sections.

1.3 FIELD ORGANIZATION

Experienced TtNUS personnel will perform the duties of the Field Operations Leader (FOL). The FOL will be responsible for the coordination of on site project personnel and will provide technical assistance when required. The FOL will coordinate and be present during sampling activities and will ensure the availability and maintenance of sampling materials/equipment. The FOL will be responsible for the completion of sampling and chain-of-custody documentation, will sign chain-of-custody forms for samples, and will ensure the proper handling and shipping of samples.

The QAM, although not formally identified as field personnel, will be responsible for adherence to quality assurance/quality control (QA/QC) guidelines. Strict adherence to these procedures is required for the collection of acceptable and representative data.

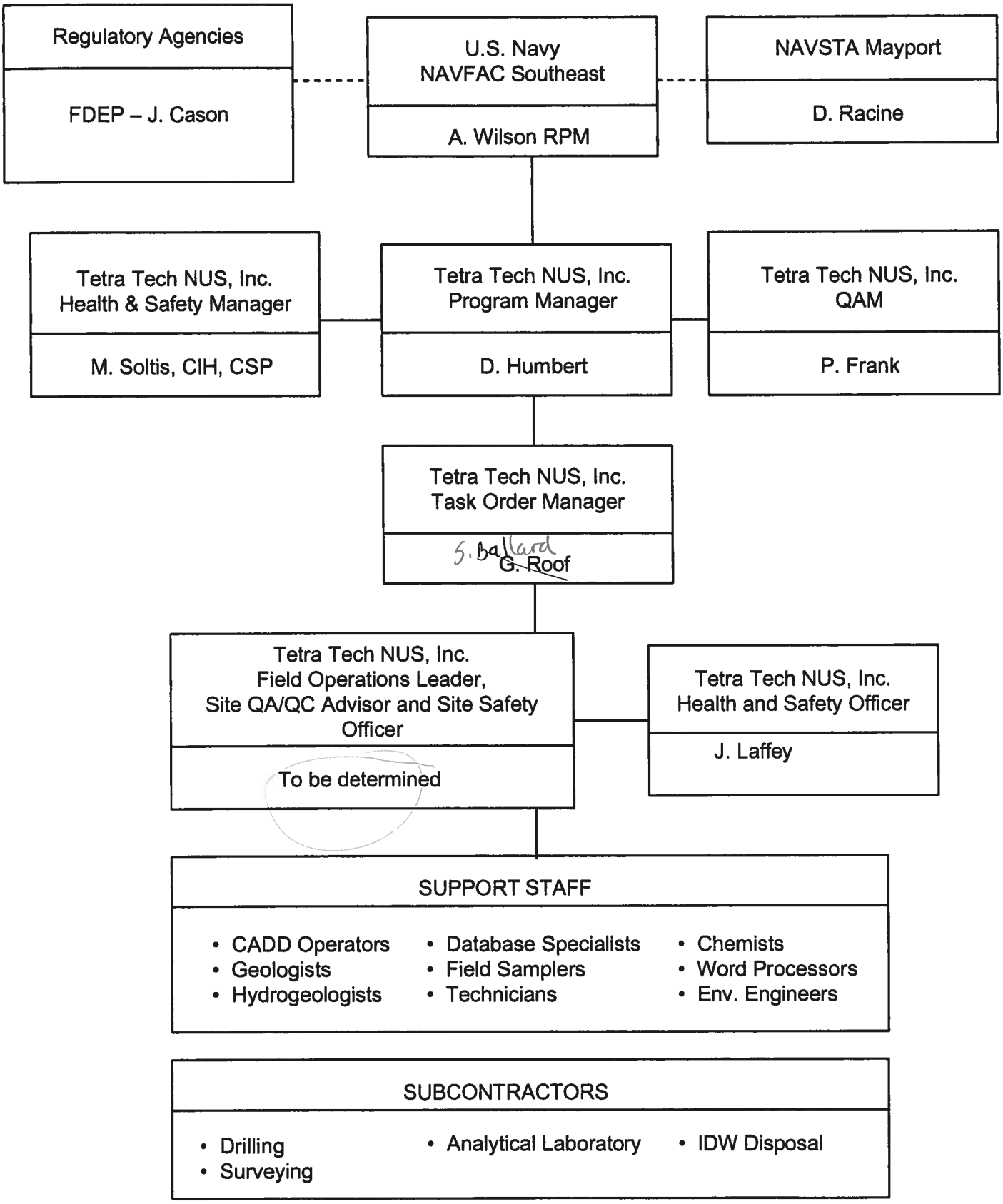
The Site Health and Safety Officer will be designated before initiation of field activities and will be responsible for ensuring that field personnel adhere to health and safety requirements. The Site Health and Safety Officer will be present during intrusive field activities.

1.4 COMMUNITY RELATIONS

Because of the anticipated short duration of the project and the location of the investigation within NAVSTA Mayport, few, if any, contacts with the general community are expected. The RPM will be notified immediately if representatives of the local community contact TtNUS during this project. Formal project relations with the public will be through NAVFAC SE. TtNUS personnel will not release project information to any outside entity without prior approval of NAVFAC SE or NAVSTA Mayport.

FIGURE 1-3

PROJECT ORGANIZATION CHART
NAVSTA MAYPORT, MAYPORT, FLORIDA



1.5 DELIVERABLES AND DATA MANAGEMENT

Draft and final versions of the Work Plan will be prepared as part of this investigation. Similarly, a presentation of the RFI Report will be made to the Mayport Partnering Team before the draft report is issued. Subsequently, upon review, issues will be resolved and the report finalized along with the appropriate response to comments documentation.

The analytical results obtained as a result of field investigations at SWMUs 8, 9, and 51 will be compared with FDEP criteria as well as to facility background concentrations. The data collected during the field investigation will be entered into the Environmental Geographic Information System for NAVSTA Mayport.

1.6 PROJECT SCHEDULE

The field activities at SWMUs 8, 9, and 51 will require approximately nine days to complete. Soil borings will be installed first. Samples will be collected from each soil boring location. After soil borings have been installed, the monitoring wells will be installed, developed, and sampled. Based on analytical data, supplemental soil borings and/or monitoring wells will be installed, as necessary. Soil material and development/purge water associated with field activities at SWMUs 8, 9, and 51 will be containerized and managed as IDW. Soil, groundwater, and IDW samples will be sent for analysis by a fixed-base laboratory. After laboratory analyses have been received, the proper disposal method for IDW will be determined.

Laboratory analyses are expected to be completed approximately 30 days after the field activities at SWMUs 8, 9, and 51 have concluded. The Draft RFI Report for SWMUs 8, 9, and 51 is scheduled to be delivered to members of the partnering team approximately four months after receiving analytical data.

2.0 FIELD PROGRAM RATIONALE

This section describes the site characteristics of SWMUs 8, 9, and 51 and provides a summary of the previous investigations and results. Additional historical information from previous investigations is presented in Appendix A. Based on on previous investigations and results, the sampling and analysis rationale for the current investigation is presented.

2.1 SITE DESCRIPTION

2.1.1 SWMU 8 – OWTP Effluent Percolation Pond

SWMU 8 is located on the northern part of NAVSTA Mayport (Figure 1-2), situated between the airstrip and the southern shore of the St. Johns River. It is located to the northwest of SWMU 10 (Figure 2-1).

SWMU 8 consists of the OWTP effluent percolation pond that operated from 1979 until 1994. "SWMU 8 formerly was the final treatment unit of the OWTP prior to discharge of the effluent at a National Pollutant Discharge Elimination System (NPDES) permitted discharge point into the St. Johns River. The OWTP Percolation Pond was originally designed to allow treated effluent to percolate into overlying sediments and/or discharge to the St. Johns River. In the event water levels became too high, effluent from an overflow pipe discharged to the St. Johns River. The pond was approximately 1,575 square feet (ft^2) in size with earthen berms approximately 5 feet (ft) above grade" [ABB Environmental Services, Inc. (ABB-ES), 1996].

Until 1988, the percolation pond was unlined. Following an overflow of oily waste to the pond in 1988, the pond was emptied, cleaned out, and a liner consisting of 1 foot of gravel covered with 6 inches of compacted clay was added to the pond. In September 1992, a concrete plug was placed in a manhole that connected the discharge pipe from the percolation pond to the St. Johns River (Appendix A) and the waste water was conveyed to the station's waste water treatment plant. This continued until 1994 while upgrades were being made to the OWTP (SWMU 9). The percolation pond was used temporarily from 1992 to 1994 for flow equalization but was formally taken out of service in 1994 and no longer receives treated effluent (ABB-ES, 1996).

The discharge pipe from the percolation pond was abandoned in place. The discharge pipe is believed to be constructed primarily of terracotta clay with possibly some small concrete sections. TtNUS has not obtained any information indicating that the discharge piping was ever cleaned out after the percolation pond was removed from service.

The potential for past releases to groundwater is high due to the original unlined nature of the pond and the fact that it was designed to allow percolation to underlying soils. The potential for future releases is low as the pond is no longer in service.

2.1.2 SWMU 9 – Oily Waste Treatment Plant

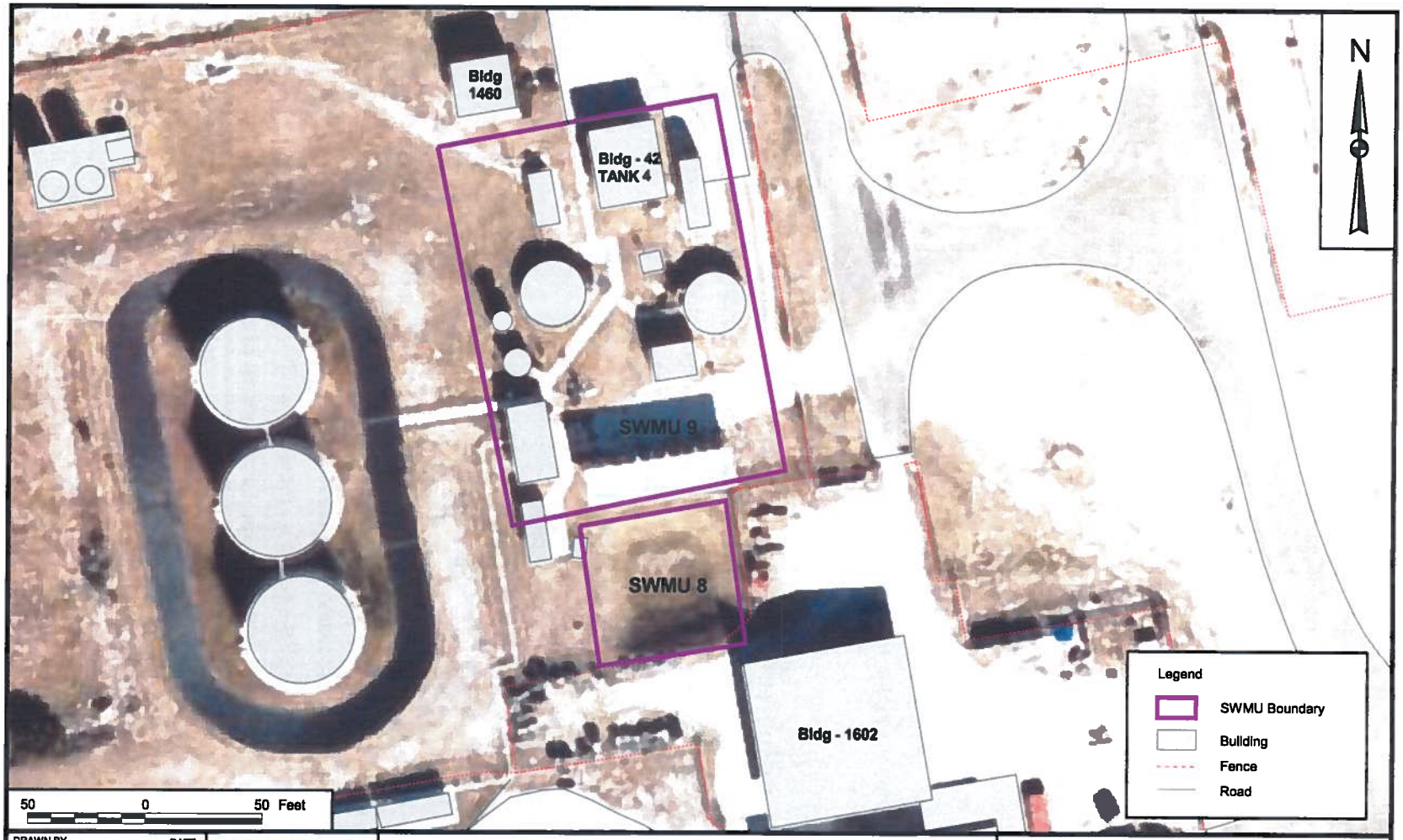
SWMU 9 is located on the northern part of NAVSTA Mayport (Figure 1-2), situated between the airstrip and the southern shore of the St. Johns River. It is adjacent to and north of SWMU 8 (Figure 2-1).

The OWTP was constructed in 1979 to treat bilge water and other oily wastes generated at NAVSTA Mayport and has been in continuous operation since that time. SWMU 9 includes the following:

- Rapid mix-flocculation tank
- Clarifier tank
- Neutralization tank
- Dissolved air flotation unit
- Connected piping

Influent to the OWTP consists of ships' bilge water from which the oily fraction is separated by the OWTP process. After separation of the oily fraction, the bilge water is pumped through underground lines to the rapid mix-flocculation tank which has a rapid mix and a flocculation (slow mix) section. Hydrated lime is added to assist in the flocculation process. Effluent from the rapid mix-flocculation tank flows through an aboveground line to the clarifier where particles in the influent are allowed to settle to the bottom of the tank. Settled sludge, floating solids, oil, and grease are removed for off site disposal. The water effluent from the clarifier is pumped through an 8-inch diameter underground pipeline to the underground neutralization tank. Sulfuric acid is added to the influent to adjust the pH prior to discharge. The system originally discharged to the OWTP percolation pond (SWMU 8) but has been routed to the waste water treatment plant since 1994 when the percolation pond was closed.

The only reported release of contaminants from SWMU 9 was caused in 1988 by operator error in which oil was released to the OWTP Percolation Pond (SWMU 8) as previously discussed (ABB-ES, 1996). However, due to the permeability of the soils in the area, the potential for leaks from underground or on-ground systems, the wastes managed in the system, and the presence of hazardous materials in the influent, there is a potential for impacts to soil and groundwater from SWMU 9.



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SCALE AS NOTED	NAVFAC		DRAWING NO. FIGURE 2 - 1 REV 0

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2.1.3 SWMU 51 – Waste Oil Tanks

SWMU 51 is located on the northern part of NAVSTA Mayport (Figure 1-2) on the southern shore of the St. Johns River and north of SWMUs 8 and 9 (Figure 2-2).

SWMU 51 is comprised of an area that formerly consisted of three waste oil underground storage tanks (USTs), former Tanks 99, 100, and 101, from the Fuel Depot Facility (Facility ID Number 8626008). The three USTs were demolished under a 1998 military construction (MILCON) project P-468 [Department of the Navy, Southern Division (DON), 2006]. Former Tanks 99, 100, and 101 were cut-and-cover waste oil storage tanks. The tanks, which were each approximately 210,000 gallons in capacity, were reportedly installed in 1954 and had been used to store oily wastewater. Two of the former tanks (99 and 100) were the oily wastewater receiving tanks for the OWTP. Waste oil was separated from the oily wastewater in former tanks 99 and 100 through the Oily Waste Collection System (SWMU 47). The oil phase from former Tanks 99 and 100 was conveyed to former Tank 101. Oil was pumped from Tank 101 into tanker trucks. The oil transported via tanker trucks from Tank 101 was used to fuel boilers and refuse burners at NAVSTA Mayport.

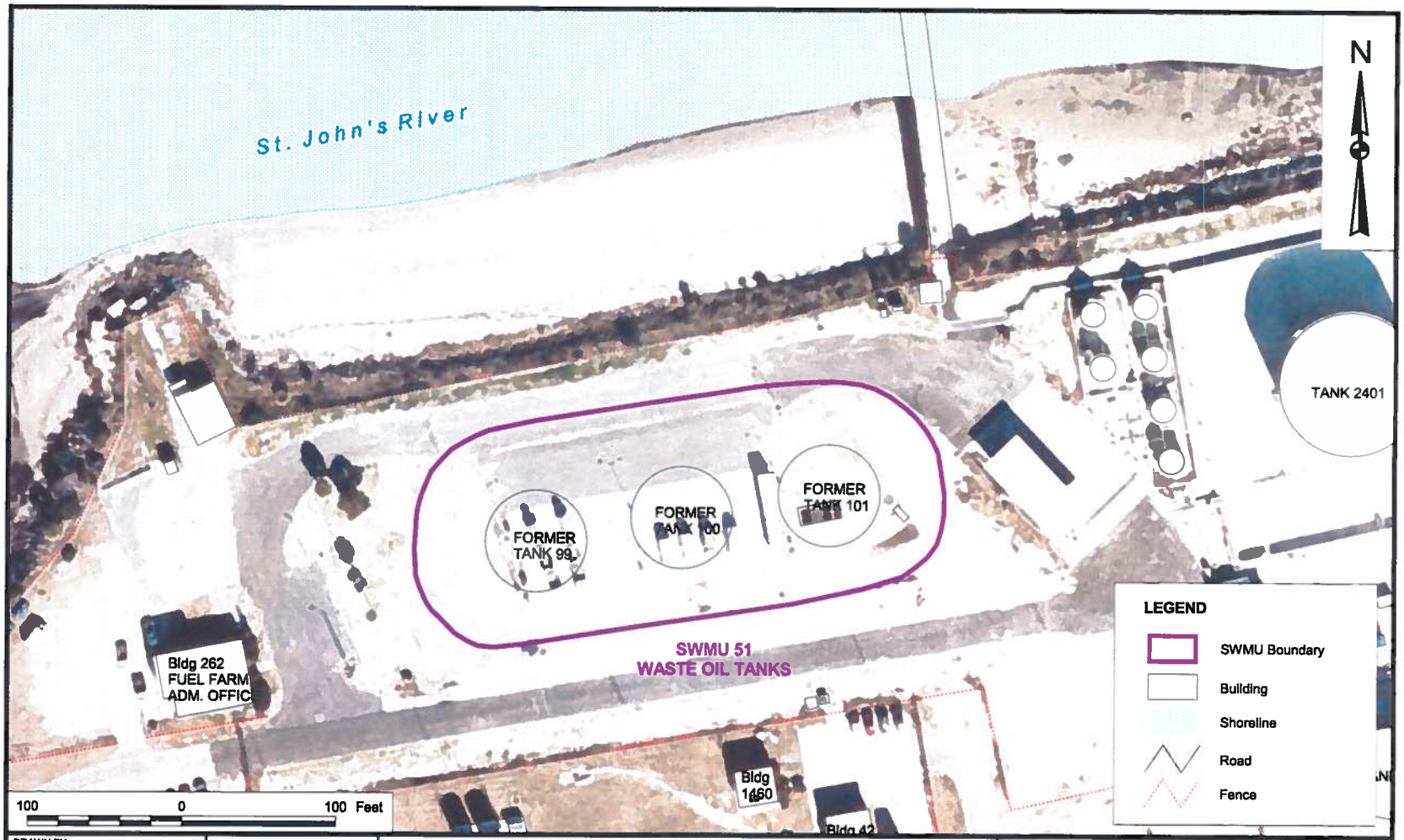
These three former USTs had leak detection methods integrated into their design and configuration. Primarily, former Tanks 99, 100, and 101 were constructed with a ring drain system surrounding the tanks that would collect any leaks and return the leaked liquid to Tanks 99 or 100 (A. T. Kearney, 1989). There is almost no potential for future waste oil releases at this SWMU as the waste oil tanks have been demolished and removed from the site.

2.2 INVESTIGATIONS PRIOR TO THE RFI

2.2.1 SWMU 8 – OWTP Effluent Percolation Pond

The OWTP percolation pond (SWMU 8) was not identified as a Navy Installation Restoration Program (NIRP) Initial Assessment Study (IAS) site and was not investigated during an Expanded Site Investigation (ESI). The OWTP percolation pond was identified in the NAVSTA Mayport Hazardous and Solid Waste Amendment of 1984 (HSWA) permit as requiring an RFI. The RFI was recommended due to the past unlined nature of the pond, the design for purposes of percolation, and the presence of hazardous constituents in the effluent from the pond.

At the time of the RCRA Facility Assessment (RFA) Visual Site Inspection performed by A. T. Kearney in 1989, no information regarding the characterization of the influent flowing to the percolation pond was available. Effluent from the pond was sampled for compliance with the NPDES permit. The USEPA



DRAWN BY S. PAXTON	DATE 8/22/06	SITE PLAN SWMU 51 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER CTO 0033
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SCALE AS NOTED			DRAWING NO. FIGURE 2 - 2 REV 0

P:\GIS\MAYPORT_NS\MAPDOCS\APR\SWMU51.APR SWMU 51 SITE PLAN LAYOUT 8/22/06 SP

conducted a study of the effluent in 1987 and detected acetone, benzene, toluene, ethylbenzene, methyl ethyl ketone, and 2,4-dimethylphenol as well as oil and grease (ABB-ES, 1996).

2.2.2 SWMU 9 – Oily Waste Treatment Plant

The OWTP (SWMU 9) was identified as NIRP IAS Site 8 and was not included in the ESI. Due to the permeability of the soils in the area, the underground or on-ground construction of the system, the wastes managed in the system, and the presence of hazardous materials in the influent, the HSWA permit for Mayport identified the OWTP as a SWMU requiring an RFI.

2.2.3 SWMU 51 – Waste Oil Tanks

The Waste Oil Tanks (SWMU 51) were not identified as a NIRP IAS site and were not investigated during the ESI. Due to the high permeability of the soils at NAVSTA Mayport; the shallow depth of the water table in the area; the underground location of the waste oil tanks; and the wastes managed in former Tanks 99, 100, and 101, the RFA identified SWMU 51 as a site requiring further investigation. Also, the HSWA permit for NAVSTA Mayport identified SWMU 51 as a site requiring corrective action.

2.3 RFI INVESTIGATION FROM 1993 TO 1994

SWMUs 8 and 9 are part of the OWTP area that was investigated as part of the RFI conducted for Group II SWMUs in 1993 and 1994 by ABB-ES (ABB-ES, 1996). Prior to collecting samples for fixed-base laboratory analyses, soil screening samples were collected across the OWTP area (Figure 4-2 in Appendix A) and were analyzed in a field laboratory for total petroleum hydrocarbons (TPH) (Tables 4-9 and 4-10 in Appendix A). The soil samples were collected at various depths, beginning at approximately 2 ft below land surface (bls) and extending to the top of the water table (depth of 14 ft bls at some locations). Two of these subsurface soil samples were located in the vicinity of SWMUs 8 and 9 (Figure 4-3 in Appendix A) and helped to identify and define the extent of petroleum hydrocarbon impacted soil in the OWTP area. Tables 4-11 through 4-14 (Appendix A) summarize the analytical results obtained for the subsurface soil samples collected in the OWTP area.

Groundwater screening samples were collected from five locations near SWMUs 8 and 9 (Figure 4-6 in Appendix A). The data shows relatively lower TPH concentrations were present in groundwater in the vicinity of SWMUs 8 and 9 (Table 4-15 in Appendix A). While more intensive sampling was conducted at other OWTP areas that were highly suspect as source areas for petroleum contamination (Table 4-16 through 4-19 in Appendix A), documentation or site evidence of releases at SWMU 8 and 9 were tenuous. Therefore, sampling activities at these SWMUs were minimal (ABB-ES, 1996).

The RFI recognized that the detection of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) in surface water collected in 1993 from the percolation pond (SWMU 8) suggested that hydrocarbon-related compounds had been released to the environment (i.e., groundwater) (Figure 4-2 and Table 4-3 in Appendix A). However, the RFI stated that the analytical results for the sludge sample collected in 1994 from the percolation pond (Figure 4-2 and Tables 4-4 and 4-5 in Appendix A) indicated that remediation was not required because the sample contained petroleum-related chemicals at concentrations less than the 1995 Florida soil cleanup values (ABB-ES, 1996).

The RFI did not recognize any risk to human health or the environment based on the current and future industrial land use at SWMU 8. The RFI indicated that water discharged to the percolation pond after treatment in the OWTP has affected groundwater hydraulically downgradient of SWMU 8 (north of SWMU 8 towards the St. John's River). None of the organic chemicals were detected in the groundwater samples (relevant to SWMU 8) at concentrations that exceeded Florida groundwater guidance concentration. The Group II RFI did not make any specific recommendations for SMWU 8.

The RFI did not recognize any potential risk to human health or the environment based on the current and future industrial land use at SWMU 9. Also, the RFI reported no indications of releases of hazardous constituents from the OWTP and no further investigation was recommended for SWMU 9. However, based on the investigations performed through 1994, data gaps still exist. In particular, potential groundwater contamination has not been sufficiently characterized at SWMUs 8 and 9. Per FDEP comments (Appendix B), additional groundwater monitoring is required to adequately address contamination in the OWTP area. No additional environmental samples pertinent to SWMUs 8 and 9 have been collected since the RFI Report was completed in 1996.

As with SWMUs 8 and 9, SWMU 51 is classified as a Group II SWMU. However, when RFI field investigations were conducted at other Group II SWMUs between 1993 and 1994, no RFI field investigations were conducted at SWMU 51. Therefore, no RFI sample data is available for soil and groundwater at SWMU 51.

2.4 LIMITED TANK CLOSURE ASSESSMENT – TANKS 99, 100, AND 101

The three former cut-and-cover waste oil storage tanks, Tanks 99, 100, and 101, were demolished under a 1998 MILCON project P-468 (DON, 2006). In May 2000, Environmental Science Associates (ESA) performed limited closure assessment services at the Fuel Depot Facility following the removal of Tanks 99, 100, and 101. Per the ESA Limited Closure Summary Report, the purpose of the limited closure assessment was to evaluate site conditions in the vicinity of the waste oil storage tanks. The limited closure assessment was conducted following the UST removals, and was performed in accordance with the requirements of Chapter 62-761, FAC, and the FDEP guidance document "Pollutant

Storage Tank Closure Assessment Requirments" (April 1998) for sites with previously documented contamination. The methods and procedures used during the closure assessment were conducted in accordance with the FDEP "Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments" (ESA, 2000).

During the 2000 ESA limited tank closure assessment, limited soil and groundwater samples were collected around former Tanks 99, 100, and 101. A groundwater sample was collected from existing well (MW-15S) north-northwest of former Tank 99 showed exceedances for naphthalenes and TPH. A groundwater sample collected from existing well (MW-3S) north of former Tank 100 showed no exceedances, and a groundwater sample collected from a temporary well (TMW-2) south-southeast of former Tank 100 showed exceedances for naphthalenes. A soil sample collected from the same location as TMW-2 showed no exceedances. A groundwater sample collected from existing well (MW-13S) north of former Tank 101 showed exceedances for lead. A groundwater sample collected from temporary well (TMW-1) south-southeast of former Tank 101 showed no exceedances. A soil sample collected from the same location as TMW-1 showed no exceedances. A groundwater sample collected from temporary well (TMW-3) west of former Tank 101 showed no exceedances and a soil sample collected from the same location as TMW-3 showed no exceedances (ESA, 2000). Groundwater sample locations from the limited tank closure assessment are depicted in Figure 2, Appendix A. A summary of the laboratory analysis results for soil and groundwater samples collected during the ESA limited tank closure assessment can be found in Appendix A.

2.5 SUMMARY OF CURRENT CONDITIONS – SWMUS 8, 9, AND 51

RFI field investigations were conducted at the OWTP area (SWMUs 6, 7, 8, 9, 10, and 11) between 1993 and 1994. Though soil and groundwater at the OWTP area were investigated during RFI field investigations, data gaps still exist at SWMUs 8 and 9 because the primary focus of these field investigations was SWMU 6 (Waste Oil Pit) and SWMU 7 (OWTP Sludge Drying Beds) (Appendix A). In particular, groundwater contamination has not been sufficiently characterized at SWMUs 8 and 9. Per FDEP comments (Appendix B), additional groundwater monitoring is required to adequately address contamination in the OWTP area.

As with SWMUs 8 and 9, SWMU 51 is classified as a Group II SWMU. However, when RFI field investigations were conducted at other Group II SWMUs between 1993 and 1994, no RFI field investigations were conducted at SWMU 51. Therefore, no RFI sample data is available for soil and groundwater at SWMU 51.

The OWTP percolation pond (SWMU 8) was formally taken out of service in 1994 (ABB-ES, 1996). Currently, SWMU 8 is covered with vegetation. No environmental samples have been collected at SWMU 8 since RFI field investigations were concluded at the OWTP area in 1994.

The OWTP (SWMU 9) system originally discharged to the OWTP percolation pond (SWMU 8) but has been routed to the waste water treatment planct since 1994 when the percolcation pond was closed. The OWTP is currently still in operation. No environmental samples have been collected at SWMU 9 since RFI field investigations were concluded at the OWTP area in 1994.

Former Waste Oil Tanks 99, 100, and 101 (SWMU 51) were demolished around 1998 as part of a MILCON project. In 2000, ESA performed a limited tank closure assessment in the SWMU 51 area after the three USTs were demolished. Currently, the area at and around SWMU 51 is used for parking. The temporary and permanent monitoring wells sampled during the limited tank closure assessment are no longer present at SWMU 51. It is believed the wells were destroyed when the parking area was put into place at SWMU 51. No environmental samples have been collected at SWMU 51 since the limited tank closure assessment in 2000.

2.6 RATIONALE FOR ANALYSIS

Limited information is available regarding potential contamination of groundwater at SWMUs 8, 9, and 51. In addition to known low levels of TPH contamination, a variety of other contaminants could potentially be present associated with past operations at SWMUs 8, 9, and 51. Therefore, the proposed sampling activities as part of this Work Plan include RCRA Appendix IX at soil and groundwater locations.

Summaries of sampling rationale are provided in Tables 2-1 and 2-2 for soil and groundwater, respectively. Summaries of proposed sampling and analyses are provided in Tables 2-3 and 2-4, respectively.

2.7 FIELD PROGRAM RATIONALE

Sample locations are shown in Figure 2-3 and Figure 2-4. Additional information regarding underground piping, manholes and valve configurations as it relates to the proposed sample locations can be obtained from the Oily Waste Treatment Plant Modifications Site Plan and Removals Site Plans 1 and 2 (Appendix A). Summaries of the rationale are provided in Tables 2-1 and 2-2 for soil and groundwater, respectively.

TABLE 2-1

RATIONALE FOR SOIL SAMPLING LOCATIONS
SWMU 8 OWTP PERCOLATION POND, SWMU 9 OWTP, AND SWMU 51 WASTE OIL TANKS
NAVSTA MAYPORT
MAYPORT, FLORIDA

Sample Location	Anticipated Analytical Sample Depths	Rationale for Location	Analyses
SWMUs 8, 9, and 51[1]			
08SB25 through 08SB31	0-2 ft bls 2-4 ft bls[2]	Determine if soil contamination is present and if so vertical extent above the water table. Collect sample from base of pond above and below liner. Collect samples around the sides of the pond.	▪ Appendix IX VOC ▪ Appendix IX SVOC ▪ Appendix IX Metals ▪ Sulfide ▪ Cyanide ▪ PCBs
09SB01 through 09SB13	0-2 ft bls 2-4 ft bls[2]	Collect soil data (above water table) within the OWTP area and determine potential associated contamination, if any.	
08SB32 through 08SB38	0-2 ft bls 2-4 ft bls[2]	Collect soil data (above water table) along the discharge pipe from the percolation pond to the St. John's River and determine potential associated contamination, if any.	
51SB01 through 51SB11	0-2 ft bls 2-4 ft bls[2]	Collect soil data (above water table) within the area of Former Waste Oil Tanks 99, 100, and 101 and determine potential associated contamination, if any.	▪ PPL Volatile Organics (plus TIC with GC/MC Peaks greater than 10 ug/L) ▪ PPL Semivolatiles (plus TIC with GC/MC Peaks greater than 10 ug/L) ▪ Arsenic, Cadmium, Chromium, and Lead ▪ PAHs (plus 1-methyl and 2-methylnaphthalene) ▪ TRPHs ▪ PCBs

Notes:

[1] A total of 38 soil borings are anticipated for the three sites combined.

[2] Soil samples will not be collected below the water table. Samples will be collected every 2 feet (2, 4, 6, 8, etc.) until the water table is reached. Each sample will be screened for the presence of hydrocarbon contamination using an OVA equipped with a FID. The subsurface sample exhibiting the highest OVA reading at each location will be collected for laboratory analysis. If no evidence of contamination is observed, an unsaturated soil sample will be collected directly above the water table. The water table at the site is generally expected to be between 4-8 ft bls, but could possibly extend to a depth of 14 ft bls at some locations. In the event a deep water table is present at a soil sample location, a middle sample will need to be collected.

SB Soil boring
PCBs Polychlorinated biphenyls

TABLE 2-2

RATIONALE FOR GROUNDWATER SAMPLING LOCATIONS
SWMU 8 OWTP PERCOLATION POND, SWMU 9 OWTP, AND SWMU 51 WASTE OIL TANKS
NAVSTA MAYPORT
MAYPORT, FLORIDA

Sample Location	Approximate Total Depth (bls)	Rationale for Location	Analyses
SWMU 8			▪ Appendix IX VOC ▪ Appendix IX SVOC ▪ Appendix IX Metals ▪ Sulfide ▪ Cyanide ▪ PCBs
08MW21S	15 ft	Confirm or deny any potential groundwater contamination upgradient of the OWTP percolation pond at SWMU 8 and aid in site geology/hydrogeology evaluation	
08MW22S	15 ft		
SWMU 9			
09MW04S	15 ft	Confirm or deny any potential groundwater contamination in and around the OWTP at SWMU 9 and aid in site geology/hydrogeology evaluation	
09MW05S	15 ft		
09MW06S	15 ft		
MW09S	Existing Monitoring Well		
SWMU 51			
51MW01S	15 ft	Confirm or deny any potential groundwater contamination in and around the area of the Former Waste Oil Tanks 99, 100, and 101 and aid in site geology/hydrogeology evaluation.	▪ PPL Volatile Organics (plus TIC with GC/MC Peaks greater than 10 ug/L) ▪ PPL Semivolatiles ▪ Arsenic, Cadmium, Chromium, and Lead ▪ PAHs (plus 1-methyl and 2-methylnaphthalene) ▪ TRPHs ▪ PCBs
51MW02S	15 ft		
51MW03S	15 ft		

TABLE 2-3

SOIL SAMPLING AND ANALYSIS PROGRAM
SWMU 8 OWTP PERCOLATION POND, SWMU 9 OWTP, AND SWMU 51 WASTE OIL TANKS
NAVSTA MAYPORT
MAYPORT, FLORIDA

Parameter	Method	Number of Samples[1]	QA/QC			Total Samples
			Field Duplicates[2]	Rinsate Blanks[3]	Trip Blanks[4]	
SWMUs 8 and 9						
Appendix IX VOC	SW-846 5035/8260B	54	0	0	3	54
Appendix IX SVOC	SW-846 8270C	54	0	0	0	54
Appendix IX Metals	SW-846 6010B	54	0	0	0	54
Sulfide	USEPA 376.2	54	0	0	0	54
Cyanide	ILM04.1	54	0	0	0	54
SWMUs 8, 9, and 51						
PCBs	SW-846 8082	76	0	0	0	76
SWMU 51						
PPL Volatile Organics (plus TIC with GC/MC Peaks greater than 10 ug/L)	SW-846 8260B	22	0	0	2	22
PPL Semivolatiles (plus TIC with GC/MC Peaks greater than 10 ug/L)	SW-846 8270C	22	0	0	0	22
Arsenic, Cadmium, Chromium, and Lead	SW-846 6010B	22	0	0	0	22
PAHs (plus 1-methyl and 2-methylnapthalene)	SW-846 8270C or 8310	22	0	0	0	22
TRPHs	FDEP FL-PRO	22	0	0	0	22

Notes:
1 Number of samples includes soil samples collected at two horizons at SWMUs 8, 9, and 51.
2 Per FDEP SOP FQ 1000, FQ 1230, field duplicates are not required as mandatory field quality controls.
3 Equipment Rinsate Blank – See Table 2-4
4 Trip Blanks – One per cooler with VOCs. See Table 2-4 for text.

TABLE 2-4

GROUNDWATER SAMPLING AND ANALYSIS PROGRAM
SWMU 8 OWTP PERCOLATION POND, SWMU 9 OWTP, AND SWMU 51 WASTE OIL TANKS
NAVSTA MAYPORT
MAYPORT, FLORIDA

Parameter	Method	Number of Samples[1]	QA/QC				Total Samples
			Field Duplicates[2]	Rinsate Blanks[3]	Trip Blanks[4]	Field Blanks[5]	
SWMUs 8 and 9							
Appendix IX VOC	SW-846 5035/8260B	6	0	2	3	0	11
Appendix IX SVOC	SW-846 8270C	6	0	2	0	0	8
Appendix IX Metals	SW-846 6010B	6	0	2	0	0	8
Sulfide	USEPA 376.2	6	0	2	0	0	8
Cyanide	ILM04.1	6	0	2	0	0	8
SWMUs 8, 9, and 51							
PCBs	SW-846 8082	9	0	2	0	0	11
SWMU 51							
PPL Volatile Organics (plus TIC with GC/MC Peaks greater than 10 ug/L)	SW-846 8260B	3	0	2	2	0	7
PPL Semivolatiles	SW-846 8270C	3	0	2	0	0	5
Arsenic, Cadmium, Chromium, and Lead	SW-846 6010B	3	0	2	0	0	5
PAHs (plus 1-methyl and 2-methylnapthalene)	SW-846 8270C or 8310	3	0	2	0	0	5
TRPHs	FDEP FL-PRO	3	0	2	0	0	5

Notes:

1 Number of samples includes eight new wells and one existing well (MW09S)

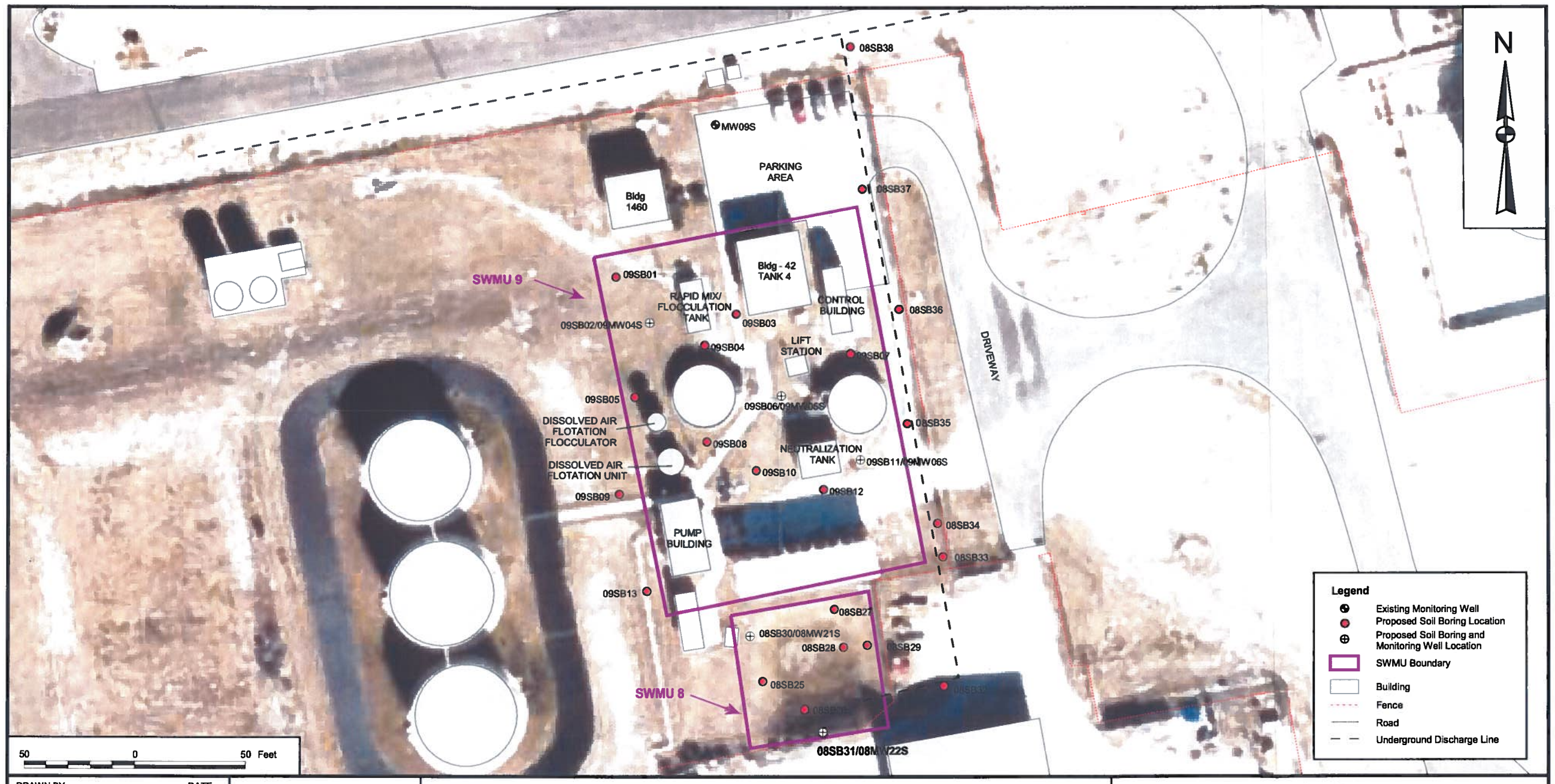
	SWMU 8	SWMU9	SWMU 51	Total
Existing Permanent Monitoring Wells (Full scan)	0	1	0	1
New Permanent Monitoring Wells (Full scan)	2	3	3	8

2 Per FDEP SOP FQ 1000, FQ 1230, field duplicates are not required as mandatory field quality controls.

3 Equipment Rinsate Blank – In accordance with FDEP SOP FQ 1000, FQ1230, precleaned and field-cleaned rinsate blanks will be collected for any equipment used in the collection of samples that is not certified precleaned.

4 Trip Blanks - One trip blank per each cooler containing VOCs in accordance with FDEP SOP FQ 1000, FQ 1213.

5 Field Blanks – Per FDEP SOP FQ 1000 FQ 1214, field blanks are not required if equipment blanks (FQ 1211 or FQ 1212) are collected.



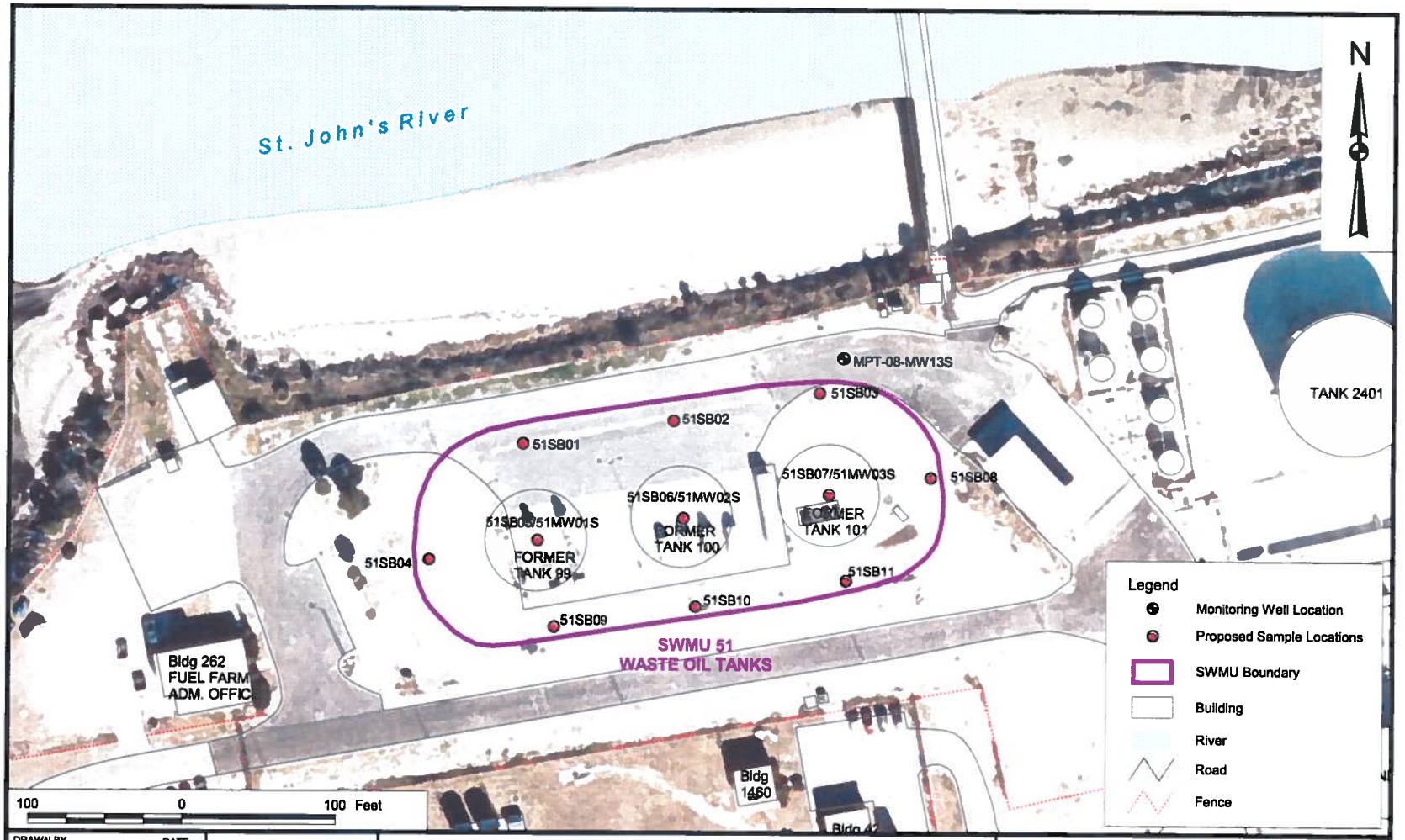
DRAWN BY: S. PAXTON	DATE: 7/25/06
CHECKED BY: S. BALLARD	DATE: 10/09/06
COST/SCHEDULE-AREA	
SCALE: AS NOTED	

NAVFAC

PROPOSED SAMPLE LOCATION MAP
SWMUs 8 AND 9
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NUMBER: CTO 0033	
APPROVED BY: —	DATE: —
APPROVED BY: —	DATE: —
DRAWING NO.: FIGURE 2 - 3	REV: 1

P:\GIS\MAYPORT_NS\MAPDOCS\APR\SWMU8&9.APR PROPOSED SAMPLE LOCATION LAYOUT 10/09/06 SP



DRAWN BY: S. PAXTON	DATE: 8/22/06	PROPOSED SAMPLE LOCATIONS SWMU 51 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NUMBER: CTO 0033
CHECKED BY: S. BALLARD	DATE: 8/22/06		APPROVED BY: — DATE: —
COST/SCHEDULE-AREA			APPROVED BY: — DATE: —
SCALE: AS NOTED			DRAWING NO.: FIGURE 2 - 4 REV: 0

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P:\GIS\MAYPORT_NS\MAPDOCS\APR\SWMU51.APR PROPOSED SAMPLE LOCATIONS LAYOUT 8/22/06 SP

2.7.1 SWMU 8 Sampling

Sampling activities at SWMU 8 will include installation of soil borings and two monitoring wells. Fourteen soil borings will be installed at SWMU 8 using direct-push technology (DPT). Two of these borings will be installed in the former percolation pond. Five soil borings will be located around the percolation pond for characterization of potential soil contamination. Seven soil borings will be located along the abandoned discharge pipe from the percolation pond. For the two samples located within the percolation pond, one sample will be collected from the base of the pond above the clay liner and one sample will be collected from beneath the clay liner.

Soil borings around the pond and along the discharge pipe will be advanced to the water table (possible depth of 14 ft bls at some locations) to identify whether soil contamination is present above the water table and its potential vertical extent. Soil samples will be collected from two horizons at each boring location.

Subsurface soil will be collected using a stainless steel Macro-Core® soil sampler (4-foot section) beginning at 4 feet bls and continuing in 4-foot vertical intervals until the water table is encountered. The water table at the site is generally expected to be between 4 and 8 ft bls, but could possibly extend to a depth of 14 ft bls at some locations. Soil samples will not be collected below the water table. Samples will be collected every 2 feet (2, 4, 6, 8, etc.) until the water table is reached. Each sample will be screened for the presence of hydrocarbon contamination using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). FID screening will be performed for each sample interval in accordance with the headspace screening method described in Chapter 62-770.200(2) Florida Administrative Code (FAC). The subsurface sample exhibiting the highest OVA reading at each location will be collected for laboratory analysis. If no evidence of contamination is observed, an unsaturated soil sample will be collected directly above the water table. The Macro-Core® soil sampler will be decontaminated in between each sample collection. Decontamination will be conducted in accordance to FDEP SOP FC1000.

Two upgradient permanent monitoring wells will be installed at SWMU 8 to aid in the hydrogeology evaluation and for groundwater monitoring purposes. Hollow-stem auguring (HSA) methods will be used to install two 2-inch diameter wells to an approximate depth of 15 ft. Using a 10-ft screen, the monitoring well will be screened across the water table. A round of water level measurements will be collected at monitoring wells at and around SWMU 8 prior to groundwater sampling in order to accurately determine groundwater flow at the SWMU. Figure 2-3 illustrates the proposed sampling locations at SWMU 8.

2.7.2 SWMU 9 Sampling

Sampling activities at SWMU 9 will include installation of soil borings and monitoring wells. Thirteen soil borings will be installed at SWMU 9 using DPT. If contamination is encountered, additional soil borings may be installed to characterize the extent of contamination [defined as constituent of concern (COC) concentration exceeding either the FDEP residential Soil Cleanup Target Level (SCTL) for direct exposure or the FDEP leaching SCTL, whichever is lower].

Soil borings will be advanced to the water table (possible depth of 14 ft bls at some locations) to identify whether soil contamination is present and define its vertical extent. Soil samples will be collected from two horizons at each boring location.

Subsurface soil will be collected using a stainless steel Macro-Core® soil sampler (4-foot section) beginning at 4 feet bls and continuing in 4-foot vertical intervals until the water table is encountered. The water table at the site is generally expected to be between 4 and 8 ft bls, but could possibly extend to a depth of 14 ft bls at some locations. Soil samples will not be collected below the water table. Samples will be collected every 2 feet (2, 4, 6, 8, etc.) until the water table is reached. Each sample will be screened for the presence of hydrocarbon contamination using an OVA equipped with a FID. FID screening will be performed for each sample interval in accordance with the headspace screening method described in Chapter 62-770.200(2) FAC. The subsurface sample exhibiting the highest OVA reading at each location will be collected for laboratory analysis. If no evidence of contamination is observed, an unsaturated soil sample will be collected directly above the water table. The Macro-Core® soil sampler will be decontaminated in between each sample collection. Decontamination will be conducted in accordance to FDEP SOP FC1000.

Three new monitoring wells will be installed at SWMU 9. The monitoring wells will be installed to aid in the evaluation of hydrogeology and for groundwater monitoring purposes. HSA methods will be used to install 2-inch diameter wells to an approximate depth of 15 ft. Using a 10-foot screen, the monitoring wells will be screened across the water table. Additionally, existing SWMU 9 monitoring well MW09S will be developed and sampled. A round of water level measurements will be collected at monitoring wells at and around SWMU 9 prior to groundwater sampling in order to accurately determinet groundwater flow at the SWMU. Figure 2-3 illustrates the proposed sampling locations at SWMU 9.

2.7.3 SWMU 51 Sampling

Sampling activities at SWMU 51 will include installation of soil borings and monitoring wells. Eleven soil borings will be installed at SWMU 51 using DPT. If contamination is encountered, additional soil borings

may be installed to characterize the extent of contamination (defined as COC concentration exceeding either the FDEP residential SCTL for direct exposure or the FDEP leaching SCTL, whichever is lower).

Soil borings will be advanced to the water table (possible depth of 14 ft bls at some locations) to identify whether soil contamination is present and define its vertical extent. Soil samples will be collected from two horizons at each boring location.

Subsurface soil will be collected using a stainless steel Macro-Core® soil sampler (4-foot section) beginning at 4 feet bls and continuing in 4-foot vertical intervals until the water table is encountered. The water table at the site is generally expected to be between 4 and 8 ft bls, but could possibly extend to a depth of 14 ft bls at some locations. Soil samples will not be collected below the water table. Samples will be collected every 2 feet (2, 4, 6, 8, etc.) until the water table is reached. Each sample will be screened for the presence of hydrocarbon contamination using an OVA equipped with a FID. FID screening will be performed for each sample interval in accordance with the headspace screening method described in Chapter 62-770.200(2) FAC. The subsurface sample exhibiting the highest OVA reading at each location will be collected for laboratory analysis. If no evidence of contamination is observed, an unsaturated soil sample will be collected directly above the water table. The Macro-Core® soil sampler will be decontaminated in between each sample collection. Decontamination will be conducted in accordance to FDEP SOP FC1000.

Three new monitoring wells will be installed at SWMU 51. The monitoring wells will be installed to aid in the evaluation of hydrogeology and for groundwater monitoring purposes. HSA methods will be used to install 2-inch diameter wells to an approximate depth of 15 ft. Using a 10-foot screen, the monitoring wells will be screened across the water table. A round of water level measurements will be collected at monitoring wells at and around SWMU 51 (including monitoring wells MPT-S-MW02S, MPT-08-MW15SR, MPT-S-MW03S, and MPT-08-MW13S) prior to groundwater sampling in order to accurately determine groundwater flow at the SWMU. Figure 2-4 illustrates the proposed sampling locations at SWMU 51.

2.8 ANALYTICAL PROGRAM

The proposed analyses for samples being collected range from field screening methods to USEPA SW-846 laboratory analyses. The work will include collection and analysis of soil and groundwater samples. These samples will be submitted to a FDEP-approved National Environmental Laboratory Accreditation Program-certified laboratory for analysis. Site-specific information regarding the analytical program is discussed below.

2.8.1 Task-Specific Data Quality Objectives (DQOs)

Tasks involving data collection are outlined as follows:

- Field Screening: Soil samples will be screened in the field with a FID to provide data concerning the presence or absence of VOCs.

- Air Quality Monitoring: For health and safety purposes, air quality will be monitored in the breathing zone by a FID to provide data concerning the presence or absence of VOCs.

- Field Parameter Analysis: Field measurements of temperature, pH, turbidity, and specific conductance for groundwater will be performed to determine aquifer stabilization during well purging. These measurements are both quantitative and qualitative.

- Characterization and Sampling: Soil and groundwater samples collected during the field program will be collected and analyzed in conformance with USEPA SW-846 methodology, with complete Contract Laboratory Program-like data packages to allow for data validation.

3.0 TECHNICAL APPROACH

The planned investigation work at SWMUs 8, 9, and 51 are in support of supplemental RFI activities that will evaluate the extent of surface soil, subsurface soil, and groundwater contamination. This information will be used to conduct human health and ecological risk assessments for SWMUs 8, 9, and 51.

Analysis of the previous investigation data suggests that additional data are needed to characterize the presence of and/or the extent of potential soil and groundwater contamination at SWMUs 8, 9, and 51. Adjustments to this work plan may be necessary, as new data become available. If new field investigation methods or changes to existing methods become necessary as a result of adjustments to the scope-of-work, then the proposed revisions will be presented by TtNUS to the NAVSTA Mayport Partnering Team for review and approval.

3.1 FIELD INVESTIGATION METHODS

3.1.1 Standard Operating Procedures

A variety of field investigation activities will be conducted at NAVSTA Mayport to meet the objectives of the RFI. Field activities, such as DPT advancement, HSA, and soil and groundwater sampling, will be conducted in accordance with the Site Specific Health and Safety Plan and the FDEP SOPs for Field Activities (FDEP, 2004a). The investigation will include surface soil sampling, collection of subsurface soil samples by DPT methods, soil boring advancement, HSA, monitoring well installation, and fixed-base laboratory analyses of soil and groundwater samples. In the event the FDEP SOPs do not apply to a specific task, TtNUS will defer to the TtNUS Corporate SOPs (TtNUS, 2004) or Navy guidance.

These will be followed to ensure the data is consistent with regulatory requirements and meet the DQOs. A copy of the above-referenced guidance documents along with this Work Plan will be maintained on site by TtNUS field personnel at NAVSTA Mayport and will be reviewed with the field team before work begins.

3.1.2 General Site Operations

3.1.2.1 Field Team Organization

The TtNUS RFI field team will consist of staff members who will conduct the field investigation activities. The organization of the field team is described below.

- The FOL is responsible for the day-to-day direction of personnel in the field. The FOL will assign tasks to field team personnel, direct the sequence of activities, coordinate with NAVSTA Mayport personnel, coordinate subcontractors, and review tasks in progress and those completed. The FOL will ensure that project-specific plans are implemented and that activities are in compliance with appropriate guidelines.

- The Project Safety Officer is responsible for ensuring that proper health and safety procedures are identified and implemented for the project and that project-related health and safety incidents are properly investigated. In the event that only a small number of project staff are required on site, the duties of the Project Safety Officer may be assigned to the FOL or another member of the field team. The Project Safety Officer or designee will report directly to the TtNUS Corporate Director of Health and Safety.

- The Field Geologist will oversee soil boring and monitoring well installation activities and may conduct various environmental sampling activities. Duties will include logging and documentation of drilling and well construction, environmental sample collection and handling, and ensuring that the approved methods are implemented. The field geologist may also conduct tests for identifying subsurface conditions and characterizing the groundwater flow regime.

- Sampling Personnel will be responsible for properly locating, collecting, preserving, packaging, documenting, and shipping environmental samples to the laboratory.

3.1.2.2 Mobilization

TtNUS must perform several internal tasks before field mobilizations. These tasks include the following:

- Preparation of technical and subcontractor bid specifications.
- Selection and mobilization of subcontractors.
- Acquisition and preparation of equipment for transportation to the field.
- Acquisition and preparation of expendable supplies for transportation to the field.
- Arrangement of transportation and lodging for field personnel.

In addition to internal efforts, external mobilization efforts will be coordinated with the NAVSTA Mayport POC. A list of the steps to be taken includes the following:

- Obtain keys to existing locks on wells (other than those installed by TtNUS).
- Select staging areas for equipment and IDW.
- Select decontamination area(s).
- Complete security procedures for project and subcontractor personnel to gain access to the Base.
- Ensure supplies of potable water are accessible.
- Coordinate with base personnel to acquire an excavation/digging permit from the Public Works Office.

Multiple decontamination facilities may be selected or constructed by the drilling subcontractor before the beginning of field activities at locations deemed appropriate by the Base POC and TtNUS. Site reconnaissance will be performed before initiation of field activities. Some of these activities will be performed with the assistance of NAVSTA Mayport personnel. These activities are listed below:

- Locating and setting up of decontamination facilities.
- Identifying the potable water source(s), electrical outlets, and other utilities to be used during field activities.
- Locating temporary storage for soil cuttings and purge/development water drums as well as solid wastes generated during field activities (e.g., Tyvek suites, gloves, plastic sheeting).
- Marking/staking sample locations.
- Locating underground and aboveground utilities within the work areas (including water, gas, sanitary sewer lines, drainage lines, telephone cable, and electric lines). Electric lines may be shielded, if necessary.
- Erecting any necessary barricades and/or temporary fencing.

3.1.3 Field Investigation Activities

The planned activities for the RFI include the following general categories of field investigation activities:

- Location survey.
- Measurement of groundwater potentiometric levels.
- Collection of groundwater samples.
- Field measurement of physical and chemical properties of soil and groundwater samples.
- Collection of surface soil samples.
- Installation of soil borings and collection of subsurface soil samples using DPT techniques.
- Installation of groundwater monitoring wells via HSA in the shallow zone of the aquifer.
- Decontamination of investigation equipment.
- Sample management.

- Field QC, documentation, and record keeping.
- IDW management.

As previously discussed, the work will be performed in general accordance with applicable FDEP SOPs. In the absence of an applicable FDEP SOP, TtNUS SOPs or Navy guidance will be utilized for the same task.

3.1.3.1 Direct-Push Sampling

A DPT soil sampling device (e.g., Geoprobe® system) may be used to obtain subsurface soil samples at NAVSTA Mayport. DPT allows investigators to push a sampler to depth and obtain a continuous core that is relatively undisturbed. Prior to the use of the DPT sampler, the proposed location must be cleared for utilities down to 4 ft. After the utilities have been cleared, the DPT can be used from 4 ft down to the water table. For this project, a DPT sampler may be used for collecting deeper (approximately 4 to 8 ft bls) soil samples for use in the risk assessment.

The soil samples may be collected from any discrete depth interval, but will typically be collected from above the zone of perched groundwater saturation. The DPT sampler has an inner diameter of 1 to 2 inches and recovers a soil core measuring 2 to 4 ft in length. Liners made of material compatible with the contaminants of interest will be used inside the soil sampler to keep the sample intact after it is extruded from the sampler and to reduce the likelihood of cross-contamination or false-positive laboratory results.

To collect a sample the DPT sampler is attached to the leading end of the pushing rods and driven into the subsurface soil using a hydraulic and/or percussion driver. At the top of the desired sampling interval, the pushing is temporarily stopped and an internal release mechanism in the sampler is triggered using extension rods inserted down the inside of the push rods. After the release is activated, the sampler is again driven forward, collecting soil in the sample tube as a piston retracts. The probe assembly is then retrieved and the soil sample is removed for examination.

After removal from the sampler barrel, the sample is extracted and placed on a fresh, clean surface. If a liner is used, it will be opened and screened with a FID. Samples selected for laboratory analyses will be immediately placed into laboratory-supplied containers. The samples will be labeled, preserved on ice, and transported to the laboratory. Portions of the probe assembly that are inserted into the ground will be decontaminated before each use using standard decontamination procedures (FDEP SOP FC 1000).

3.1.3.2 Well Casing and Screen Materials

Permanent monitoring wells will be constructed of Schedule 40 polyvinyl chloride (PVC) casing and screen manufactured for environmental applications (i.e., no inked markings, shipped clean in individual, sealed wrappings) and meeting the requirements of the American Society for Testing and Materials (ASTM) F 480 and D 1785. The use of PVC will make the construction of these wells consistent with that of wells previously installed at NAVSTA Mayport. If conditions are encountered where the use of PVC in well construction is inappropriate, then stainless steel or another suitable material will be selected and presented to FDEP and Navy personnel for approval before being used.

3.1.3.3 Filter Pack and Screen Design

RFI well construction will follow previous NAVSTA Mayport investigation practice of using a 20/30-size gradation filter material coupled with a 0.010-inch, factory-slotted well screen. This filter pack size and screen slot size combination has previously been used at NAVSTA Mayport, and groundwater samples of acceptable quality have been obtained.

The 20/30 filter size is compatible with a formation that has a D30 size (i.e., 30 percent finer by weight than the D30 sieve size) in the range of fine sand. If visual inspection of the drill cuttings or split-spoon samples indicates that the D30 size of the formation is significantly coarser than this range (e.g., uniform medium to coarse sand and/or gravel), then an alternate filter pack and screen slot size combination will be recommended in accordance with FDEP SOPs.

3.1.3.4 Monitoring Well Installation

Monitoring Well Installation

The monitoring wells will be installed using HSA methods. The wells will be completed to approximate depths of 15 ft bls as determined in the field. 2- inch-diameter, Schedule 40 PVC, flush-threaded casing with 10 ft of 0.01-in. factory-slotted PVC screen will be used. The well screens will be placed such that the screens bracket the water table. Once the screen and riser pipe are in place, the annulus of the boring will be backfilled with clean, 20/30, silica sand from the bottom of the borehole to 2 feet above the top of the screen. A fine-sand seal at least 2 ft thick will be installed on top of the 20/30 silica sand. The remainder of the annulus of the borehole will be grouted by pumping a cement/bentonite slurry through a tremie pipe up to 2 ft bls.

Well Surface Completion

Each monitoring well surface completion will be flush mount. The riser pipe will be cut to approximately 3 inches bls using an inside pipe cutter and a v-notch will be cut into the north edge of the top of casing for surveying purposes. A protective steel casing will be flush-mount installed around each monitoring well. The flush-mount covers shall be a minimum 8-inch round security vault provided with sealing gasket to reduce the amount of water infiltration. Each well will be fitted with a J-Plug and stainless steel lock. A 2-ft by 2-ft by 6-inch thick concrete pad will be constructed around each flush mount monitoring well. The flush mounted casings shall be completed 1 inch above existing grade and the apron tapered to be flush with existing grade at the edges such that water will run off of the apron. The protective casing shall be completed with a metal identification tag indicating the corresponding well identifier.

The tag specifications include:

- 4-inch x 4-inch x 0.032-inch stainless steel or aluminum.
- 3/16 inch lettering.
- 1/8 inch diameter mounting holes.
- Black printed or stamped lettering.

General Drilling Requirements

The only drilling fluid used will be potable water. In addition, lubricants used on the DPT rig and/or HSA rig will not introduce or mask chemicals of concern at the site being investigated. Trash, waste, grout, cuttings, and waste fluids associated with the monitoring well installation activities will be disposed of in accordance with the methods previously used at NAVSTA Mayport.

The items listed below will also be part of the SOP for monitoring well installation:

- Data related to well construction will be documented on a monitoring well sheet (Appendix C).
- Each well will be constructed by a driller and drilling company certified by the State of Florida.
- Well locations will be approved by the Base POC before installation.
- Glue will not be used to join screen or casing.
- A notch will be cut into the top of the casing to be used as a reference point for the elevation survey and for measuring water levels.

Well Development

Monitoring wells will be developed to remove fine-grained sediments. The preferred method of development will be surging alternated with overpumping. Development equipment will be decontaminated before being placed in the well. Throughout the development procedure, discharge water color and volume shall be documented. Wells will be developed until the following criteria are achieved:

- Stabilization of the following parameters occurs:
  - temperature is constant for three consecutive readings.
  - pH plus or minus 0.1 unit.
  - electrical conductivity plus or minus 10 percent of scale.
  - turbidity is below 10 Nephelometric Turbidity Units.
- A minimum of five well volumes is removed from the monitoring well.
- Accumulated sediment is removed from the well.

The well development process will begin no sooner than 24 hours after well installation. Detergents, bleaches, soaps, or other such items will not be used to develop a well. Following development and after the water levels have been allowed to stabilize a minimum of 24 hours, the static water level will be measured and recorded. Data related to well development, including alternate development methodologies and their justification, will be written on the well development sheet (Appendix C) or in the field logbook. Development water will be contanerized and disposed of according to the NAVSTA Mayport SOP for IDW (Appendix D).

3.1.3.5 Decontamination Procedures

The decontamination of major equipment (e.g., DPT and HSA rigs) and sampling equipment (e.g., split-spoons) will minimize the spread of contamination to clean zones, reduce cross-contamination of samples when equipment is used at more than one sampling location, and minimize exposure to site personnel. FDEP SOPs for decontamination (FDEP-SOP FC 1000) will be followed.

Major equipment will be decontaminated at the equipment decontamination area as necessary. Sampling equipment will be decontaminated in tubs or drainage pans to allow rinse water to collect for disposal. Rinsate samples will be collected from the decontaminated sampling equipment by rinsing the clean equipment with analyte-free water. The sampling equipment will then be wrapped in aluminum foil and stored in a clean area until use. Clean sampling equipment will not be allowed to come into contact with the ground or any potentially contaminated surfaces before use at the sampling location.

Disposable material (e.g., gloves, Tyvek suits) generated during decontamination will be bagged and stored in drums for proper disposal at an off-base location.

Soil Sampling Equipment

Stainless steel spoons, bowls, and other soil-sampling equipment will be decontaminated after each use. The decontamination procedure outlined in FDEP SOP FC 1000 FC 1131 will be used.

Water Sampling Equipment

Peristaltic pumps will be used to purge and collect water samples. Dedicated Teflon™ tubing will be used for each sampling location. Water level indicators will be used to monitor water levels in the monitoring wells during sampling. Water level indicators will be cleaned in general accordance with FDEP SOP FC 1000 FC 1130 between each sampling location.

Major Equipment

Between each well or boring, major equipment used for sample collection such as DPT rigs will be decontaminated. The equipment decontamination area will be used as necessary. Decontamination will consist of steam-cleaning, washing with Liquinox (or equivalent), and rinsing with potable water. If necessary, surfaces will be scrubbed until visible soil and possible contaminants have been removed. Dirt, grime, grease, oil, loose paint, and rust flakes shall be removed. The inside surfaces will be similarly cleaned. The decontamination area will be constructed and operated to contain solids and liquids produced.

3.1.3.6 Trace Metals Sampling in Groundwater

Groundwater samples to be analyzed for trace levels of inorganics will be collected in a manner consistent with FS 2002 (General Aqueous Sampling: Metals) and FS 2200 (Groundwater Sampling).

3.1.3.7 Groundwater Level Measurements

Measurement of the depth to water in monitoring wells will be performed according to FDEP SOPs. The measuring devices will not be calibrated against an Invar steel surveyor's chain. The devices will be calibrated against each other to ensure that accurate relative measurements are made during the data collection event. The results of the calibration will be recorded in the field logbook.

A minimum of one complete round of water level measurements will be obtained from an existing SWMU 9 monitoring well (MW-9S) and the monitoring wells installed during the RFI. These measurements will also fall within a 48-hour period of consistent weather conditions to minimize atmospheric/precipitation effects on groundwater conditions. Measurements will be collected at least 24 hours after well development using an electrical water level indicator. A permanent reference point on the top of each well casing will be used for determining the depth to water. Measurements will be recorded on a field water level measurement sheet (Appendix C) and in the field logbook to the nearest 0.01 ft. Static water levels will be measured in each well before any fluid is withdrawn. If floating hydrocarbon is detected in the monitoring wells, the thickness of the free product will be measured with an electronic interface probe and an adjusted water level will be calculated for the monitoring well.

3.1.3.8 Sample Head Space Analysis

Soil vapor head space analyses will be performed in general accordance with the method prescribed in FDEP-SOP FS 3000. Soil samples will be analyzed for their total hydrocarbon content using an organic vapor analyzer (OVA) equipped with a FID. Charcoal filters will be used to differentiate between methane (a naturally occurring gas) and petroleum hydrocarbon vapors. This information will be recorded in the field logbook.

The following steps will be used to prepare soil samples for head space analysis:

- Each soil sample to be analyzed will be equally split and placed into two clean, 16-ounce glass jars.
- Each sample jar will be filled to approximately one-half of its volume, if sufficient sample volume is available.
- Aluminum foil covers will be sealed over the open end of the glass jar using a threaded, metal ring.
- The sample jars will be allowed to equilibrate under a temperature range of 20–30 degrees Celsius (°C) for approximately 5 minutes.
- The head space will be measured by piercing the aluminum foil with the FID probe and recording the highest sustained reading.
- The FID will be calibrated daily and calibration will be confirmed every 20 samples.
- If FID readings above background are detected in the first jar, the second sample jar will be measured using an in-line charcoal filter to determine the portion of the total reading attributable to methane gas.

3.1.3.9 Laboratory Sample Identification

The sample identification system to be used in the field to identify each sample taken during the RFI field effort will be in accordance with FDEP-SOP FD 5000. The coding system provides a tracking record to allow the retrieval of information about a particular sample and to ensure that each sample is uniquely identified.

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

1		2		3		4
MPTXX	-	SB/GWXX	-	XX	-	MMDDYY

Sample Nomenclature for soil and groundwater samples:

- MPTXX = NS Mayport, SWMU 8 (MPT08), SWMU 9 (MPT09), and SWMU 51 (MPT51)
- SBXX or GWXX = SBXX represents a subsurface soil sample where XX is a consecutive number beginning with '01' and GWXX represents a groundwater sample where XX is a consecutive number beginning with '01'
- XX = Depth sample was collected at (ft bls) [Note: This nomenclature is not used for groundwater samples.]
- MMDDYY = Month and Year of sample collection

An example of the above nomenclature is:

- A soil sample collected on August 29, 2006, from soil boring SB02 at SWMU 8 collected 4 ft bls would be represented by MPT08-SB02-04-082906.
- If the 3rd well (MW03S) at SWMU 9 was sampled on August 29, 2006, the sample identification would be represented by MPT09-GW03S-082906.

Existing monitoring wells will continue to be referenced by their present identifications. New monitoring wells will be designated as follows:

1		2
MPTXX	-	MWXXS

- MPTXX = NS Mayport, SWMU 8 (MPT08), SWMU 9 (MPT09), and SWMU 51 (MPT51)
- MWXXS = MW represents a monitoring well, XX is a consecutive number beginning with '01', and 'S' indicates a shallow monitoring well

Other QA/QC samples collected during the field activities will be labeled as follows:

- Trip Blanks: Trip blanks will be labed in ascending sequential order beginning with -01 for samples collected at SWMUs 8, 9, and 51. An example of this is as follows: the second trip blank sent during the SWMU 8 characterization would be designated MPT08-TB02-082906. Table 2-4 specifies the requirements for trip blanks.

- Rinsates: Rinsate samples will be labeled in ascending sequential order beginning with -01. For example, the first equipment blank sample collected during SWMU 9 characterization would be designated MPT09-EB01-082906. Table 2-4 specifies the requirements for equipment rinsate blanks.

Pre-preserved, certified-clean bottleware will be supplied by the subcontracted laboratory for all samples.

3.1.3.10 Sample Custody, Packaging, and Shipping

Custody of samples must be maintained and documented at all times. Chain-of-custody begins with the collection of the samples in the field. FDEP SOP 001/01 FS 1000 and TtNUS SOP SA-6.3 provide a description of the chain-of-custody procedures to be followed.

Samples will be packaged and shipped in accordance with FDEP SOP 001/01 FS1000: General Sampling and applicable sections of FS2200 and FS3000. The FOL will be responsible for completion of 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

FS1000 also addresses the topics of containers, holding times, and sample preservations.

3.1.3.11 Field Measurements

Field measurements recorded during field and sampling operations include screening breathing air around the workspace area, screening soil samples, and screening air quality within the well casing. Also, field measurements of groundwater temperature, pH, turbidity, specific conductance, dissolved and water levels will be taken. The following instruments are anticipated to be used during the field activities:

- FID.
- YSI 556 water quality data meter (or equivalent).
- Electronic water-level meter.
- Lamotte 2020 turbidity meter (or equivalent).

Field instruments are calibrated according to the manufacturer's procedures and in accordance with the following:

- YSI 556 water quality meters (or equivalent) are commonly used in place of separate temperature (FDEP SOP FT 1400), conductivity (FDEP SOP FT 1200), pH (FDEP SOP FT 1100), and dissolved oxygen meters (FDEP SOP FT 1500). This device can record six separate parameters and is calibrated automatically before each day's use.
- Lamotte 2020 turbidity meters are used to give a more accurate measurement of turbidity. This device will be calibrated before each day's use (FT 1600).
- FIDs will be calibrated as per the manufacturer's recommendations.

Instrument calibration is recorded on an Equipment Calibration Log Sheet provided in Appendix C. During calibration, a maintenance check is 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 the defective parts can be repaired or the instrument replaced.

3.1.3.12 Field Instrument Control Limits

QA/QC specifications for field measurements are summarized in Table 3-1. This table shows the control parameters to be assessed, control limits, and corrective actions to be implemented. The TtNUS representative on site at each well and boring will confirm measurements of total depth of holes, dimensions and placement of well screens and casings, and volume and placement of filter pack and grout materials by independent observation or measurement. The FOL will review field forms and field logbook entries for indications of measurement data outside of the control range.

3.1.3.13 Investigation-Derived Waste

IDW generated during RFI field activities will be containerized in drums and stored on site until analysis of the media has been reviewed and appropriate decisions for the disposal of the waste can be made by the base environmental coordinator. Purge water, decontamination water and soil cuttings will be collected and containerized in Department of Transportation-approved (Specification 17C) 55-gallon drums. Each drum will be sealed, labeled, and left at a drum staging area pending groundwater analytical results or composite waste sample results, and will be subsequently managed in accordance with procedures described in the NAVSTA Mayport SOP for IDW Waste (Appendix D).

TABLE 3-1

FIELD QA/QC SPECIFICATIONS
RFI WORK PLAN FOR
SWMUs 8, 9, AND 51
NAVSTA MAYPORT
MAYPORT, FLORIDA

Analysis	Control Parameter	Control Limit	Corrective Action	FDEP SOP Number
Air monitoring using an OVA	Daily check of calibration of FID	Calibration to manufacturer's specifications	Recalibrate. If unable to calibrate, replace.	
pH of water	Continuing calibration check of pH 7.0 buffer	pH = 7.0 ± 0.1	Recalibrate. If unable to calibrate, replace electrode.	FT 1100
Specific conductance of water	Continuing calibration check of standard solution	± 1% of standard	Recalibrate.	FT 1200
Temperature of water	Check against NIST precision thermometer	± 0.1°C at two different temperatures	Reset thermistors in accordance with manufacturer's specifications; dispose of inaccurate thermometer.	FT 1400
Dissolved Oxygen	Continuing dissolved oxygen determinations	Calibration to manufacturer's specifications	Recalibrate.	FT 1500
Turbidity	Continuing measurement of the scattering effect that suspended solids have on the propagation of light through a body of water	Calibration to manufacturer's specifications	Recalibrate.	FT 1600

Notes:
NIST – National Institute of Standards and Technology

Weekly IDW inspections will occur for IDW temporarily stored on site to ensure that IDW is properly secured and labeled, that IDW drums are not compromised, and that IDW is removed from the site in a timely manner. A Weekly Investigative Derived Waste Checklist for NAVSTA Mayport (Appendix D) will be completed during these IDW inspections and submitted to Diane Racine. The field events for SWMUs 8, 9, and 51will take place concurrently with field events at other locations (SWMUs 6 and 7, SWMUs 10 and 11, and SWMUs 44 and 45). Therefore, the IDW from field events will be stored in a centralized location. Once the field events are finish and analytical results obtained, the IDW will be transported and disposed of off site by a subcontractor.

3.1.3.14 Field Logbooks and Forms

Field logbooks and standard data collection forms will be completed for field investigation, sample description, and data collection activities. These forms include sample log sheets (for soil and groundwater samples), a daily record of drilling activities, and equipment calibration logs. Copies of these forms can be found in Appendix C.

A bound, weatherproof field logbook shall be maintained by each sampling event leader. The FOL or designee will record the information related to sampling or field activities. This information may include sampling time, weather conditions, unusual events (e.g., well tampering), field measurements, descriptions of photographs, or other such details. A site logbook shall be maintained by the FOL. This book will contain a summary of daily site.

Each field team member who is supervising a drilling subcontractor must complete a daily record of drilling activity. This form documents the stage, hours, methods, materials, and supplies used during daily drilling activities. The information contained on this form is used for billing verification and progress reports. The driller's signature is required at the end of each working day to verify work accomplished, hours worked, standby time, and material used. An example of this form is provided in Appendix C.

At the completion of field activities, the FOL will submit to the TOM field records, data, field logbooks, site logbooks, chain-of-custody receipts, sample log sheets, drilling logs, daily logs, and other such forms.

3.1.3.15 Manufacturers' Specifications

The FOL shall collect a copy of the available manufacturers' specifications and material safety data sheets, if applicable, for supplies and equipment that are used in the collection of environmental samples. This shall apply to, but not be limited to, the following:

- Calibration gases.
- Sample containers.
- Decontamination solvents and detergents.
- Laboratory-grade/analyte-free water.
- Reagents.
- Drilling additives.
- Bentonite and cement.
- Filter pack materials.
- Well casing and screen.
- Disposable bailers, filters, and tubing.

The manufacturers' specifications will be included in the project files at the end of the field mobilization.

3.1.3.16 Surveying

Global Positioning Survey Locations

The locations of sample points, soil borings, and wells may initially be determined during the field investigation using a portable Global Positioning Survey (GPS) instrument with sub-meter accuracy. This information may be helpful in plotting results and analyzing the data coverage in real-time to make data acquisition decisions during RFI field activities. The GPS instrument will be used in accordance with the manufacturer's instructions, and the results will be recorded in the field records. Monitoring wells and other selected points will be permanently located using a professional surveyor at the close of the field activities.

National Geodetic Vertical Datum Survey Locations

The locations of monitoring wells installed during the RFI field activities will be measured by a certified land surveyor. Each point will be measured from a reference location that is tied to the Florida State Plane Coordinate System. An X–Y coordinate system shall be used to identify locations. The X coordinate will be the east–west axis; the Y coordinate will be the north–south axis. The reference location will be the origin.

The surveyed locations will be reported using the Florida State Plane Coordinate System. Existing installation benchmarks will serve as the horizontal and vertical datum for the survey. Elevations and horizontal locations will be recorded to the nearest hundredth of a foot. The elevations of monitoring wells will be surveyed at the water level measuring reference point on the top of the well casing and on the undisturbed ground surface adjacent to the well pad.

3.2 NAVSTA MAYPORT SUPPORT

The NAVSTA Mayport facility POC will be responsible for the following activities:

- Providing access to the site;
- Answering questions related to NAVSTA Mayport policies and procedures; and
- Signing manifests associated with IDW disposal, conducting IDW disposal, and providing TtNUS with a copy of the manifests for inclusion in the report.

REFERENCES

ABB-ES (ABB Environmental Services, Inc.), 1996. *Resource Conservation and Recovry Act Facility Investigation Group II Solid Waste Management Units*, U.S. Naval Station Mayport, Jacksonville, FL. January.

ASTM (American Society for Testing and Materials), 2006. F480-02 Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80 & D1785-06 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

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ESA (Environmental Science Associates, Inc.), 2000. *Limited Closure Summary Report, Mayport Naval Station Fuel Depot, Tanks # 99, 100, 101*, Mayport Naval Station, Duval County, Florida. June.

FDEP (Florida Department of Environmental Protection), 2005. Technical Report for the Development of Soil Cleanup Target Levels, FAC 62-777, Sarankso et al, Gainesville, Florida.

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APPENDIX A

HISTORICAL INFORMATION

SUMMARY INFORMATION FOR SWMU NOs. 8, 9, 10, AND 11
NAVSTA MAYPORT, MAYPORT FLORIDA

BACKGROUND

This information summary report is for SWMU Nos. 8, 9, 10, and 11 at NAVSTA Mayport. These SWMUs are located in the Group II area (Figure 1) and their boundaries are coterminous, or nearly so. SWMU Nos. 8 and 9 are part of the Oily Waste Treatment Plan and consist of the effluent percolation pond and treatment facilities, respectively. SWMU No. 10 is a metal building and fenced yard used for the temporary storage of hazardous wastes. SWMU No. 11 was identified as an undocumented fuel spill area located just to the west of the bulk fuel storage farm.

SWMU No. 8

SWMU No. 8 consists of the OWTP effluent percolation pond that operated from 1979 until 1994. The pond was approximately 1,575 square feet in size with earthen berms approximately 5 feet above grade. Until 1988, the pond was unlined and allowed effluent to percolate into the ground or to flow to the St. Johns River via a overflow pipe. Following an accidental release of oily waste to the pond in 1988, the pond was emptied, cleaned out, and a 1 foot clay liner installed across the bottom and sides. After lining, the pond discharged either to the St. Johns River or to the station's wastewater treatment plant until it was taken out of service in 1994.

SWMU No. 9

The OWTP was constructed in 1979 to treat bilge water and other oily wastes generated at NAVSTA Mayport, and it has been in continuous operation since that time. SWMU No. 9, for the purposes of the RFI and CMS, includes the following facilities:

- Rapid mix-flocculation tank; concrete, in-ground; above grade discharge pipe
- Clarifier tank; 25-feet diameter, concrete, in-ground; below grade discharge pipe
- Neutralization tank; concrete, 125 cubic feet capacity, below ground; below grade discharge pipe
- Dissolved air flotation (DAF) unit

SWMU No. 10

The hazardous waste storage facility is a sheet metal building approximately 8,100 square feet in size that was constructed in 1984. The hazardous waste storage facility is operated under FDEP permit no. H016-118598. The building and outside less-than-90-day storage area are encircled by a chainlink fence encompassing an area of approximately 96,250 square feet.

The interior of the building is divided into seven storage bays, and the floor consists of a concrete base coated with synthetic epoxy. Each storage bay is surrounded by a 12-inch concrete curb on three sides, and the floor of each bay slopes towards grated, isolated containment basins in the center of the building. Wastes in the outside storage area are mostly placed on pallets. Most of the soil within the outside storage area is covered with crushed lime rock. However, there is a grass covered area in the northwestern portion of the outside storage area; PCB containing wastes were stored in this area during the RFA conducted in 1988.

SWMU No. 11

The fuel spill area at SWMU No. 11 was identified when pre-construction soil borings were found to have a strong fuel odor. The source of the fuel, thought to be JP-4, JP-5, or diesel marine fuel, has not been identified, but it was thought that the release was likely to have originated in the adjacent fuel farm area. Subsequent file review identified the presence of a former waste oil pit, located to the southwest of Tank 201, that may have been the source for the noted soil contamination.

SUMMARY OF RCRA FACILITY INVESTIGATION

SWMU Nos. 8, 9, 10, and 11 are part of the Oily Waste Treatment Plant (OWTP) area that was investigated as part of the Group II SWMUs during the RFI conducted in 1993 and 1994.

Prior to fixed-base laboratory sample collection, soil and groundwater screening samples were collected across the OWTP area using a Terra Probe sampler and were analyzed at a field laboratory for total petroleum hydrocarbons (TPH). The soil samples were collected at various depths, beginning at approximately 2 feet below ground surface (bgs) and extending to the top of the water table (depth of 14 feet bgs at some locations). A few of these subsurface soil samples were located within, or in the immediate vicinity of, SWMU Nos. 8, 9, 10, and 11, and help to identify and define the extent of petroleum hydrocarbon impact. The RFI figure presenting the results of the subsurface soil TPH screening is included in Attachment 1. The results for soil screening sample locations partinent to SWMU Nos. 8, 9, 10, and 11 are listed in Table 1; the locations are also shown in relation to SWMU Nos. 8, 9, 10, and 11 on Figures 2 through 5.

TABLE 1
TPH SOIL SCREENING RESULTS
NAVSTA MAYPORT, MAYPORT FLORIDA

SWMU No.	Sample ID	TPH Concentration (mg/kg) in Soil (depth below grade)			
		6-8 ft	8-10 ft	10-12 ft	12-14 ft
8	MPT-8-T19/-22	*	3.7	--	--
9	MPT-8-T23/-18	*	*	--	--
	MPT-8-T23/-21	*	*	--	--
	MPT-8-T24/-16	*	8	--	--
11	MPT-8-T06	--	--	ND	88
	MPT-8-T08	--	ND	--	--
	MPT-8-T19	--	1,163	18,459	--
	MPT-8-T20	--	--	8,172	--
	MPT-8-T21	--	--	4,422	--
	MPT-8-T22	--	ND	12,903	--
	MPT-8-T24	--	3,390	--	--
	MPT-8-T25	--	ND	--	--
	MPT-8-T27	ND	222	--	--
	MPT-8-T28	--	ND	--	--

* Result not available; RFI report (ABB-ES, 1996) indicates that screening result was less than detection limit.
-- Indicates sample not collected.
ND Result reported as less than detection limit.

The subsurface soil TPH screening results suggest that a significant concentration of petroleum hydrocarbons may be associated with a groundwater smear zone above the water table at, and around, SWMU No. 11. The screening results indicate that soils above a depth of about 8 ft have not been impacted. The data suggest that a groundwater plume or former free product plume may have at one time extended beneath SWMU No. 11; it can not be determined if the groundwater contamination, or plume, originated at SWMU No. 11 or is the result of migration from the SWMU Nos. 6 and 7 area.

The groundwater TPH screening results were used to select the locations for the permanent monitoring wells installed during the RFI (Figure 6). Groundwater screening samples were collected from only a few locations near SWMU Nos. 8 and 9; the RFI figure that presented the results of the groundwater screening is included in Attachment 1. The data show that relatively lower TPH concentrations were present in groundwater in the vicinity of SWMU Nos. 8 and 9.

Intense sampling was conducted in the OWTP area specifically at, and around, SWMU No. 6 (former waste oil pit) and SWMU No. 7 (sludge drying beds) that were highly suspect as source areas for petroleum contamination due to historical practices. However, documentation or site evidence of releases at SWMU Nos. 8, 9,10, and 11 were tenuous; therefore, sampling activities at these SWMUs

were minimal. Table 2 summarizes the types and numbers of fixed-base laboratory samples collected at each SWMU. The locations of these samples are shown in Figures 2 through 6.

TABLE 2
SUMMARY OF LABORATORY SAMPLES
NAVSTA MAYPORT, MAYPORT FLORIDA

SWMU No.	Sludge	Soil	Surface Water	Groundwater
8	1	--	1	10 shallow and 1 intermediate depth well samples
9	--	--	--	
10	--	--	--	
11	--	--	--	

SUMMARY OF RFI RECOMMENDATIONS

SWMU No. 8

The RFI recognized that the detection of VOCs and SVOCs in surface water collected in 1993 form the percolation pond at SWMU No. 8 suggested that hydrocarbon-related compounds had been released to the environment (i.e. groundwater). However, the RFI also stated that the analytical results for the sludge sample collected in 1994 from the percolation pond indicated that remediation was not required "because the sample contained petroleum-related chemicals at concentrations below the Florida clean soil criteria (62-775 FAC)". The RFI did not recognize any risk to human health or the environment based on the current and future industrial land use at SWMU No. 8. In conclusion, the RFI stated that "water discharged to the percolation pond after treatment in the OWTP has affected groundwater hydraulically downgradient of SWMU No. 8." None of the organic chemicals were detected in the groundwater samples (relevant to SWMU No. 8) at concentrations that exceeded Florida groundwater guidance concentration (i.e., those in affect at the time of the RFI). The RFI did not make any specific recommendations for SMWU No. 8.

SWMU No. 9

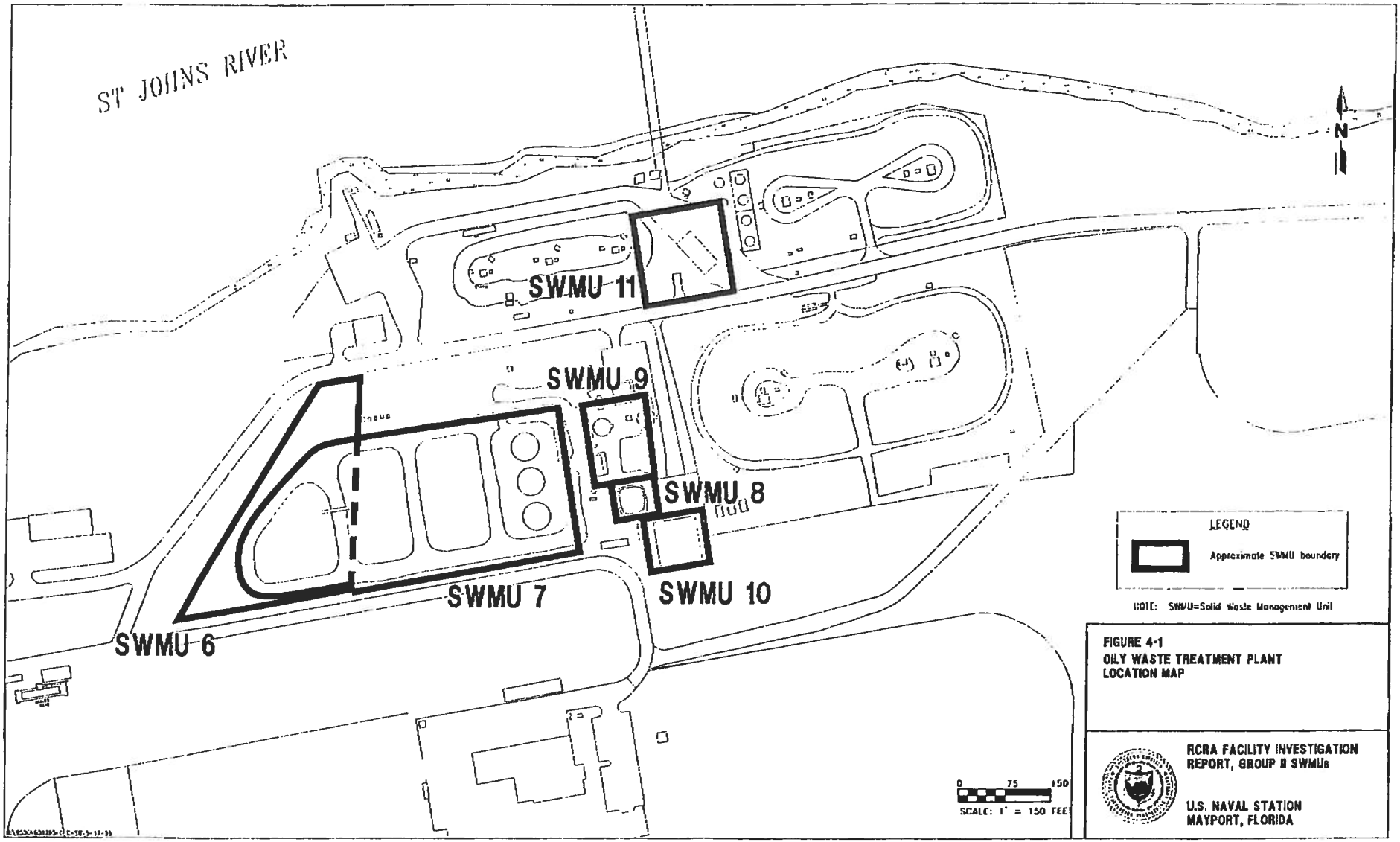
The RFI did not recognize any potential risk to human health or the environment based on the current and future industrial land use at SWMU No. 9. In conclusion, the RFI stated that "there are no indications of releases of hazardous constituents from the OWTP (SWMU No. 9)" and "no further investigation was recommended for SWMU No. 9.

SWMU No. 10

The RFI did not recognize any potential risk to human health or the environment based on the current and future industrial land use at SWMU No. 10. In conclusion, the RFI stated that there were no indications of releases of hazardous constituents from the hazardous waste storage building. No further investigation was recommended for SWMU No. 10 in the RFI report (ABB-ES, 1996).

SWMU No. 11

The RFI recognized that an area of TPH contamination in subsurface soil was apparently associated with the fuel spill area at SWMU No. 11. The remediation of free-phase hydrocarbons floating on top of the Surficial Aquifer in the vicinity of SWMU Nos. 6 and 7 (to the west of SWMU No. 11) was recommended for interim action; the area-wide occurrence of TPH contamination in subsurface soil was recommended for evaluation in the CMS. No specific actions were recommended for SWMU No. 11.


ST JOHNS RIVER
N
SWMU 11
SWMU 9
SWMU 8
SWMU 7
SWMU 10
SWMU 6
LEGEND
Approximate SWMU boundary
NOTE: SWMU=Solid Waste Management Unit
0 75 150
SCALE: 1" = 150 FEET
FIGURE 4-1
OILY WASTE TREATMENT PLANT
LOCATION MAP
RCRA FACILITY INVESTIGATION
REPORT, GROUP II SWMUs
U.S. NAVAL STATION
MAYPORT, FLORIDA

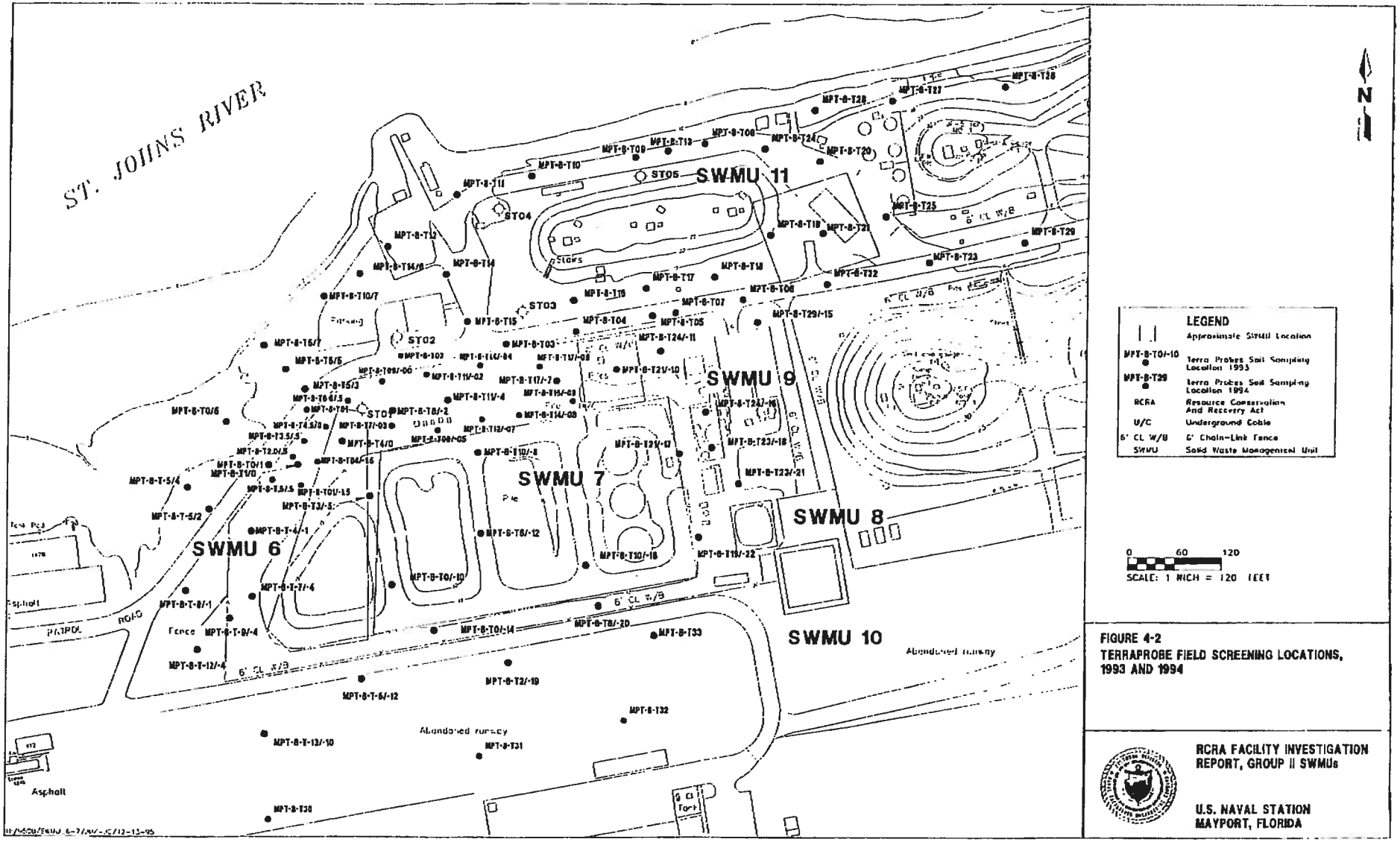


FIGURE 4-2
TERRAPROBE FIELD SCREENING LOCATIONS, 1993 AND 1994

RCRA FACILITY INVESTIGATION REPORT, GROUP II SWMUs

U.S. NAVAL STATION MAYPORT, FLORIDA

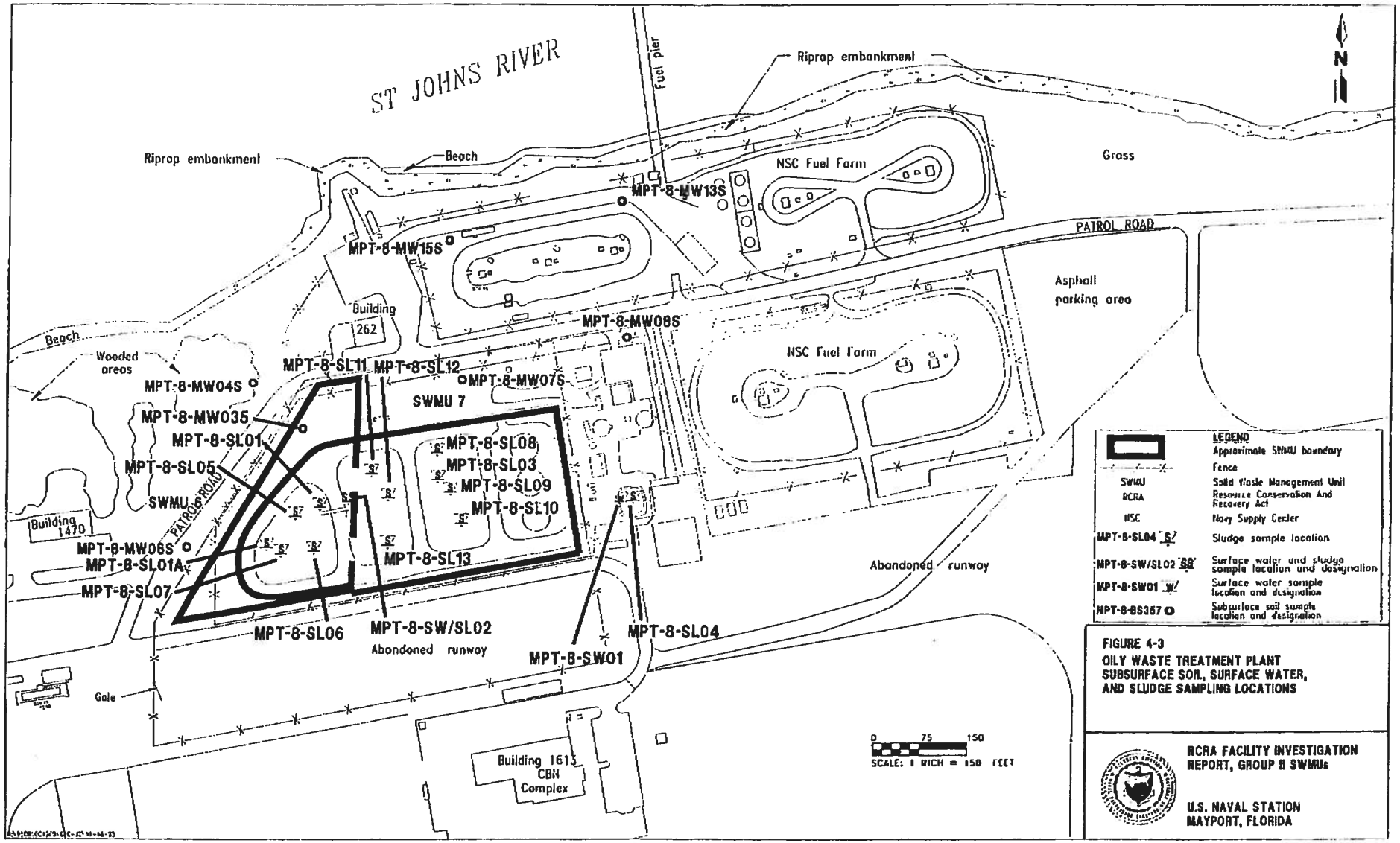


FIGURE 4-3
OILY WASTE TREATMENT PLANT
SUBSURFACE SOIL, SURFACE WATER,
AND SLUDGE SAMPLING LOCATIONS

RCRA FACILITY INVESTIGATION
REPORT, GROUP II SWMUs

U.S. NAVAL STATION
MAYPORT, FLORIDA

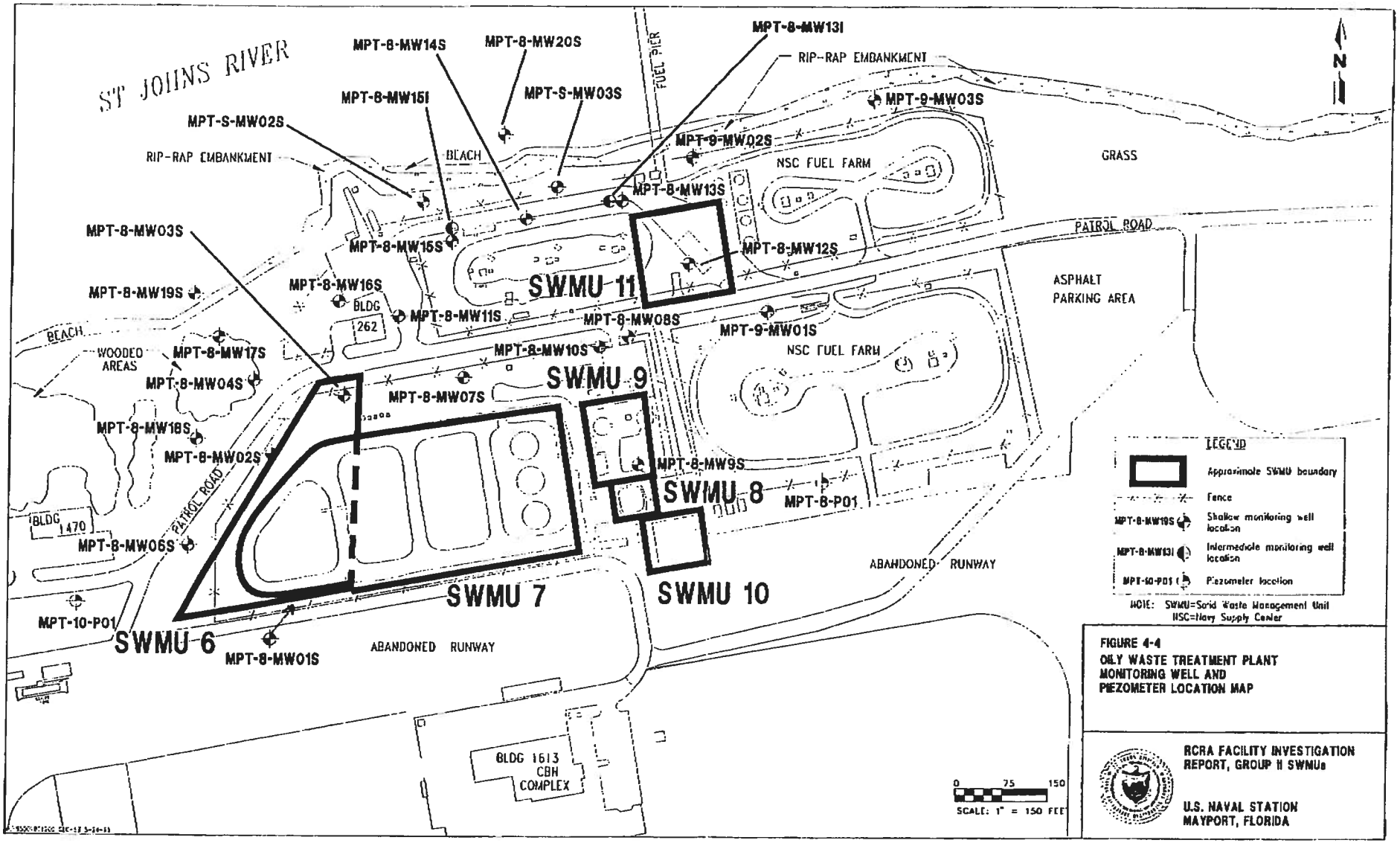

ST JOHNS RIVER
MPT-8-MW14S
MPT-8-MW20S
MPT-8-MW13I
FUEL PIER
RIP-RAP EMBANKMENT
MPT-8-MW15I
MPT-S-MW03S
MPT-9-MW03S
MPT-S-MW02S
MPT-9-MW02S
RIP-RAP EMBANKMENT
BEACH
NSC FUEL FARM
GRASS
MPT-8-MW13S
MPT-8-MW03S
MPT-8-MW15S
PATROL ROAD
MPT-8-MW12S
MPT-8-MW19S
MPT-8-MW16S
SWMU 11
ASPHALT
PARKING AREA
BLDG
262
MPT-8-MW11S
MPT-8-MW08S
MPT-9-MW01S
BEACH
WOODED
AREAS
MPT-8-MW17S
MPT-8-MW10S
NSC FUEL FARM
MPT-8-MW04S
SWMU 9
MPT-8-MW07S
MPT-8-MW18S
MPT-8-MW02S
MPT-8-MW09S
SWMU 8
MPT-8-P01
PATROL ROAD
BLDG
1470
MPT-8-MW06S
ABANDONED RUNWAY
SWMU 7
SWMU 10
MPT-10-P01
SWMU 6
MPT-8-MW01S
ABANDONED RUNWAY
BLDG 1613
CBH
COMPLEX
N
0
75
150
SCALE: 1" = 150 FEET
LEGEND
Approximate SWMU boundary
Fence
MPT-8-MW19S Shallow monitoring well location
MPT-8-MW13I Intermediate monitoring well location
MPT-10-P01 Piezometer location
NOTE: SWMU=Solid Waste Management Unit
NSC=Navy Supply Center
FIGURE 4-4
OILY WASTE TREATMENT PLANT
MONITORING WELL AND
PIEZOMETER LOCATION MAP
RCRA FACILITY INVESTIGATION
REPORT, GROUP II SWMUs
U.S. NAVAL STATION
MAYPORT, FLORIDA

Table 4-3
Summary of Chemicals Detected in Oily Waste Treatment Plant (OWTP) Surface Water and a Comparison to Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration	Florida Guidance Concentration[4]	Frequency Above Florida Guidance Concentration
Volatile Analytes (µg/ℓ)								
2-Butanone	2/2	10.5*	15	13	N/A	MPT8SW2	4,200	0/2
Acetone	2/2	185*	210	198	N/A	MPT8SW2	700	0/2
Benzene	2/2	19.5*	63	41	N/A	MPT8SW2	1	2/2
Carbon disulfide	2/2	4	10.5*	7	N/A	MPT8SW1	700	0/2
Ethylbenzene	2/2	13.5*	36	25	N/A	MPT8SW2	30	1/2
Toluene	2/2	50.5*	160	105	N/A	MPT8SW2	40	2/2
Xylenes (total)	2/2	81.5*	230	156	N/A	MPT8SW2	20	2/2
Semivolatile Analytes (µg/ℓ)								
2,4-Dimethylphenol	2/2	45	160	103	N/A	MPT8SW2	400	0/2
2-Methylnaphthalene	2/2	11	84	48	N/A	MPT8SW2	NSC	N/A
2-Methylphenol	2/2	14	84	49	N/A	MPT8SW2	350	0/2
4-Methylphenol	2/2	9	62	36	N/A	MPT8SW2	35	1/2
Acenaphthene	2/2	3	4	4	N/A	MPT8SW2	20	0/2
Dibenzofuran	1/2	2	2	2	10 - 10	MPT8SW2	NSC	N/A
Diethylphthalate	1/2	2	2	2	10 - 10	MPT8SW2	5,600	0/2
Fluorene	2/2	4	5	5	N/A	MPT8SW2	280	0/2
Naphthalene	2/2	7	140	74	N/A	MPT8SW2	6.8	2/2
Phenanthrene	2/2	3	6	5	N/A	MPT8SW2	10	0/2
bis(2-Ethylhexyl)phthalate	1/2	3	3	3	10 - 10	MPT8SW2	NSC	N/A
Inorganics (µg/ℓ)								
Antimony	2/2	17.2	35.9	26.6	N/A	MPT8SW1	6	2/2
Barium	2/2	10.5	37.1	23.8	N/A	MPT8SW1	2,000	0/2
Chromium	1/2	6	6	6	3.7 - 3.7	MPT8SW1	100	0/2
Cobalt	1/2	5.9	5.9	5.9	5.8 - 5.8	MPT8SW2	NSC	N/A

See notes at end of table.

Table 4-3 (Continued)
Summary of Chemicals Detected in Oily Waste Treatment Plant (OWTP) Surface Water and a Comparison to Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration	Florida Guidance Concentration[4]	Frequency Above Florida Guidance Concentration
Mercury	1/2	0.1	0.1	0.1	0.1 - 0.1	MPT8SW1	2	0/2
Nickel	2/2	11.2	29.8	20.5	N/A	MPT8SW1	100	0/2
Vanadium	2/2	3.7	4.2	4	N/A	MPT8SW2	49	0/2
Zinc	1/2	16.7	16.7	16.7	2.2 - 2.2	MPT8SW1	5,000	0/2

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed.
[2] A value indicated by an asterisk is the average of the detected concentrations in a sample and its duplicate. For nondetected values, one-half the CRQL/CRDL is used as a surrogate.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples in which the analyte was not detected.
[4] Florida Groundwater Guidance Concentrations (June 1994). These guidance concentrations were used on the water in the ponds because of the potential for infiltration of groundwater.

Notes: RCRA = Resource Conservation and Recovery Act.
SWMU = solid waste management unit.
$\mu g/\ell$ = micrograms per liter.
N/A = not applicable.
NSC = no screening concentration.
CRQL/CRDL = contract-required quantitation limits/contract-required detection limit.

Table 4-4
Organic Analytes Detected in Sludge Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	3492	2396-3507	2396-3507	23883-34923	3492	8977	R897	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL01	MPT-8-SL01A	MPT-8-SL01A	MPT-8-SL02	MPT-8-SL03	MPT-8-SL04	MPT-8-SL04	MPT-8-SL05	MPT-8-SL05
Sample No.:	MPT8SL1	8SL1A	8SL1ADup	MPT8SL2	MPT8SL3	08SL00401	08SL00401Dup	08SL00501	08SL00505
Date Sampled:	19-JAN-93	02-FEB-93	02-FEB-93	19-JAN-93	19-JAN-93	27-OCT-94	27-OCT-94	09-AUG-94	09-AUG-94
Sample Depth (ft bls):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	4 to 5
Volatile Analytes (µg/kg)									
Methylene chloride	--	--	--	--	--	--	--	21	30
Acetone	--	2 J	3 J	--	--	--	--	--	180 J
Carbon disulfide	7 J	--	--	--	--	--	--	--	19
2-Butanone	--	--	--	--	--	--	--	--	35
Benzene	--	--	--	--	--	--	--	--	--
2-Hexanone	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	210 J	--	--	--	4 J	--
Ethylbenzene	--	--	--	430 J	--	--	--	--	810
Xylenes (total)	--	--	--	2,400 J	--	--	--	2 J	950 J
Trichlorofluoro-methane	--	--	--	--	--	--	--	--	2 J
Isobutyl alcohol	--	--	--	--	--	--	--	--	610
Semivolatile Analytes (µg/kg)									
Naphthalene	--	--	--	12,000 J	--	--	--	2,400 J	19,000
2-Methylnaphthalene	--	--	--	22,000 J	--	--	--	7,100	61,000
Acenaphthene	1,700 J	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	1,300 J	7,200 J
N-Nitrosodiphenyl-amine (1)	50,000	--	--	7,300 J	--	--	--	--	--
Phenanthrene	--	--	--	13,000 J	--	--	--	1,400 J	12,000
Anthracene	--	100 J	91 J	--	79 J	--	--	--	--
Fluoranthene	--	--	--	5,800 J	--	220 J	--	--	--
Pyrene	3,400 J	--	170 J	37,000 J	--	320 J	140 J	660 J	1,300 J
Butylbenzylphthalate	--	--	85 J	--	--	--	--	--	--

See notes at end of table.

Table 4-4 (Continued)
Organic Analytes Detected in Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	3492	2396-3507	2396-3507	23883-34923	3492	8977	R897	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL01	MPT-8-SL01A	MPT-8-SL01A	MPT-8-SL02	MPT-8-SL03	MPT-8-SL04	MPT-8-SL04D	MPT-8-SL05	MPT-8-SL05
Sample No.:	MPT8SL1	8SL1A	8SL1ADup	MPT8SL2	MPT8SL3	08SL00401	08SL00401D	08SL00501	08SL00505
Date Sampled:	19-JAN-93	02-FEB-93	02-FEB-93	19-JAN-93	19-JAN-93	27-OCT-94	27-OCT-94	09-AUG-94	09-AUG-94
Sample Depth (ft bls):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	4 to 5
Benzo(a)anthracene	--	--	--	6,600 J	--	100 J	--	--	--
Chrysene	--	220 J	170 J	--	91 J	110 J	--	--	--
bis(2-Ethylhexyl)-phthalate	3,800 J	--	1,200	51,000 J	--	170 J	230 J	--	670 J
Benzo(b)fluoranthene	--	--	76 J	--	--	140 J	--	--	--
Benzo(g,h,i)perylene	--	--	85 J	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)									
4,4-DDE	--	7.1	7.1	--	--	--	--	--	--
4,4-DDD	--	--	--	--	--	6.2	5.3	--	--
4,4-DDT	--	--	--	--	--	2.2 J	2.1 J	--	--
Chlordane	--	--	--	--	--	--	--	--	--

See notes at end of table.

Table 4-4 (Continued)
Organic Analytes Detected in Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL08	MPT-8-SL08	MPT-8-SL07	MPT-8-SL07	MPT-8-SL07	MPT-8-SL08	MPT-8-SL08	MPT-8-SL09	MPT-8-SL09	MPT-8-SL010	MPT-8-SL10
Sample No.:	08SL00601	08SL00605	08SL00701	08SL00701Dup	08SL00705	08SL00801	08SL00806	08SL00901	08SL00906	08SL01001	08SL01001Dup
Date Sampled:	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94
Sample Depth (ft bls):	0 to 1	4 to 5	0 to 1	0 to 1	4 to 5	0 to 1	5 to 6	0 to 1	5 to 6	0 to 1	0 to 1
Volatile Analytes (µg/kg)											
Methylene chloride	9 J	--	--	--	11 J	42	11 J	--	9 J	22	24
Acetone	120 J	--	150 J	--	190 J	--	140 J	--	160 J	--	--
Carbon disulfide	6 J	2 J	--	--	16 J	5 J	13 J	1 J	6 J	5 J	2 J
2-Butanone	30 J	2 J	--	--	87 J	--	50 J	--	45 J	4 J	3 J
Benzene	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	--	--	--	--	--	--	560 J	--	650 J	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	13 J	11 J	--	--	31 J	--	59 J	--	--
Ethylbenzene	590 J	56 J	--	--	[1]1,300 J	--	840 J	2 J	[1]950	--	
Xylenes (total)	[1]2,600	19 J	4 J	4 J	890 J	19 J	[1]3,700	3 J	[1]4,300	8 J	5 J
Trichlorofluoro-methane	--	--	--	--	--	--	--	--	--	--	--
Isobutyl alcohol	320 J	170 J	--	--	2,700 J	--	1,200 J	--	--	--	--
Semivolatile Analytes (µg/kg)											
Naphthalene	6,100 J	6,800	--	--	15,000	--	16,000 J	--	8,400 J	--	--
2-Methylnaphthalene	25,000	28,000	--	--	8,400	--	[1]69,000	--	33,000	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	2,000 J	--	--	--	--	--	--
Fluorene	2,900 J	2,400 J	--	--	4,600	--	6,000 J	--	2,900 J	--	--
N-Nitrosodiphenyla-mine (1)	--	1,500 J	--	--	2,900 J	--	--	--	--	--	--

See notes at end of table.

Table 4-4 (Continued)
Organic Analytes Detected in Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL06	MPT-8-SL06	MPT-8-SL07	MPT-8-SL07	MPT-8-SL07	MPT-8-SL08	MPT-8-SL08	MPT-8-SL09	MPT-8-SL09	MPT-8-SL010	MPT-8-SL-10
Sample No.:	08SL00601	08SL00605	08SL00701	08SL00701Dup	08SL00705	08SL00801	08SL00806	08SL00901	08SL00906	08SL01001	08SL01001Dup
Date Sampled:	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94
Sample Depth (ft bls):	0 to 1	4 to 5	0 to 1	0 to 1	4 to 5	0 to 1	5 to 6	0 to 1	5 to 6	0 to 1	0 to 1
Semivolatile Analytes (µg/kg) (Continued)											
Phenanthrene	3,400 J	3,900 J	--	--	7,300	--	11,000 J	--	4,800 J	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	390 J	--	--	950 J	--	1,100 J	--	--	--	--
Butylbenzylphthalate	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	270 J	--	--	--	--	--	--
bis(2-Ethylhexyl)-phthalate	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)											
4,4-DDE	--	--	--	--	--	--	--	--	--	--	--
4,4-DDD	--	--	--	--	--	--	--	--	--	--	--
4,4-DDT	--	--	--	--	--	--	--	--	--	--	--
Chlordane	--	--	--	--	--	--	--	--	--	--	--

See notes at end of table.

Table 4-4 (Continued)
Organic Analytes Detected in Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL10	MPT-8-SL11	MPT-8-SL11	MPT-8-SL12	MPT-8-SL12	MPT-8-SL13	MPT-8-SL13
Sample No.:	08SL01006	08SL01101	08SL01102	08SL01201	08SL01202	08SL01301	08SL01302
Date Sampled:	09-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94
Sample Depth (ft bls):	5 to 6	0 to 1	1 to 2	0 to 1	1 to 2	0 to 1	1 to 2
Volatile Analytes (µg/kg)							
Methylene chloride	37	--	--	--	--	--	51 J
Acetone	--	240 J	--	120 J	--	86 J	140 J
Carbon disulfide	15	5 J	10	5 J	8	4 J	32
2-Butanone	--	41 J	36 J	12 J	--	13 J	--
Benzene	--	--	7	--	--	--	--
2-Hexanone	--	--	--	--	--	--	--
Tetrachloroethene	--	--	2 J	--	--	--	3 J
Toluene	23 J	--	7 J	1 J	--	--	15 J
Ethylbenzene	110 J	--	69 J	--	43 J	26	260 J
Xylenes (total)	350 J	--	300 J	5 J	32 J	24	230 J
Trichlorofluoromethane	--	--	--	--	--	--	5 J
Isobutyl alcohol	130 J	--	--	--	--	--	--
Semivolatile Analytes (µg/kg)							
Naphthalene	8,600	--	4,400 J	--	--	--	--
2-Methylnaphthalene	[1]54,000 J	--	24,000	--	--	--	--
Acenaphthene	--	--	--	--	1,200 J	--	--
Dibenzofuran	--	--	--	--	--	--	--

See notes at end of table.

Table 4-4 (Continued)
Organic Analytes Detected In Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL10	MPT-8-SL11	MPT-8-SL11	MPT-8-SL12	MPT-8-SL12	MPT-8-SL13	MPT-8-SL13
Sample No.:	08SL01006	08SL01101	08SL01102	08SL01201	08SL01202	08SL01301	08SL01302
Date Sampled:	09-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94
Sample Depth (ft bls):	5 to 6	0 to 1	1 to 2	0 to 1	1 to 2	0 to 1	1 to 2
Semivolatile Analytes (µg/kg) (Continued)							
Fluorene	8,500	--	3,700 J	--	2,800 J	2,000 J	--
N-Nitrosodiphenylamine (1)	4,400	--	3,600 J	--	2,100 J	1,700 J	2,200 J
Phenanthrene	16,000	2,600 J	7,200 J	--	4,800	4,600	6,500
Anthracene	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--
Pyrene	1,500 J	3,100 J	1,700 J	210 J	530 J	580 J	610 J
Butylbenzylphthalate	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--
Chrysene	470 J	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	11,000 J	1,700 J	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)							
4,4-DDE	--	--	--	--	--	--	--
4,4-DDD	--	--	--	--	--	--	--
4,4-DDT	--	--	--	--	--	--	--
Chlordane	--	--	--	--	--	--	--

[1] Value from reanalysis or dilution.

Notes: RCRA = Resource Conservation and Recovery Act.
ft bls = feet below land surface.
µg/kg = micrograms per kilogram.
-- = analyte not detected.
J = estimated value.
Dup = duplicate.
PCBs = polychlorinated biphenyls.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
DDT = dichlorodiphenyltrichloroethane.

Table 4-5
Inorganic Analytes Detected in Sludge Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	3492	3507	3507	34923	3492	R897	R897	M788	M788	M788	M788
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL01	MPT-8-SL01	MPT-8-SL01	MPT-8-SL02	MPT-8-SL03	MPT-8-SL04	MPT-8-SL04	MPT-8-SL05	MPT-8-SL05	MPT-8-SL06	MPT-8-SL06
Sample No.:	MPT8SL1	8SL1A	BSL1AOup	MPT8SL2	MPT8SL3	08SL00401	08SL00401Dup	08SL00501	08SL00505	08SL00601	08SL00605
Date Sampled:	19-JAN-93	02-FEB-93	02-FEB-93	19-JAN-93	19-JAN-93	27-OCT-94	27-OCT-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94
Sample Depth (ft bls):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	4 to 5	0 to 1	4 to 5
Inorganic Analytes (mg/kg)											
Antimony	4.5 J	4 J	--	19.7 J	5.9 J	--	--	--	--	--	--
Arsenic	1.2 J	--	--	10.6	0.49 J	0.68 J	0.48 J	0.95 J	0.68 J	0.43 J	0.62 J
Barium	32.7 J	8 J	7.1 J	344 J	27.6 J	7.8 J	5.4 J	8.9 J	4.6 J	5.1 J	5.6 J
Beryllium	--	--	--	--	0.13 J	0.12 J	--	--	--	--	--
Cadmium	6.6 J	--	--	10.3 J	1.4 J	--	--	--	--	--	--
Chromium	75.1 J	1.1 J	1.5 J	127 J	28.5 J	5.4	4	2 J	3.1 J	2.5 J	1.5 J
Cobalt	--	--	--	--	--	--	--	--	--	--	--
Copper	510	6	5.7	859	72.4	15	8.4	--	--	5.7 J	--
Lead	91.3 J	3.1 J	2.8 J	171 J	43.4 J	26	20	0.91 J	1.5 J	2.3 J	1.1 J
Mercury	6 J	--	--	0.17 J	0.77 J	0.05 J	0.08	--	--	0.1 J	0.1 J
Nickel	285 J	2.2 J	4.3 J	198 J	38.7 J	2.8 J	--	1.7 J	2.5 J	7 J	--
Selenium	--	--	0.11 J	0.86 J	--	0.24 J	--	--	--	--	--
Silver	18.4	--	--	1.5 J	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	0.35 J	--	--
Tin	235	--	--	17.3	3.5	5.4 J	3.2 J	--	2.5 J	--	--
Vanadium	80.4 J	3.2 J	3.3 J	31.8 J	34.1 J	8.2 J	4.9 J	2 J	2.7 J	9.8 J	1.8 J
Zinc	421 J	14.7 J	20.8 J	1,700 J	203 J	27 J	28.2 J	--	8.9 J	24.4 J	8.5 J
Cyanide	--	0.21 J	--	--	--	--	--	0.12 J	0.08 J	--	0.23 J

See notes at end of table.

Table 4-5 (Continued)
Inorganic Analytes Detected in Sludge Samples at
Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL07	MPT-8-SL07	MPT-8-SL07	MPT-8-SL08	MPT-8-SL08	MPT-8-SL09	MPT-8-SL09	MPT-8-SL10	MPT-8-SL10	MPT-8-SL10	MPT-8-SL11
Sample No.:	08SL00701	08SL00701Dup	08SL00705	08SL00801	08SL00806	08SL00901	08SL00906	08SL01001	08SL01001Dup	08SL01008	08SL01101
Date Sampled:	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-AUG-94	09-Aug-96	09-AUG-94	09-AUG-94	09-AUG-94	08-AUG-94
Sample Depth (ft bls):	0 to 1	4 to 5	0 to 1	5 to 6	0 to 1	0 to 1	5 to 6	0 to 1	0 to 1	5 to 6	0 to 1
Inorganic Analytes (mg/kg)											
Antimony	--	--	--	1.3 J	--	3.8 J	--	0.61 J	0.71 J	0.78 J	3.9 J
Arsenic	0.39 J	0.27 J	1.4 J	1 J	0.91 J	2.8 J	0.44 J	0.48 J	0.31 J	0.49 J	1.8 J
Barium	7 J	5.6 J	8.3 J	27.6 J	9.7 J	81.2	5.7 J	14.6 J	11.5 J	5.9 J	209
Beryllium	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	1.1 J	--	4.8	--	--	0.74 J	--	3.1
Chromium	3.2 J	3.9 J	6.2 J	34.3 J	3.4 J	95.6 J	5.9 J	19.9 J	13.5 J	3.9 J	78.1 J
Cobalt	--	--	--	1.2 J	--	2.5 J	--	1.1 J	0.83 J	--	2.9 J
Copper	6.5 J	7 J	10.8 J	66.9 J	6.3 J	319 J	9.4 J	44.8 J	29.8 J	5.5 J	377 J
Lead	4.1 J	2.8 J	4.8 J	37.5 J	5.5 J	281 J	5.3 J	13.3 J	39.4 J	5.5 J	92 J
Mercury	0.1 J	0.09 J	--	0.7 J	--	3.3 J	0.31 J	0.75 J	0.42 J	--	0.74 J
Nickel	4.6 J	3.8 J	5.3 J	59.9	6.4 J	119	6.6 J	32.5	23.5	6 J	103
Selenium	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	0.59 J	--	1.4 J	--	--	--	--	1.4 J
Thallium	--	--	--	--	--	--	--	--	--	--	--
Tin	2.1 J	2.7 J	2.5 J	4.1 J	--	11.3 J	2.3 J	3.8 J	3.5 J	2.7 J	12.5 J
Vanadium	2.4 J	2.9 J	--	42	4.3 J	104	5.9 J	26.5	20.7	4.5 J	16.8 J
Zinc	15.2 J	17.7 J	25.6 J	207 J	23.3 J	1,040 J	33.6 J	127 J	87.8 J	19.6 J	885 J
Cyanide	--	--	0.1 J	--	0.08 J	--	--	--	--	0.08 J	--

See notes at end of table.

Table 4-5 (Continued)
Inorganic Analytes Detected in Sludge Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M768	M768	M768	M768	M768
Sample Matrix:	Sludge	Sludge	Sludge	Sludge	Sludge
Sample Location:	MPT-8-SL11	MPT-8-SL12	MPT-8-SL12	MPT-8-SL13	MPT-8-SL13
Sample No.:	08SL01102	08SL01201	08SL01202	08SL01301	08SL01302
Date Sampled:	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94	08-AUG-94
Sample Depth (ft bls):	1 to 2	0 to 1	1 to 2	0 to 1	1 to 2
Inorganic Analytes (mg/kg)					
Antimony	--	--	--	--	--
Arsenic	0.59 J	0.46 J	0.22 J	0.3 J	0.24 J
Barium	7.4 J	9 J	7.3 J	12.4 J	11.2 J
Beryllium	--	--	--	--	--
Cadmium	--	--	--	--	--
Chromium	3 J	3.5 J	2.7 J	5.4 J	4.1 J
Cobalt	--	--	--	--	--
Copper	--	6.5 J	--	12.7 J	--
Lead	1.1 J	8.1 J	1.5 J	9.4 J	6.7 J
Mercury	0.18 J	--	0.1 J	--	--
Nickel	--	6 J	2.6 J	4.6 J	4.8 J
Selenium	--	--	--	--	--
Silver	--	0.51 J	--	--	--
Thallium	--	--	--	--	--
Tin	8 J	4.1 J	4.8 J	3.9 J	4.1 J
Vanadium	2.2 J	5.2 J	2.3 J	3.8 J	3.1 J
Zinc	--	19.2 J	12.1 J	31.7 J	21.5 J
Cyanide	--	--	--	--	0.06 J

Notes: RCRA = Resource Conservation and Recovery Act.
Dup = duplicate.
ft bls = feet below land surface.
mg/kg = milligrams per kilogram.
J = estimated value.
-- = analyte not detected.

Table 4-9
Total Recoverable Petroleum Hydrocarbon Analysis of Soil Samples, Oily Waste Treatment Plant Area, 1993

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Soil Sample Location[1]	Laboratory I.D.[2]	Sample Depth (feet)	Sample Elevation (ft msl)	NDIR[3]	Laboratory Results[4]
MPT-8-T17/-7	MPT8BS4	6	5.0	–	14,200
MPT-8-T11/-4	MPT8BS3	7	4.1	–	15,100
MPT-8-T6/-12	MPT8BS12	8	4.9	–	22,300
MPT-8-T17/-7	MPT8BS5	9	2.0	–	170
MPT-8-T19/-22	MPT8BS9	9	3.7	ND	<2.0
MPT-8-T29/-15	MPT8BS10	9	4.9	ND	<2.0
MPT-8-T2/-19	MPT8BS14	9	3.9	–	<2.1
MPT-8-T2/-19D	MPT8BS14D	9	3.9	–	2.75
MPT-8-T4.5/0	MPT8BS1	9	1.7	600	22,000
MPT-8-T-5/2	MPT8BS13	9	2.1	ND	<2.0
MPT-8-T-6/-12	MPT8BS8	9	3.9	ND	<2.0
MPT-8-T8/-21	MPT8BS7	9	4.0	ND	3.6
MPT-8-T8/-2	MPT8BS2	9	2.1	–	21,100
MPT-8-T12/-4	MPT8BS6	10	2.7	ND	3.3
MPT-8-T6/-12	MPT8BS11	11	6.2	–	12,200

[1] Sample locations are presented on Figure 4-2.
[2] Sample identification as submitted for laboratory analysis.
[3] Results of onsite NDIR analysis in parts per million (ppm).
[4] Total recoverable petroleum hydrocarbons (TRPH) results of laboratory analysis by U.S. Environmental Protection Agency Method 418.1 in ppm.

Notes: RCRA = Resource Conservation and Recovery Act.
SWMU = solid waste management unit.
ft msl = feet above mean sea level (National Geodetic Vertical Datum of 1929).
NDIR = nondispersive infrared.
– = onsite nondispersive infrared analysis not conducted.
ND = not detected.
< = less than.

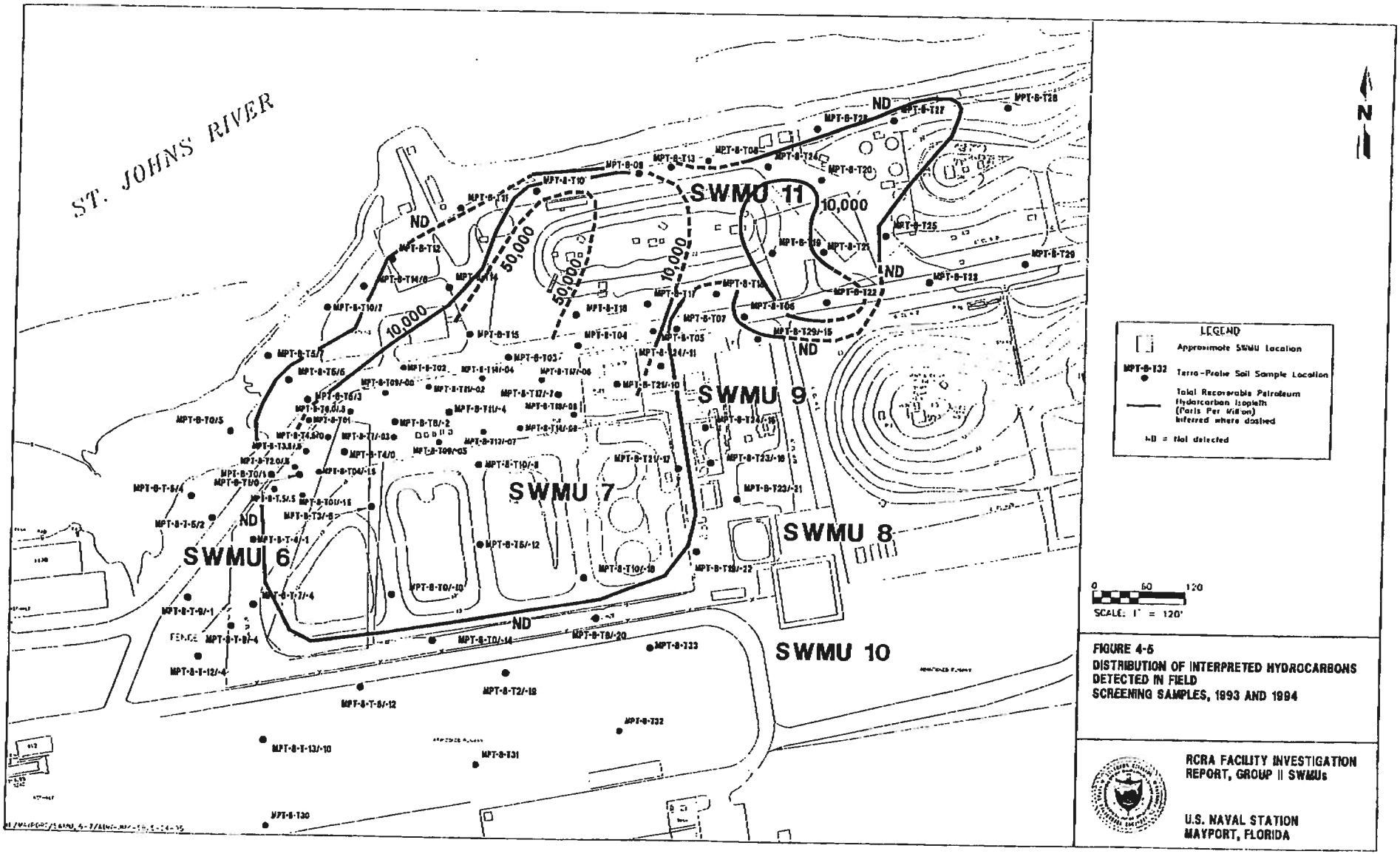

ST. JOHNS RIVER
SWMU 6
SWMU 7
SWMU 8
SWMU 9
SWMU 10
SWMU 11
ND
10,000
50,000
LEGEND
Approximate SWMU Location
Terra-Probe Soil Sample Location
Total Recoverable Petroleum Hydrocarbon Isopleth (Parts Per Million) Inferred where dashed
ND = Not detected
N
0
60
120
SCALE: 1" = 120'
FIGURE 4-5
DISTRIBUTION OF INTERPRETED HYDROCARBONS DETECTED IN FIELD SCREENING SAMPLES, 1993 AND 1994
RCRA FACILITY INVESTIGATION REPORT, GROUP II SWMUs
U.S. NAVAL STATION MAYPORT, FLORIDA

Table 4-10
1994 Total Recoverable Petroleum Hydrocarbons (TRPH) Screening Results

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Sample Location	Soil Screening Results (mg/kg)					Groundwater (mg/ℓ)
	4 to 6 feet bls	6 to 8 feet bls	8 to 10 feet bls	10 to 12 feet bls	12 to 14 feet bls	
MPT-8-T01	–	–	70	–	8,122	–
MPT-8-T02	–	–	30,726	–	13,894	–
MPT-8-T03	–	175	–	39,081	–	–
MPT-8-T04	–	–	4,924	–	47,766	2.8
MPT-8-T05	–	–	ND	–	30,556	–
MPT-8-T06	–	–	–	ND	88	ND
MPT-8-T07	–	–	–	ND	6	ND
MPT-8-T08	–	–	ND	–	–	–
MPT-8-T09	–	–	27,803	15,755	–	0.9
MPT-8-T10	–	–	–	40,317	–	–
MPT-8-T11	–	–	–	–	–	ND
MPT-8-T12	–	–	6,783	ND	–	0.9
MPT-8-T13	–	–	–	663	–	–
MPT-8-T14	–	–	ND	–	–	ND
MPT-8-T15	–	3,723	–	74,394	–	–
MPT-8-T16	–	ND	–	49,646	–	5.8
MPT-8-T17	–	ND	–	21,706	–	–
MPT-8-T18	–	–	ND	ND	–	4.3
MPT-8-T19	–	–	1,163	18,459	–	4.2
MPT-8-T20	–	–	–	8,172	–	5.2
MPT-8-T21	–	–	–	4,422	–	2
MPT-8-T22	–	–	ND	12,903	–	0.3
MPT-8-T23	–	–	ND	ND	–	ND
MPT-8-T24	–	–	3,390	–	–	3.9
MPT-8-T25	–	–	ND	ND	–	ND
MPT-8-T26	–	ND	ND	–	–	ND
MPT-8-T27	–	ND	222	–	–	1.5
MPT-8-T28	–	–	ND	ND	–	ND
MPT-8-T29	–	–	ND	–	–	ND
MPT-8-T30	–	ND	–	–	–	ND
MPT-8-T31	–	–	–	–	–	ND
MPT-8-T32	–	–	–	–	–	ND
MPT-8-T33	672	–	–	–	–	ND
MPT-8-T1/-1.5	ND	7,833	–	–	–	–
MPT-8-T4/-1.5	ND	38,582	–	–	–	–
MPT-8-T7/-03	ND	12,856	–	–	–	–
MPT-8-T9/00	ND	12,715	–	–	–	–

See notes at end of table.

Table 4-10 (Continued)
1994 Total Recoverable Petroleum Hydrocarbons (TRPH) Screening Results

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Sample Location	Soil Screening Results (mg/kg)					Groundwater (mg/ℓ)
	4 to 6 feet bls	6 to 8 feet bls	8 to 10 feet bls	10 to 12 feet bls	12 to 14 feet bls	
MPT-8-T9/-05	10,484	12,195	–	–	–	–
MPT-8-T0.5/0.5	ND	9,238	35,051	–	–	–
MPT-8-T11/-02	ND	15,806	–	–	–	–
MPT-8-T12/-07	25,857	13,549	–	–	–	–
MPT-8-T14/-04	25	14,000	–	–	–	–
MPT-8-T14/-08	18,280	14,504	–	–	–	–
MPT-8-T16/-09	10,210	15,149	–	–	–	–
MPT-8-T17/-06	ND	13,454	–	–	–	–
MPT-8-T2.0/0.5	ND	20,513	–	–	–	–
MPT-8-T3.5/0.5	ND	32,106	–	–	–	–
MPT-8-T4.5/0.0	ND	39,779	–	–	–	–
MPT-8-T6.0/0.5	ND	33,253	–	–	–	–

Notes: RCRA = Resource Conservation and Recovery Act.
bls = below land surface.
ND = not detected.
– = no sample collected.
SWMU = solid waste management unit.
mg/kg = milligrams per kilogram.
mg/ℓ = milligrams per liter.

Table 4-11
Organic Analytes Detected in Subsurface Soil Samples at Solid Waste Management Units (SWMU) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2382	2382-2882	3488	3488	34901
Sample Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-8-MW03S	MPT-8-MW04S	MPT-8-MW04S	MPT-8-MW05D	MPT-8-MW06S
Sample No.:	MPT8BS357	MPT8MS4S2	MPT8MS4S8	2BS85DD79	MPT8MS6S2
Sample Date:	15-JAN-93	14-JAN-93	14-JAN-93	13-JAN-93	15-JAN-93
Sample Depth (ft bis):	5 to 7	1 to 2	7 to 8	8 to 9	1 TO 2
Volatile Analytes (µg/kg)					
Trichloroethene	150 J	--	--	--	--
Acetone	160 J	61	--	--	--
Benzene	160 J	3 J	--	--	--
Toluene	170 J	3 J	--	--	--
Ethylbenzene	1,500	--	470 J	--	--
Xylenes (total)	--	--	1,600	--	--
Acetonitrile	--	--	--	--	--
Acrolein	--	18 J	--	--	--
Semivolatile Analytes (µg/kg)					
Benzoic acid	--	--	--	65 J	--
Butylbenzylphthalate	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	57 J
Di-n-octylphthiate	--	--	--	--	--
Naphthalene	--	39,000 J	22,000 J	--	--
2-Methylnaphthalene	--	170,000	83,000 J	--	--
Acenaphthene	--	23,000 J	6,300 J	--	--
Fluorene	--	31,000 J	13,000 J	--	--
N-Nitrosodiphenylamine (1)	--	22,000 J	8,000 J	--	--
Phenanthrene	--	42,000 J	19,000 J	--	--
Pyrene	--	--	--	--	--
Pesticides/PCBs					
4,4'-DDE	--	12	--	--	--
4,4'-DDT	--	21	--	--	--

See notes at end of table.

Table 4-11 (Continued)
Organic Analytes Detected in Subsurface Soil Samples at Solid Waste Management Units (SWMU) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2388	2388	3491	3491	M778
Sample Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-8-MW07S	MPT-8-MW07S	MPT-8-MW08S	MPT-8-MW08S	MPT-8-MW13S
Sample No.:	MPT8MS7S2	MPT8MS7S9	MPTMS8S2	MPT8MS8S9	08BS01316
Sample Date:	18-JAN-93	18-JAN-93	18-JAN-93	18-JAN-93	26-AUG-94
Sample Depth (ft bis):	1 to 2	8 to 9	1 to 2	8 to 9	15 to 16
Volatile Analytes (µg/kg)					
Trichloroethene	–	–	–	–	–
Acetone	–	–	–	–	–
Benzene	–	–	–	–	–
Toluene	–	–	–	–	–
Ethylbenzene	–	130 J	–	–	–
Xylenes (total)	–	–	–	–	–
Acetonitrile	–	–	–	4 J	–
Acrolein	–	–	–	4 J	–
Semivolatile Analytes (µg/kg)					
Benzoic acid	–	–	–	–	–
Butylbenzylphthalate	–	–	170 J	–	–
bis(2-Ethylhexyl)phthalate	–	–	880	–	–
Di-n-octylphthlate	–	–	4,000	–	–
Naphthalene	–	–	–	27,000 J	600[1]
1-Methylnaphthalene	–	NA	–	NA	1,300[1]
2-Methylnaphthalene	–	–	–	99,000	2,100[1]
Acenaphthene	–	–	–	11,000 J	–
Fluorene	–	–	–	17,000 J	–
N-Nitrosodiphenylamine (1)	–	–	–	10,000 J	–
Phenanthrene	–	–	–	23,000 J	–
Pyrene	–	–	–	3,300 J	–
Pesticides/PCBs					
4,4'-DDE	18	–	63	–	–
4,4'-DDT	1.8	–	62	–	–

[1] Analysis by U.S. Environmental Protection Agency methods 8100 and 8020.

Notes: RCRA = Resource Conservation and Recovery Act.
µg/kg = micrograms per kilogram.
mg/kg = milligram per kilogram.
ft bis = feet below land surface.
J = estimated value.
NA = not analyzed.
– = not sampled.
PCBs = polychlorinated biphenyls.

Table 4-12
Inorganic Analytes Detected in Subsurface Soil Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	3488	3488	3490	3491	3491
Sample Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-8MW04S	MPT-8-MW05S	MPT-8-MW06S	MPT-8-MW07S	MPT-8-MW08S
Sample No.:	MPT8MS4S2	2BS85S02	MPT8MS6S2	MPT8MS7S2	MPT8MS8S2
Date Sampled:	14-JAN-93	13-JAN-93	15-JAN-93	18-JAN-93	18-JAN-93
Sample Depth (ft bis):	1 to 2	1 to 2	1 to 2	1 to 2	1 to 2
Inorganic Analytes (mg/kg)					
Antimony	–	3.2 J	–	–	–
Arsenic	0.82 J	0.68 J	0.19 J	0.56 J	0.23 J
Barium	5.2 J	6 J	7.1 J	11 J	4.5 J
Beryllium	–	–	–	0.13 J	–
Chromium	1.5 J	–	–	4.7 J	2.2 J
Copper	1.8 J	0.72 J	3.5 J	8.5	1.5 J
Lead	0.88	0.25 J	0.26 J	11.4	9.5
Mercury	0.03 J	0.03 J	0.06 J	–	0.04 J
Nickel	–	–	–	2.5 J	–
Selenium	–	–	–	–	0.17 J
Thallium	0.19 J	–	–	–	–
Vanadium	3.2 J	1.9 J	1.8 J	7.8 J	2.4 J
Zinc	3.9 J	2.9 J	2.5 J	32.6 J	4.9 J

See notes at end of table.

Table 4-12 (Continued)
Inorganic Analytes Detected in Subsurface Soil Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	3490	3488	3488	3490	3491	3491
Sample Matrix:	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-8-MW03S	MPT-8-MW04S	MPT-8-MW05D	MPT-8-MW06S	MPT-8-MS07S	MPT-8-MW08S
Sample No.:	MPT8BS3S7	MPT8MS4S8	MPT2BS85DD79	MPT8MS6S7	MPT8MS7S9	MPT8MS8S9
Date Sampled:	15-JAN-93	14-JAN-93	13-JAN-93	15-JAN-93	18-JAN-93	18-JAN-93
Sample Depth (ft bls):	6 to 7	7 to 8	8 to 9	6 to 7	8 to 9	8 to 9
Inorganic Analytes (mg/kg)						
Arsenic	0.32 J	--	1.1 J	0.91 J	0.29 J	0.36 J
Barium	3.1 J	43.9 J	3.6 J	3.4 J	3.7 J	4.8 J
Beryllium	--	0.23 J	--	--	--	--
Cadmium	--	1.8 J	--	--	--	--
Chromium	--	14.2 J	2 J	3.3 J	1.3 J	--
Cobalt	--	1.7 J	--	--	--	--
Copper	6.2	5.9	0.99 J	3.7 J	1.7 J	1.2 J
Lead	0.28 J	0.25 J	1.4	0.71 J	0.36 J	0.52 J
Mercury	0.1 J	0.04 J	0.06 J	0.06 J	--	0.05 J
Nickel	--	8.6 J	--	--	--	--
Thallium	--	0.16 J	0.22 J	--	--	--
Vanadium	1.2 J	27.4 J	1.5 J	2.8 J	1.7 J	2 J
Zinc	3.5 J	21.8 J	3.4 J	5.7 J	2.9 J	3 J

Notes: RCRA = Resource Conservation and Recovery Act.
ft bls = feet below land surface.
mg/kg = milligram per kilogram.
J = estimated value.
-- = not sampled.

Table 4-13
Summary of Chemicals Detected in OWTP Subsurface Soil

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration
Volatile Analytes (µg/kg)						
Acetone	1/9	61	61	61	11 - 2,500	MPT8MS4S2
Acetonitrile	1/9	4	4	4	110 - 14,000	MPT8MS8S9
Acrolein	1/9	18	18	18	110 - 14,000	MPT8MS4S2
Benzene	2/9	3	160	82	5 - 690	MPT8BS3S7
Ethylbenzene	3/9	130	1,500	700	5 - 6	MPT8BS3S7
Toluene	2/9	3	170	87	5 - 690	MPT8BS3S7
Trichloroethene	1/9	150	150	150	5 - 690	MPT8BS3S7
Xylenes (total)	1/8	1,600	1,600	1,600	5 - 30	MPT8MS4S8
Semivolatile Analytes (µg/kg)						
1-Methylnaphthalene	1/2	1,300	1,300	1,300	58 - 58	08BS01316
2-Methylnaphthalene	4/11	2,100	170,000	88,525	58 - 760	MPT8BS3S7
Acenaphthene	3/11	6,300	23,000	13,433	58 - 760	MPT8BS3S7
Butylbenzylphthalate	1/9	170	170	170	350 - 76,000	MPT8MS8S2
Di-n-octylphthalate	1/9	4,000	4,000	4,000	350 - 76,000	MPT8MS8S2
Fluorene	3/11	13,000	31,000	20,333	58 - 760	MPT8BS3S7
N-Nitrosodiphenylamine (1)	3/9	8,000	22,000	13,333	350 - 760	MPT8BS3S7
Naphthalene	4/11	600	39,000	22,150	58 - 760	MPT8BS3S7
Phenanthrene	3/11	19,000	42,000	28,000	58 - 760	MPT8BS3S7
Pyrene	1/11	3,300	3,300	3,300	58 - 76,000	MPT8MS7S9
bis(2-Ethylhexyl)phthalate	2/9	57	880	469	350 - 76,000	MPT8MS8S2
Pesticides/PCBs (µg/kg)						
4,4'-DDE	3/9	12	63	31	0.73 - 7.6	MPT8MS8S2
4,4'-DDT	3/9	1.8	62	28.3	1.4 - 15	MPT8MS8S2
Inorganic Analytes (mg/kg)						
Arsenic	8/9	0.19	0.91	0.46	0.16 - 0.16	MPT8MS6S7

See notes at end of table.

Table 4-13 (Continued)
Summary of Chemicals Detected in OWTP Subsurface Soil

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration
Barium	9/9	3.1	43.9	9.6	N/A	MPT8MS4S8
Beryllium	2/9	0.13	0.23	0.18	0.11 - 0.13	MPT8MS4S8
Cadmium	1/9	1.8	1.8	1.8	0.26 - 0.3	MPT8MS4S8
Chromium	6/9	1.3	14.2	4.5	0.79 - 0.85	MPT8MS4S8
Cobalt	1/9	1.7	1.7	1.7	1.2 - 1.5	MPT8MS4S8
Copper	9/9	1.2	8.5	3.8	N/A	MPT8MS7S2
Lead	9/9	0.25	11.4	2.68	N/A	MPT8MS7S2
Mercury	7/9	0.03	0.1	0.05	0.03 - 0.03	MPT8BS3S7
Nickel	2/9	2.5	8.6	5.6	1.6 - 2	MPT8MS4S8
Selenium	1/9	0.17	0.17	0.17	0.11 - 0.13	MPT8MS8S2
Thallium	2/9	0.16	0.19	0.18	0.15 - 0.18	MPT8MS4S2
Vanadium	9/9	1.2	27.4	5.6	N/A	MPT8MS4S8
Zinc	9/9	2.5	32.6	9	N/A	MPT8MS7S2

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed.
[2] A value indicated by an asterisk is the average of the detected concentrations in a sample and its duplicate. For nondetected values, one-half the CRQL/CRDL is used as a surrogate.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples in which the analyte was not detected.

Notes: OWTP = oily waste treatment plant.
SWMU = solid waste management unit.
RCRA = Resource Conservation and Recovery Act.
µg/kg = micrograms per kilogram.
PCBs = polychlorinated biphenyls.
4,4'-DDE = dichlorodiphenyldichloroethene.
4,4'-DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligram per kilogram.
NA = not applicable.
CRQL/CRDL = contract-required quantitation limit/contract-required detection limit.

Table 4-14
Comparison of Analytes Detected in Oily Waste Treatment Plant (OWTP) Subsurface Soil to Background Screening and Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Concentration[1]	Background Screening Concentration[2]	Frequency Above Background Screening Concentration	Florida Soil Cleanup Goal[3]	Frequency Above Florida Soil Cleanup Goal	Risk-Based Screening Concentration[4]	Frequency Above Risk-Based Screening Concentration
Volatile Organic Compounds (µg/kg)							
Acetone	61	NSC	N/A	890,000	0/9	20,000,000	0/9
Acetonitrile	4	NSC	N/A	NSC	N/A	1,200,000	0/9
Acrolein	18	NSC	N/A	1,300	0/9	4,100,000	0/9
Benzene	160	NSC	N/A	1,100	0/9	200,000	0/9
Ethylbenzene	1,500	NSC	N/A	5,500,000	0/9	20,000,000	0/9
Toluene	170	NSC	N/A	1,800,000	0/9	41,000,000	0/9
Trichloroethene	150	NSC	N/A	4,800	0/9	520,000	0/9
Xylenes (total)	1,600	NSC	N/A	44,000,000	0/8	16,000,000	0/8
Semivolatile Analytes (µg/kg)							
1-Methylnaphthalene	1,300	NSC	N/A	1,500,000	0/2	NSC	N/A
2-Methylnaphthalene	170,000	NSC	N/A	5,800,000	0/11	NSC	N/A
Acenaphthene	23,000	NSC	N/A	19,000,000	0/11	12,000,000	0/11
Butylbenzylphthalate	170	NSC	N/A	300,000,000	0/9	41,000,000	0/9
Di-n-octylphthalate	4,000	NSC	N/A	32,000,000	0/9	4,100,000	0/9
Fluorene	31,000	NSC	N/A	21,000,000	0/11	8,200,000	0/11
N-Nitrosodiphenylamine (1)	22,000	NSC	N/A	69,000	0/9	1,200,000	0/9
Naphthalene	39,000	NSC	N/A	6,800,000	0/11	8,200,000	0/11
Phenanthrene	42,000	NSC	N/A	11,000,000	0/11	NSC	N/A
Pyrene	3,300	NSC	N/A	37,000,000	0/11	6,100,000	0/11
bis(2-Ethylhexyl)phthalate	880	NSC	N/A	100,000	0/9	410,000	0/9
Pesticides/PCBs (µg/kg)							
4,4'-DDE	63	3.5	3/9	9,900	0/9	17,000	0/9
4,4'-DDT	62	NSC	N/A	12,000	0/9	17,000	0/9

See notes at end of table.

Table 4-14 (Continued)
Comparison of Analytes Detected in Oily Waste Treatment Plant (OWTP)
Subsurface Soil to Background Screening and Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Concentration[1]	Background Screening Concentration[2]	Frequency Above Background Screening Concentration	Florida Soil Cleanup Goal[3]	Frequency Above Florida Soil Cleanup Goal	Risk-Based Screening Concentration[4]	Frequency Above Risk-Based Screening Concentration
Inorganic Analytes (mg/kg)							
Arsenic	0.91	0.9	1/9	3	0/9	3.3	0/9
Barium	43.9	7.2	2/9	74,000	0/9	14,000	0/9
Beryllium	0.23	0.14	1/9	0.2	1/9	1.3	0/9
Cadmium	1.8	NSC	N/A	600	0/9	100	0/9
Chromium	14.2	3.4	2/9	220	0/9	1,000	0/9
Cobalt	1.7	1.04	1/9	110,000	0/9	12,000	0/9
Copper	8.5	3.6	4/9	72,000	0/9	7,600	0/9
Lead	11.4	2.8	2/9	1,000	0/9	400	0/9
Mercury	0.1	0.06	1/9	480	0/9	61	0/9
Nickel	8.6	NSC	N/A	11,000	0/9	4,100	0/9
Selenium	0.17	NSC	N/A	9,900	0/9	1,000	0/9
Thallium	0.19	NSC	N/A	NSC	N/A	16	0/9
Vanadium	27.4	3.2	2/9	4,800	0/9	1,400	0/9
Zinc	32.6	4.8	4/9	550,000	0/9	61,000	0/9

[1] A value indicated by an asterisk is the average of the detected concentrations in a sample and its duplicate. For nondetected values, one half the CRQL/CRDL is used as a surrogate.
[2] The background screening concentration is twice the mean of detected concentrations for inorganic analytes.
[3] Florida Cleanup Goals (April 5, 1995).
[4] U.S. Environmental Protection Agency Region III risk-based screening concentrations (February 9, 1995). Concentrations for noncarcinogenic risks are adjusted to a hazard index of 0.1.

Notes: SWMU = solid waste management unit.
RCRA = Resource Conservation and Recovery Act.
µg/kg = micrograms per kilogram.
4,4'-DDT = dichlorodiphenyltrichloroethane.
PCBs = polychlorinated biphenyls.
N/A - not applicable.
4,4'-DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.
NSC - no screening concentration.
CRQL/CRDL = contract-required quantitation limit/contract-required detection limit.

Table 4-15
Total Recoverable Petroleum Hydrocarbons Analysis of Groundwater Samples, Oily Waste Treatment Plant Area, 1993

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Groundwater Sample Location[1]	Sample Identifier[2]	NDIR[3] Result (ppm)	Laboratory[4] Results (ppm)
(4,0)	8GW1	32.2	950
(-5,2)	8GW2	11.2	2.89
(5,3)	8GW7	13.1	197
(21,-10)	8GW4	3.6	359
(10,-8)	8GW5	18.3	784
(10,-8)	8GW5D	18.3	28.6
(0,-10)	8GW8	7.6	244
(14,6)	8GW6	0.6	0.07
(19,-22)	8GW9	0.7	0.26
(21,-17)	8GW3	13.1	360

[1] Sample locations as presented on Figure 4-2.
[2] Sample identification as submitted for laboratory analysis.
[3] Results of onsite NDIR analysis in ppm.
[4] Total recoverable petroleum hydrocarbon (TRPH) results of laboratory analysis by U.S. Environmental Protection Agency Method 418.1 in ppm.

Notes: RCRA = Resource Conservation and Recovery Act.
SWMU = solid waste management unit.
NDIR = nondispersive infrared.
ppm = parts per million.

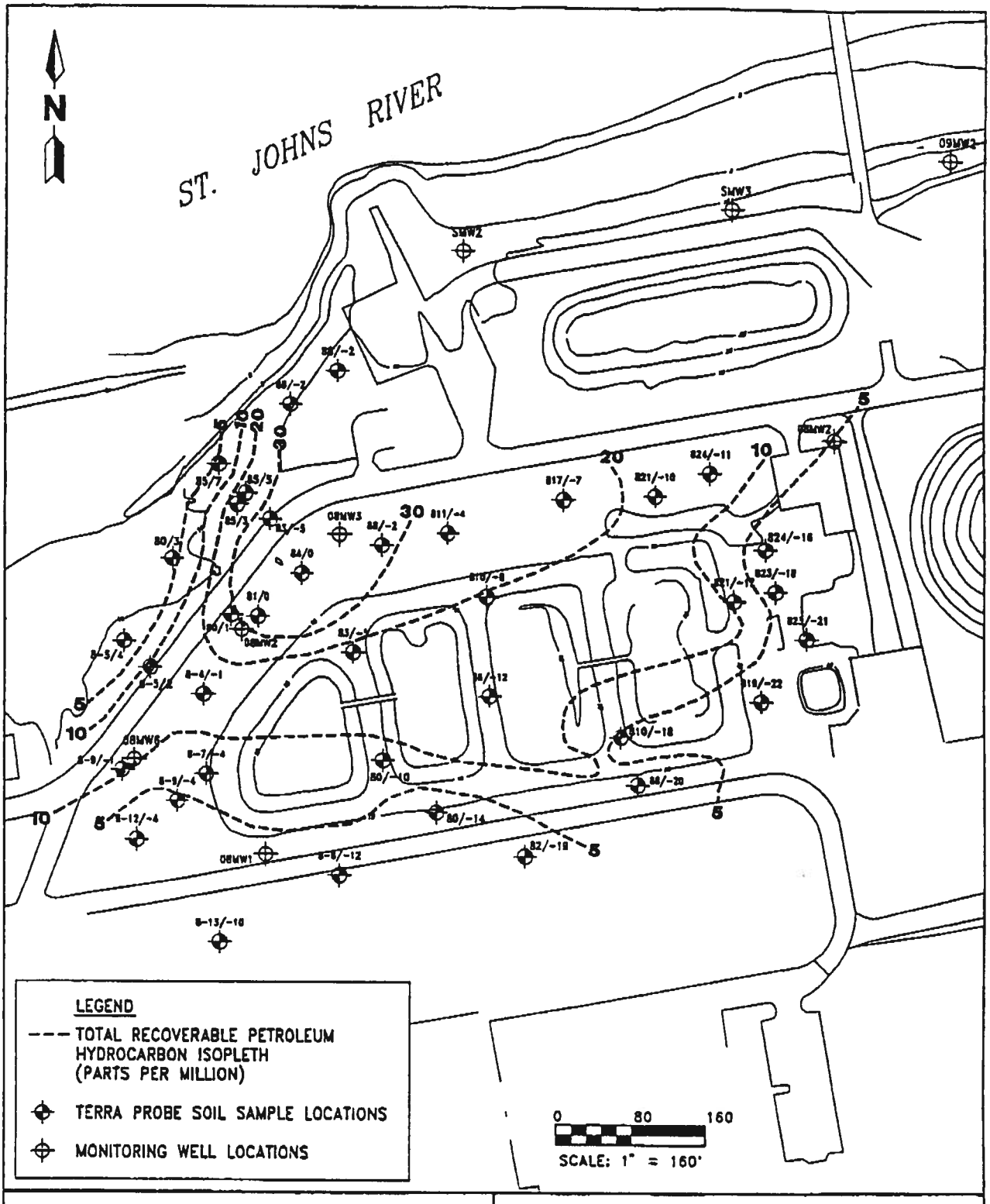


FIGURE 4-6
FIELD SCREENING RESULTS
ANALYSIS OF GROUNDWATER SAMPLES
FOR TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

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RCRA FACILITY INVESTIGATION REPORT, GROUP II SWMUs

U.S. NAVAL STATION
MAYPORT, FLORIDA

Table 4-16
Volatile and Semivolatile Analytes Detected in Groundwater Samples at the Oily Waste Treatment Plant Area Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2391	2391	R862	2388	3507	M749	2391	2391	R862	R861
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Location:	MPT-8-MW01S	MPT-8-MW04S	MPT-8-MW04S	MPT-8-MW08S	MPT-8-MW08S	MPT-8-MW06	MPT-8-MW07S	MPT-8-MW08S	MPT-8-MW09S	MPT-8-MW12S
Sample No.:	8MW1	8MW4	08MW004S	8MW6	8MW6Dup	08MW006SD	8MW7	8MW8	08MW009S	08MW012S
Date Sampled:	01-FEB-93	01-FEB-93	26-AUG-94	28-JAN-93	28-JAN-93	10-JUL-94	01-FEB-93	01-FEB-93	26-AUG-94	25-AUG-94
Volatile Analytes (µg/l)										
Methylene chloride	5 J	--	--	5 J	--	--	--	4 J	--	--
Acetone	--	--	--	6 J	--	9 J	--	--	330 J	--
Carbon disulfide	--	--	--	--	--	--	2 J	--	4 J	--
Chloroform	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	1 J	--	--	--	230 J	--
Benzene	--	--	--	--	--	--	2 J	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--	1 J	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	3 J	--
Ethylbenzene	--	--	--	--	--	--	21	--	--	--
Semivolatile Analytes (µg/l)										
2-Methylphenol	--	--	--	--	NA	--	--	--	180	--
Nitrobenzene	--	--	--	--	NA	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	NA	--	--	--	180	--
Benzoic acid	--	--	--	--	NA	--	--	--	--	8 J
Naphthalene	--	85	94	--	NA	--	130	--	--	--
2-Methylnaphthalene	--	56	140	--	NA	--	120	--	--	--
Dimethylphthalate	--	--	--	--	NA	--	--	--	--	--
Acenaphthene	--	--	9 J	--	NA	--	--	--	--	--
Dibenzofuran	--	--	5 J	--	NA	--	--	--	--	--
Diethylphthalate	--	--	4 J	--	NA	--	--	--	20 J	3 J
Fluorene	--	3 J	14 J	--	NA	--	5 J	--	--	--
Phenanthrene	--	--	12 J	--	NA	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	5 J	--	--	--	NA	--	--	--	--	--
3- and 4-Methylphenol (2)	--	--	--	--	NA	--	--	--	480	--
4-Chloro-3-Methylphenol	--	--	--	--	--	--	--	--	--	--

See notes at end of table.

Table 4-16 (Continued)
Volatile and Semivolatile Analytes Detected in Groundwater Samples at the Oily Waste Treatment Plant Area Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R861	R878	R861	2390	M750	2390
Sample Matrix:	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Location:	MPT-8-MW013S	MPT-8-MW013I	MPT-8-MW014S	MT-9-MW02S	MPT-9-MW02S	MPT-9-MW03S
Sample No.:	08MW013S	08MW013I	08MW014S	9MW2	09MW002S	9MW3
Date Sampled:	25-AUG-94	22-SEP-94	25-AUG-94	29-JAN-93	11-JUL-94	29-JAN-93
Volatile Analytes (µg/ℓ)						
Methylene chloride	--	--	--	--	--	2 J
Acetone	--	16	--	5 J	--	5 J
Carbon disulfide	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	--
Benzene	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--	--	--
Toluene	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--
Semivolatile Analytes (µg/ℓ)						
2-Methylphenol	--	--	--	--	--	--
Nitrobenzene	--	--	3 J	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--
Benzoic acid	--	--	17 J	--	--	--
Naphthalene	--	--	170	110	140	--
2-Methylnaphthalene	--	--	110	44	53	--
Dimethylphthalate	--	--	17	--	--	--
Acenaphthene	--	--	5 J	--	--	--
Dibenzofuran	--	--	3 J	--	--	--
Diethylphthalate	2 J	--	--	--	--	--
Fluorene	--	--	7 J	--	--	--
Phenanthrene	--	--	5 J	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--
3- and 4-Methylphenol (2)	--	--	--	--	--	
4-chloro-3-Methylphenol	--	--	--	--	--	--

See notes at end of table.

Table 4-16 (Continued)
Volatile and Semivolatile Analytes Detected in Groundwater Samples at the Oily Waste Treatment Plant Area Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R9036	R9036
Sample Matrix:	Groundwater	Groundwater
Sample Location:	MPT-8-MW20S	MPT-8-MW020S
Sample No.:	08MW0S0S	08MW0S0SD
Date Sampled:	11-AUG-94	11-AUG-94
Volatile Analytes (µg/ℓ)		
Methylene chloride	--	--
Acetone	--	--
Carbon disulfide	--	--
Chloroform	--	--
2-Butanone	--	--
Benzene	--	--
1,1,2,2-Tetrachloroethane	--	--
Toluene	--	--
Ethylbenzene	--	--
Semivolatile Analytes (µg/ℓ)		
2-Methylphenol	--	--
Nitrobenzene	--	--
2,4-Dimethylphenol	--	--
Benzoic acid	--	--
Naphthalene	--	--
2-Methylnaphthalene	--	--
Dimethylphthalate	4 J	4 J
Acenaphthene	--	--
Dibenzofuran	--	--
Diethylphthalate	--	--
Fluorene	--	--
Phenanthrene	--	--
bis(2-Ethylhexyl)phthalate	--	--
3- and 4-Methylphenol (2)	--	--
4-chloro-3-Methylphenol	--	--

See notes at end of table.

Table 4-16 (Continued)
Volatile and Semivolatile Analytes Detected in Groundwater Samples at the Oily Waste Treatment Plant (OWTP) Area Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Notes: MPT-8-MW02S and MPT-8-MW03S were not sampled in 1993 due to the presence of floating product in the monitoring well.
MPT-8-MW02S, MPT-8-MW03S, MPT-8-MW07S, MPT-8-MW11S, and MPT-8-MW15S were not sampled in 1994 due to the presence of floating product in the monitoring well.
MPT-8-MW05S, MPT-8-MW05I, and MPT-8-MW05D are listed in the NAVSTA Mayport RFI General Information Report, Vol. I, 1995.

RCRA = Resource Conservation and Recovery Act.
Dup = duplicate.
µg/ℓ = micrograms per liter.
J = estimated value.
-- = analyte not detected.
NA = not applicable.
RFI = RCRA Facility Investigation.

Table 4-17
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2391	M750	2391	R862	2388	2394	2388	2388	M749
Sample Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-8-MW01S	MPT-8-MW01S	MPT-8-MW04S	MPT-8-MW04S	MPT-8-MW05S	MPT-8-MW05S	MPT-8-MW06	MPT-8-MW06	MPT-8-MW06S
Sample No.:	8MW1	08MW001S	8MW4	08MW004S	8MW5S	8MW5DDup	8MW6	8MW6Dup	08MW006S
Date Sampled:	01-FEB-93	11-JUL-94	01-FEB-93	26-AUG-94	27-JAN-93	02-FEB-93	28-JAN-93	28-JAN-93	10-JUL-94
Inorganic Analytes (µg/ℓ)									
Arsenic	3.2 J	1.1 J	11.7	1.7 J	2.9 J	--	2.5 J	2.8 J	2.1 J
Barium	9.7 J	3.9 J	12.1 J	4.9 J	6.5 J	45.3 J	5.9 J	6.6 J	--
Beryllium	--	--	--	--	--	--	--	--	--
Cadmium	3 J	--	--	--	--	--	--	--	--
Calcium	NA	57,900	NA	146,000	89,500	158,000	62,200	62,300	56,700
Chromium	4.5 J	--	5.7 J	--	6.6 J	--	4.2 J	6.7 J	--
Cobalt	--	--	--	--	--	3.2 J	--	--	--
Copper	--	--	--	--	--	--	5.8 J	14.5 J	--
Iron	NA	710 J	NA	15,000	2,760 J	182	2,340 J	2,750 J	57.1 J
Lead	--	--	--	0.8 J	--	--	--	--	--
Magnesium	NA	6,180	NA	15,400	15,400	314,000	13,300	12,400	8,300
Manganese	NA	43.6 J	NA	280	39.9	101	36.1	36.8	21.5
Mercury	--	--	--	--	--	--	--	--	0.08 J
Nickel	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	3.7 J	--	--	--
Sodium	NA	4,980 J	NA	35,600	NA	NA	NA	NA	5,690
Thallium	--	1.5 J	--	--	--	--	--	--	--
Tin	13.2 J	--	--	--	--	--	34.9 J	--	--
Vanadium	6.3 J	--	8 J	2 J	7.2 J	2.8 J	5.7 J	8.3 J	--
Zinc	31	--	34.5	2.5 J	23.9 J	15.6 J	97.5 J	35.1 J	--
Cyanide	--	--	5.5	--	--	--	--	--	1.1 J

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	M749	2391	2391	M749	R862	R871	R871	R861	R861
Sample Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-8-MW06S	MPT-8-MW07S	MPT-8-MW08S	MPT-8-MW08S	MPT-8-MW09S	MPT-8-MW10S	MPT-8-MW10S	MPT-8-MW12S	MPT-8-MW13S
Sample No.:	08MW006SD	8MW7	8MW8	08MW008S	08MW009S	08MW010S	08MW010SDup	08MW012S	08MW013S
Date Sampled:	10-JUL-94	01-FEB-93	01-FEB-93	09-JUL-94	26-AUG-94	09-SEP-94	09-SEP-94	25-AUG-94	25-AUG-94
Inorganic Analytes (µg/l)									
Arsenic	2.1 J	41.2	20.7	5.6 J	0.6 J	1.8 J	1.1 J	--	1.4 J
Barium	--	67.6 J	28.1 J	8.4 J	112 J	6.2 J	6.3 J	11 J	9.9 J
Beryllium	--	1.6 J	0.98 J	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--
Calcium	56,700	NA	NA	33,800	1,830,000	79,600	77,100	138,000	98,200
Chromium	--	40.9	36.8	--	--	--	--	--	--
Cobalt	--	11.7 J	7.1 J	--	--	--	--	--	--
Copper	--	15.4 J	3.4 J	--	--	--	--	--	--
Iron	69.2 J	NA	NA	88 J	4,820	--	--	3,890	38 J
Lead	--	45.9	10.4	--	--	--	--	2.5 J	1.9 J
Magnesium	8,050	NA	NA	28,100	401,000	17,100	16,500	8,300	5,480
Manganese	21	NA	NA	12 J	2,260	21.5	19.2	135	3.4 J
Mercury	0.08 J	0.29	--	--	--	--	--	--	--
Nickel	--	19.9 J	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	1.9 J	1.2 J	--	--
Silver	--	2.1 J	--	--	--	--	--	--	--
Sodium	5,530	NA	NA	675,000	1,810,000	24,100	23,100	12,300	8,070
Thallium	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--
Vanadium	--	60.3	48 J	--	8.3 J	3 J	2 J	2.1 J	4.9 J
Zinc	--	127	52.2	--	16.5 J	--	--	--	--
Cyanide	--	12.8	NA	--	--	--	--	--	--

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R878	R861	2390	M749	2390	M750	2390	M750	2390	M749
Sample Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-8-MW13I	MPT-8-MW14S	MPT-9-MW01S	MPT-8-MW01S	MPT-9-MW02S	MPT-8-MW02S	MPT-9-MW03S	MPT-9-MW03S	MPT-S-MW02S	MPT-S-MW02S
Sample No.:	08MW013I	08MW014S	9MW1	09MW001S	9MW2	09MW002S	9MW3	09MW003S	S-2	0SMW002S
Date Sampled:	22-SEP-94	25-AUG-94	29-JAN-93	09-JUL-94	29-JAN-93	11-JUL-94	29-JAN-93	11-JUL-94	29-JAN-93	09-JUL-94
Inorganic Analytes (µg/l)										
Arsenic	8.9 J	1.3 J	11.4	2.8 J	--	1.4 J	6.7 J	3.8 J	2.6 J	3.3 J
Barium	21.4 J	16.3 J	32.8 J	7.6 J	7.1 J	5.4 J	13.9 J	--	13.2 J	18.1 J
Beryllium	--	--	0.37 J	--	--	--	--	--	--	--
Cadmium	--	1.1 J	--	--	--	--	--	--	--	--
Calcium	47,700	201,000	145,000	103,000	168,000	170,000	130,000	118,000	162,000	185,000
Chromium	--	--	16.4	--	--	--	11	--	--	--
Cobalt	--	--	2.8 J	--	2.7 J	--	--	--	--	--
Copper	--	--	--	--	--	--	3.1 J	--	--	--
Iron	167	34,500	12,200 J	--	9,350 J	7,710 J	8,240 J	86.4 J	753 J	238
Lead	0.8 J	--	--	--	--	--	--	--	--	--
Magnesium	28,200	20,500	23,000	19,000	11,900	10,100	12,500	10,900	260,000	351,000
Manganese	83.5	734	386	4.7 J	285	236 J	142	7.5 J	25.3	20.8
Mercury	--	--	--	0.08 J	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	2.3 J	--	--	--	2.2 J	--
Sodium	357,000	18,700	NA	13,700	NA	37,200 J	NA	11,200 J	NA	3,030,000
Thallium	--	--	--	--	--	--	--	--	--	1.7 J
Tin	--	--	--	--	--	--	--	--	--	--
Vanadium	3.8 J	3.9 J	21.2 J	3.8 J	--	--	14.7 J	--	6.2 J	4.4 J
Zinc	--	--	86.4 J	--	15 J	--	31.6 J	--	25.6 J	--
Cyanide	--	--	--	0.82 J	--	--	--	--	--	1.3 J

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2390	M750	R860	M750	M750	M750
Sample Matrix:	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-S-MW03S	MPT-S-MW03S	MPT-10-P01S	MPT-8-MW01S	MPT-9-MW03S	MPT-S-MW03S
Sample No.:	S-3	0SMW003S	10OP001	08MW001SF	09MW003SF	0SMW003S
Date Sampled:	28-JAN-93	11-JUL-94	24-AUG-94	11-JUL-94	11-JUL-94	11-JUL-94
Inorganic Analytes (µg/l)						
Arsenic	12.5	2.9 J	1.4 J	0.95 J	2.9 J	3.2 J
Barium	7 J	3.8 J	4.7 J	–	–	3.5 J
Beryllium	–	–	–	–	–	–
Cadmium	–	–	–	–	–	–
Calcium	99,100	142,000	77,900	58,800	119,000	140,000
Chromium	–	–	–	–	–	–
Cobalt	–	–	–	–	–	–
Copper	–	–	–	–	–	–
Iron	11,200 J	96.2 J	46.7 J	450	24.6 J	–
Lead	–	–	–	–	–	–
Magnesium	7,440	9,500	11,400	5,730	11,100	9,250
Manganese	67.5	1.4 J	4.5 J	39.3 J	7 J	0.84 J
Mercury	–	–	–	–	–	–
Nickel	–	–	–	–	–	–
Selenium	–	–	–	–	–	–
Silver	2.8 J	–	–	–	–	–
Sodium	NA	11,000 J	8,910	4,940 J	11,200 J	10,900
Thallium	–	–	–	1.5 J	1.6 J	–
Tin	–	–	–	–	–	–
Vanadium	10.8 J	2.3 J	4.4 J	–	2.2 J	3.2 J
Zinc	26.2 J	–	3.6 J	–	–	–
Cyanide	–	–	3.6 J	–	–	–

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R8784	R8628	R8628	R8628	R8628	R8784
Sample Matrix:	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-8-MW15I	MPT-8-MW16S	MPT-8-MW16S	MPT-8-MW17S	MPT-8-MW18S	MPT-8-MW19S
Sample No.:	08MW015I	08MW016S	08MW016SD	08MW017S	08MW018S	08MW019S
Date Sampled:	22-SEP-95	26-AUG-94	26-AUG-94	26-AUG-94	26-AUG-94	22-SEP-94
Inorganic Analytes (µg/l)						
Arsenic	–	24.1	23.5	1.6 J	2.3 J	–
Barium	86.3 J	11 J	11 J	5.3 J	3.7 J	8 J
Beryllium	–	–	–	–	–	–
Cadmium	–	–	2.9 J	–	–	–
Calcium	70,400	145,000	143,000	130,000	41,500	166,000
Chromium	–	–	–	–	–	–
Cobalt	–	–	–	–	–	–
Copper	–	–	–	–	–	–
Iron	–	14,300	13,900	2,810	221	–
Lead	0.9 J	–	–	–	–	9 J
Magnesium	90,200	10,100	9,790	7,010	17,800	390,000
Manganese	215	343	338	95.1	35.5	23.3
Mercury	–	–	–	–	–	–
Nickel	6.3 J	–	–	–	–	–
Selenium	–	–	–	–	–	–
Silver	–	–	–	–	–	–
Sodium	683,000	12,700	12,500	14,800	176,000	3,510,000
Thallium	–	–	–	–	–	–
Tin	–	–	–	–	–	–
Vanadium	3.6 J	2.3 J	2.5 J	2.3 J	3.2 J	3.4 J
Zinc	16.8 J	6.3 J	11.7 J	3.1 J	2.0 J	–
Cyanide	–	–	–	–	–	–

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R8784	R9037	R9037
Sample Matrix:	Water	Water	Water
Sample Location:	MPT-8-19S	MPT-8-MW20S	MPT-8-MW20S
Sample No.:	08MW019S	08MW020S	08MW020SD
Date Sampled:	22-SEP-94	11-AUG-	11-AUG-94
Inorganic Analytes (µg/l)			
Arsenic	--	--	--
Barium	6.5 J	5.4 J	5.3 J
Beryllium	--	--	--
Cadmium	--	--	--
Calcium	155,000	186,000	187,000
Chromium	--	--	--
Cobalt	--	--	--
Copper	--	--	--
Iron	--	333	322
Lead	8 J	--	--
Magnesium	359,000	357,000	361,000
Manganese	23.8	24.2	23.5
Mercury	--	--	--
Nickel	--	--	--
Selenium	--	--	--
Silver	--	--	--
Sodium	344,000	2,970,000	2,990,000
Thallium	--	--	--
Tin	--	--	--
Vanadium	3 J	3.8 J	3.4 J
Zinc	--	--	--
Cyanide	--	--	--

See notes at end of table.

Table 4-17 (Continued)
Inorganic Analytes Detected in Groundwater Samples at Solid Waste Management Units (SWMUs) 6, 7, 8, 9, 10, and 11

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	2390	M750	R860	M750	M750	M750
Sample Matrix:	Water	Water	Water	Water	Water	Water
Sample Location:	MPT-S-MW03S	MPT-S-MW03S	MPT-10-P01S	MPT-8-MW01S	MPT-9-MW03S	MPT-S-MW03S
Sample No.:	S-3	0SMW003S	10OP001	08MW001SF	09MW003SF	0SMW003S
Date Sampled:	28-JAN-93	11-JUL-94	24-AUG-94	11-JUL-94	11-JUL-94	11-JUL-94

Notes: RCRA = Resource Conservation and Recovery Act.
DUP = duplicate.
$\mu g/\ell$ = milligrams per liter.
-- = analyte not detected.
J = estimated value.
NA = not analyzed.

Table 4-18
Summary of Chemicals Detected in Oily Waste Treatment Plant Area Groundwater

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration
Water Quality Parameters (mg/ℓ)						
Alkalinity as $CaCO_3$	18/18	150	3,390	550	N/A	08MW009S
Ammonia-N	13/18	0.3	7.6	2.5	0.3 - 0.3	08MW009S
Chloride	18/18	5.6	13,600	1,455	N/A	08MW019S
Color	18/18	10	140	53	N/A	08MW013I
Hardness as $CaCO_3$	18/18	180	7,180	969	N/A	08MW009S
Nitrate/Nitrite-N	13/18	0.14	3.69	0.59	0.05 - 0.1	08MW010S
Oil and Grease	3/18	19	1,480	517	5 - 10	8MW7
Phosphorous-P, Total	18/18	0.21	28	2.75	N/A	08MW009S
Sulfate	16/18	2.1	1,950	214.2	10 - 100	08MW019S
Sulfide	8/18	1.2	33	10.1	1 - 10	08MW015I
Total Dissolved Solids	18/18	341	14,500	2,649	N/A	08MW009S
Total Kjeldahl Nitrogen	17/18	0.3	15.2	4.6	0.3 - 0.3	08MW009S
Total Organic Carbon	18/18	3	3,990	246.1	N/A	08MW009S
Total Petroleum Hydrocarbons	9/19	0.045	132	18.56	0.05 - 0.06	08MW004S
pH	18/18	6.2	8	7.15	N/A	09MW001S
Volatile Analytes (µg/ℓ)						
2-Butanone	1/18	230	230	230	10 - 20	08MW009S
Acetone	5/23	7	330	79	10 - 20	08MW009S
Benzene	1/23	2	2	2	5 - 10	8MW7
Carbon disulfide	4/23	2	4	3	5 - 10	08MW009S
Chloroform	1/23	7	7	7	5 - 10	08MW015I
Ethylbenzene	1/23	21	21	21	5 - 10	8MW7
Methylene chloride	1/23	2	2	2	5 - 10	08MW015I
Toluene	1/23	3	3	3	5 - 10	08MW009S
Semivolatile Analytes (µg/ℓ)						
2,4-Dimethylphenol	1/23	180	180	180	10 - 20	08MW009S

See notes at end of table.

Table 4-18 (Continued)
Summary of Chemicals Detected in Oily Waste Treatment Plant Area Groundwater

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[3]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration
2-Methylnaphthalene	5/23	42.5*	140	93	10 - 80	08MW004S
2-Methylphenol	1/23	180	180	180	10 - 20	08MW009S
3- and 4-Methylphenol	1/23	480	480	480	10 - 20	08MW009S
4-Chloro-3-methylphenol	1/23	4*	4*	4	10 - 80	08MW020SD
Acenaphthene	3/23	2*	9	5	10 - 80	08MW004S
Benzoic acid	2/19	8	17	13	50 - 400	08MW014S
Dibenzofuran	2/23	3	5	4	10 - 80	08MW004S
Diethylphthalate	4/23	2	20	7	10 - 20	08MW009S
Dimethylphthalate	3/23	4*	17	8	10 - 80	08MW014S
Diphenylamine	1/1	0	0	0	N/A	8MW7
Fluorene	4/23	4*	14	8	10 - 80	08MW004S
Naphthalene	5/23	78.5*	170	123	10 - 80	08MW014S
Nitrobenzene	1/23	3	3	3	10 - 80	08MW014S
Phenanthrene	3/23	4*	12	7	10 - 80	08MW004S
bis(2-Ethylhexyl)phthalate	1/23	4*	4*	4	10 - 80	08MW019S
Pesticides/PCBs (µg/l)						
Endrin aldehyde	1/23	0.052	0.052	0.052	0.04 - 0.2	08MW004S
Endrin ketone	1/23	0.048	0.048	0.048	0.04 - 0.2	08MW004S
Inorganics Analytes (µg/l)						
Arsenic	19/23	0.6	41.2	5.7	0.6 - 4.5	8MW7
Barium	21/23	3.7	112	20	200 - 200	08MW009S
Beryllium	1/23	1.6	1.6	1.6	0.3 - 5	8MW7
Cadmium	2/23	1.1	1.7*	1.4	1 - 5	08MW016SD
Calcium	22/22	33,800	1,830,000	191,657	N/A	08MW009S
Chromium	1/23	40.9	40.9	40.9	2.6 - 10	8MW7
Cobalt	1/23	11.7	11.7	11.7	3.1 - 50	8MW7

See notes at end of table.

Table 4-18 (Continued)
Summary of Chemicals Detected in Oily Waste Treatment Plant Area Groundwater

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection[1]	Minimum Concentration[2]	Maximum Concentration[2]	Mean of Detected Concentrations[2]	Range of Reporting Limits for Nondetects	Sample with Maximum Concentration
Copper	1/23	15.4	15.4	15.4	0.9 - 25	8MW7
Iron	18/22	38	34,500	4,717.3	9.1 - 100	08MW014S
Lead	7/23	0.8	45.9	8.8	0.6 - 6	8MW7
Magnesium	22/22	5,480	401,000	82,204	N/A	08MW009S
Manganese	22/22	1.4	2,260	209.2	N/A	08MW009S
Mercury	3/23	0.08*	0.29	0.15	0.1 - 0.5	8MW7
Nickel	2/23	6.3	19.9	13.1	5.9 - 40	8MW7
Selenium	1/23	1.55*	1.55*	1.5	0.6 - 30	08MW010S
Silver	1/23	2.1	2.1	2.1	2.1 - 10	8MW7
Sodium	22/22	4,980	3,475,000*	609,285	N/A	08MW019S
Thallium	2/23	1.5	1.7	1.6	0.6 - 10	0SMW002S
Vanadium	18/23	2	60.3	6.7	50 - 50	8MW7
Zinc	8/23	2	127	22.6	1 - 20	8MW7
Cyanide	5/23	0.82	12.8	4.31	2.7 - 10	8MW7

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed.
[2] A value indicated by an asterisk is the average of the detected concentrations in a sample and its duplicate. For nondetected values, one-half the CRQL/CRDL is used as a surrogate.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples in which the analyte was not detected.

Notes: SWMU = solid waste management unit.
RCRA = Resource Conservation and Recovery Act.
mg/ℓ = milligrams per liter.
µg/ℓ = micrograms per liter.
N/A = not applicable.
$CACO_3$ = calcium carbonate.
PCBs = polychlorinated biphenyls.
CRQL/CRDL = contract-required quantitation limit/contract-required detection limit.

Table 4-19
Comparison of Analytes Detected in Oily Waste Treatment Plant Area Groundwater to Background Screening and Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Concentration[1]	Background Screening Concentration[2]	Frequency Above Background Screening Concentration	Florida Guidance Concentration[3]	Frequency Above Florida Guidance Concentration	Risk-Based Screening Concentration[4]	Frequency Above Risk-Based Screening Concentration
Volatile Analytes (µg/ℓ)							
2-Butanone	230	NSC	N/A	4,200	0/18	190	1/18
Acetone	330	16	3/23	700	0/23	370	0/23
Benzene	2	NSC	N/A	1	1/23	0.36	1/23
Carbon disulfide	4	1	4/23	700	0/23	2.1	2/23
Chloroform	7	2.5	1/23	6	1/23	0.15	1/23
Ethylbenzene	21	NSC	N/A	30	0/23	130	0/23
Methylene chloride	2	NSC	N/A	5	0/23	4.1	0/23
Toluene	3	NSC	N/A	40	0/23	75	0/23
Semivolatile Analytes (µg/ℓ)							
2,4-Dimethylphenol	180	NSC	N/A	400	0/23	73	1/23
2-Methylnaphthalene	140	NSC	N/A	NSC	N/A	NSC	N/A
2-Methylphenol	180	NSC	N/A	350	0/23	180	0/23
3- and 4-Methylphenol	480	29	1/23	35	1/23	18	1/23
4-Chloro-3-methylphenol	4*	NSC	N/A	3,000	0/23	NSC	N/A
Acenaphthene	9	NSC	N/A	20	0/23	220	0/23
Benzoic acid	17	NSC	N/A	28,000	0/19	15,000	0/19
Dibenzofuran	5	NSC	N/A	NSC	N/A	15	0/23
Diethylphthalate	20	NSC	N/A	5,600	0/23	2,900	0/23
Dimethylphthalate	17	NSC	N/A	70,000	0/23	37,000	0/23
Diphenylamine	0	NSC	N/A	175	0/1	91	0/1
Fluorene	14	NSC	N/A	280	0/23	150	0/23
Naphthalene	170	NSC	N/A	6.8	5/23	150	1/23
Nitrobenzene	3	NSC	N/A	9.5	0/23	0.34	1/23

See notes at end of table.

Table 4-19 (Continued)
Comparison of Analytes Detected in Oily Waste Treatment Plant Groundwater to Background Screening and Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Concentration[1]	Background Screening Concentration[2]	Frequency Above Background Screening Concentration	Florida Guidance Concentration[3]	Frequency Above Florida Guidance Concentration	Risk-Based Screening Concentration[4]	Frequency Above Risk-Based Screening Concentration
Phenanthrene	12	NSC	N/A	10	1/23	NSC	N/A
bis(2-Ethylhexyl)phthalate	4*	6.2	1/23	NSC	N/A	4.8	1/23
Pesticides/PCBs (µg/l)							
Endrin aldehyde	0.052	NSC	N/A	0.1	0/23	NSC	N/A
Endrin ketone	0.048	NSC	N/A	NSC	N/A	NSC	N/A
Inorganics (µg/l)							
Arsenic	41.2	9.8	2/23	50	0/23	0.038	19/23
Barium	112	39	3/23	2,000	0/23	260	0/23
Beryllium	1.6	NSC	N/A	4	0/23	0.016	1/23
Cadmium	1.7*	NSC	N/A	5	0/23	1.8	1/23
Calcium	1,830,000	207,466	1/22	NSC	N/A	1,055,398	1/22
Chromium	40.9	10.4	1/23	100	0/23	18	1/23
Cobalt	11.7	NSC	N/A	NSC	N/A	220	0/23
Copper	15.4	2.8	1/23	1,000	0/23	140	0/23
Iron	34,500	1,728	7/22	300	9/22	13,267	3/22
Lead	45.9	3.6	2/23	15	1/23	15	1/23
Magnesium	401,000	153,984	4/22	NSC	N/A	118,807	4/22
Manganese	2,260	210	6/22	50	9/22	18	16/22
Mercury	0.29	0.16	1/23	2	0/23	1.1	0/23
Nickel	19.9	NSC	N/A	100	0/23	73	0/23
Selenium	1.55*	11.8	0/23	50	0/23	18	0/23
Silver	2.1	NSC	N/A	100	0/23	18	0/23
Sodium	3,475,000*	1,519,016	4/22	160,000	8/22	396,022	6/22
Thallium	1.7	NSC	N/A	2	0/23	0.29	2/23

See notes at end of table.

Table 4-19 (Continued)
Comparison of Analytes Detected in Oily Waste Treatment Plant Area Groundwater to Background Screening and Benchmark Concentrations

RCRA Facility Investigation, Group II SWMUs
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Concentration[1]	Background Screening Concentration[2]	Frequency Above Background Screening Concentration	Florida Guidance Concentration[3]	Frequency Above Florida Guidance Concentration	Risk-Based Screening Concentration[4]	Frequency Above Risk-Based Screening Concentration
Vanadium	60.3	9.2	1/23	49	1/23	26	1/23
Zinc	127	41.6	1/23	5,000	0/23	1,100	0/23
Cyanide	12.8	1.9	2/23	200	0/23	73	0/23

[1] A value indicated by an asterisk is the average of the detected concentrations in a sample and its duplicate. For nondetected values, one-half the CRQL/CRDL is used as a surrogate.
[2] The background screening concentration is twice the mean of detected concentrations for inorganic analytes.
[3] Florida Guidance Concentrations, June 1994.
[4] U.S. Environmental Protection Agency Region III risk-based screening concentrations (February 9, 1995). Concentrations for noncarcinogenic risks are adjusted to a hazard index of 0.1.

Notes: SWMU = solid waste management unit.
RCRA = Resource Conservation and Recovery Act.
µg/ℓ = micrograms per liter.
PCBs = polychlorinated biphenyls.
N/A = not applicable.
NSC = no screening concentration.
CRQL/CRDL = contract-required quantitation limits/contract-required detection limits.

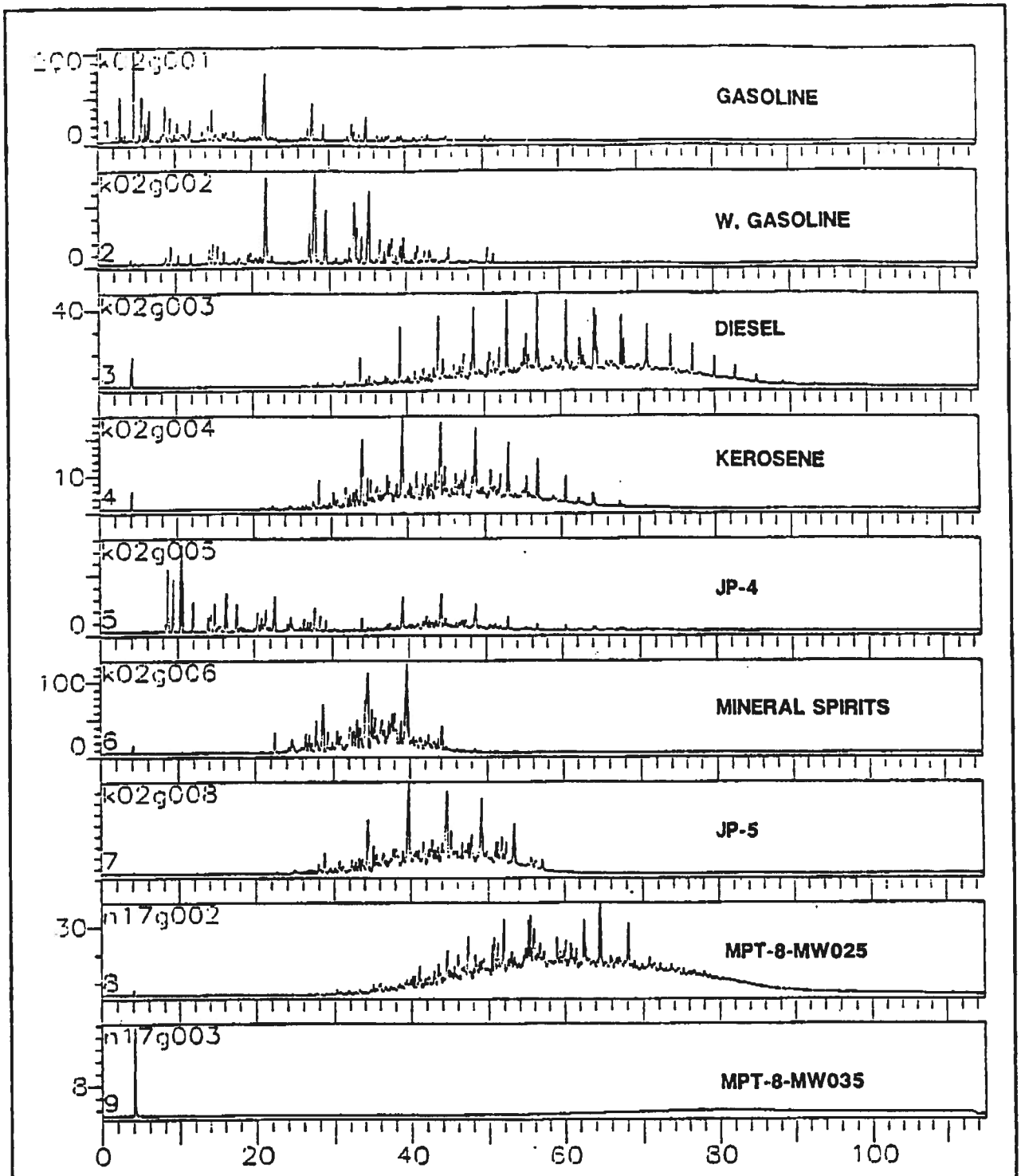

FIGURE 4-7

EXAMPLE GAS CHROMATOGRAM COMPARING SAMPLES TO STANDARD PETROLEUM PRODUCTS

RCRA FACILITY INVESTIGATION REPORT, GROUP II SWMUs

U.S. NAVAL STATION MAYPORT, FLORIDA

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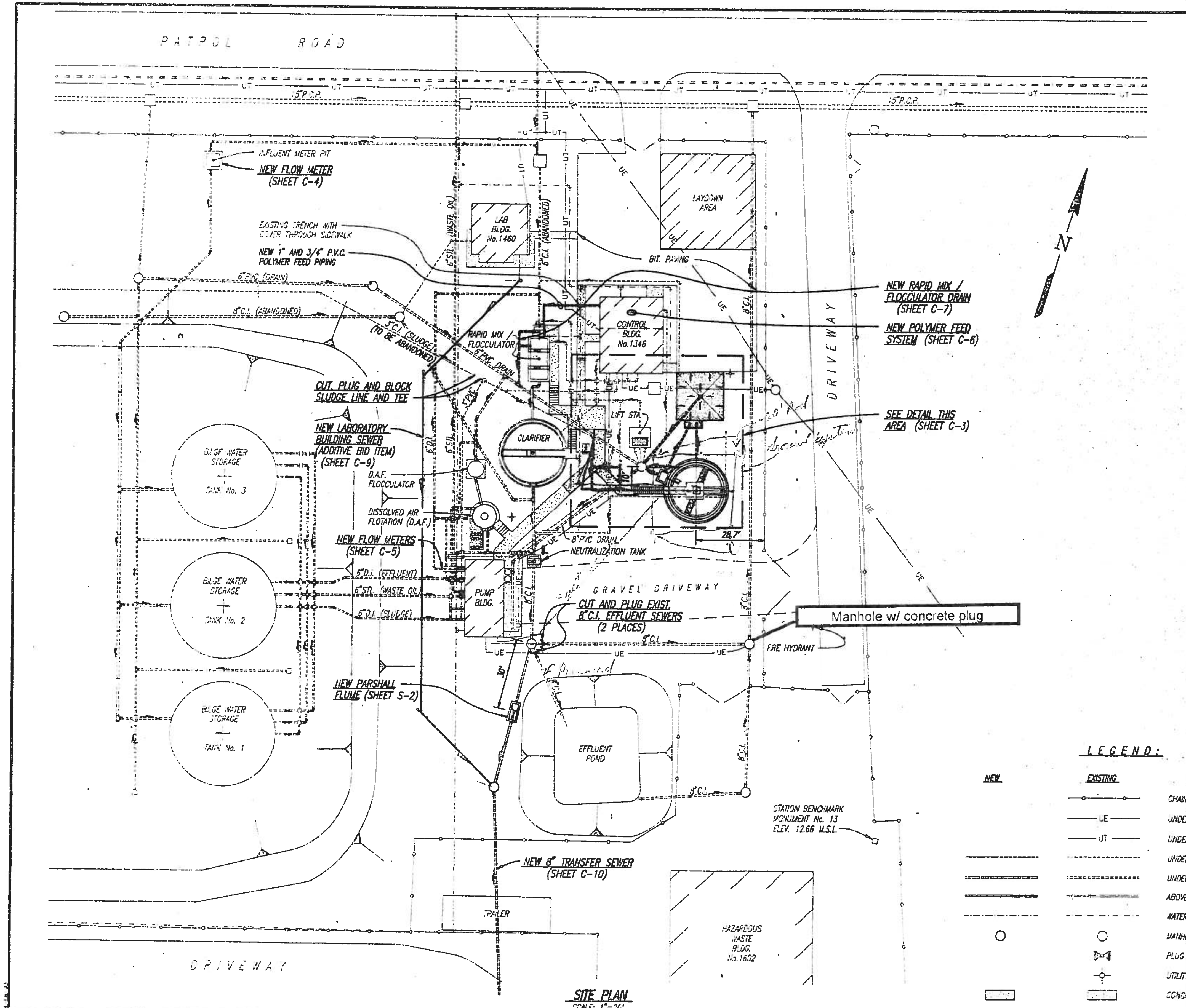


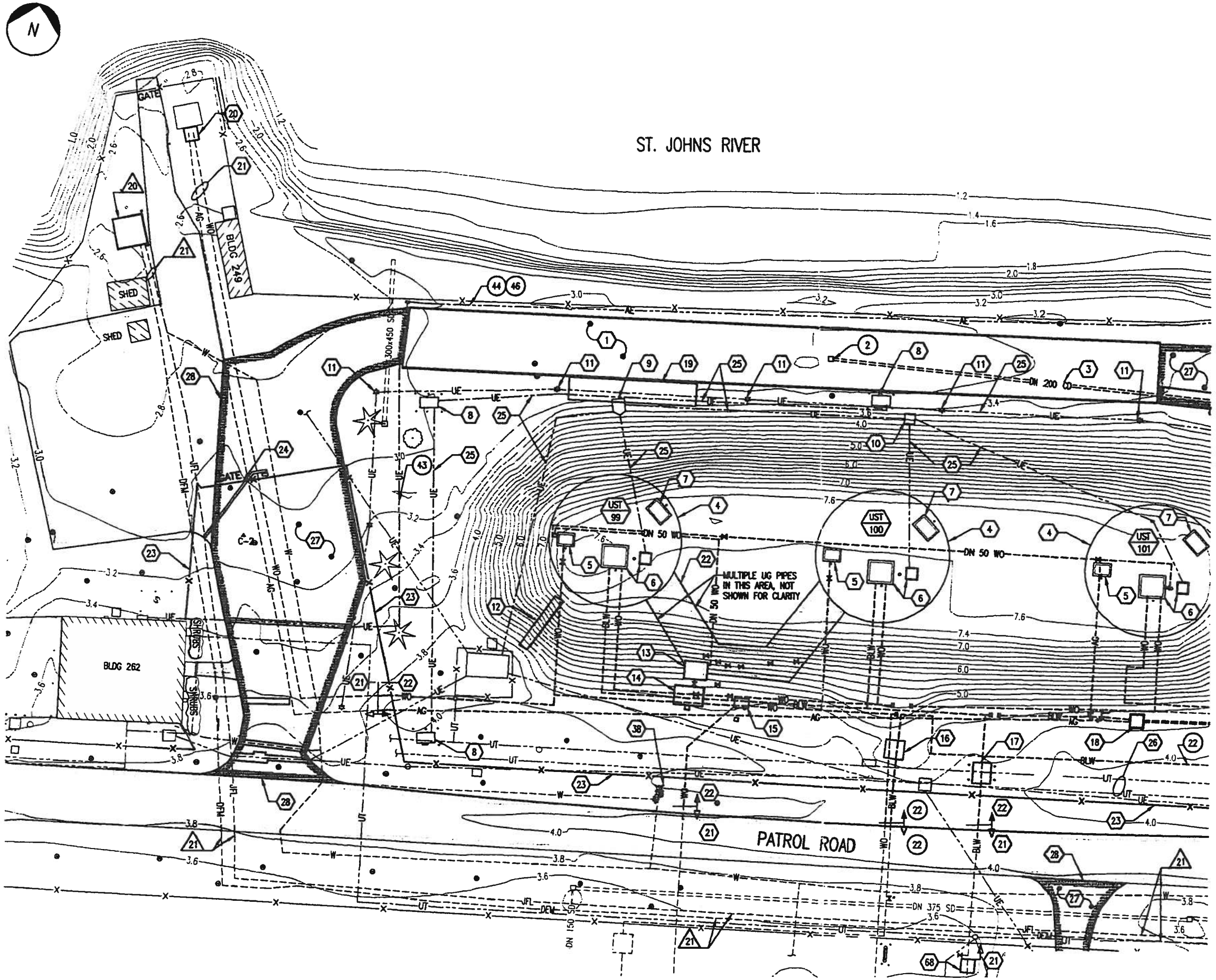
GENERAL NOTES:

1. OILY WASTE TREATMENT PLANT SHALL REMAIN IN OPERATION THROUGHOUT CONSTRUCTION PERIOD. SEE SPECS., SECTION 01010, PARAGRAPH 1.19, "ORDER OF WORK".
2. PRIOR TO REMOVING ANY EQUIPMENT FROM OPERATION, CONTRACTOR SHALL SUBMIT TO THE CONTRACTING OFFICER A WORK PLAN/ SCHEDULE DETAILING HOW TREATMENT PLANT WILL BE OPERATED WHILE EQUIPMENT IS BEING REPLACED. PRIOR TO STARTING THE WORK, THE WORK PLAN/SCHEDULE MUST BE APPROVED BY CONTRACTING OFFICER. CONTRACTOR SHALL PROVIDE ALL TEMPORARY WORK NECESSARY TO MAINTAIN TREATMENT PLANT OPERATION, INCLUDING, BUT NOT LIMITED TO, BYPASS PUMPING.
3. NO BYPASSING OR DISCHARGING UNTREATED WASTEWATER WILL BE ALLOWED UNLESS PRIOR WRITTEN APPROVAL HAS BEEN OBTAINED FROM FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS (FDER).
4. ACCIDENTAL SPILLS SHALL BE REPORTED IMMEDIATELY TO CONTRACTING OFFICER AND FDER. SPILLS AND CLEAN-UP ARE THE RESPONSIBILITY OF THE CONTRACTOR.
5. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY. CONTRACTOR SHALL PROVIDE ADEQUATE VENTILATION FOR CONFINED SPACES AND SHALL CERTIFY CONFINED SPACES ARE GAS-FREE PRIOR TO ANY PERSONNEL ENTERING THE CONFINED SPACE.
6. LOCATIONS OF EXISTING UNDERGROUND PIPING WERE OBTAINED FROM AS-BUILT DRAWINGS SUPPLEMENTED BY FIELD LOCATION OF ABOVE-GROUND FEATURES SUCH AS VALVES, MANHOLES, CLEANOUTS, ETC. CONTRACTOR SHALL FIELD LOCATE ALL TIE-IN LOCATIONS AND POTENTIAL UTILITY CONFLICTS PRIOR TO INSTALLING NEW PIPELINES.
7. PIPING MODIFICATIONS ARE DETAILED ON REFERENCED SHEETS.

HENDON ENGINEERING ASSOCIATES, INC.
DSGN DUKE DR BLYTHE CHK DUKE
DWN DUKE CK HOLB

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHERN DIVISION
CHARLESTON, S.C.
NAVAL STATION — MAYPORT, FLORIDA
OILY WASTE TREATMENT PLANT MODIFICATIONS
SITE PLAN
CIVIL

SPEC. NO. 16-93-C679
CONSTR. CONTR. NO. N62467-93-C-0679
NAVFAC DRAWING NO. 5250923
SHEET 3 OF 32
C-2



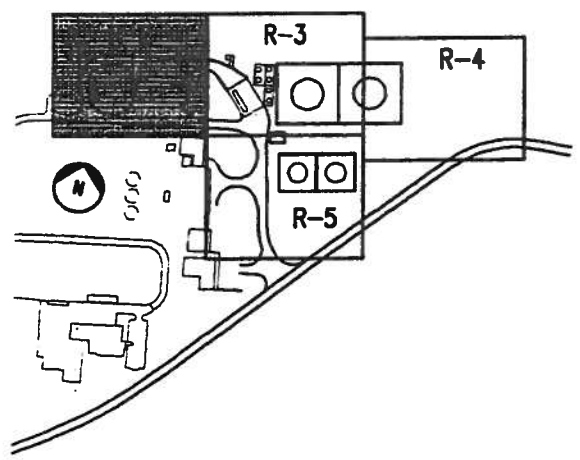
REMOVALS SITE PLAN 1

SCALE: 1:250

GENERAL NOTES

1. REMOVAL NOTES WITH PHASING SYMBOLS ARE SHOWN ON SHEET R1.
2. REMOVALS SHALL BE PHASED AS INDICATED ON SHEET R7.

KEY PLAN



GRAPHIC SCALE

5 0 5 10 15

SCALE: 1:250

CHECK GRAPHIC SCALE BEFORE USING

ENTERPRISE ENGINEERING, INC.

DRAWING REVISIONS

Rev.	Description	Prep By	Date	Approved

MAYPORT, FLORIDA

NAVAL STATION

REPLACE FUEL TANKS

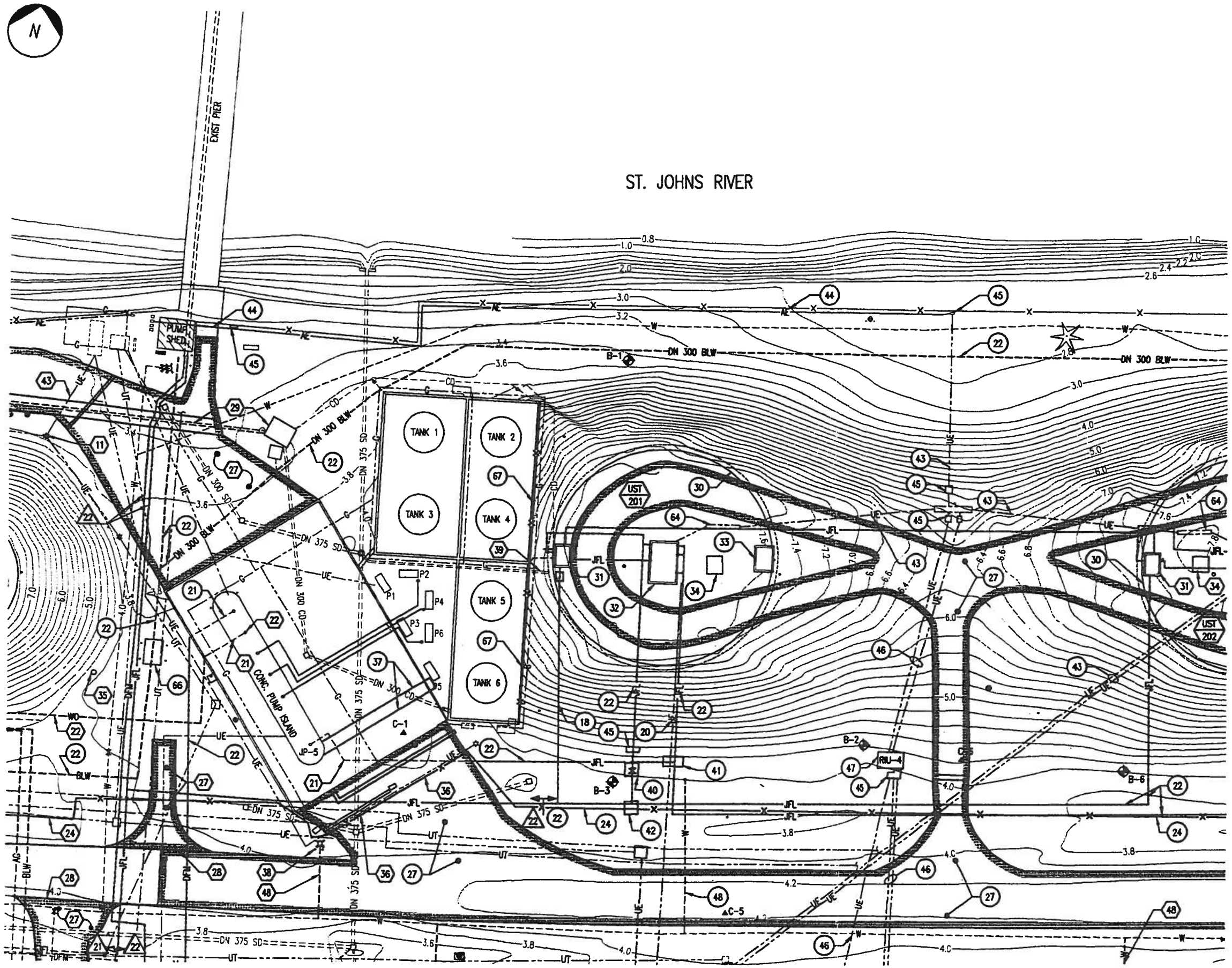
REMOVALS SITE PLAN 1

DATE

APPROVED FOR CONSTRUCTION

Naval Facilities Engineering Command
Southern Division
Charleston, South Carolina

RECORD DRAWING DATE	
CODE I.D. NO.	80091
DRAWING SIZE:	D
SPEC. NO.	05-97-0027
CONSTRN. CONTR. NO.	N62467-97-C-0027
NAVFAC DRAWING NO.	
SHEET	OF
	R-2



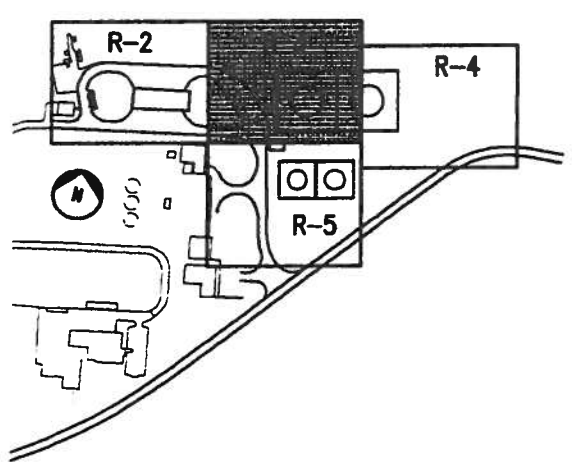
REMOVALS SITE PLAN 2

SCALE: 1:250

GENERAL NOTES

1. REMOVAL NOTES WITH PHASING SYMBOLS ARE SHOWN ON SHEET R1.
2. REMOVALS SHALL BE PHASED AS INDICATED ON SHEET R7.

KEY PLAN



GRAPHIC SCALE

5 0 5 10 15

SCALE: 1:250

CHECK GRAPHIC SCALE BEFORE USING

ENTERPRISE ENGINEERING, INC. JACKSONVILLE, FL

DRAWN: DR YOUNG CHK: DR DOUGHTY
SUBMITTED BY: SUPV WRONEN QA: DR DAVIS
TECHNICAL DIVISION: DATE: TYPE:

DRAWING REVISIONS

No.	Description	Prep By	Date	Apprvd.

MAYPORT, FLORIDA

NAVAL STATION

REPLACE FUEL TANKS
REMOVALS SITE PLAN 2

APPROVED FOR COMMANDER, NAVFAC

DATE

Naval Facilities Engineering Command
Southern Division
Charleston, South Carolina

RECORD DRAWING DATE	
CODE I.D. NO.	80091
DRAWING SIZE:	D
SPEC. NO. 05-97-0827	
CONSTRN. CONTR. NO.	N62467-97-C-0827
NAVFAC DRAWING NO.	
SHEET	OF

R-3

Department of Environmental Protection

TwTwin Towers Office Building ♦ 2600 Blair Stone Road ♦ Tallahassee, Florida 32399-2400

DEP Form 62-761.900(8)
Form Title: Limited Closure Summary Report
Effective Date: 7/13/98

Limited Closure Summary Report

This form is required for facilities that have sites with documented contamination requiring a site assessment in accordance with Chapter 62-770, F.A.C. This includes those facilities that are eligible for the Early Detection Incentive Program (EDI), the Florida Petroleum Liability and Restoration Insurance Program (FPLRIP), and the Petroleum Cleanup Participation Program (PCPP), pursuant to Sections 376.3071 and 376.3072, F.S. Documentation of procedures followed, and results obtained during closure shall be reported in this form, along with any attachments. This form shall be submitted to the County within 60 days of completion of the closure in accordance with Section A of the "Storage Tank System Closure Assessment Requirements."

Complete All Applicable Blanks. Please Print or Type

General Information

Date 4/25/00	FDEP Facility ID Number 8626008	County Duval
Facility Name US Navy – Mayport Naval Station	Facility Telephone #: ( )	
Facility Address:		
Owner or Operator Name: US Navy	Owner/Operator phone #: ( )	
Mailing Address:		

Storage Tank System Closure Information

1. Were the storage tanks(s): (Check one or both) Tanks #99, 100, 101 – Fuel dep. L

• Aboveground	• Underground

2. General System Information

Types of Products Stored: Only wastewater	Number of Tanks Closed 3	Age(s) of Tanks 45 years

3. Was the Limited Closure Summary Report Performed as a Result of: (check one or more)

• Tank Systems Removal? ✓	• Spill Containment Installation?	• Change in Storage to a Non-Regulated Substance?
• Tank Systems Closed in Place?	• Dispenser Liners Installation?	• Release Prevention Barrier Installation?
• Piping Sump Installation?	• Secondary Containment Installation?	• Other? (please explain)

4. Please Check Yes or No to the following:

a. Was there previously reported contamination discovered on site? If yes, was	(Yes)	• No
1. A Discharge Report Form submitted to the County?	(Yes)	• No
2. An investigation performed in accordance with Rule 62-761.820, F.A.C.?	(Yes)	• No
b. Is the depth to groundwater less than 20 feet?	(Yes)	• No
c. Are there monitoring wells on site? If yes, were they	(Yes)	• No
1. Groundwater monitoring wells?	(Yes)	• No
2. Vapor monitoring wells?	• Yes	(No)
3. Used for closure assessment sampling?	(Yes)	• No
4. Properly closed?	• Yes	(No)
5. Retained for site assessment purposes?	(Yes)	• No
d. If tanks were replaced, were contaminated soils returned to the tank excavation?	• Yes	(No)

Signature of owner or operator	Signature of person performing Limited Closure Assessment	Richard Moriarty Name of person performing Limited Closure Assessment
(date)	(date) 4/25/00	Affiliation ESA

LIMITED CLOSURE SUMMARY REPORT

Mayport Naval Station Fuel Depot
Tanks # 99, 100, 101
Mayport Naval Station, Duval County, Florida
Facility ID # 8626008

Summary of Field Activities

On May 24 and 25, 2000 Environmental Science Associates, Inc. (ESA) was contracted by Environmental Recovery, Inc. (ERI) of Atlantic Beach, Florida (PSSSC #PC-C050751) to perform limited closure assessment services following the removal of three Waste Oil Underground Storage Tanks (UST's) from the Fuel Depot facility (Facility ID #8626008) located on Mayport Naval Station in Duval County, Florida (refer to Figure 1., Site Location Map). The purpose of the limited closure summary was to evaluate current site conditions in the vicinity of the tanks. Subsurface soil and groundwater contamination has been documented at the site in the past, and remedial activities have been conducted.

The tanks, which were each approximately 210,000-gallons in capacity, were reported to have been installed in 1954, and had been used to store oily wastewater. The limited closure assessment was conducted following the UST removals, and was performed in accordance with the requirements of Chapter 62-761 F.A.C. and the Florida Department of Environmental Protection (FDEP) guidance document "Pollutant Storage Tank Closure Assessment Requirements"(April 1998) for sites with previously documented contamination. The methods and procedures used during the closure assessment were conducted in accordance with the FDEP "Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments".

As part of the limited closure assessment, total of three groundwater samples were collected from three (3) pre-existing monitoring wells located on the north side of the tank farm. In addition, a total of three groundwater samples were collected from temporary wells installed on site in selected locations, and a total of three soil samples were collected from soil borings conducted on site for. Each of these samples were

Three (3) pre-existing monitor wells (# MW -15S, # MW-03S, and # MW-13S) were sampled on April 24, 2000, Prior to initiating groundwater sample collection activities, the depth to groundwater and total depth of each well was measured using an electronic water level indicator. The depth to groundwater was determined to be approximately 9 to 10 ft below the original surface grade. A total of five well volumes were purged from each well prior to groundwater sample collection. Well purging and groundwater sample collection of the permanently installed wells was conducted using Teflon bailers. The groundwater samples were placed in laboratory prepared sample containers, appropriately preserved, labeled, sealed in zip-lock type bags, placed on wet ice, and hand-delivered under chain-of-custody procedures to the designated laboratory for analysis. The results of the groundwater analysis is summarized in Table 1, and copies of the laboratory reports and chain of custody forms are provided in Attachment A. Copies of the well sampling field logs are

provided in Attachment B. The results of the laboratory analysis of the groundwater samples collected from the existing monitor wells (#MW-15S, MW-03S, and MW-13S) indicated the presence of petroleum contamination, with the concentrations of Naphthalene (140μg/L) and Total Petroleum Hydrocarbons (Fl-PRO, 15mg/L) in excess of the FDEP Groundwater Cleanup Target Levels, as specified by Chapter 62-775, F.A.C., Table I.

On May 25, 2000, confirmatory soil samples were collected, and temporary wells were installed and sampled in the vicinity of Tanks # 100 and 101.

A total of three (3) confirmatory soil samples were collected from soil borings conducted in proximity to the former tank locations, as follows:

- Confirmatory Soil Sample #CS-1 was collected from the south side of Tank #100. Based On the lack of apparent indications of the presence of soil contamination, the sample was collected at a depth of approximately 8.0 ft below the original surface grade, which was just above the level of groundwater saturation, and below the bottom of Tank 100.

- Confirmatory Soil Sample #CS-2 was collected from the south side of Tank #101. Based on the lack of apparent indications of soil contamination, the sample was collected at a depth of approximately 8.0 ft below the original surface grade, which was just above the level of groundwater saturation, and below the bottom of Tank 101.

- Confirmatory Soil Sample #CS-3 was collected from the midpoint between the location of Tank #100 and 101. Based on the lack of apparent indications of soil contamination, The sample was collected at a depth of approximately 8.0 below the original surface grade, which was just above the level of groundwater saturation, and below the bottom of Tanks #100 and 101.

Each of these samples were collected using a stainless steel hand auger and Encore® brand samplers. Sampling equipment was decontaminated between sampling locations to prevent the possibility of cross-contamination. The samples were placed into pre-cleaned, laboratory supplied sample containers, appropriately labeled, sealed in zip-lock type bags and placed on wet ice for transport, and hand-delivered to a FDEP-approved laboratory (ENCO Laboratories, Jacksonville) for analysis by the following methods:

EPA Method 8260	Volatile Organic Compounds
EPA Method 8270	Extractable Organic Compounds
Fla-PRO	Total Petroleum Hydrocarbons
RCRA Metals	As, Ba, Cd, Cr, Pb, Hg, Ag, Se

The results of the laboratory analysis of the soil samples were below laboratory detection limits for all chemicals of concern with the exception of Arsenic, which was detected in soil samples #CS-1 and CS-2 at concentrations of 1.2 mg/Kg and 1.5 mg/Kg, respectively, as well as Chromium

and Lead, which were detected in soil sample #CS-1 at concentrations of 1.0 mg/Kg and 4.4 mg/Kg, respectively. The results of the soil analysis are summarized in Table 2, and soil sampling locations are illustrated in Figure 3.

Following confirmatory soil sample collection, each of the three (3) soil borings were advanced below the top of the water table and temporary monitor wells were installed and sampled. Each of the temporary wells (TMW-1, TMW-2 and TMW-3) were constructed of 2-inch PVC with 5 ft of 0.01.-inch slotted well screen, and was installed such that the well screen intercepted the top of the water table, which was encountered at a depth of approximately 9 ft below surface grade, and the annular space around the well screen was filled with clean 6/20 grade sand pack. Prior to sample collection, each temporary well was purged a total of five (5) standing volumes using a portable peristaltic pump. Groundwater samples were collected from each temporary well using a Teflon bailer. Sample containers, which had been provided by the designated laboratory, were appropriately labeled, preserved, sealed in zip-lock type bags, placed on wet ice, and hand-delivered, under standard chain of custody procedures, to an FDEP-approved environmental laboratory (ENCO Laboratories, Jacksonville) for analysis, as follows:

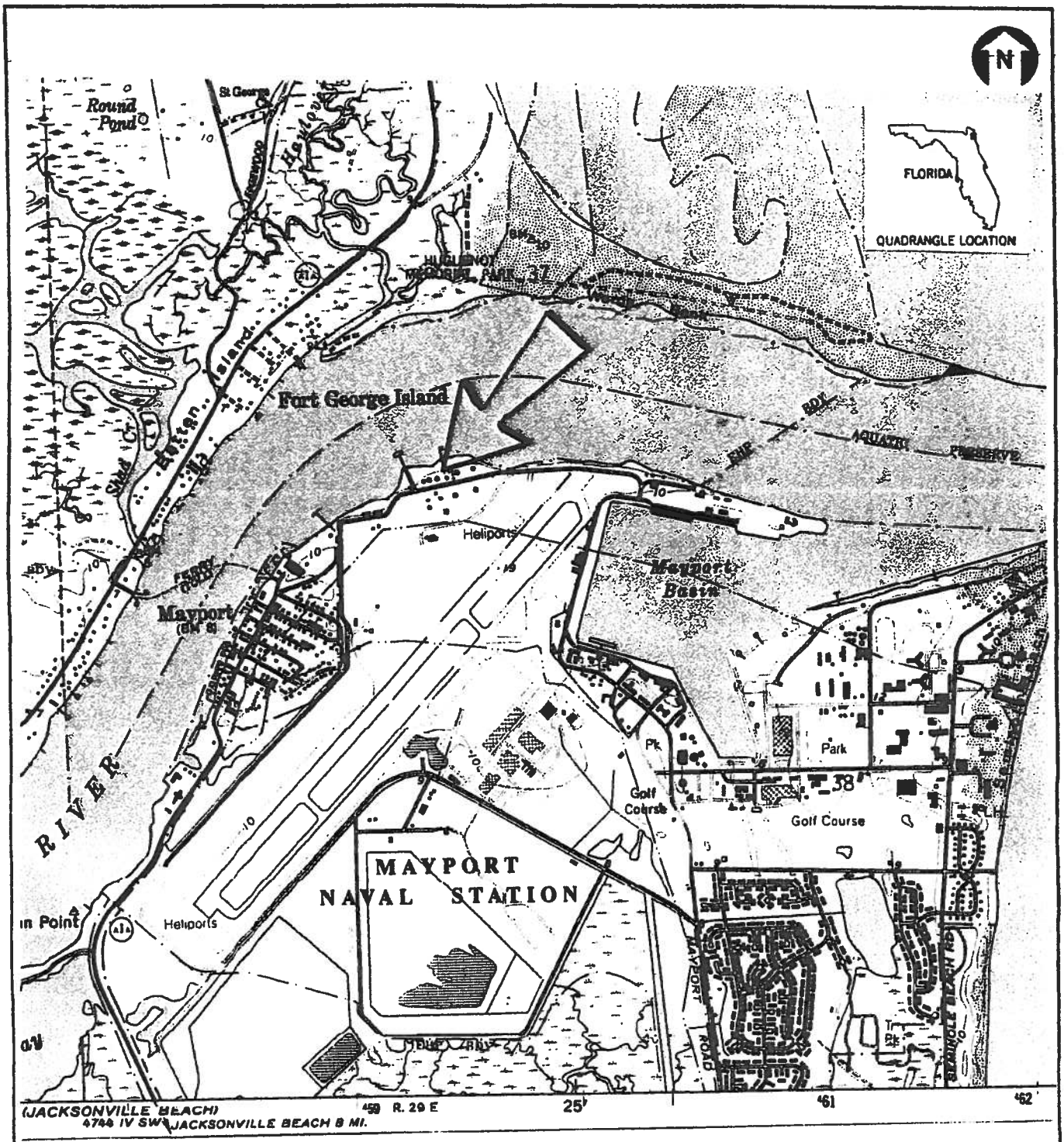
EPA Method 8260	Volatile Organic Compounds
EPA Method 8270	Extractable Organic Compounds
Fla-PRO	Total Petroleum Hydrocarbons
RCRA Metals	As, Ba, Cd, Cr, Pb, Hg, Ag, Se

The results of the laboratory analysis of the groundwater samples collected from temporary monitor wells # TMW-1, TMW-2, and TMW-3 are summarized in Table 3, and temporary well locations are illustrated in Figure 2. The results of the laboratory analysis of the groundwater samples collected from the temporary monitor wells indicated concentrations of petroleum hydrocarbons, including present in each of the wells, with the concentration of Naphthalene detected in TMW-2 (120μg/L) and the concentration of Lead detected in TMW-1 (0.074mg/L) in excess of the FDEP Groundwater Cleanup Target Levels, as specified by Chapter 62-775, F.A.C., Table I. Copies of the laboratory report of the groundwater analysis are provided in Attachment A, and the temporary well locations are illustrated in Figure 2.

Copies of the laboratory reports of the soil and groundwater analysis are provided as Attachment A. Also included in the limited closure summary report is a site location map, a site sketch indicating soil and groundwater sampling locations relative to the former tank locations, as well as the results of the laboratory analysis in table form.

Respectfully Submitted,
Environmental Science Associates, Inc.

Richard Moriarty
Environmental Scientist



Environmental Science Associates, Inc.	**Site Location Map** **Limited Closure Summary, Tanks #99, 100, and 101** Mayport Naval Station Fuel Depot Mayport Naval Station, Duval County, Florida; Facility ID #8626008	FIGURE **1** PROJECT NO.

Table 1.
Summary of Laboratory Analysis
Groundwater Sampling - Monitor Wells # MW-15S, MW-03S, and MW-13S
Mayport Naval Station Fuel Depot, Tanks # 99, 100, and 101
Mayport Naval Station, Duval County, Florida

Parameter	Monitor Well ID # MW-15S	MW-03S	MW-13S	Groundwater Cleanup Target Levels*
Volatile Organic Compounds:				
(EPA Method 8260)				
Isopropylbenzene	2.6µg/L	BDL	BDL	N/A
1,2,3-Trichlorobenzene	1.8µg/L	BDL	BDL	70µg/L
N-Propylbenzene	3.3µg/L	BDL	BDL	N/A
Tert-Butylbenzene	2.7µg/L	BDL	BDL	N/A
S-Butylbenzene	5.6µg/L	BDL	BDL	N/A
P-Isopropylyoluene	3.7µg/L	BDL	BDL	N/A
N-Butylbenzene	6.8µg/L	BDL	BDL	N/A
Naphthalene	**140µg/L**	9.2µg/L	4.8µg/L	**20µg/L**
All other 8260 Compounds	BDL	BDL	BDL	N/A
Semi-Volatile Organic Compounds:				
(EPA Method 8270)				
Bis(2-ethylhexylphthalate	14µg/L	BDL	BDL	N/A
Flourene	17µg/L	BDL	BDL	280µg/L
1-Methylnaphthalene	100µg/L	BDL	BDL	20µg/L
2-Methylnaphthalene	90µg/L	BDL	BDL	20µg/L
Naphthalene	48µg/L	BDL	4.8µg/L	20µg/L
Phenanthrene	22µg/L	BDL	BDL	210µg/L
All other 8270 Compounds	BDL	BDL	BDL	N/A
FLA PRO:	**15mg/L**	BDL	BDL	**5mg/L**
Total RCRA Metals:				
Arsenic	BDL	0.012mg/L	0.011mg/L	50µg/L
Barium	BDL	BDL	BDL	2000µg/L
Cadmium	BDL	BDL	0.002mg/L	5µg/L
Chromium	BDL	BDL	0.031mg/L	100µg/L
Lead	BDL	BDL	0.009mg/L	15µg/L
Mercury	0.00022mg/L	BDL	BDL	2µg/L
Silver	BDL	BDL	BDL	50µg/L
Selenium	BDL	BDL	BDL	50µg/L

BDL = Below Detection Limits; N/A = Not Applicable
*Groundwater Cleanup Target Levels as per 62-775 F.A.C., Table I, Groundwater Cleanup Target Levels

Table 2.
Summary of Laboratory Analysis
Confirmatory Soil Sampling
Mayport Naval Station Fuel Depot, Tanks # 99, 100, and 101
Mayport Naval Station, Duval County, Florida

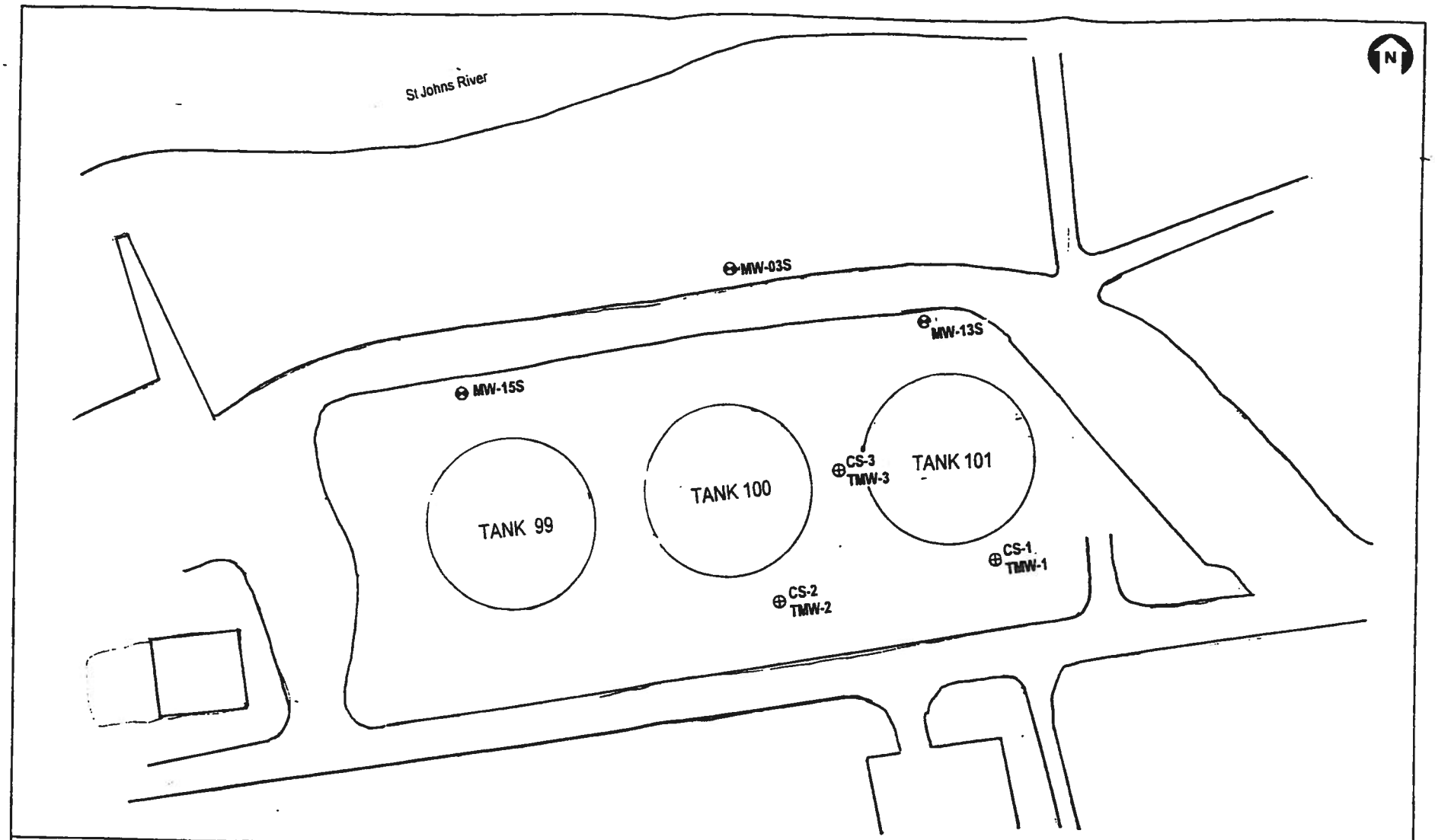
Parameter	Confirmatory Soil Sample ID			FDEP Soil Cleanup Target Levels*	
	CS-1	CS-2	CS-3		
Volatile Organic Compounds: (EPA Method 8260)					
All 8260 Compounds	BDL	BDL	BDL	N/A	
Semi-Volatile Organic Compounds: (EPA Method 8270)					
All 8270 Compounds	BDL	BDL	BDL	N/A	
FLA PRO:	BDL	BDL	BDL	340mg/Kg	340mg/Kg
Total RCRA Metals:					
Arsenic	1.0mg/Kg	1.5mg/Kg	BDL	3.7mg/Kg	29mg/Kg
Barium	BDL	BDL	BDL	87000mg/Kg	TCLP
Cadmium	BDL	BDL	BDL	1300mg/Kg	8mg/Kg
Chromium	1.0mg/Kg	BDL	BDL	420mg/Kg	38mg/Kg
Lead	4.0mg/Kg	BDL	BDL	920mg/Kg	TCLP
Mercury	BDL	BDL	BDL	28mg/Kg	TCLP
Silver	BDL	BDL	BDL	9100mg/Kg	TCLP
Selenium	BDL	BDL	BDL	10000mg/Kg	TCLP

BDL = Below Detection Limits; N/A = Not Applicable
*Soil Cleanup Target Levels as per 62-775 F.A.C., Table II, Direct Exposure, Industrial Use Assumption/Leachability

Table 3.
Summary of Laboratory Analysis
Groundwater Sampling - Temporary Monitor Wells #TMW 1, TMW-2, and TMW-3
Mayport Naval Station Fuel Depot, Tanks # 99, 100, and 101
Mayport Naval Station, Duval County, Florida

Parameter	Monitor Well ID # TMW-1	TMW-2	TMW-3	Groundwater Cleanup Target Levels*
Volatile Organic Compounds: (EPA Method 8260)				
Isopropylbenzene	22µg/L	13µg/L	BDL	N/A
MTBE	BDL	28µg/L	BDL	70µg/L
N-Propylbenzene	44µg/L	25µg/L	BDL	N/A
Tert-Butylbenzene	BDL	2.6µg/L	BDL	N/A
S-Butylbenzene	BDL	15µg/L	BDL	N/A
P-Isopropylyoluene	BDL	BDL	BDL	N/A
N-Butylbenzene	BDL	10µg/L	BDL	N/A
Naphthalene	BDL	**120µg/L**	8.5µg/L	**20µg/L**
All other 8260 Compounds	BDL	BDL	BDL	N/A
Semi-Volatile Organic Compounds: (EPA Method 8270)				
1-Methylnaphthalene	BDL	46µg/L	BDL	20µg/L
2-Methylnaphthalene	BDL	45µg/L	BDL	20µg/L
Naphthalene	BDL	42µg/L	BDL	20µg/L
All other 8270 Compounds	BDL	BDL	BDL	N/A
FLA PRO:	BDL	BDL	BDL	**5mg/L**
Total RCRA Metals:				
Arsenic	BDL	BDL	BDL	50µg/L
Barium	BDL	BDL	BDL	2000µg/L
Cadmium	BDL	BDL	0.001mg/L	5µg/L
Chromium	BDL	BDL	BDL	100µg/L
Lead	**0.074mg/L**	BDL	BDL	**15µg/L**
Mercury	BDL	BDL	BDL	2µg/L
Silver	BDL	BDL	BDL	50µg/L
Selenium	BDL	BDL	BDL	50µg/L

BDL = Below Detection Limits; N/A= Not Applicable
*Groundwater Cleanup Target Levels as per 62-775 F.A.C., Table I, Groundwater Cleanup Target Levels



Environmental Science Associates, Inc.

Site Sketch Indicating Soil and Groundwater Sampling Locations.
Mayport Naval Station Fuel Depot
Mayport Naval Station, Duval County, Florida; Facility ID #8626008

	INITIAL	DATE
DRAWN BY:		
REVIEWED BY:		
PROJECT MANAGER:		

FIGURE
2
PROJECT NO.

APPENDIX B

PREVIOUS REGULATOR COMMENTS

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 15, 1996

Mr. David Driggers
Department of the Navy; Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, SC. 29419-9010

file: gp_2cms.doc

RE: Final Corrective Measures Study for Group II Solid Waste Management Units, NAVSTA Mayport

Dear David:

Mr. Greg Brown, P.E., and I have reviewed the above document dated January 1996 (received January 18, 1996). Mr. Brown's comments are attached. Both Greg and I are concerned that the CMS does not adequately address ground water contamination at SWMUs 6 and 7. I recognize that a proposed IM consisting of treatment by low temperature thermal desorption of the excessively contaminated soils at the site is presently under review and that the LNAPL removal facility at the site has been in operation since late last year; however, the CMS should more fully address the ground water situation. Since the current LNAPL removal project that is presently underway may take several years to complete, I am concerned that the issue of contaminated ground water has not received the attention it warrants given the close proximity of the St. Johns River. I know that the ground water situation may change as the two present Intermediate Measures proceed to completion; however, ground water data from monitoring well sampling and DPT screening data are presently available in the Group II RFI, presently under review. Please address the ground water contamination at SWMUs 6 and 7.

Thank you for the opportunity to review this document. Our comments should be adequately addressed before final approval can be considered for the document. If you have questions or require further clarification, please contact me at (904) 921-9994.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

cc: Cheryl Mitchell, NAVSTA Mayport
Martha Berry, EPA Region IV, Atlanta
Pat Kingcade, OGC/Trustee File
Terry Hansen, ABB Environmental Services, Tallahassee
Satish Kastury, FDEP Tallahassee
Brian Cheary, FDEP Northeast District, Jacksonville

Enclosure (1)

TB JJC ESN

8534-172

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 16, 1996

Mr. David Driggers
Department of the Navy
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, SC 29419-9010

file: g2rfi_fi.doc

RE: Final RFI for Group II SWMUs, Volumes I and II, Naval Station Mayport

Dear David:

I have reviewed the subject document dated January 1996 (received February 2, 1996). The responses to our previous comments are adequate and the document is approved; however, there are a number of points that I would like to discuss further and offer for your additional consideration:

1. As a statement of clarification and in a similar manner that I have previously commented concerning the Corrective Measures Study for Group II SWMUs (as have others in the review of this document), I am concerned that the Navy has not adequately addressed ground water contamination at the Oily Wastewater Treatment Plant (OWTP) area. To its credit, the Navy has instituted or proposed two Intermediate Measures which address the excessively contaminated soils and the LNAPL at the site. In my previous comments on the CMS, I asked the Navy to address the ground water situation at the OWTP area. This RFI also discusses the need for additional monitoring of the groundwater at the OWTP. No changes are necessary in the RFI; I merely wanted to restate my position concerning the ground water at the OWTP area and remind the Navy of the need to keep this as a priority while the soils and LNAPL are being addressed at the OWTP site.

2. In the Executive Summary, the cancer risk should be corrected to be attributed only to arsenic, not to arsenic and lead. This was previously commented on but the change was not made.

Thank you for the opportunity to review this document. These concerns may be addressed by furnishing corrected pages and I will insert them into the existing document. If you have questions or require further clarification, please feel free to contact me at (904) 921-4230.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

cc: Cheryl Mitchell, NAVSTA Mayport
Martha Berry, EPA Region IV, Atlanta
Terry Hansen, ABB Environmental Services, Tallahassee
Satish Kastury, FDEP, Tallahassee
Brian Cheary, FDEP Northeast District, Jacksonville

Reviewed by:

Timothy J. Bahr, P.G.
Professional Geologist Supervisor
Bureau of Waste Cleanup

TIMOTHY J. BAHR LICENSE NO. 1209 STATE OF FLORIDA PROFESSIONAL GEOLOGIST

5/17/96
Date

JJC ESN ESN

APPENDIX C

FIELD FORMS

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: ____________
PROJECT NUMBER: ____________
DRILLING COMPANY: ____________
DRILLING RIG: ____________

BORING No.: ____________
DATE: ____________
GEOLOGIST: ____________
DRILLER: ____________

					MATERIAL DESCRIPTION					PID/FID Reading (ppm)			
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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	U S C S *	Remarks	Sample	Sampler BZ	Borehole**	Driller BZ**

* When rock coring, enter rock brokeness.

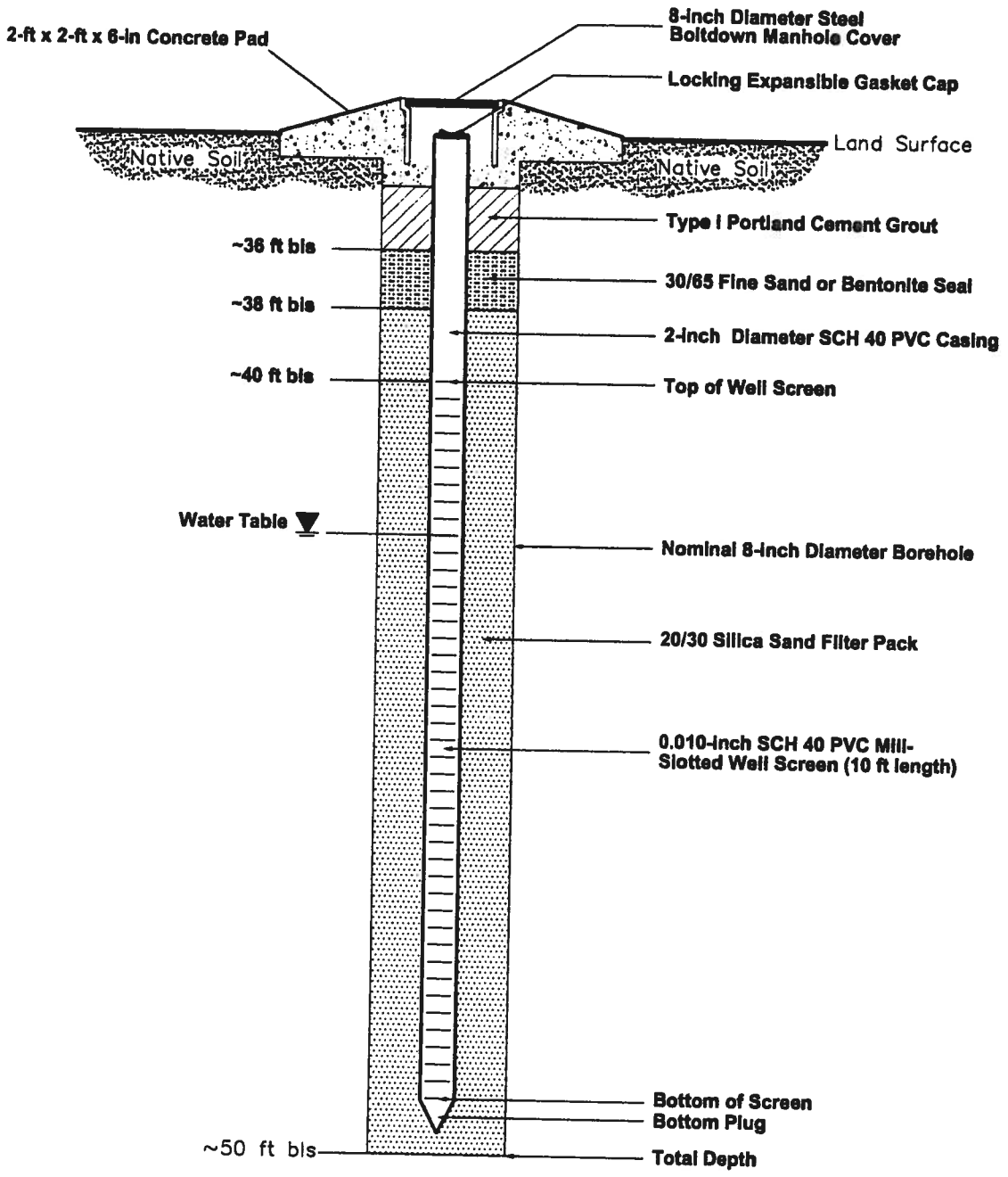
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: ____________

Drilling Area
Background (ppm): ☐

Converted to Well: Yes ______ No ______ Well I.D. #: ____________

S:\CADD\WELCON\MW_sh_fm



DRAWN BY LLK DATE 7/13/05		TYPICAL MONITORING WELL DESIGN OLF SAUFLEY FIELD PENSACOLA, FLORIDA	CONTRACT NO. 00036
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED–AREA			APPROVED BY DATE
SCALE NOT TO SCALE	NAVFAC		DRAWING NO. REV. 0

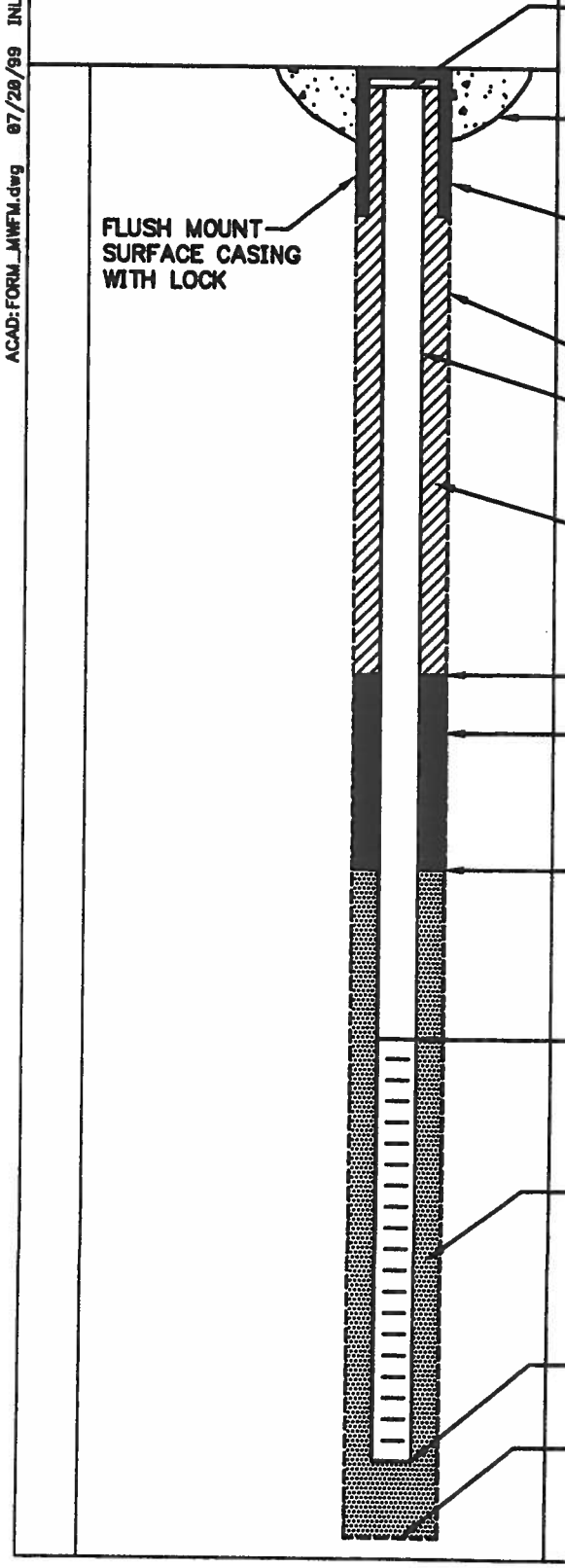
CTO 0370

WELL NO.: _____

Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET
FLUSH - MOUNT

PROJECT _____	LOCATION _____	DRILLER _____
PROJECT NO. _____	BORING _____	DRILLING METHOD _____
DATE BEGUN _____	DATE COMPLETED _____	
FIELD GEOLOGIST _____		DEVELOPMENT METHOD _____
GROUND ELEVATION _____	DATUM _____	



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: _____

_____

TYPE OF PROTECTIVE CASING: _____

_____

I.D. OF PROTECTIVE CASING: _____

DIAMETER OF HOLE: _____

TYPE OF RISER PIPE: _____

_____

RISER PIPE I.D.: _____

TYPE OF BACKFILL/SEAL: _____

_____

ELEVATION/DEPTH TOP OF SEAL: _____ / _____

TYPE OF SEAL: _____

_____

ELEVATION/DEPTH TOP OF SAND: _____ / _____

ELEVATION/DEPTH TOP OF SCREEN: _____ / _____

TYPE OF SCREEN: _____

SLOT SIZE x LENGTH: _____

TYPE OF SAND PACK: _____

_____

DIAMETER OF HOLE IN BEDROCK: _____

ELEVATION / DEPTH BOTTOM OF SCREEN: _____ / _____

ELEVATION / DEPTH BOTTOM OF SAND: _____ / _____

ELEVATION/DEPTH BOTTOM OF HOLE: _____ / _____

BACKFILL MATERIAL BELOW SAND: _____

_____

ACAD:FORM_MWFM.dwg 07/28/99 INL

Tetra Tech NUS / FDEP Groundwater Sampling Sheet

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

PURGING DATA

WELL DIAMETER (inches):	TUBING DIAMETER (inches):	WELL SCREEN INTERVAL DEPTH: feet to feet	STATIC DEPTH TO WATER (feet):	PURGE PUMP TYPE OR BAILER:

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 (Liters)	CUMUL. VOLUME PURGED (Liters)	PURGE RATE (lpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (µmhos/cm or µS/cm)	DISSOLVED OXYGEN (circle mg/L or % saturation)	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)

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:	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 FILTER SIZE: ____ µm Filtration Equipment Type: _____	DUPLICATE: Y N	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION				
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE
PP	3	CG	40 ml	HCL	NONE	<2	8260B	SM

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.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: _____
Project No.: _____

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other: _____
[] QA Sample Type: _____

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

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

GRAB SAMPLE DATA:

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

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

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.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : ____________________ INSTRUMENT NAME/MODEL: ____________________

SITE NAME: ____________________ MANUFACTURER: ____________________

PROJECT No.: ____________________ SERIAL NUMBER: ____________________

Date of Calibration	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		

APPENDIX D

NAVSTA MAYPORT SOP FOR IDW

Standard Operating Procedure for Investigative Derived Waste

1. At Naval Station Mayport (NAVSTA), Investigative Derived Waste is defined as soil or water that is generated from the remedial investigation of contaminated sites. IDW can include, but not be limited to, drill cuttings, purge water, soil, sediment or decontamination water. Operations usually associated with IDW include soil and groundwater sampling, monitoring well installation and decontamination of equipment used for sampling and installation.

2. IDW will be containerized when generated and kept at the site of generation as coordinated with the tenant occupying the area. Drums can be moved to other locations in the general area to accommodate NAVSTA personnel movement or requirements within reason. A central location can be identified prior to the sampling event if in the best interest of the government.

3. IDW drums shall be clearly identified with "Awaiting Analytical" sticker visible containing contractor name and phone number, generation location, date of generation, NAVSTA point of contact, and contents of drum. A drum log using the format of Enclosure (1) shall be completed for each drum and provided to the NAVSTA point of contact when drum is generated. Drums shall be inspected weekly until disposal using Enclosure (2) and inspection form shall be faxed to NAVSTA Environmental Department. When sample results have been received, the analytical shall be provided to the NAVSTA point of contact for waste and disposal determination. The contractor shall be responsible for disposal of all IDW. IDW with analytical results less than Cleanup Target Levels identified in 62-777 Florida Administrative Code may be disposed onsite if sufficient soil is at location. IDW may not be disposed in storm drain or on an impervious surface. In certain conditions, non-hazardous IDW may be disposed through a sewer lift station to the Wastewater Treatment Plant with prior written approval by the Utility Engineer at Public Works Center Jacksonville.

4. If the IDW is identified as hazardous waste, the contractor shall manage drums per the NAVSTA Hazardous Waste Management Plan (SOPA(ADMIN) MYPTINST 5090.1F) and shall be disposed through the NAVSTA Hazardous Waste Storage Facility with the contractor paying disposal cost to PWC (2005 cost approximately $1.75/pound). IDW that is not hazardous waste but does not meet the Target Levels to be disposed onsite, the contractor shall arrange for the IDW to be legally transported and disposed at an approved facility. The contractor will coordinate with NAVSTA personnel to sign the non-hazardous manifest as generator.

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

WEEKLY INVESTIGATIVE DERIVED WASTE INSPECTION CHECKLIST
NAVAL STATION MAYPORT

This form is to be completed legibly by the contractor when conducting weekly inspections of IDW drums.

All discrepancies shall be corrected immediately. Failure to correct discrepancy(s) shall result in contractual action.

Date: _____

Inspector: _____

Company Name: _____

		YES	NO
1.	Are all containers properly labeled/dated?		
2.	Are containers compatible with contents?		
3.	Are all containers in good condition?		
4.	Are containers closed?		
5.	Are lids/caps/bolts/rings tight?		
6.	Are any containers dated longer than 60 days?		
7.	Number of containers inspected. _____		
Comments:			
Date/nature of repairs or remedial actions:			
Copy to: NAVSTA Mayport N4E FAX: 270-7398 (EACH FRIDAY)			

Enclosure (2)

Revised 1/24/2006