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SITE ASSESSMENT REPORT ADDENDUM FOR SITE 1330 NS MAYPORT FL
12/1/2003
TETRA TECH NUS

Rev. 1
12/12/03

Site Assessment Report Addendum

for

Site 1330

Naval Station Mayport

Mayport, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0255

December 2003

SITE ASSESSMENT REPORT ADDENDUM
FOR
SITE 1330

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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

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

Submitted by:
TETRA TECH NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0255

DECEMBER 2003

PREPARED UNDER THE SUPERVISION OF:

FOR

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PROFESSIONAL CERTIFICATION

Site Assessment Report Addendum
Site 1330
Naval Station Mayport
Mayport, Florida

This Site Assessment Report was prepared in general accordance with Chapter 62-770 of the Florida Administrative Code under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.

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

12/17/03
Date

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ACRONYMS

atm-m^{-3}/mol	Atmosphere Meter Cubed per Mole
Bechtel	Bechtel Environmental Services
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
bls	Below Land Surface
CAR	Contamination Assessment Report
CLEAN	Comprehensive Long-term Environmental Action Navy
CTO	Contract Task Order
DPT	Direct-Push Technology
EDB	Ethylene Dibromide
EM	Electromagnetic
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame-Ionization Detector
FL-PRO	Florida Petroleum Range Organics
ft	Feet (or Foot)
ft/day	Feet (or Foot) per Day
ft/ft	Feet (or Foot) per Feet (or Foot)
GAG	Gasoline Analytical Group
GCTL	Groundwater Cleanup Target Level
GPR	Ground Penetrating Radar
HSA	Hollow Stem Auger
ID	Inside Diameter
KAG	Kerosene Analytical Group
K_{OC}	Log Soil Absorption Coefficient
L/kg	Liters per Kilogram
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mgd	Million Gallons per Day
MOP	Monitoring Only Plan
msl	Mean Sea Level
MTBE	Methyl Tertiary-Butyl Ether
NAVFAC EFD SOUTH	Southern Division, Naval Facilities Engineering Command
Navy	United States Navy
NS	Naval Station
Omega	Omega Environmental Services, Inc.

ACRONYMS (Continued)

OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
ppm	Parts per Million
PVC	Polyvinyl Chloride
SA	Site Assessment
SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
STL	Severn Trent Laboratories
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USTs	Underground Storage Tanks
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) Addendum at Site 1330, Naval Station (NS) Mayport, Mayport, Florida in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). This Site Assessment Report Addendum (SARA) is being submitted to the Florida Department of Environmental Protection (FDEP) for approval. A SARA summary sheet is included as Appendix A. The SARA was required to assess the isopropylbenzene plume recently discovered in 1999. The origin of the plume is the former abandoned underground storage tank farm used to fuel Navy Aircraft.

TtNUS performed the following tasks during the SA:

- Reviewed available United States Navy (Navy) documents to:
  - Identify potential sources and receptors for petroleum hydrocarbons in the vicinity.
  - Identify private potable wells within a 0.25-mile radius of the site and public water supply wells within a 0.5-mile radius.
  - Locate nearby surface water bodies.
  - Evaluate surface hydrology and drainage.

- Conducted a site survey.

- Performed a subsurface investigation using electromagnetic (EM) and ground penetrating radar (GPR) to determine potential sources of contamination.

- Advanced 26 soil borings on site using Direct-Push Technology (DPT) and collected soil and groundwater samples for analysis by mobile and fixed-base laboratories.

- Collected one required soil sample per Chapter 62-770, FAC, and analyzed for gasoline analytical group (GAG) and kerosene analytical group (KAG) constituents.

- Installed three shallow monitoring wells and one deep well in the area of greatest laboratory screened isopropylbenzene sample concentrations. Groundwater samples from these four wells and from five existing monitoring wells were analyzed for VOCs and GAG/KAG constituents.

- Obtained aquifer data from the United States Geological Survey (USGS) to calculate hydrogeologic parameters.

The EM and GPR survey identified utilities throughout the site. The greatest concentration of utilities was at the Bravo Pier. In addition to utilities a former distribution line, was identified that appears to be a source of the isopropylbenzene. It is possible that more than one former fuel distribution line may be present in the source area for isopropylbenzene.

The results of the soil vapor analysis during the SA revealed no "excessively contaminated" soil, as defined by Chapter 62-770.200, FAC. Soil samples analyzed by a mobile laboratory and confirmatory samples analyzed by the fixed-base laboratory contained no reported concentrations of analyzed compounds exceeding FDEP Soil Cleanup Target Levels (SCTLs).

The mobile laboratory analysis results recorded isopropyl benzene concentrations to exceed the FDEP Groundwater Cleanup Target Level (GCTL) for all 32 samples analyzed. Benzene and isopropyl benzene were identified in excess of GCTLs in groundwater samples collected from monitoring wells and analyzed by a fixed-base laboratory.

Based on the results of this investigation, remedial actions are recommended. These actions should include removal of the abandoned fuel line, over-excavation of any contaminated soils that may lie beneath the line, and groundwater remediation.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

A SA was conducted at Site 1330, NS Mayport, by TtNUS for the Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH) under Contract Task Order (CTO) 0255 for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888. Historically, several assessments have been completed in the area or at Site 1330. This SARA was necessary to determine the source(s) of isopropylbenzene and to determine potential follow up actions. The source of the isopropylbenzene is believed to be former USTs and dispensing system used to fuel Navy aircraft at the Bravo pier. The impacts of petroleum were documented at the site in the mid to late 1980s, but the presence of isopropyl benzene was not reported until 1999. The data collected during the investigation was used to prepare a SARA. Information from the field investigation has been assimilated into this SARA to provide a characterization of site conditions from which to base future courses of action. A SARA Summary Sheet is included as Appendix A.

1.2 FACILITY AND SITE LOCATION

NS Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville and adjacent to the town of Mayport. A Regional Area Map is presented as Figure 1-1. The station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north. NS Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the station and the St. Johns River.

The site surrounds Building 46, which is located north of the air traffic control tower, west of the turning basin, and east of the air strip. Building 46 is located along Maine Street. A Site Location Map depicting the position of the area of investigation is presented as Figure 1-2.

1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

Northeast Florida is underlain by two main aquifer systems: the surficial aquifer system and the Floridan aquifer system. The surficial aquifer system in the vicinity of NS Mayport includes sediments of the upper Hawthorn Group, upper Miocene and Pliocene deposits, and Pleistocene and Holocene deposits [United States Department of Agriculture (USDA), 1978]. These undifferentiated surficial deposits extend from land surface to the top of the Hawthorn Group about 50 feet (ft) below land surface (bls) (USGS, 1992).

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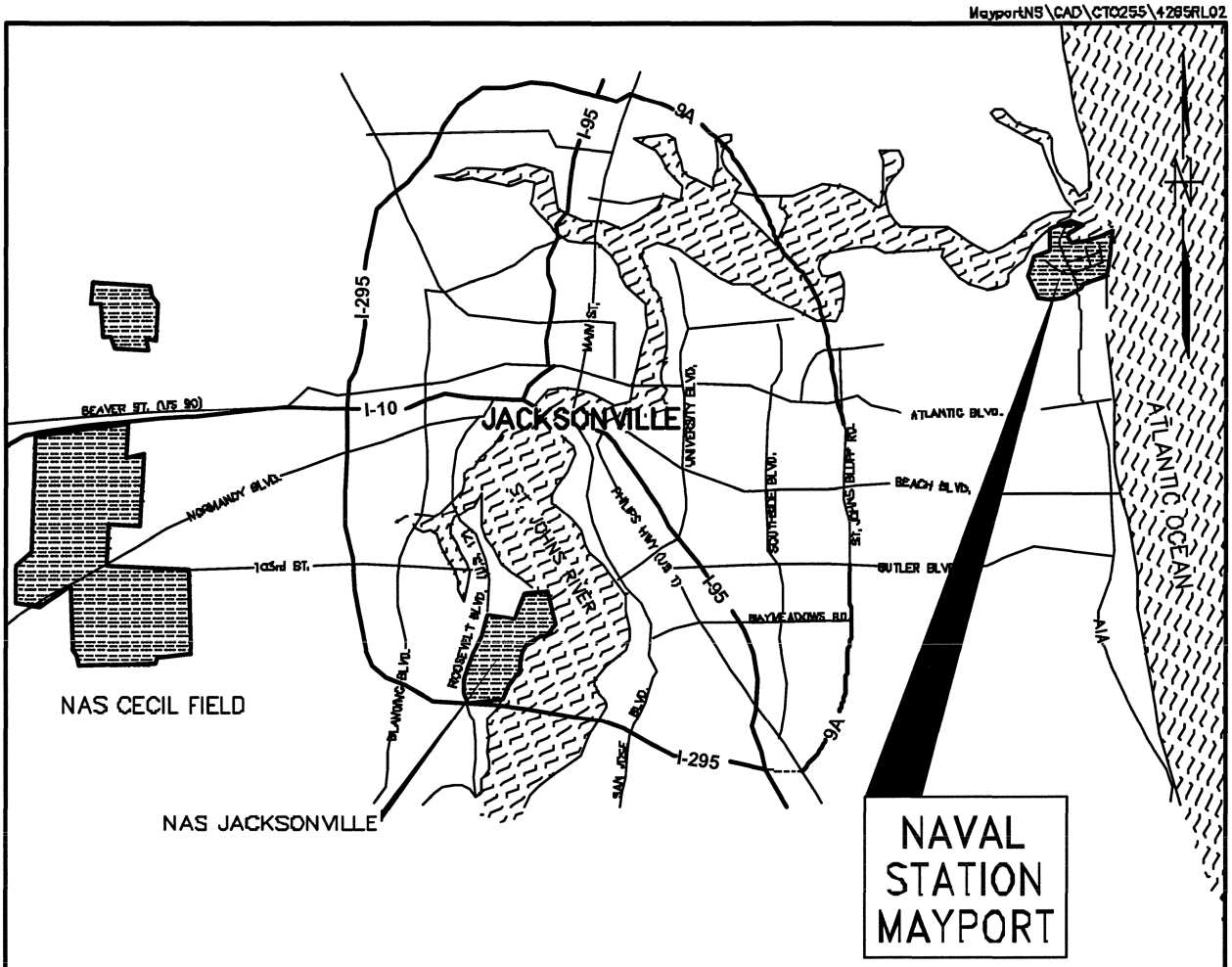

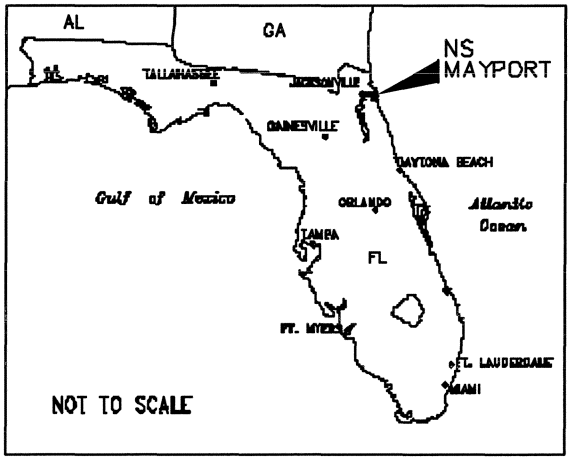

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APPROXIMATE SCALE IN FEET

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COST/SCHED–AREA			APPROVED BY DATE
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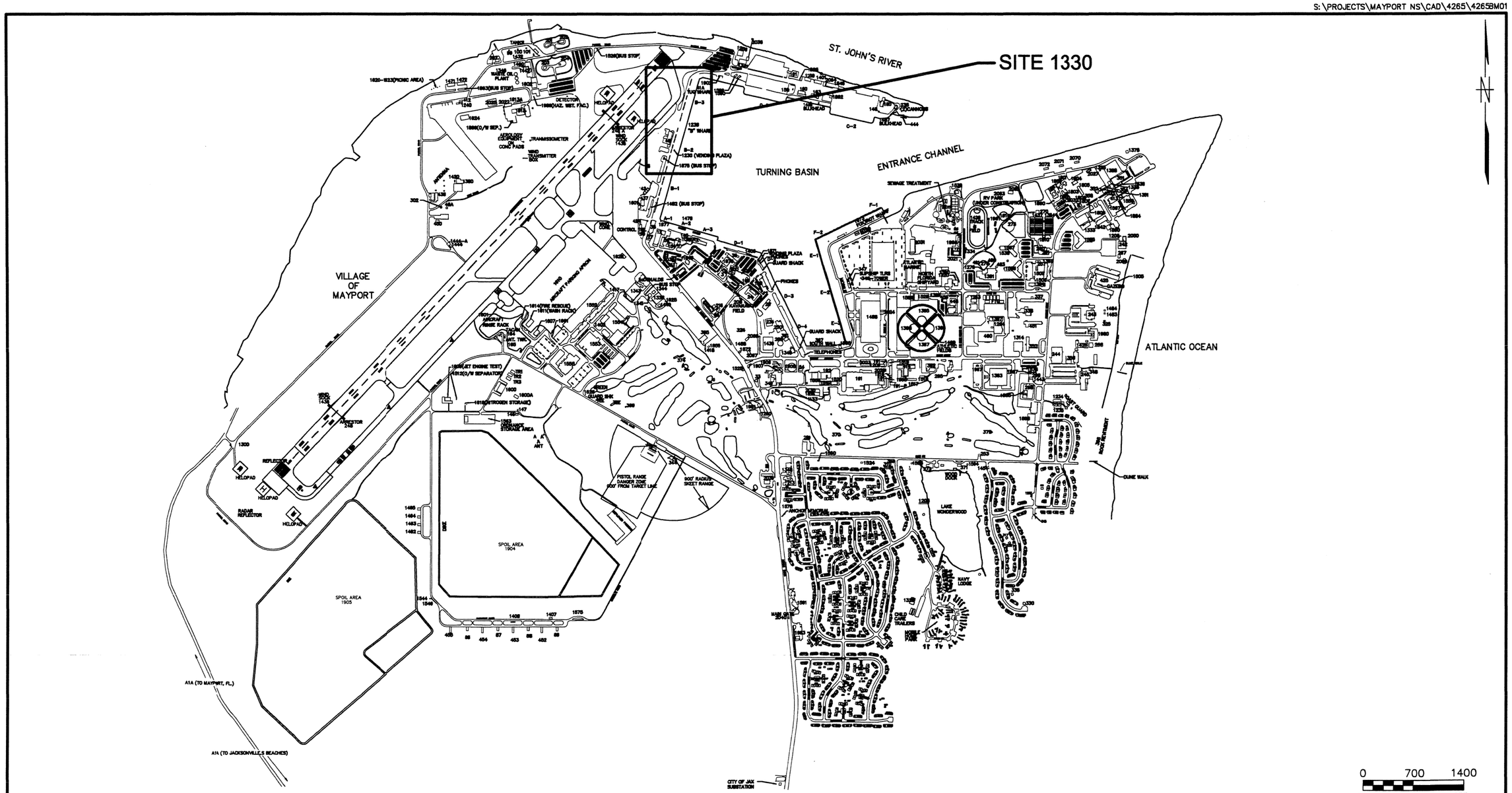

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SCALE AS NOTED

DEPARTMENT OF THE NAVY ★ SOUTHNAVFACENGCOM ★ NAVAL FACILITIES ENGINEERING COMMAND

SITE LOCATION MAP
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 1–2
REV. 0

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The surficial aquifer system consists of fine-grained sands near the surface interspersed with thin (less than 1 ft) clay lenses and generally grades to a mixture of sand and coarse shell fragments from 30 to 50 ft bls. The base of the surficial aquifer system is the intermediate confining unit, which is a sequence of marine clays and discontinuous limestone stringers (Spechler, 1994).

The Floridan aquifer system is the principal source of groundwater for public drinking water in most of northern Florida. In the area of investigation, the system is comprised of (from youngest to oldest) the Ocala Formation, the Avon Park Formation, and the Oldsmar Limestone. The Hawthorn Group, a confining unit between the surficial aquifer system and Floridan aquifer system, unconformably overlies the Floridan aquifer system (USDA, 1978).

1.4 POTABLE WATER WELL SURVEY

The potable water supply information presented in this report was obtained from a Contamination Assessment Report (CAR) for Site 1330 prepared by the United States Army Corps of Engineers (USACE) in 1992 (USACE, 1992). Personnel at the water treatment plant confirmed the accuracy of the water well information.

Potable water is supplied to NS Mayport by three on-base supply wells. One of the three active wells is 12 inches in diameter, and the other two are 18-inch diameter wells. All three wells draw water from the Floridan aquifer at depths from approximately 1,000 ft. Well capacities range between 2.1 and 2.9 million gallons per day (mgd) with a combined total pumping capacity of 10.0 mgd. Well number 1 and well number 3 are greater than one-half mile from the site and well number 2 is approximately 2000 ft south of the site. The water is treated by the base water treatment plant prior to distribution.

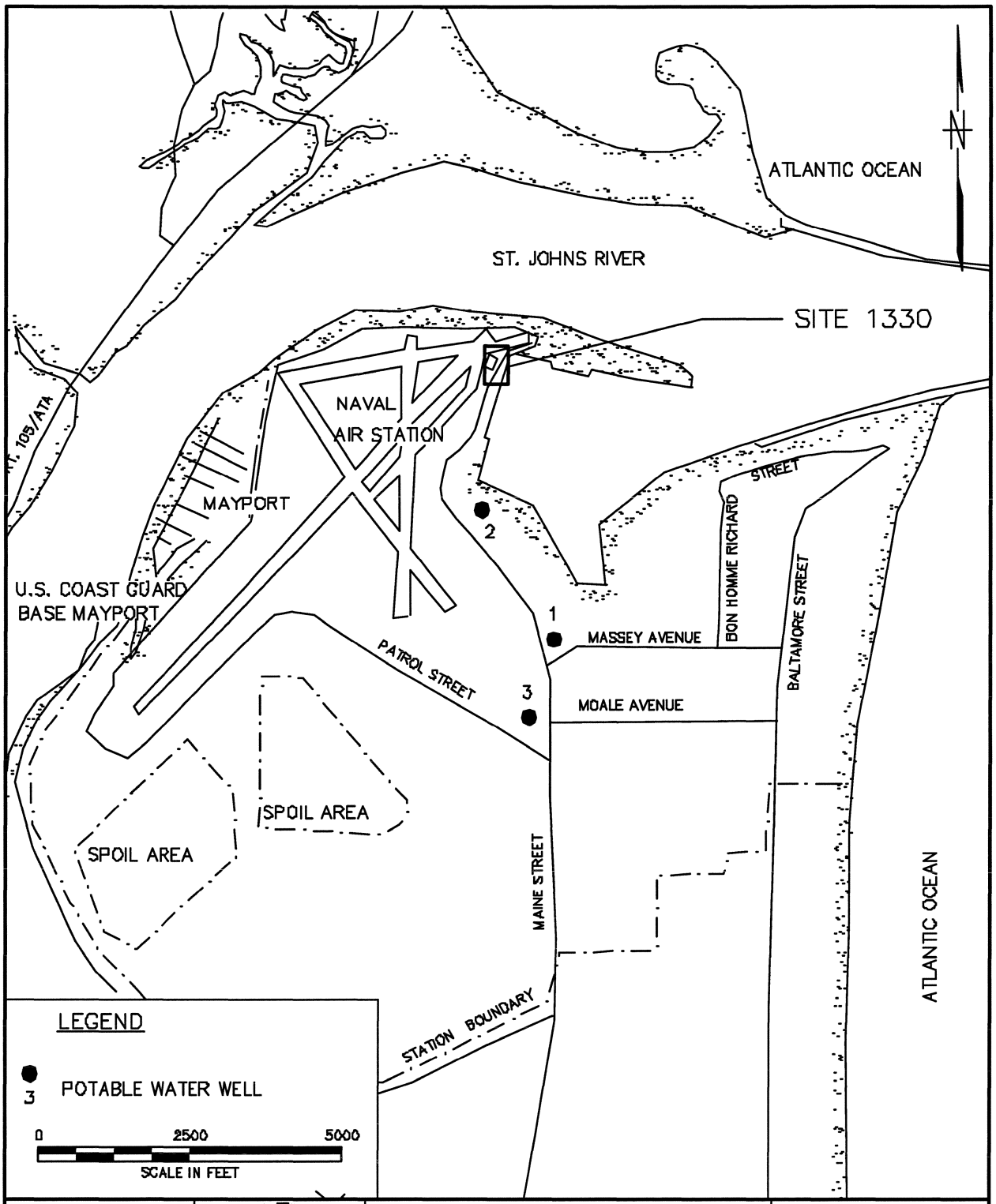
Potable well information is summarized on Table 1-1. The locations of the potable wells are depicted on Figure 1-3.

Table 1-1
Potable Water Well Survey Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Well ID	Distance from Site (miles)	Diameter (inches)	Depth of Well (ft bls)	Use
1	>0.5	12	1,000	In use
2	>0.4	16	1,000	In use
3	>0.5	16	1,000	In use

MayportNS\CTO247\BLD1586\Figures\4240WS01



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1.5 TOPOGRAPHY AND DRAINAGE

NS Mayport is located in the Southeastern Coastal Plain physiographic province. The topography is mostly low, gentle to flat, and composed of a series of ancient marine terraces. NS Mayport is located within the Silver Bluff Terrace. The average land surface elevation at NS Mayport is between 8 and 10 ft above mean sea level (msl) (USGS, 1992).

Site 1330 is a relatively flat parcel. During rain events, surface water at the site drains east towards the turning basin. Most of the site is paved with asphalt.

1.6 LAND USE IN SITE VICINITY

An active air strip bounds the site to the north and west, buildings are located to the south, and the turning basin and Bravo Pier are located to the east.

1.7 SITE DESCRIPTION

The area of investigation includes Building 46 and extends approximately 200 ft north of the building, which covers the majority of a nearby parking lot. The area of investigation also extends west from Building 46 and the parking lot to the taxiway and east of Building 46 and the parking lot to include Bravo Pier. A site plan showing surface features in the area of investigation is provided as Figure 1-4. Site 1330 is a large, mostly asphalt covered area with Building 46 located near the center of the investigation area. Building 46 is a recreation hall for Navy personnel and a laundromat. Bravo Pier is an operational pier.

Utilities criss-cross the pier area and include active pressurized steam lines, fuel oil product lines, and oily waste water oil lines. Cement structures fitted with utility access points or “igloos” dot the pier providing utility service hook-ups such as electricity, petroleum fuel, steam, oily waste water return, and water to the docked shops. No overhead utilities are present.

1.8 SITE HISTORY AND OPERATIONS

Site 1330 is the location of a former fuel depot that reportedly began operations in 1944. This facility distributed “high octane” and “low octane” fuels to ships and sea planes docked at the turning basin. The facility consisted of a series of four 25,000-gallon, circular concrete USTs (numbered 39, 39A, 39B, and 40) connected by a 3-inch and 4-inch underground piping that ran to the turning basin. The 25,000-gallon tanks were located approximately 200 to 300 ft west of the ship basin near the airport taxiway. The 25,000-gallon tanks were apparently covered by a large soil mound that measured 400 ft long x 240 ft wide x 4 ft high. According to design drawings, the main portion of these tanks were about 10 ft bls.

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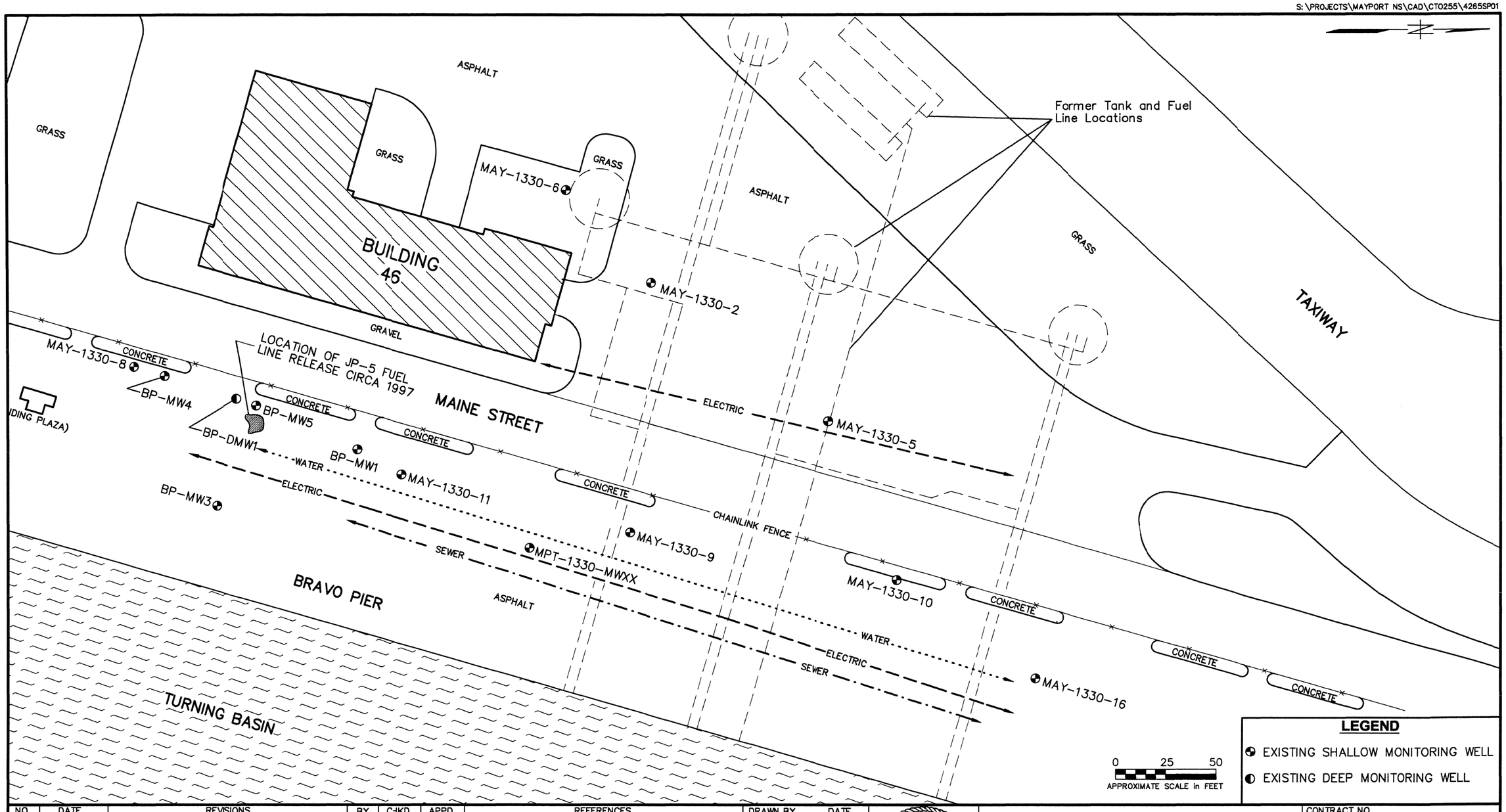

LEGEND

- EXISTING SHALLOW MONITORING WELL
- EXISTING DEEP MONITORING WELL

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SITE PLAN
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 1-4
REV. 0

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These tanks and associated piping were allegedly removed sometime in the early 1950s. In 1969, above ground storage tanks (numbered 1330 and 1331) holding lubrication oils for the ships were installed along the taxiway in the area between the footprints of the former cement USTs. Although the history of these tanks is not well documented, they reportedly were removed in December 1986 or 1988.

A Contamination Assessment Report (CAR) detailing the fuel distribution area located along the taxiway for Site 1330 was prepared by the USACE and submitted to the FDEP in May 1992. The FDEP submitted comments in June 1992 requesting additional assessment work due to the presence of soil and groundwater impacts from the fuel distribution system, which included the Bravo Pier. The requested supplemental work was performed in October 1992, and a CAR Addendum was submitted in December 1992. The FDEP submitted comments to the CAR addendum in February 1993 requesting removal of petroleum-contaminated soils and additional information about the Bravo Pier soil contamination discovered during the original CAR. Responses to these comments were addressed in March 1993, stating that a soil removal contract would be initiated for Site 1330, and further investigations would be conducted at the Bravo Pier site. At this time, it was not known that concrete USTs were still in place along the airport taxiway. Two areas of investigation emerged as potential sites for additional investigation: the former USTs near the taxiway and the release at Bravo Pier.

During November 1993, NAVFAC EFD SOUTH contracted Omega Environmental Services, Inc. (Omega) to remove the contaminated soil at the former UST site. It was discovered during the soil removal process that at least one of the tanks (Tank 39) was still in place. This tank was subsequently abandoned in place by Omega. In December 1993, NS Mayport sent an Interim Report to FDEP detailing this discovery of three additional USTs (39A, 39B, and 40) and proposed a plan of action. The tanks were abandoned in place by Bechtel Environmental Services (Bechtel) and closure reports were submitted in July 1995 to the FDEP representing two separate tank closure activities at Site 1330: one for Tank 39 in December 1993 by Omega and one for Tanks 39A, 39B, and 40 by Bechtel in 1995.

Between August and September 1995, Bechtel also performed an Initial Remedial Action (IRA) at Bravo Pier. These activities were completed in response to recommendations made during the CAR for Site 1330. During the assessment of Site 1330, pressure tests were performed on fuel lines which located the area of contamination. At this time, a small leak was detected from the JP-5 lateral line valve connection. Bechtel removed approximately 23 tons of impacted soil, an area of 12 ft x 9 ft x 7.5 ft deep. As a result of the work plan limitations, the area of “excessively contaminated “soils was not delineated. The location of the leaking JP-5 valve is noted on Figure1-4.

In January of 1999, TtNUS completed a SAR at the Bravo Pier (the location of the JP-5 line leak), identifying petroleum impacted groundwater, but no petroleum impacted soils. The groundwater samples were analyzed for the VOCs and the GAG/KAG analytical group per Chapter 62-770, FAC. Groundwater

GCTLs were only exceeded by isopropylbenzene. No other constituents were detected in excess of GCTL values. As a result, no recommendations of additional measures to assess or remediate the Bravo Pier JP-5 fuel leak were instituted since the release was determined to not be related to the leaking product line. The source of the isopropylbenzene release was considered a separate release.

Between the time of the Bravo Pier SA in 1999 and the tank closures in 1995, FDEP gave final approval of a Monitoring Only Plan (MOP) for the Site 1330 that was granted in a letter to NAVFAC EFD SOUTH dated 17 February 1997 and was carried out by the USACE. Subsequent sampling and analysis for United Sates Environmental Protection Agency (USEPA) Method 602 (including MTBE) performed during monitoring indicated a continuation and worsening trend of matrix interferences to the target analyses. Isopropylbenzene was later learned to be the laboratory matrix interference, but this was not understood during the initial monitoring of Site 1330. The full VOC parameter, which includes isopropylbenzene, was not analyzed until it became apparent during the TtNUS January 1999 SA which showed isopropylbenzene was also impacting Site 1330, which was located across Maine Street to the west. Subsequent quarters of monitoring have included the constituent of isopropylbenzene.

The most recent USACE Monitoring Report dated December 2002 provides an isopropylbenzene plume delineation map which is presented as Figure 1-5 and a graph of the isopropylbenzene concentrations from June 1998 to October 2002, which is presented as Figure 1-6. Isopropylbenzene concentrations have remained mostly consistent since monitoring of the compound began in 1998. The plume forms a triangle-like geometric shape with the tip of the triangle pointing at the former tank pit.

1.9 CHEMICAL PROPERTIES OF ISOPROPYLBENZENE

Isopropylbenzene (cumene) is a colorless flammable liquid that exhibits a gasoline like smell. It was commonly used an additive of high-octane fuels. Isopropylbenzene has a Henry's Law constant of 1.47×10^{-2} atm-m^{-3}/mol, (atmosphere meter cubed per mole), which indicates that it falls within the range of VOCs similar to benzene. Contrasting isopropylbenzene with benzene, which has a Henry's Law constant of 5.55×10^{-3} atm-m^{-3}/mol, denotes that isopropylbenzene is chemically more volatile than benzene by a factor of 2.6. The reference handbook (Handbook of Environmental Degradation Rates, Howard, et. al. 1991) supports this finding noting that isopropylbenzene is easily aerobically biodegradable. The aerobic biodegradation half-life of isopropylbenzene (high 192 hours and low 48 hours) is less than the half life of benzene, indicating that isopropylbenzene should degrade quicker than benzene as a free compound.

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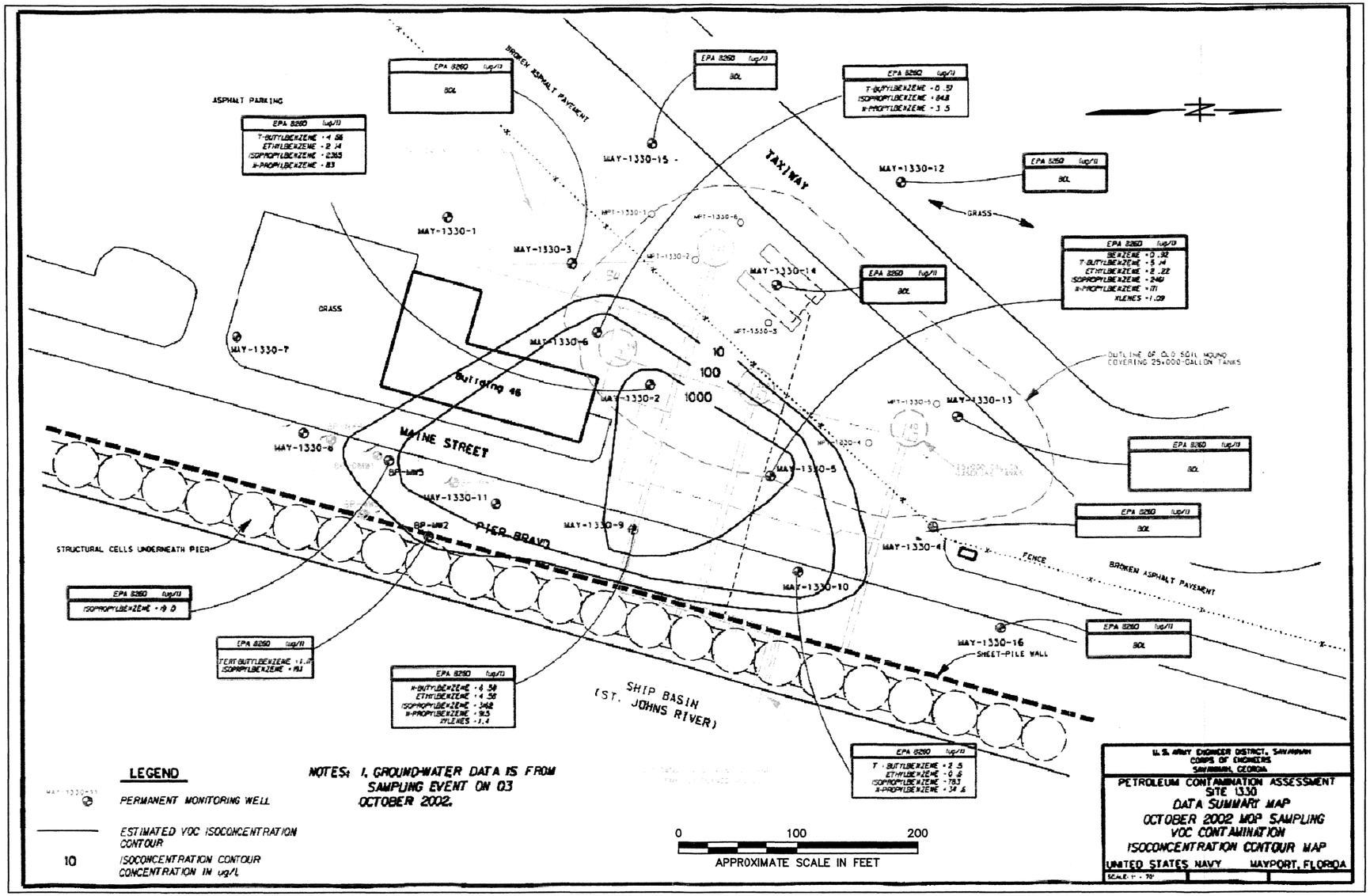

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VOC ISOCONCENTRATION MAP
OCTOBER 2002
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
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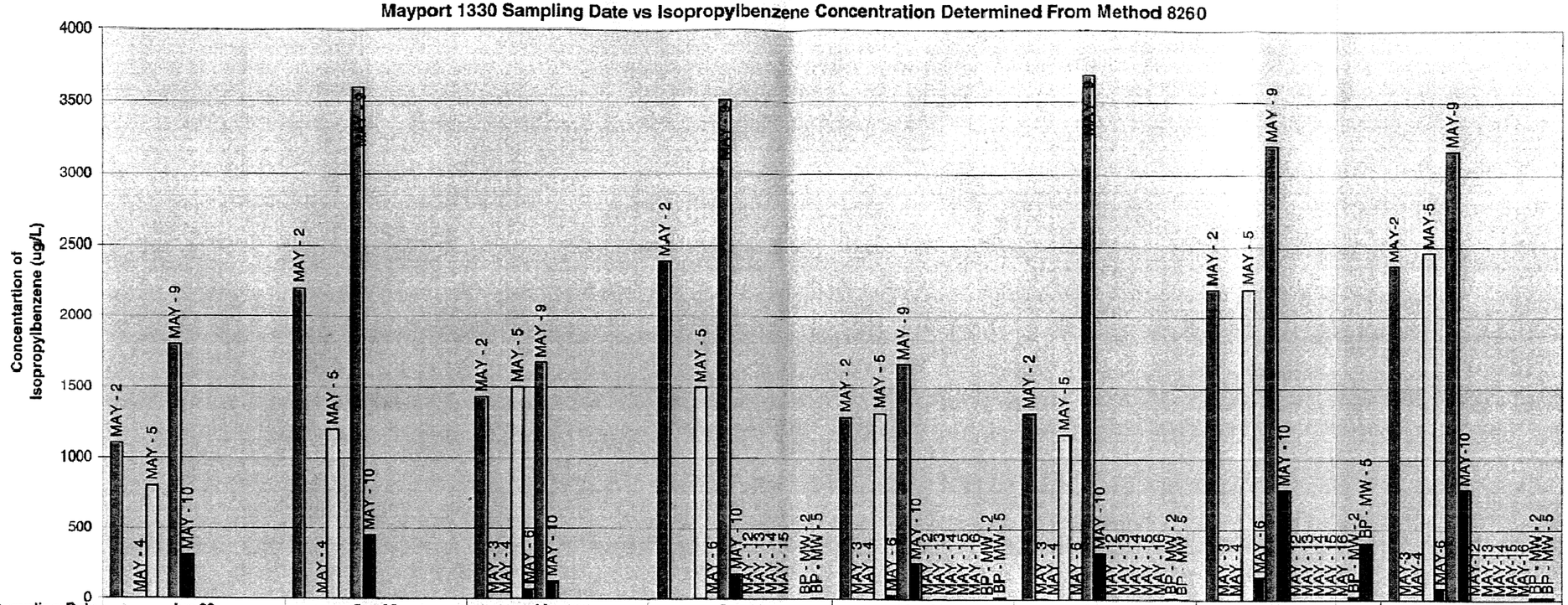
Mayport 1330 Sampling Date vs Isopropylbenzene Concentration Determined From Method 8260



Sampling Date	Jun 98	Sep 98	Mar 99	Sep 99	May 01	Sep 01	Mar 02	Oct 02
MAY-2	1100	2200	1430	2390	1290	1320	2200	2365
MAY-3			0		2.12	8.04	0.48	0
MAY-4	0	0	0		2.5	0	0.39	0
MAY-5	800	1200	1500	1500	1320	1170	2200	2461
MAY-6			71	0	29.5	2.76	160	84.8
MAY-9	1800	3600	1670	3510	1660	3690	3200	3162
MAY-10	310	450	122	175	255	332	780	783
MAY-12				0	0	0	0	0
MAY-13				0	1.11	1.07	0	0
MAY-14				0	0	0	0	0
MAY-15				0	0	0	0	0
MAY-16					0	2.07	0	0
BP-MW-2				0	0	11.9	25	19.1
BP-MW-5				7.2	15.7	3.72	410	19

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ISOPROPYLBENZENE CONCENTRATIONS IN GROUNDWATER, JUNE 1998–OCTOBER 2002
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
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DRAWING NO. FIGURE 1–6
REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

The solubility of isopropylbenzene in water is 48.3 milligrams per liter (mg/L) as compared to 1,780 mg/L (Groundwater Chemical Desk Reference) for benzene. Therefore, isopropylbenzene is less soluble in water than benzene. The K_{oc} (log soil absorption coefficient) of isopropylbenzene is 2,818 liters per kilogram (L/kg) as compared to K_{oc} of benzene which is 59 L/kg indicating that isopropylbenzene absorbed to almost 50 times more mass than benzene. Physical properties of isopropylbenzene are provided in Appendix B. To summarize, isopropylbenzene is more volatile and less soluble in water than benzene, but isopropylbenzene will adhere to soil particles 50 times more than benzene, slowing the release of isopropylbenzene.

1.10 PURPOSE OF CURRENT INVESTIGATION

Past investigations, which include tank removals, site investigations, and monitoring events, have been conducted at Site 1330 over a period of 17 years. Initially, gasoline components and benzene, toluene, ethyl benzene, and xylenes (BTEX) were identified as the primary contaminants. Over the course of time, these constituents were monitored and have been attenuating. However, in the late 1990s, VOC analyzes inferences were encountered during monitoring events. The interference was found to be caused by isopropylbenzene, and subsequently, isopropylbenzene was added to the MOP groundwater analysis list. The greatest concentration of isopropylbenzene [3,162 micrograms per liter (µg/L)] recorded in the most recent monitoring event report was identified in monitoring well MAY-1330-9. Isopropylbenzene was also detected at levels exceeding the Florida GCTLs in six other wells during the same monitoring period. Based on these findings, the NS Mayport Partnering Team decided that additional assessment is necessary to determine the source(s) of isopropylbenzene and to determine potential follow up actions.

The objective of this SA was to identify source area(s) for the isopropylbenzene and to provide more information pertaining to the increase in groundwater impacts (isopropylbenzene), identify any potential contamination sources, and assess the horizontal and vertical extent of the known impacts. The data collected during the investigation was used to prepare this SAR as required by Chapter 62-770.600, FAC. This SAR provides a characterization of site conditions from which to base future courses of action. A SARA summary sheet is provided as Appendix A.

2.0 SUBSURFACE INVESTIGATION METHODS

2.1 QUALITY ASSURANCE

The site investigation was conducted in general accordance with the FDEP-approved standard operating procedures (SOPs) (DEP-SOP-001-01) adopted by TtNUS. In addition to indoctrinating the FDEP SOPs, TtNUS prepared a site-specific Contamination Assessment Plan and a Health and Safety Plan to provide additional guidance to work being completed.

2.2 GROUND PENETRATING RADAR AND ELECTROMAGNETIC SURVEY

During the days of September 2 through 6, 2002, representatives of TtNUS conducted a subsurface investigation to screen for structures and utilities at Site 1330. The purpose of the screening was to find potential source(s) or conduit(s) of isopropylbenzene. The investigation included the area surrounding Building 46 and extended approximately 200 ft north of the building, which covers the majority of a nearby parking lot, west from building 46, including the parking lot west to the airport taxiway and east of Building 46, including the parking lot and Bravo Pier. GPR and EM instrumentation were used to screen for subsurface objects. Once objects were located, their locations were marked on land surface, and the positions of the objects were recorded using a global positioning system. This information facilitated the next phase of the investigation, which involved locating the source of the isopropylbenzene through the DPT method of sampling of soil and groundwater and mobile laboratory screening.

2.3 DETERMINATION OF GROUNDWATER FLOW DIRECTION

Groundwater elevations have been collected for a number of years at this site. Depth to water is approximately 6 ft to 7 ft bls. Historically, the groundwater flow is east towards the turning basin. A groundwater contour map from the USACE December 2002 MOP dated October 2002 is provided as Figure 2-1. Additional hydrogeologic information collected during this study is presented in Section 3.

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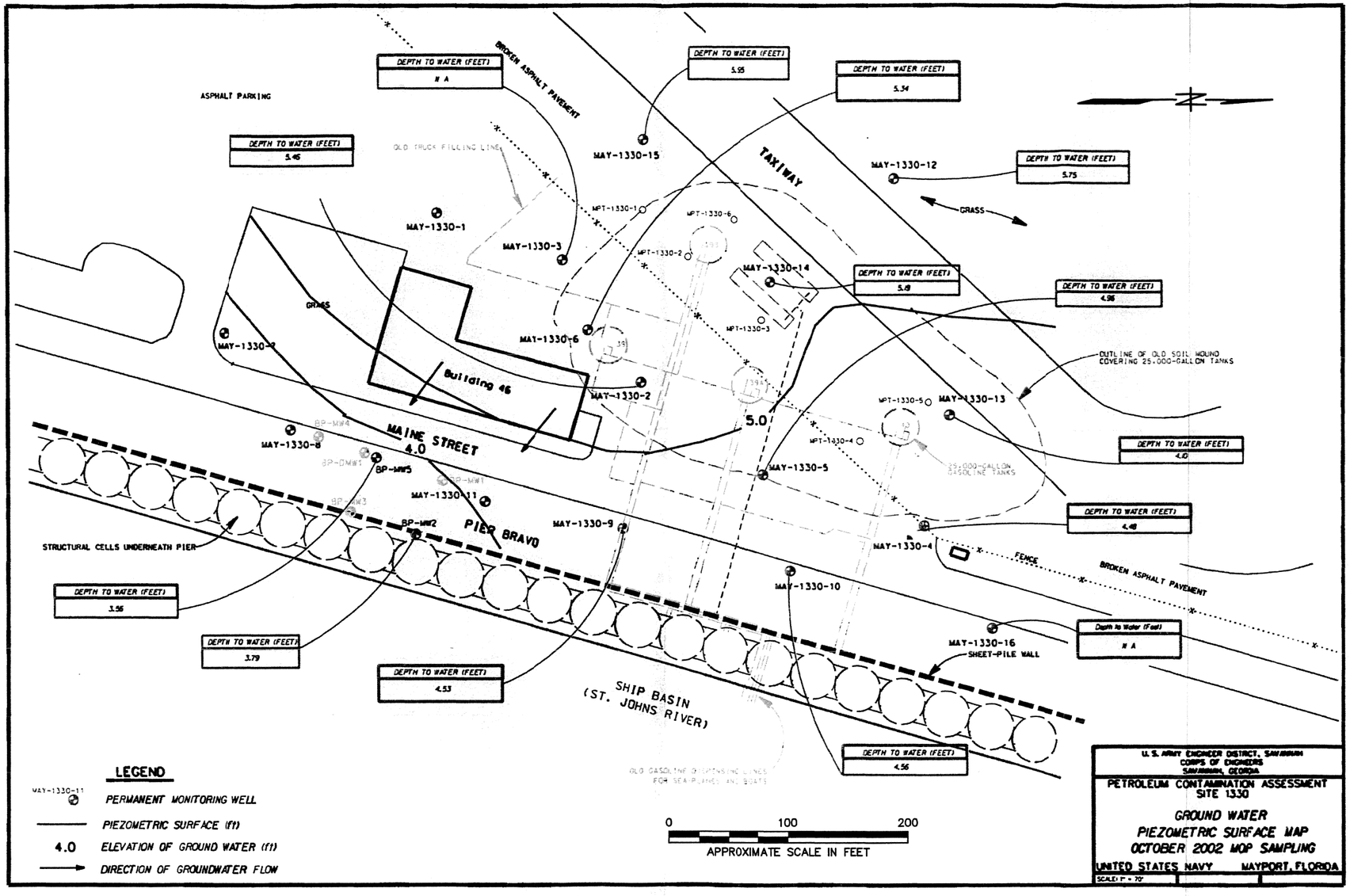

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GROUNDWATER ELEVATION CONTOUR MAP
OCTOBER 2002
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265

APPROVED BY DATE

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2.4 SOIL QUALITY ASSESSMENT

2.4.1 Soil Borings

From September 30 through October 2, 2002, a total of 26 shallow soil borings (SB-01 through SB-26) were advanced near the center of the plume around potential sources of impacts to an approximate depth of 5 ft to 7 ft bls. The areas of soil boring activities were identified based on the results from GPR and EM surveys conducted by TtNUS, September 2 though 6, 2002 which identified a former product line in the source area. The 26 shallow borings were advanced using a stainless steel, 3-inch, inside diameter (ID), hand-auger. Decontamination procedures were implemented between each boring, and the wash water was containerized for disposal in a 55-gallon drum. Soil boring locations are shown on Figure 2-2. A TtNUS scientist described the material encountered during advancement of the borings. Soil boring logs compiled from these descriptions are provided in Appendix C.

To determine site lithology, split spoon samples were collected during the installation of a deep zone well (MPT-1330-MW017D). The location of the boring was chosen to be near the highest isopropylbenzene concentration in shallow groundwater (monitoring well MPT-1330-MWXX). The monitoring well ID of XX was given to this well since no other ID was recoded in the historical documents. Monitoring well MWXX is a shallow micro well. On February 27, 2003, a boring within two ft of monitoring well MWXX was advanced from 5 ft to 42 ft bls using a hollow stem drilling rig and a 4-ft long split spoon sampler. The split spoon lithologic samples were retrieved on 5 ft centers. A lithologic description of materials retrieved in the split spoons is also included in Appendix C.

On April 5, 2003, an additional boring MPT-1330-SB01 was advanced near monitoring well MPT-1330-MWXX. The boring was completed to 7 ft bls.

2.4.2 Field Screening Procedures

At the 26 DPT boring locations, soil samples were collected from the unsaturated zone at depths of 1 ft, 3 ft, and 5 ft bls, with some borings also being collected at depths of 6 ft and 7 ft bls. Soil samples were screened for organic vapors using an organic vapor analyzer (OVA) equipped with a flame ion detector (FID). Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), FAC. In addition to screening organic vapors, each soil sample was visually screened for evidence of petroleum contamination.

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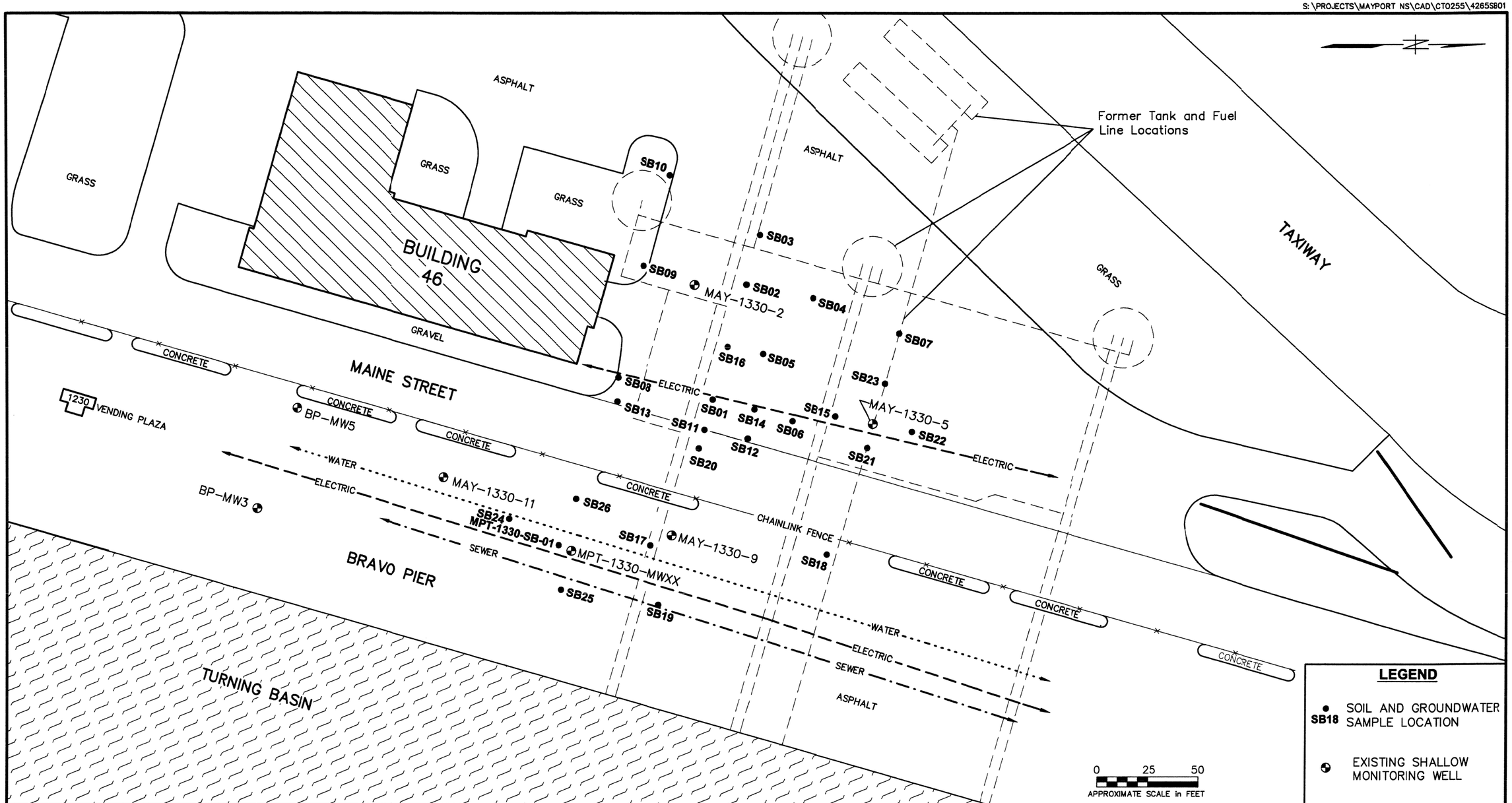

LEGEND

- ● **SB18** SOIL AND GROUNDWATER SAMPLE LOCATION
- ◓ EXISTING SHALLOW MONITORING WELL

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SCALE: AS NOTED

SOIL BORING LOCATIONS
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
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DRAWING NO. FIGURE 2-2
REV. 0

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2.4.3 Soil Sampling Strategy for Laboratory Analysis

2.4.3.1 Mobile Laboratory

One soil sample from each DPT boring was submitted to an on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and isopropylbenzene. The soil boring locations are depicted on Figure 2-2. Each sample was collected in a 4-ounce glass jar provided by the mobile laboratory. The sample selected for mobile laboratory analysis was a split of the sample exhibiting the highest organic vapor reading at each location. If all OVA values at a particular location were equal to background levels, the sample collected from immediately above the water table was selected for mobile laboratory analysis for VOCs.

2.4.3.2 Fixed-Base Laboratory

Typically, a split of the sample exhibiting highest organic vapor concentrations would be collected for fixed-base laboratory analysis, assuming the mobile laboratory identified contaminants. No VOCs were identified in the soil above the water table during the soil screening with the mobile laboratory and OVA-FID. Therefore, only one soil sample was needed for submittal to the laboratory per Chapter 62-770, FAC. During the DPT screening phase, two split soil samples were also collected from SB-2 and SB-3, which are located adjacent to the former petroleum distribution pipeline. These samples were sent to a fixed-base lab for analysis using USEPA Method 8260B as part of a QC check of the mobile laboratory. No constituents were detected in these soil samples; therefore, a single soil sample was collected as required by Chapter 62-770, FAC. The soil sample collection area was selected from the location with the greatest groundwater impacts (MPT-1330-MWXX). The area selected for the FDEP compliance soil sample collection location is located less than 1 ft south of MPT-1330-MWXX and was collected on April 5, 2003, using a stainless steel handauger. The location of MPT-1330-MWXX and soil boring MPT-1330-SB-01 are depicted on the site plan Figure 2-2.

2.5 GROUNDWATER ASSESSMENT METHODS

2.5.1 Monitoring Well Installation

On February 27, 2003, four permanent shallow monitoring wells [MPT-1330-MW17D (MW17D), MW18, MW19, and MW20] were installed by Preferred Drilling Solutions, Inc. under TtNUS supervision. Base personnel cleared underground utilities prior to well installations. The locations of the four new wells and the existing on-site monitoring wells are shown on Figure 2-3. Originally the wells were intended to be located at the source area based on soil impacts identified during the soil screening phase. Since no soil contamination was identified, the monitoring well placement was based on defining elevated areas of the

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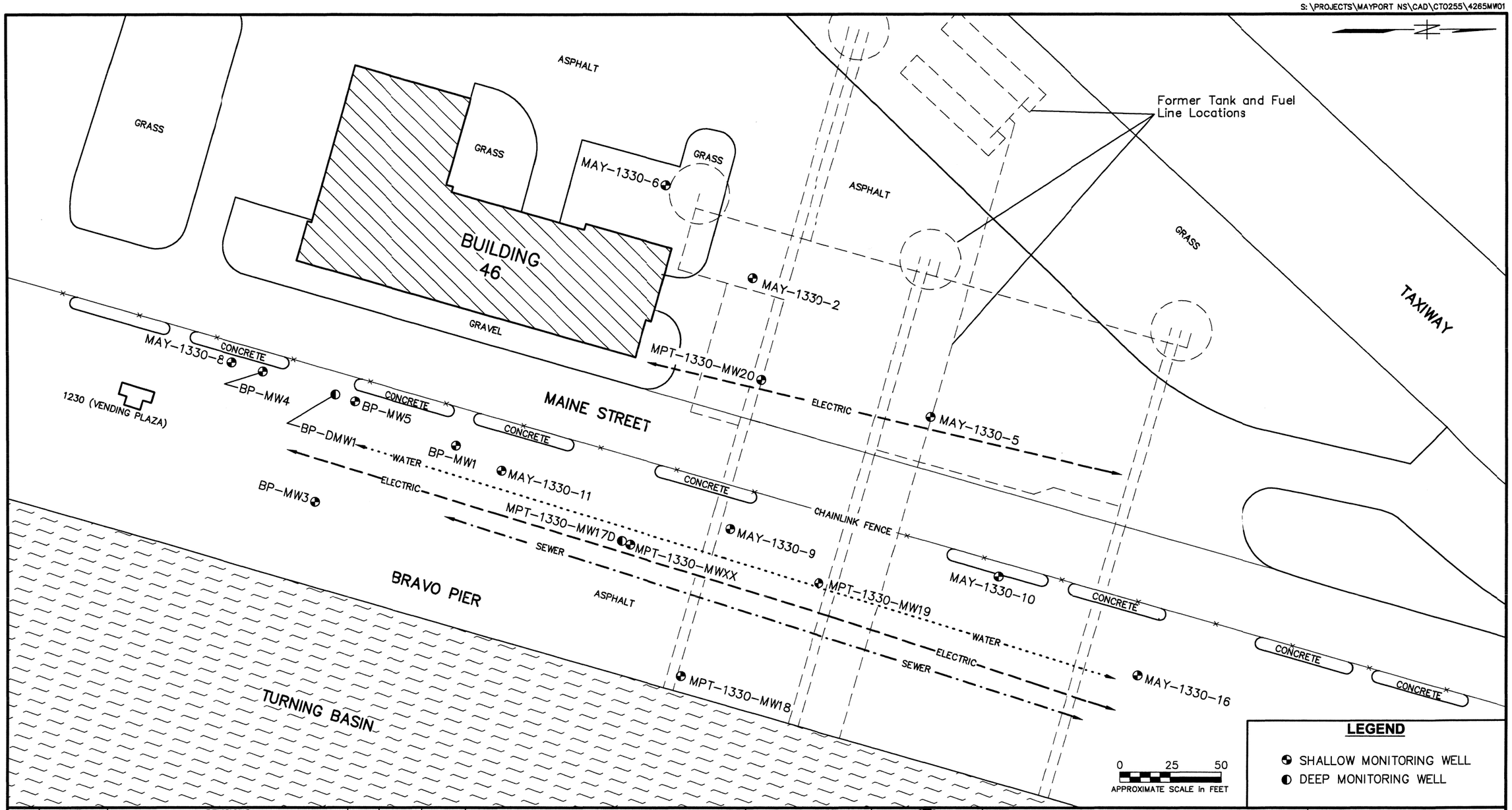

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DEPARTMENT OF THE NAVY · SOUTHERN DIV FACILITIES ENGINEERING COMMAND

MONITORING WELL LOCATIONS
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
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isopropylbenzene in groundwater. Monitoring well MW17D is a deep well (40 ft bls) installed at the area of highest isopropylbenzene contamination in the shallow zone to profile the vertical extent information. Monitoring well MW18S is a shallow well (13 ft bls) installed along the bulkhead. The purpose of this well was to determine if groundwater impacts are reaching the turning basin. Monitoring well MW19S was installed north of the source area in an attempt to better define the isopropylbenzene plume and is also installed to a total depth of 13 ft bls. Monitoring well MW20S was installed along the still present product transfer line that originally extended from the USTs to Bravo Pier. This well was installed in an area of elevated isopropylbenzene groundwater concentration, and the total depth of the well is 14 ft.

2.5.2 Borehole Advancement

A posthole auger was used at the four selected monitoring well locations to excavate boreholes from ground surface to a depth of 5 ft bls to verify absence of subsurface utilities. Within the same borehole, a hand auger was also used to bore to a depth of 6 ft bls in an attempt to locate unmarked utilities. From 6 ft bls to total depth, the borehole was advanced using 4 ¼-inch ID hollow stem augers (HSAs) attached to a truck-mounted drill rig. Prior to use, the hand tools and drilling augers were pressure washed to remove soil. The wash water was containerized for disposal as investigation derived waste. Soil cuttings were described during borehole advancement to further characterize site lithology. Soil boring logs are included in Appendix C.

2.5.2.1 Well Construction and Development

Three shallow wells and one deep well were installed using hallow stem augers. Monitoring wells MW18 and MW19 were installed to a total depth of 13 ft bls and MW20s was installed to a total depth of 14 ft bls. Monitoring well MW17D was drilled to a total depth of 42 ft, but the total depth of the well is approximately 40 ft bls. All wells were constructed of 2-inch diameter, 0.010-inch mill slotted Schedule 40 polyvinyl chloride (PVC) screen (10 ft lengths for shallow wells and a 5 ft length for the deep well), and solid riser (flush threaded) inserted through the HSAs after attaining total depth. Graded 20/30 silica sand was poured from the surface between the PVC well and HSAs as the augers were being slowly removed from the borehole to create a filter pack in the annular space between borehole and monitoring well. The filter pack was poured into the annular space to a depth approximately 1 to 2 ft above the top of the screen (i.e., 1 ft bls) and was capped by with 30/65 fine sand 6 inches for the shallow well and 2 ft for the deep well. The remaining annular space from the top of the fine sand seal to within 6 inches of ground surface was filled with Type I Portland cement grout. The well was completed at the surface with an 8-inch diameter steel manhole equipped with bolt down cover. Manholes were secured in place with concrete pads 2-ft square and 6 inches thick. A diagram showing a typical shallow monitoring well design is provided as Figure 2-4 and the construction diagram for deep well MW17D is provided as Figure 2-5.

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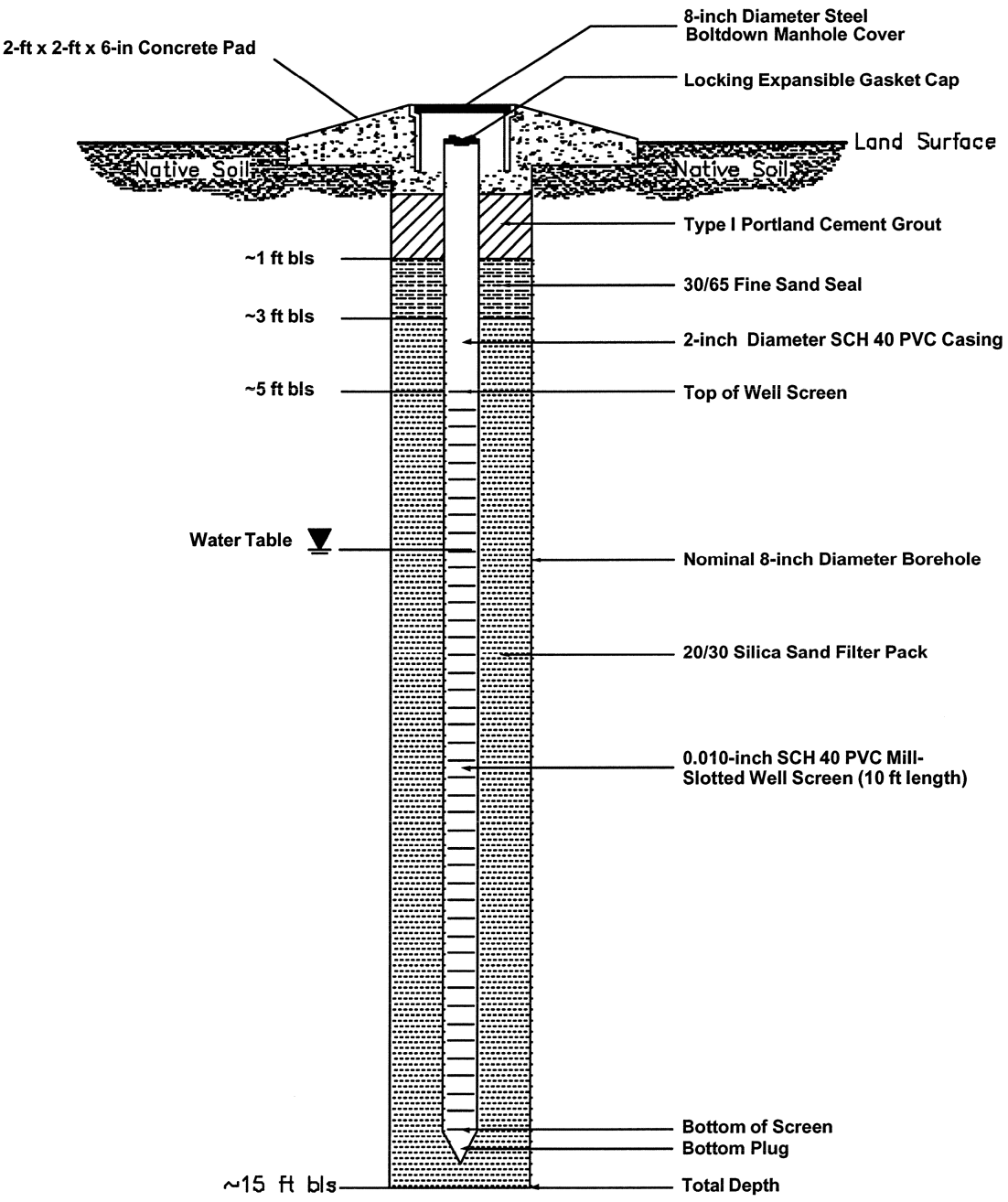

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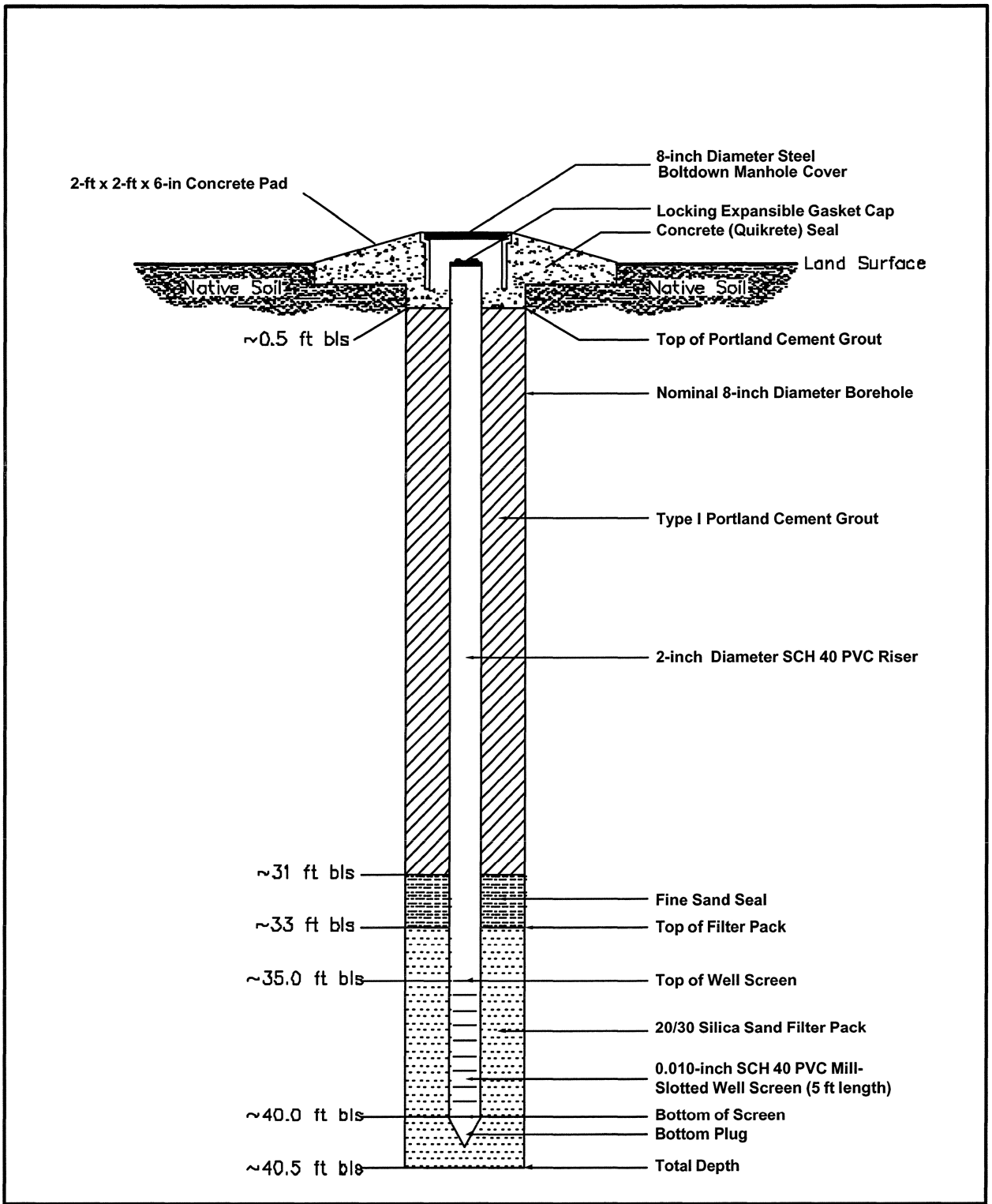

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COST/SCHED–AREA			APPROVED BY DATE
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Well construction details for the four new wells are listed in Table 2-1, and well completion logs are provided in Appendix D.

Table 2-1
Well Construction Details

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Well ID Number	Date Installed	Top of Casing Elevation (ft msl)	Total Well Depth (ft)	Screened Interval (ft bls)	Well Diameter (inches)	Lithology of Screened Interval
MPT-1330-MW17D	2/27/03	9.00	13.00	35 to 40	2.00	Medium to fine sand
MPT-1330-MW18	2/27/03	7.88	13.00	3 to 13	2.00	Medium to fine sand
MPT-1330-MW19	2/27/03	8.99	13.00	3 to 13	2.00	Medium to fine sand
MPT-1330-MW20	2/27/03	10.19	14.00	4 to 14	2.00	Medium to fine sand
MPT-1330-MWXX	X	9.14	7.00	2 to 7*	0.50	Medium to fine sand^
BP-MW3	9/23/98	7.60	14.00	3 to 14	2.00	Medium to fine sand^
BP-MW5	9/25/98	8.09	14.00	3 to 14	2.00	Medium to fine sand^
MAY-1330-8	X	X	13.00	3 to 13	2.00	Medium to fine sand^
MAY-1330-9	X	8.55	13.00	3 to 13*	2.00	Medium to fine sand^
MAY-1330-MW-11	X	8.00	13.00	3 to 13*	2.00	Medium to fine sand^
BP-MW1	9/24/98	X	14.00	4 to 14	2.00	Medium to fine sand^
BP-DWM-1	9/16/98	X	30.00	25 to 30	2.00	Medium to fine sand^
MPT-1330-2	X	9.28	13.00	3 to 13	2.00	Medium to fine sand^

Notes:
X = information not known by TtNUS
* = presumed screened interval
D = shallow well
^ = presumed lithology

After a minimum of 24 hours after completion, the wells were developed using a submersible pump. Field measurements of pH, temperature, and specific conductance were recorded during development. Wells were developed until field measurements became stable and purge water virtually clear. Water quality stabilization was determined using the following criteria: temperature ±5 degrees Celsius, pH ±0.1 unit, and specific conductance ±10 micro-ohms per centimeter. Monitoring well development records are provided in Appendix D. All development water was containerized for disposal in 55-gallon steel drums.

2.5.2.2 Mobile Laboratory Grab Groundwater Samples

During the DPT investigation, groundwater samples were collected at the 26 soil boring locations (SB-1 through SB-26) discussed in Section 2.4.1 and also at six existing monitoring wells (MPT-1330-2, BP-MW3, BP-MW5, MAY-1330-9, MAY-1330-MW-11, and MAY-1330-MWXX). The existing monitoring

well locations and DPT groundwater sample locations are detailed on Figure 2-2. During DPT operations, groundwater samples were collected from the upper 4 ft of the saturated zone at the soil borings using DPT (i.e., Geoprobe) methodology. The samples were collected using a detachable drive tip attached to a 48-inch, retractable stainless steel well screen encased in the lead drive casing. After the water sampler was advanced into the water-bearing zone, the casing was withdrawn 48-inches to allow influx of groundwater to the retractable screen. For groundwater recovery, Tygon® tubing was inserted into the probe or monitoring well and connected to a peristaltic pump. The well or boring was pumped to reduce turbidity. After purging, groundwater samples were collected for analysis in 40-milliliter vials provided by the mobile laboratory. The samples were immediately delivered to the on-site mobile laboratory for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and isopropylbenzene.

2.5.2.3 Permanent Monitoring Well Groundwater Samples

On March 13, and 14, 2003, TtNUS personnel collected groundwater samples from the four newly installed wells (MPT-1330-MW17D, MPT-1330-MW18, MPT-1330-MW19, and MPT-1330-MW20), and five existing wells (BP-MW-1, BP-MW-3, MAY-MW-8, MPT-1330-MWXX, and BP-DWM-1) were sampled in accordance with the procedures described in the FDEP SOPs (DEP-SOP-001/01). Figure 2-3 depicts the newly installed well locations and the existing monitoring wells. The wells were purged using a peristaltic pump using low flow quiescent purging techniques per FDEP SOPs. The data was recorded on a low flow purge data sheet (Appendix E). Depending on the groundwater parameters, up to five well volumes may be purged.

After collection, samples were immediately placed on ice and shipped under proper chain-of-custody protocol to Severn Trent Laboratories (STL) located in Pittsburgh, Pennsylvania for analysis of VOCs using USEPA Method 8021B, PAHs using USEPA Method 8310, EDB using USEPA Method 504.1, lead using USEPA Method 239.2, and TRPH using Florida Petroleum Range Organics (FL-PRO).

3.0 RESULTS OF INVESTIGATION

3.1 GROUND PENETRATING RADAR AND ELECTROMAGNETIC SURVEY

The results of the EM and GPR survey were successful in locating numerous utilities, former product piping, former USTs, and various piping (not limited to active utilities) throughout the site. Figure 3-1 depicts the results of the EM and GPR survey. In general, the utilities run parallel to Maine Street with the densest area of utilities at Bravo Pier. Standard active utilities such as sewer, water, and electric, were present at Bravo Pier along with steam lines, product lines, and an oily waste water line. Figure 3-1 depicts the objects located during the screening. Other unidentifiable linear objects of varying lengths were noted, but do not appear to have been part of the petroleum distribution system given their location when compared to fuel system location plans.

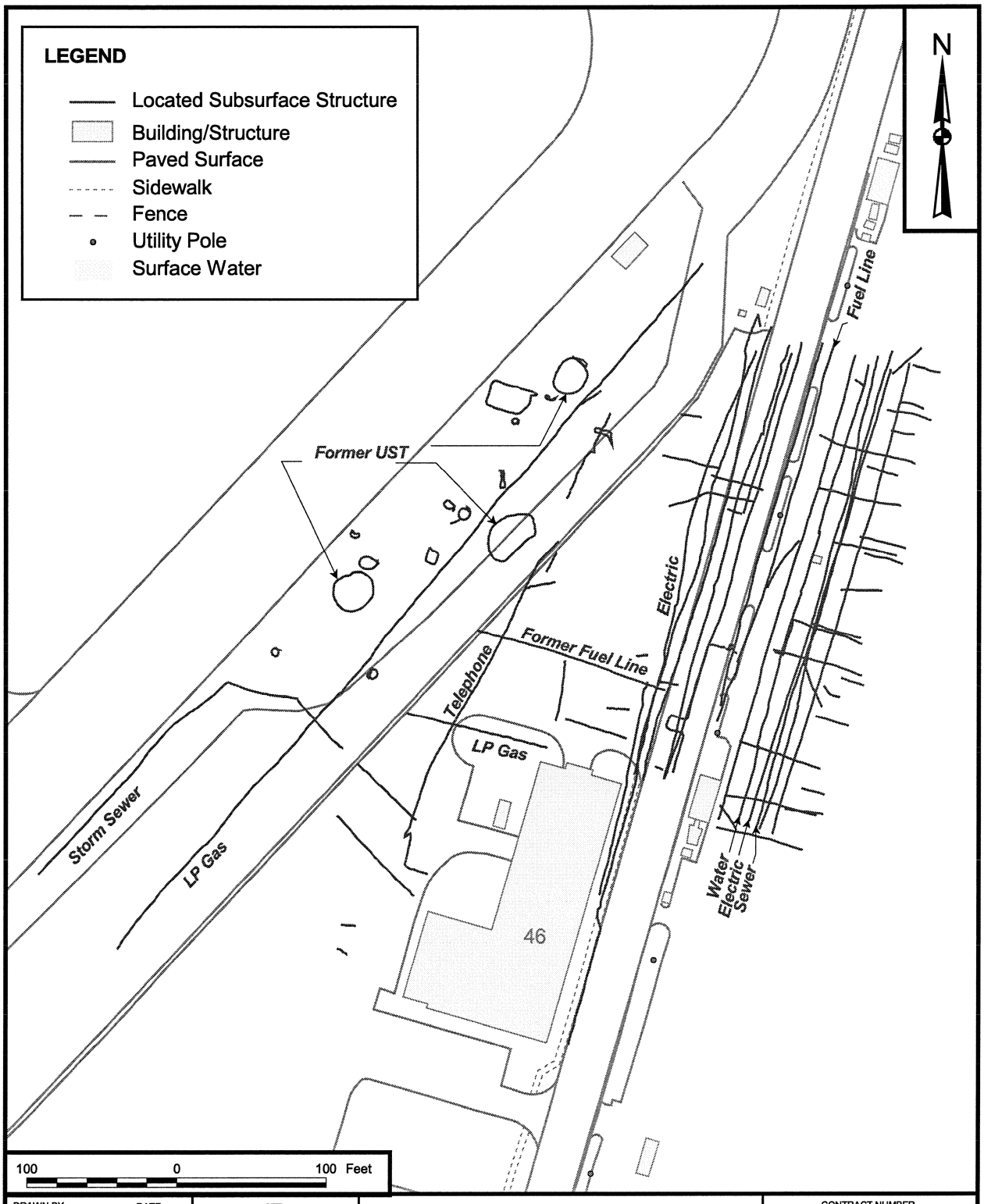
Utilities of special interest are the utilities that bisected the elevated plumes of isopropylbenzene. Such active utilities include an electrical conduit bank located north of Building 46 and parallel to Maine Street, extending the length of the parking lot north. The other active utilities that are of special interest are water, sewer, and electrical lines, which extend north and south within the Bravo Pier. These utilities bisect the impacted area near monitoring well MWXX which includes the elevated (< 1000 ppm) isopropyl benzene contamination area. Contamination may follow disturbances in the natural formation caused during the utility installation and adhere to the utility structure, facilitating migration in a linear flow pattern.

A key structure that is not a utility is a 135 ft former petroleum distribution line that extends towards the former cement USTs abandoned in place. The product line is located approximately 70 ft north of Building 46 in the asphalt parking lot and trends directly to one of the former cement storage tanks abandoned in place. The presence of the former product line was verified using a hand auger which contacted the pipe at approximately 2.5 ft bls. Three ovals identified near the taxiway mark the locations of the former cement USTs abandoned in place. Other structures were noted that may also be remnants of the fuel distribution system as shown on Figure 3-1.

3.2 SITE GEOLOGY AND HYDROGEOLOGY

3.2.1 Lithology

Split spoons were taken during the installation of monitoring well MW17D. At this location the upper 41.5 ft of material underlying the site consists of gray, brown to light brown, fine to medium sand, with varying percentages of shell hash and silts. Two-inch non-confining, plastic, clay, lenses separated by sand were identified at 30 ft to 32 ft bls. Dense olive colored clay was encountered at a depth of



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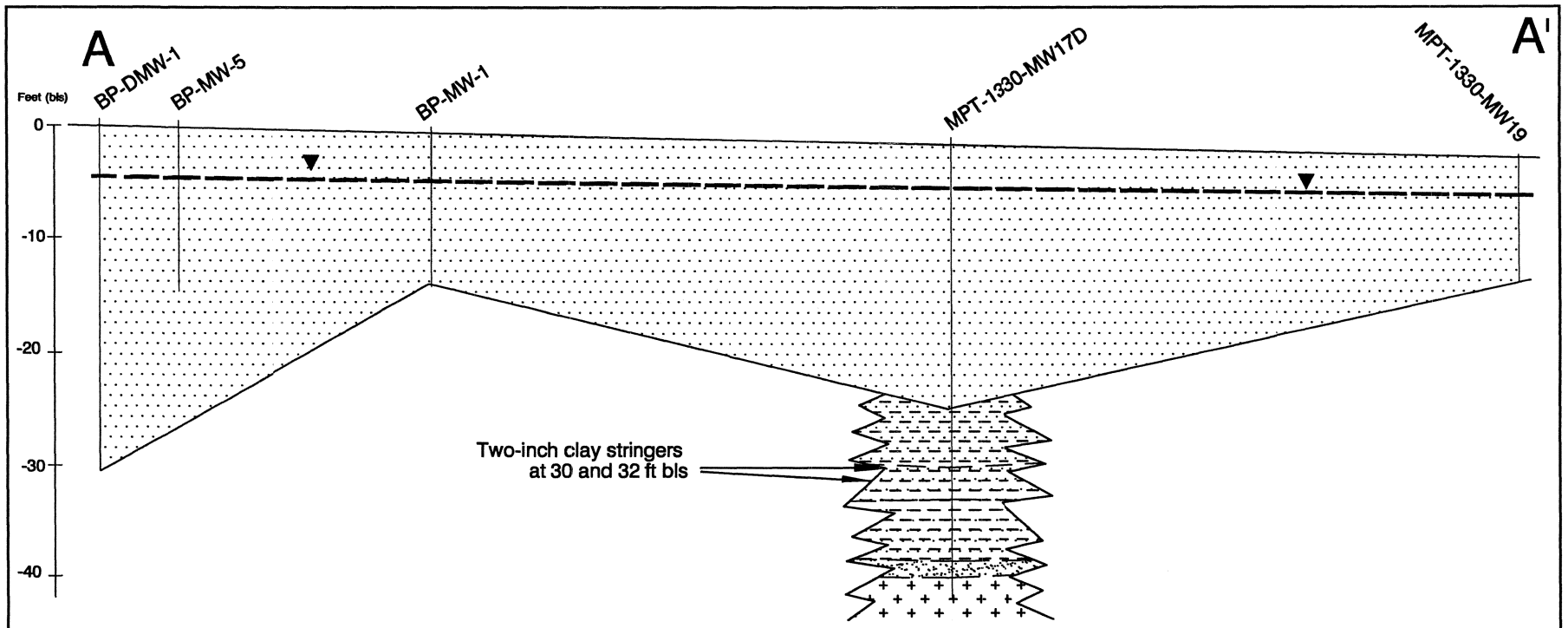
41.5 ft bls and continues to 42 ft bls where the split spoon sampling was terminated. Soil boring logs are presented in Appendix C.

The lithology observed at monitoring well MPR-MW-MW17D is similar to the descriptions recorded in a facility wide hydrogeologic investigation which also parallels other regional investigations. The lithology from land surface to the upper Hawthorn includes deposits (Scott, 1988) consisting of fairly uniform well sorted, poorly graded, very fine-grained sand which typically contained minor amounts of fines consisting of silt and clay and frequently has numerous shell fragments. Color changes from light brown to gray. Where color change occurs, the change is typically gradual over several feet. Causley and Phelps (1978) report that the surficial aquifer under most of Duval County is composed of an upper and lower zone that are separated by deposits of lower permeability at a depth of 25 ft to 50 ft bls. This area of lower permeability at Mayport occurs near 40 ft bls and is called the upper Hawthorn Group.

The upper Hawthorn Group is depicted in cross sections of the site provided as Figure 3-2 and Figure 3-3. The composition of the upper Hawthorn Group was verified from three separate borings recorded in the Resource Conservation Recovery Act, Corrective Action Program General information Report prepared by ABB Environmental in 1995. The closest of the three referenced borings to the site identify, MPT-8-MW5D, to be is located in the center of the airport operations area located approximately 2,400 ft to the west of MPT-MW-17D and is similar in lithology to 42 ft bls. The Upper Hawthorn consists of fine to medium light brown to greenish-gray sand. This sand typically contains black phosphatic nodules and /or lithic limestone fragments. Interbedded within the upper Hawthorn Group sand is clay, typically gray or olive in color. The seams of clay varied in thickness from inches to a maximum of several feet. This zone was interpreted to be the confining units typical of the Hawthorn Group located in Duval County (Leve, 1966). The boring log for MPT-MW-5D records supports the findings of Leve describing the upper Hawthorn. Varying thickness of clay were described in the boring log for MPT-8-MW5D beginning at a depth of 35 ft bls and extending to 72 ft bls. Beginning at 72 ft bls there is a solid clay unit extending to a depth of 87 ft where the boring was terminated. This boring log is provided in Attachment C.

3.2.2 Groundwater Flow Direction

Groundwater elevation data obtained on August 2, 2002, is presented in Table 3-1 and a groundwater flow map generated from the data is provided as Figure 3-4. The direction of the groundwater flow in the surficial aquifer is to flow to the southeast, toward the turning basin. This groundwater flow mirrors historical flow directions recorded by the USACE (Figure 2-1). The groundwater at the site is known to be tidally influenced. The groundwater flow direction was calculated based on the recent survey data collected by Consul-Tech Engineering of a Jacksonville.



Legend

- Gray Silt
- Fine to Medium Light Brown White and Gray Sands with Shell Hash
- Coarse Large Grain White Sand
- Dense Blue Green Clay
- Monitoring Well
- Potentiometric Surface

0 30 60
Approximate Horizontal Scale in Feet

Vertical Exaggeration:
X.5

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CHECKED BY: DS — DATE: AUG 03	Geologic Cross-Section A-A' Site Assessment Report Site 1330 Naval Station Mayport Mayport, Florida	APPROVED BY: — DATE:	
COST/SCHED-AREA:		APPROVED BY: — DATE:	
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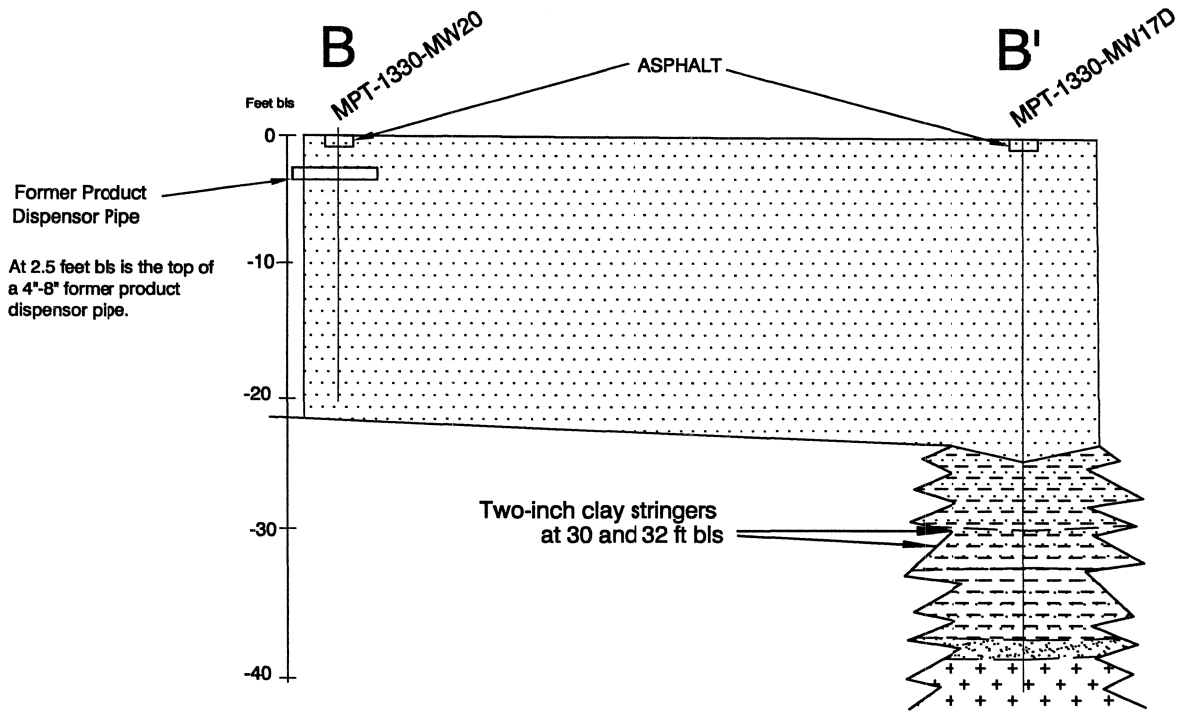

Legend

- Gray Silt
- Fine to Medium Light Brown White and Gray Sands with Shell Hash
- Coarse Large Grain White Sand
- Dense Blue Green Clay

Monitoring Well

0 30 60

Approximately Horizontal Scale in Feet

Vertical Exaggeration:
X.5

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COST/SCHED-AREA		APPROVED BY: — DATE:	
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Table 3-1
Water Table Elevation Data

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Monitoring Well Identification Suffices	Surveyed Top-of-Casing Elevation (ft)	April 13, 2003		May 11, 2003	
		Depth to Water (ft)	Water Table Elevation	Depth to Water (ft)	Water Table Elevation
BP-MW-3	8.69	6.62	2.07	7.13	1.56
MPT-1330-MW17D	9.00	6.28	2.72	NM	NM
MPT-1330-MW18	7.88	5.65	2.23	6.12	1.76
MPT-1330-MW19	8.99	5.83	3.16	6.64	2.35
MPT-1330-MW20	10.19	6.39	3.8	7.51	2.68
May-1330-MW-9	8.76	NM	NM	6.40	2.36
BP-MW-1	8.55	5.64	2.91	6.39	2.16
BP-MW-4	9.43	NM	NM	7.49	1.94
BP-MW-5	9.30	NM	NM	7.22	2.08
MAY-1330-2	10.30	NM	NM	7.44	2.86
MPT-1330-MWXX	9.14	NM	NM	NM	NM
MAY-1330-MW-6	10.58	NM	NM	7.71	2.87

Notes:
MPT-1330-MWXX is a micro well and was not measured because the probe diameter was larger than the well diameter.
MPT-1330-MW17D was not measured since it was a deep well.
NM = not measured

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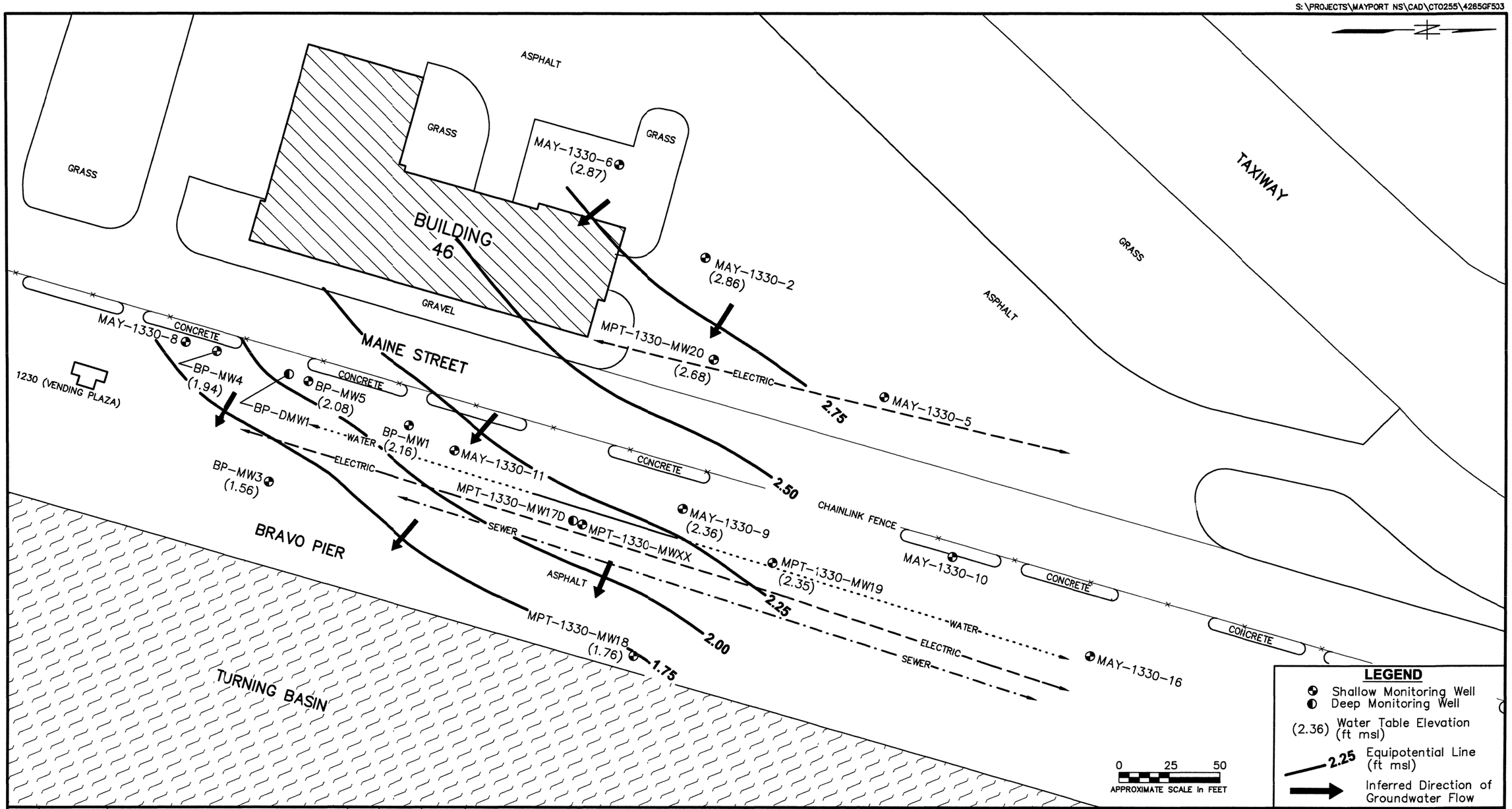

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SCALE AS NOTED

GROUNDWATER ELEVATION CONTOUR MAP,
MAY 11, 2003
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-4
REV. 0

FORM CADD NO. SDIV_BH.DWG – REV 0 – 1/20/98

The horizontal groundwater (hydraulic) gradient across the site was evaluated from water level data listed in Table 3-1 and shown on Figure 3-4. The average horizontal hydraulic gradient beneath the site, calculated from potentiometric contours, and was determined to be 0.004 ft per ft (ft/ft).

3.2.3 Aquifer Classification and Characteristics

The State of Florida classifies the surficial aquifer underlying the site as G-II. Previous USGS aquifer test data indicate that the average hydraulic conductivity of the surficial aquifer is approximately 4.34 ft per day (ft/day) (USGS, 1997). Based on information provided by Driscoll (Driscoll, 1986) and on lithologic descriptions of material encountered during the current investigation, the effective porosity of surficial aquifer sediments was estimated to be 0.30.

Using Darcy's Law the groundwater velocity at the site was calculated.

Darcy's Law may be expressed as follows:

$$V = \frac{(K \times I)}{n}$$

where:

V = average seepage velocity

K = hydraulic conductivity

n = effective porosity

I = average hydraulic gradient

Using a hydraulic conductivity of 4.34 ft/day, a hydraulic gradient of 0.004 ft/ft, an inferred effective porosity value of 0.30, and Darcy's law, the groundwater seepage velocity across the site was calculated at 0.058 ft/day or 21.17 ft per year in a general easterly direction.

3.3 SOIL SCREENING RESULTS

Results of the soil vapor survey from depths ranging in from 1 ft to 7 ft bls are listed in Table 3-2, and the soil sample locations are illustrated on Figure 2-2. The samples collected at 7 ft were collected at or near the groundwater water table. All soil samples produced a no instrument response above background reading.

Table 3-2
Soil Vapor Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-01	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-02	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-03	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-04	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-05	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
SB-06	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-07	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-08	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-09	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-10	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-11	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-12	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0

Table 3-2
Soil Vapor Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-13	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-14	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-15	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-16	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0
SB-17	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-18	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-19	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0
SB-20	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0
SB-21	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0
SB-22	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0

Table 3-2
Soil Vapor Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Soil Boring Number	Date of Measurement	Sample Depth (ft bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SB-23	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
		7	0	0	0
SB-24	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-25	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0
SB-26	8/3/2002	1	0	0	0
		3	0	0	0
		5	0	0	0
		6	0	0	0

Notes:
ppm = parts per million

3.4 SOIL SAMPLE ANALYTICAL RESULTS

3.4.1 Mobile Laboratory

During September 30, 2002, to October 2, 2002, soil samples were collected and submitted by a TtNUS representative to KB Laboratories for analytical screening. Constituents screened include isopropylbenzene, BTEX, MTBE, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. None of the analyzed constituents were identified during the investigation. Samples were collected from 5 ft to 7 ft bls for analysis. Soil samples collected at 7 ft bls were near the water table elevation. These samples collected for screening at 7 ft bls were an attempt to screen soils as close to the water table as possible. Analytical results are summarized on Table 3-3 and the sample locations are illustrated in Figure 2-2. A complete report provided by KB Laboratories is included in Appendix F. Sample SB-25 was collected, but not analyzed.

3.4.2 Fixed-Base Laboratory

Prior to collecting the required samples per Chapter 62-770, FAC, soil vapors were screened, a mobile laboratory analyzed soil samples, and two soil samples (SB02 and SB03) were collected from along the former product pipe and were sent to STL for analysis using USEPA Method 8260B. No readings above the background or detection limits were identified for all samples screened by OVA or analyzed by mobile and fixed-base laboratories. Based on soil screening and laboratory analysis, no petroleum was recorded to be present in the soil; therefore, a single soil sample was collected as required by Chapter 62-770, FAC. The soil sample collection area was selected based on the location with the greatest impact to groundwater impact, which is located at MPT-1330-MWXX. The soil sample MPT-1330-SB-27 was collected on April 5, 2003, and was submitted to STL for analysis of PAHs using USEPA Method 8270B, TRPH using Method Florida Professional, and VOCs using USEPA Method 8260B. No analyzed parameters were detected above the SCTLs. Seven constituents were identified at estimated "J" concentrations below the laboratory detection limits. Analytical results are summarized in Table 3-4 and the complete laboratory report is provided in Appendix G. The well locations are illustrated on Figure 2-2 which depicts the location of soil sample MPT-1330-SB27 (SB-27).

3.5 GROUNDWATER ANALYTICAL RESULTS

3.5.1 Mobile Laboratory

A total of 32 groundwater samples were collected during the period of September 30, 2002, and October 2, 2002. Figure 3-5 depicts the sample location and results of six samples that were collected from existing monitoring wells previously installed, and the remaining sample locations were collected during DPT operations. Constituents analyzed by the mobile laboratory include isopropylbenzene, BTEX,

Table 3-3
Mobile Laboratory Soil Results

Site Assessment Report, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (mg/kg)		SB-01	SB-02	SB-03	SB-04	SB-05	SB-06	SB-07
			10/1/2002	9/30/2002	9/30/2002	9/30/2002	9/30/2002	10/1/2002	9/30/2002
Sample Interval	**Residential**	**Leachability**	7ft	6-7 ft	5 ft	5 ft	5 ft	7 ft	5 ft
VOCs (USEPA Method 8260B) (mg/kg)									
Isoprolylbenzene	160	0.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	3200	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	1100	0.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Xylenes	5600	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Napthalene	40	1.7	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1-Methylnapthalene	68	2.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnapthalene	80	6.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Compound	FDEP Target Level[1] (mg/kg)		SB-08	SB-09	SB-10	SB-11	SB-12	SB-13	SB-14
			9/30/2002	9/30/2002	9/30/2002	10/1/2002	10/1/2002	10/1/2002	10/1/2002
Sample Interval	**Residential**	**Leachability**	6 ft	6 ft	6 ft	6 ft	6 ft	6 ft	6 ft
VOCs (USEPA Method 8260B) (mg/kg)									
Isoprolylbenzene	160	0.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	3200	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	1100	0.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Xylenes	5600	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Napthalene	40	1.7	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1-Methylnapthalene	68	2.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnapthalene	80	6.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table 3-3
Mobile Laboratory Soil Results

Site Assessment Report, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (mg/kg)		SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21
			10/1/2002	10/1/2002	10/1/2002	10/2/2002	10/2/2002	10/1/2002	10/2/2002
Sample Interval	**Residential**	**Leachability**	6 ft	6 ft	7 ft	5 ft	6 ft	6 ft	7 ft
VOCs (USEPA Method 8260B) (mg/kg)									
Isoprolylbenzene	160	0.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	3200	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	1100	0.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Xylenes	5600	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Napthalene	40	1.7	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
1-Methylnapthalene	68	2.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnapthalene	80	6.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Compound	FDEP Target Level[1] (mg/kg)		SB-22	SB-23	SB-24	SB-25	SB-26
			10/2/2002	10/2/2002	10/2/2002	10/2/2002	10/2/2002
Sample Interval	**Residential**	**Leachability**	7 ft	7 ft	6 ft	5 ft	6 ft
VOCs (USEPA Method 8260B) (mg/kg)							
Isoprolylbenzene	160	0.8	<0.01	<0.01	<0.01	<0.01	<0.01
MTBE	3200	0.2	<0.01	<0.01	<0.01	<0.01	<0.01
Benzene	1.1	0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Toluene	380	0.5	<0.01	<0.01	<0.01	<0.01	<0.01
Ethylbenzene	1100	0.6	<0.01	<0.01	<0.01	<0.01	<0.01
Total Xylenes	5600	0.2	<0.01	<0.01	<0.01	<0.01	<0.01
Napthalene	40	1.7	<0.02	<0.02	<0.02	<0.02	<0.02
1-Methylnapthalene	68	2.2	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnapthalene	80	6.1	<0.02	<0.02	<0.02	<0.02	<0.02

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
mg/kg = milligrams per kilogram
Bold indicates values in excess of SCTLs, Chapter 62-770, FAC (April 30, 1999).

Table 3-4
Fixed-Base Laboratory Soil Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (mg/kg)		MPT-1330-SB-01
			10/2/2002
Sample Interval	**Residential**	**Leachability**	6 ft
VOCs (USEPA Method 8021B) (mg/kg)			
Isoprolylbenzene	160	0.8	<.0058
MTBE	3200	0.2	<.0058
Benzene	1.1	0.007	<.0058
Toluene	380	0.5	<.0058
Ethylbenzene	1100	0.6	<.0058
Total Xylenes	5600	0.2	<.0058
PAHs (USEPA Method 8310) (mg/kg)			
Benzo (a) anthracene	1.4	3.2	0.042 J
Benzo (a) pyrene	0.1	8	0.059 J
Benzo (b) fluoranthene	1.4	10	0.110 J
Chrysene	140	77	0.042 J
Indeno (1,2,3-cd) pyrene	1.5	28	0.033 J
Benzo (g,h,i) perylene	2300	32000	0.039 J
Pyrene	2200	880	0.042 J
FL-PRO (USEPA Method 8270 (mg/kg)			
TRPH	340	340	<11

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
Bold indicates values in excess of SCTLs, Chapter 62-770, FAC (April 30, 1999).
<.0058 = less than analyzed detection limit
J = estimated value

S:\PROJECTS\MAYPORT NS\CAD\CTO255\4265PB

ASPHALT
GRASS
BUILDING 46
GRASS
GRAVEL
CONCRETE
MAINE STREET
CONCRETE
CONCRETE
1230 (VENDING PLAZA)
ASPHALT
WATER
ELECTRIC
MAY-1330-11
210
BP-MW-3
7.1
BRAVO PIER
SEWER
TURNING BASIN
ASPHALT
GRASS
Former Tank and Fuel Line Locations
TAXIWAY
10 3.8
3 740
9 520
MAY-1330-2
470
2 760
4 520
16 640
5 560
7 530
56.8
8
13 940
1 1600
ELECTRIC
14 480
6 1600
15 83
MAY-1330-5
1700
23 710
22 310
820
11
20 1400
12 540
21 360
26 10.6
24 1700
MW-XX
3100
17 1300
MAY-1330-9
2500
18 12
CONCRETE
CHAINLINK FENCE
CONCRETE
CONCRETE
25 650
19 1800
WATER
ELECTRIC
SEWER
ASPHALT

LEGEND

- DPT GROUNDWATER GRAB SAMPLE LOCATION
- MONITORING WELL
- 1600 ISOPROPYLBENZENE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- APPROXIMATE AREAS IN WHICH ISOPROPYLBENZENE CONCENTRATIONS EXCEED 1000 µg/L

0 25 50
APPROXIMATE SCALE in FEET

NO.	DATE	REVSIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY WLR DATE 8/19/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

ISOPROPYLBENZENE CONCENTRATIONS IN GROUNDWATER REPORTED BY MOBILE LABORATORY
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-5
REV. 0

FORM CADD NO. SDIV_BH.DWG – REV 0 – 1/20/98

MTBE, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. Of the constituents analyzed, no compound other than isopropylbenzene was identified during mobile laboratory analysis. Of the 32 samples analyzed, all exceeded the GCTL of 0.8 µg/L for isopropylbenzene. It should be noted that some of the detection limits of other constituents were elevated due to the high concentrations of isopropylbenzene. The concentration of isopropylbenzene in groundwater samples ranged from 3100 µg/L for monitoring well MPT-1330-MWXX to 3.8 µg/L for SB-08. Monitoring well MPT-1330-MWXX is a micro well located in the Bravo Pier area, and soil boring SB08 is located near the northwest corner of Building 46. The four sample locations with the greatest isopropylbenzene concentrations (BP-MW-5 at 1700 µg/L, MPT-1330-MWXX at 3100 µg/L, MAY-1330-9 at 2500 µg/L, and SB-24 at 1700 µg/L) are located at Bravo Pier. These sample locations are arranged in a line north to south along the pier near to a number of identified utilities such as sewer, electric, water, and a fuel line. The wells are surrounded on both sides by utilities. Monitoring well MAY-1330-9 is positioned next to the location of a former product line that extends west towards the taxiway. Other elevated areas of isopropylbenzene are along the same former fuel distribution line west of the pier in the parking lot of Building 46. These elevated isopropyl benzene concentrations are also in a linear array and are positioned near an electrical conduit.

Groundwater analytical results reported by the mobile laboratory on grab samples collected using DPT are summarized in Table 3-5 and illustrated on Figure 3-3. A complete mobile laboratory analytical report including detection limits and GCTLs is submitted by KB Laboratories is included in Appendix F.

3.5.2 Fixed-Base Laboratory

On March 14, 2003, nine monitoring wells (BP-DWM-1, BP-MW-1, BP-MW-3, MAY-1330-8, MPT-1330-MWXX, MPT-1330-MW17D, MPT-1330-MW18, MPT-1330-MW19, and MPT-1330-MW-20) were sampled by a TtNUS representative and the samples were shipped via express mail to STL. The samples were analyzed for VOCs and GAG/KAG analytical parameters in accordance with the requirements per Chapter 62-770, FAC, Table B (VOCs by USEPA Method 8260B, PAHs by USEPA Method 8270, TRPH by Method Florida Professional, EDB by USEPA Method 504.1, and total lead by USEPA Method 6010). Of the samples analyzed, only two constituents, benzene and isopropylbenzene, exceeded the FDEP GCTLs. Benzene was reported in one monitoring well, BP-MW-1, at a concentration of 1.6 µg/L, which exceeds the FDEP GCTL of 1.0 µg/L. Isopropylbenzene was detected in exceedence of the FDEP GCTL of 0.8 µg/L in monitoring wells MPT-1330-MW17D, MPT-1330-MWXX, BP-MW-1, MPT-1330-MW19, and MPT-1330-MW20 at concentrations of 210 µg/L, 3200 µg/L, 120 µg/L, 1700 µg/L, and 200 µg/L, respectively. Due to the high concentration of isopropylbenzene, dilutions were performed resulting in elevated detection limits for some parameters, sometimes in excess of GCTL values. Fixed-base laboratory analytical results, laboratory detection limits, and GCTLs are summarized in Table 3-6 and illustrated in Figure 3-6. Complete validated laboratory reports are presented in Appendix G.

Table 3-5
Mobile Laboratory Groundwater Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (µg/L)	SB-01	SB-02	SB-03	SB-04	SB-05	SB-06	SB-07
		10/1/2002	9/30/2002	9/30/2002	9/30/2002	9/30/2002	10/1/2002	9/30/2002
Sample Interval	**Groundwater Criteria**							
VOCs (USEPA Method 8021B) (µg/L)								
Isoprolylbenzene	0.8	**1600**	**760**	**740**	**520**	**560**	**1600**	**530**
MTBE	50	<50	<100	<100	<100	<100	<100	<100
Benzene	1	<10	<20	<20	<20	<20	<20	<20
Toluene	40	<10	<20	<20	<20	<20	<20	<20
Ethylbenzene	30	<10	<20	<20	<20	<20	<20	<20
Total Xylenes	20	<10	<20	<20	<20	<20	<20	<20
Napthalene	20	<50	<100	<100	<100	<100	<100	<100
1-Methylnapthalene	20	<50	<100	<100	<100	<100	<100	<100
2-Methylnapthalene	20	<50	<100	<100	<100	<100	<100	<100

Compound	FDEP Target Level[1] (µg/L)	SB-08	SB-09	SB-10	SB-11	SB-12	SB-13	SB-14
		9/30/2002	9/30/2002	9/30/2002	10/1/2002	10/1/2002	10/1/2002	10/1/2002
Sample Interval	**Groundwater Criteria**							
VOCs (USEPA Method 8021B) (µg/L)								
Isoprolylbenzene	0.8	**56.8**	**520**	**3.8**	**820**	**540**	**940**	**480**
MTBE	50	<5	<100	<5	<50	<50	<5	<50
Benzene	1	<1	<20	<1	<10	<10	<1	<10
Toluene	40	<1	<20	<1	<10	<10	<1	<10
Ethylbenzene	30	<1	<20	<1	<10	<10	<1	<10
Total Xylenes	20	<1	<20	<1	<10	<10	<1	<10
Napthalene	20	<5	<100	<5	<50	<50	<5	<50
1-Methylnapthalene	20	<5	<100	<5	<50	<50	<5	<50
2-Methylnapthalene	20	<5	<100	<5	<50	<50	<5	<50

Table 3-5
Mobile Laboratory Groundwater Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (µg/L)	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21
		10/1/2002	10/1/2002	10/1/2002	10/2/2002	10/2/2002	10/1/2002	10/2/2002
Sample Interval	**Groundwater Criteria**							
VOCs (USEPA Method 8021B) (µg/L)								
Isoprolylbenzene	0.8	**83**	**640**	**1300**	**12.6**	**1800**	**1400**	**360**
MTBE	50	<50	<100	<50	<5	<250	<250	<5
Benzene	1	<10	<20	<10	<1	<50	<50	<1
Toluene	40	<10	<20	<10	<1	<50	<50	<1
Ethylbenzene	30	<10	<20	<10	<1	<50	<50	<1
Total Xylenes	20	<10	<20	<10	<1	<50	<50	<1
Napthalene	20	<50	<100	<50	<5	<250	<250	<5
1-Methylnapthalene	20	<50	<100	<50	<5	<250	<250	<5
2-Methylnapthalene	20	<50	<100	<50	<5	<250	<250	<5

Compound	FDEP Target Level[1] (µg/L)	SB-22	SB-23	SB-24	SB-25	SB-26	MPT-1330-2	BP-MW-3
		10/2/2002	10/2/2002	10/2/2002	10/2/2002	10/2/2002	10/2/2002	10/2/2002
Sample Interval	**Groundwater Criteria**							
VOCs (USEPA Method 8021B) (µg/L)								
Isoprolylbenzene	0.8	**310**	**710**	**1700**	**650**	**10.6**	**470**	**7.1**
MTBE	50	<50	<50	<50	<250	<5	<250	<5
Benzene	1	<10	<10	<10	<50	<1	<50	<1
Toluene	40	<10	<10	<10	<50	<1	<50	<1
Ethylbenzene	30	<10	<10	<10	<50	<1	<50	<1
Total Xylenes	20	<10	<10	<10	<50	<1	<50	<1
Napthalene	20	<50	<50	<50	<250	<5	<250	<5
1-Methylnapthalene	20	<50	<50	<50	<250	<5	<250	<5
2-Methylnapthalene	20	<50	<50	<50	<250	<5	<250	<5

Table 3-5
Mobile Laboratory Groundwater Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (µg/L)	BP-MW-5	MAY-1330-9	MAY-1330-MW-11	MAY-1330-MW-XX
		10/2/2002	10/2/2002	10/2/2002	10/2/2002
Sample Interval	**Groundwater Criteria**				
VOCs (USEPA Method 8021B) (µg/L)					
Isoprolylbenzene	0.8	**1700**	**2500**	**210**	**3100**
MTBE	50	<50	<50	<50	<250
Benzene	1	<10	<10	<10	<50
Toluene	40	<10	<10	<10	<50
Ethylbenzene	30	<10	<10	<10	<50
Total Xylenes	20	<10	<10	<10	<50
Napthalene	20	<50	<50	<50	<250
1-Methylnapthalene	20	<50	<50	<50	<250
2-Methylnapthalene	20	<50	<50	<50	<250

Notes:

[1]Chapter 62-770, FAC (April 30, 1999)

Bold indicates values in excess of GCTLs, Chapter 62-770, FAC (April 30, 1999).

The detection limits for several constituents exceeded the FDEP GCTL. The elevated detection limits are due to dilution factors needed because of the elevated isopropylbenzene concentrations.

Table 3-6
Fixed-Base Laboratory Groundwater Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (µg/L)	MPT-1330-8	BP-MW-3	MPT-1330-MW-17D	MPT-1330 MW-XX	BP-DMW-1	BP-MW-1	MPT-1330-MW-18	MPT-1330-MW-19	MPT-1330-MW-20
Sample Interval	**Groundwater Criteria**		bulkhead					bulkhead		
VOCs (USEPA Method 8260B) (µg/L)										
Isoprolylbenzene	0.8	< 1.0	< 1.0	**210**	**3200**	0.66 J	**120**	< 1.0	**1700**	**2000**
MTBE	50	< 1.0	< 1.0	<2	<90	< 1.0	< 1.0	< 1.0	< 50	< 75
Benzene	1	< 1.0	< 1.0	<2	<90	< 1.0	**1.6**	< 1.0	< 50	< 75
Toluene	40	< 1.0	< 1.0	<2	<90	< 1.0	<0.42	< 1.0	< 50	< 75
Ethylbenzene	30	< 1.0	< 1.0	<2	<90	< 1.0	1	< 1.0	< 50	< 75
Total Xylenes	20	< 1.0	< 1.0	<2	<90	< 1.0	<0.57	< 1.0	< 50	< 75
Bromomethane	9.8	<.02	<.02	1.0 J	<90	< 1.0	< 1.0	<.02	< 50	67 J
USEPA 504.1(µg/L)										
EDB	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PAHs (USEPA Method 8310) (µg/L)										
Napthalene	20	<1.0	<1.0	<1.0	1.7 J	<1.0	<1.0	<1.0	0.59 J	<1.0
1-Methylnapthalene	20	<1.0	0.15	<1.0	4 J	<1.0	< 1.0	<1.0	0.42 J	<1.0
2-Methylnapthalene	20	<1.0	<1.0	<1.0	12	<1.0	0.29 J	<1.0	<1.0	<1.0
Acenaphthene	20	<1.0	5.9	0.31 J	5.5	<1.0	0.37 J	<1.0	5.5	<1.0
Acenaphthylene	210	<1.0	0.63 J	<1.0	<5.0	<1.0	<1	<1.0	<1.0	<1.0
Anthracene	2100	<0.2	<0.2	<0.2	<0.57	<0.2	0.43	<0.2	<0.2	<0.2
Benzo(a)anthracene		<0.2	<0.2	<0.2	<1.0	<0.2	0.11 J	<0.2	<0.2	<0.2
Chrysene		<0.2	<0.2	<0.2	<1.0	<0.2	0.13 J	<0.2	<0.2	<0.2
Fluoranthene	280	<0.2	<0.2	<0.2	1.5	<0.2	1.3	<0.2	2.4	<0.2
Fluorene	280	<0.2	0.69	0.038 J	5	<0.2	0.35	<0.2	<0.2	<0.2
Phenanthrene	210	<0.2	<0.2	<0.2	6.4	<0.2	1.1	<0.2	0.28	<0.2
Pyrene	210	<0.2	0.24	<0.2	0.85	<0.2	0.89	<0.2	0.21	<0.2

Table 3-6
Fixed-Base Laboratory Groundwater Results

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Compound	FDEP Target Level[1] (µg/L)	MPT-1330-8	BP-MW-3	MPT-1330-MW-17D	MPT-1330 MW-XX	BP-DMW-1	BP-MW-1	MPT-1330-MW-18	MPT-1330-MW-19	MPT-1330-MW-20
Sample Interval	**Groundwater Criteria**		bulkhead					bulkhead		
FL-PRO (USEPA Method 8270) (mg/L)										
TRPH	5	0.3	0.3	0.3	1.4	0.3	0.3	0.3	0.9	1.1
Metals Analysis (µg/L)										
Total Lead	15	< 1.6	< 1.6	< 1.6	5.4	< 1.6	< 1.6	< 1.6	< 1.6	10.7

Notes:
[1]Chapter 62-770, FAC (April 30, 1999)
Bold indicates values in excess of GCTLs, Chapter 62-770, FAC (April 30, 1999).
The detection limits for several constituents exceeded the FDEP GCTL. The elevated detection limits are due to dilution factors needed because of the elevated isopropylbenzene concentrations.

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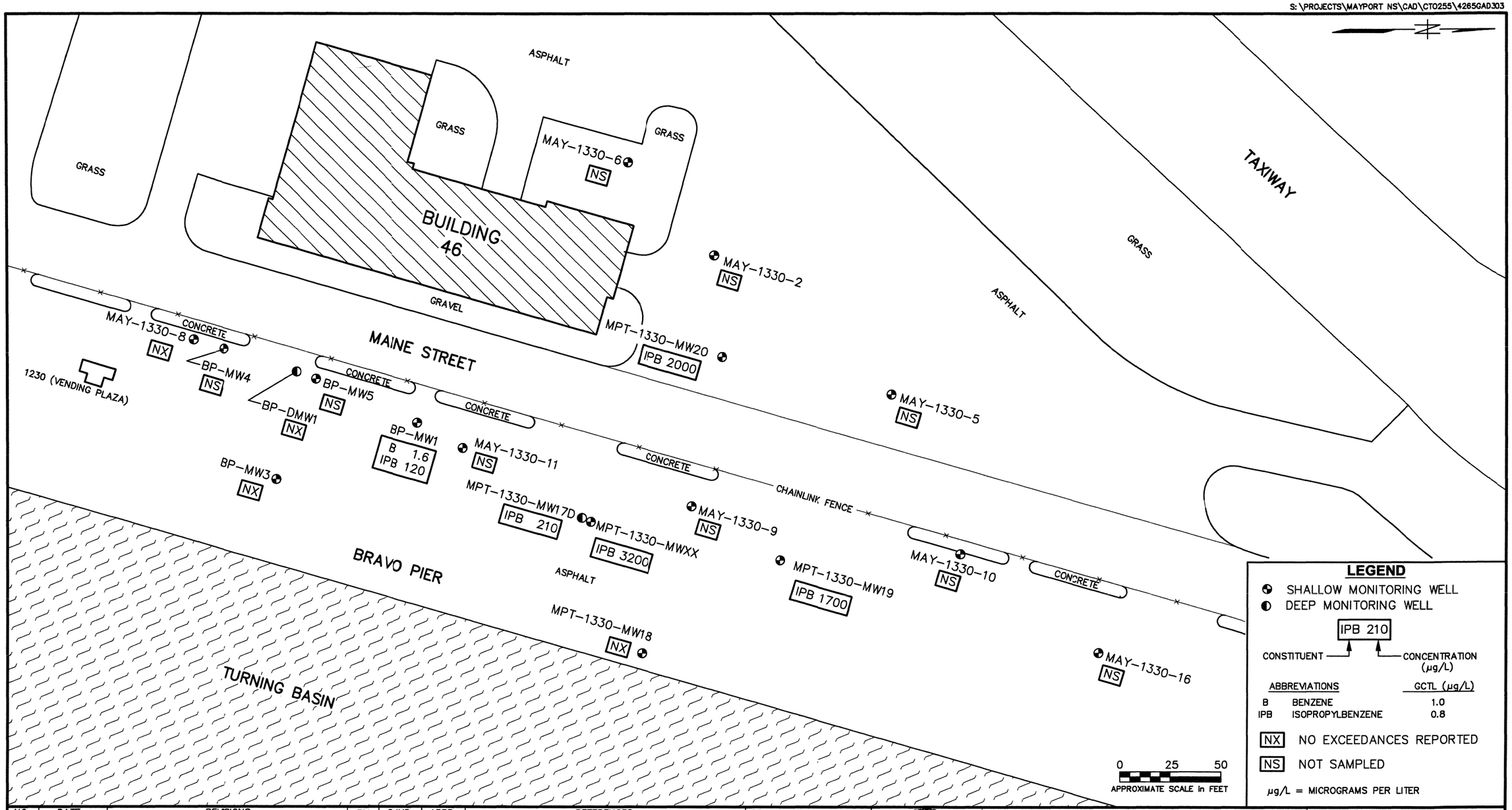

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL

IPB 210 (CONSTITUENT — CONCENTRATION (µg/L))

ABBREVIATIONS		GCTL (µg/L)
B	BENZENE	1.0
IPB	ISOPROPYLBENZENE	0.8

NX NO EXCEEDANCES REPORTED

NS NOT SAMPLED

µg/L = MICROGRAMS PER LITER

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 11/13/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

FIXED-BASE GROUNDWATER ANALYTICAL RESULTS EXCEEDING GCTLs, MARCH 14, 2003
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-6
REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

Prior to sampling the groundwater water quality measurements are taken from each monitoring well. These readings have been tabulated and are presented at Table 3-7. The original groundwater data sheets are presented in Appendix E. Based on the water quality measurements there appears to be minimal aerobic biodegradation ongoing at the site. Other water quality measurements appear to be typical. It should be noted that groundwater from monitoring well BP-MW1 is heated from a nearby steam line.

3.5.3 Isopropylbenzene Groundwater Concentrations

A composite of both mobile laboratory (September 2002) and fixed based analytical (March 2003) data from both TtNUS and the ACOE (October 2002) are depicted as Figure 3-7. It should be noted that a significant difference in groundwater concentrations were recorded for monitoring well MAY-1330-2. The TtNUS mobile laboratory recorded a concentration of 470 µ/L and the ACOE fixed based laboratory recorded a concentration of 2,365 µ/L. One other discrepancy occurred at monitoring well MAY-1330-8 where it was recorded by the mobile laboratory to have concentration of 7.1 µ/L while the fixed based lab recorded below detection limit concentrations. For both cases the most recent data was used for Figure 3-7. The mobile and fixed based lab data comparison for MPT-1330-MWXX was nearly identical.

Table 3-7
Field Water Quality Measurements

Site Assessment Report Addendum, Site 1330
Naval Station Mayport
Mayport, Florida

Well ID	pH	Cond	Temperature	Turbidity	DO	ORP
	standard	mS/cm	Celcius	NTU	mg/L	mV
MPT-1330-MW17D	7.6	0.768	26.6	4.0	0.71	-240
MPT-1330-MW18	7.30	0.140	18.8	5.7	0.39	-97
MPT-1330-MW19	6.93	0.078	29.70	0.0	MNW	-317
MPT-1330-MW20	7.18	0.488	22.38	3.5	0.66	-309
BP-MW1	6.85	0.350	54.90	0.0	0.67	-302
BP-MW3	6.91	0.012	23.40	2.8	MNW	-309
MAT-1330-8	7.09	0.056	22.40	0.0	13.59	-24
MPT-1330-MWXX	7.17	0.050	23.60	3.6	MNW	-290
BP-DWM-1	7.25	0.487	26.27	0.0	1.26	-190

Notes:
DO = dissolved oxygen
ORP = oxidation reduction potential
mS-cm = millisiemens per centimeter
NTU = mephelometric turbidity units
mg/L = milligrams per liter
mV = millivolts
MNW = meter not working properly

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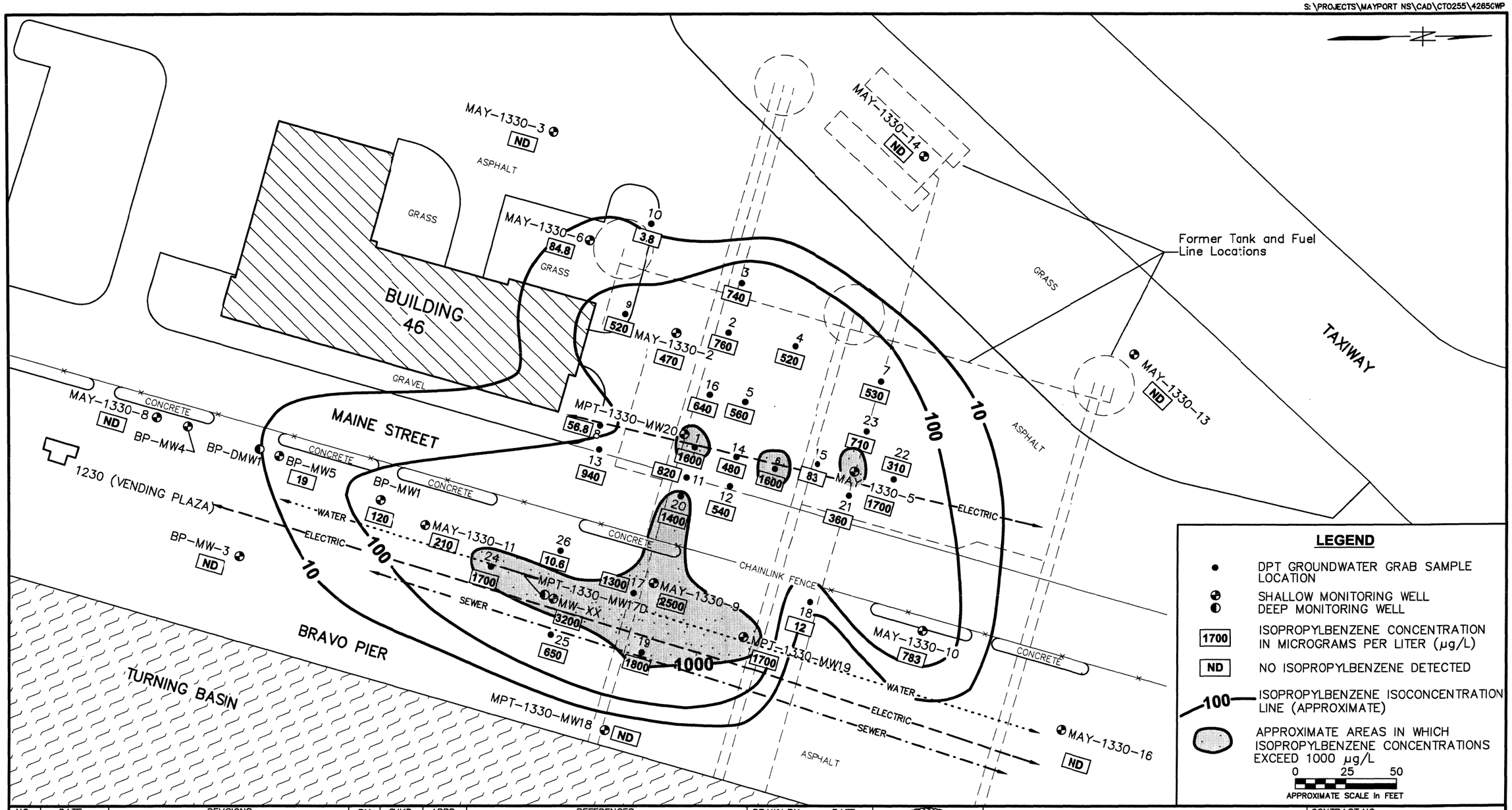

LEGEND

- DPT GROUNDWATER GRAB SAMPLE LOCATION
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- 1700 — ISOPROPYLBENZENE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- ND — NO ISOPROPYLBENZENE DETECTED
- 100 — ISOPROPYLBENZENE ISOCONCENTRATION LINE (APPROXIMATE)
- APPROXIMATE AREAS IN WHICH ISOPROPYLBENZENE CONCENTRATIONS EXCEED 1000 µg/L

0 25 50
APPROXIMATE SCALE In FEET

NO.	DATE	REVSIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY WLR DATE 8/19/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMMAND

ISOPROPYLBENZENE CONCENTRATIONS
IN GROUNDWATER
SITE ASSESSMENT REPORT
SITE 1330
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4265
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-7
REV. 0

FORM CADD NO. SDIV_BH.DWG – REV 0 – 1/20/98

4.0 CONCLUSION AND RECOMMENDATIONS

Results of the SA at Site 1330 indicate the following:

- An EM and GPR survey were conducted at Site 1330 which identified current utilities, former petroleum distribution lines, and abandoned USTs. A former product line was reportedly removed, but was located during this investigation. The former fuel line extends from Maine Street west, pointing directly toward a former abandoned in place cement UST. In addition, other remnants of the fuel distribution system may be present in the source area.

- No "excessively contaminated soil," as defined by Chapter 62-777.200, FAC, is present at the site in the vadose zone as measured by OVA-FID headspace analyses. No soil contaminants of concern were reported at concentrations exceeding SCTLs for 25 samples submitted for analysis by a mobile laboratory. Two soil samples collected from along the pipeline were analyzed for VOCs by a fixed-base laboratory. In addition to these two samples, one confirmatory sample was collected from the area of greatest potential. No constituents were recorded to exceed the SCTL for all fixed-base laboratory analyses.

- Groundwater samples analyzed by the mobile laboratory did report exceedences of the GCTL for all 32 samples analyzed for isopropylbenzene. No other constituent was identified in the analyzed samples. Similar results of predominately isopropylbenzene detections were recorded for the fixed-base laboratory. Nine monitoring wells were sampled with five of the wells having exceedences for isopropylbenzene. One monitoring well (BP-MW-1) showed a detection and exceedence of benzene. No other GCTL exceedences were identified. A deep well installed near the greatest concentration of isopropyl benzene was contaminated (210 µ/L) above the GCTL of 0.8µ/L. A groundwater sample collected from a well located near the bulkhead, (MPT 1330-MW18) was below the GCTLs for all analyzed parameters.

The areas of isopropylbenzene identified with the greatest groundwater concentrations are located at the Bravo Pier and near the still present product pipe located in the parking area of Building 46. These areas with the greatest groundwater isopropylbenzene concentration appear to be elongated in shape, resulting from secondary migration along utilities. The horizontal extent of the isopropylbenzene plume has been defined covering an area approximately 400 ft by 240 ft.

Vertical extent has not been defined. At boring later turned into MPT-1330-MW17D at the site was recorded to have at a depth of 41.5 ft a dense hard clay layer. Given that the there are varying depths and types of clay lenses in this region and the tightness of this lens was that of a confining unit, the boring was

terminated at 42 ft. Also, based on the site geology from a nearby boring at MPT-8-MW5D approximately 2,400 ft away the aquiford beneath the shallow aquifer is believed to extend to a depth of 72 ft where a dense clay unit begins. The next aquifer is at a depth below a depth of 87 ft which is where the boring was terminated. As a result, it is believed that contamination is restricted to the shallow aquifer.

Based on the laboratory analysis of soil and groundwater no impacts to the soil were identified and nearly all groundwater impacts were related to isopropylbenzene exceedences. The explanation for this occurrence is not conclusive but the ability of isopropylbenzene to strongly adhere to soil particles in the saturated interval may be the explanation for the groundwater impacts given the release was very old and that there is a strong washing of the capillarary zone through tidal influence. The remaining petroleum has either washed away or has been degraded leaving isopropylbenzene attached to soil particles. The loosening of the chemical bond to soil particles would slowly release isopropylbenzene back into the water column. Once released back onto the water column the isopropylbenzene compound is easily degraded and the length of time taken to breakdown the isopropylbenzene is less than that of benzene.

4.1 REMEDIAL ACTION PLAN

Based on the results of this investigation, remedial actions are recommended. These actions could include removal of the abandoned fuel line, over-excavation of any contaminated soils that may lie beneath the line, and groundwater remediation.

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APPENDIX A

SARA SUMMARY SHEET

CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 1330, Naval Station Mayport Reimbursement Site: ☐

Location: Mayport, Florida State Contract Site: ☐

EDI #: _____ FAC I.D.# _____ Other: Non-Prog. ☑

Date Reviewed: _____ Local Government: _____

(1) Source of Spill: Installation error Date of Spill: Unknown

(2) Type of Product:

Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
☐ Leaded		☐ Kerosene	
☐ Unleaded Regular		☐ Diesel	
☐ Unleaded Premium		☐ JP-4 Jet Fuel	
☐ Gasohol		☐ Heating Fuel	
☐ Undetermined		☑ Unknown	

(3) Description of IRA: _____

☐ Free product Removal: _____ (gals)
☐ Soil Removal: _____ (cubic yds)
☐ Soil Incineration: _____ (cubic yds)

(4) Free Product still present (yes/no) no Maximum apparent product thickness: none (feet)

(5) Maximum Groundwater contamination levels (ppb):

Total VOA:	3100 µ/L	benzene:	<2 µ/L	EDB:	< 0.020 µ/L
lead:	<1	MTBE:	<10 µ/L	other:	isopropylbenzene

(6) Brief lithologic description: Medium to fine grained sand. No significant lithologic variations across site. Confining unit at 42 ft bls

(7) Areal and vertical extent of soils contamination defined (yes/no) no

Highest current soil concentration (OVA: 0 ppm) or (EPA method 5030/8020: 0 ppb)

(8) Lower aquifer contaminated? (yes/no) no Depth of vertical contamination: 40 ft bls

(9) Date of last complete round of groundwater sampling: 8/21/02 Date of last soil sampling: 8/5/02

(10) QAPP approved? (yes/no) Date: 8/24/98

(11) Direction (e.g. NNW) of surficial groundwater flow: E (Fig. ~~3-2~~ 3-4 on page ~~3-4~~ 3-7)

(12) Average depth to groundwater: 6.0 to 8.0 (ft)

(13) Observed range of seasonal groundwater fluctuations: @ 1 (ft) (Based on water level data collected during the CAR investigation)

(14) Estimated rate of groundwater flow: 0.058 (ft/day)

(15) Hydraulic gradient across site: 0.004 (ft/ft)

(16) Aquifer characteristics:

	Values	Units	Method
Hydraulic conductivity	4.34	ft/day	Kasenow & Pare, 1995
Storage coefficient	-	ft/ft	-
Aquifer thickness	41.5	ft	Literature
Effective soil porosity	30	%	Literature
Transmissivity	10	gal/day/ft	Specific Capacity Tests

(17) Other remarks: None

APPENDIX B
ISOPROPYL BENZENE PHYSICAL PROPERTIES

HANDBOOK

OF

Environmental Degradation Rates

PHILIP H. HOWARD
ROBERT S. BOETHLING
WILLIAM F. JARVIS
WILLIAM M. MEYLAN
EDWARD M. MICHALENKO

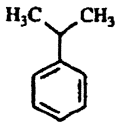
HEATHER TAUB PRINTUP
Editor

LEWIS PUBLISHERS

Cumene

CAS Registry Number: 98-82-8

Structure:



Half-lives:

· **Soil:**	High:	192 hours	(8 days)
	Low:	48 hours	(2 days)

Comment: Based upon data from a soil column study in which aerobic ground water was continuously percolated through quartz sand (Kappeler, T and Wuhrmann, K (1978)).

· **Air:**	High:	97.2 hours	(4.05 days)
	Low:	9.72 hours	

Comment: Scientific judgement based upon estimated photooxidation half-life in air.

· **Surface Water:**	High:	192 hours	(8 days)
	Low:	48 hours	(2 days)

Comment: Based upon data from a soil column study in which aerobic ground water was continuously percolated through quartz sand (Kappeler, T and Wuhrmann, K (1978)).

· **Ground Water:**	High:	384 hours	(16 days)
	Low:	96 hours	(4 days)

Comment: Based upon data from a soil column study in which aerobic ground water was continuously percolated through quartz sand (Kappeler, T and Wuhrmann, K (1978)).

Aqueous Biodegradation (unacclimated):

· **Aerobic half-life:**	High:	192 hours	(8 days)
	Low:	48 hours	(2 days)

Comment: Based upon data from a soil column study in which aerobic ground water was continuously percolated through quartz sand (Kappeler, T and Wuhrmann, K (1978)).

· **Anaerobic half-life:**	High:	768 hours	(32 days)
	Low:	192 hours	(8 days)

Comment: Scientific judgement based upon unacclimated aqueous aerobic biodegradation half-life.

· **Removal/secondary treatment:**	High:	100%
	Low:	

Comment: Removal percentage based upon data from a continuous activated sludge biological

treatment simulator (Kappeler, T and Wuhrmann, K (1978)).

Photolysis:

· **Atmos photol half-life:** High: No data
Low:

Comment:

· **Max light absorption (nm):** lambda max = 248, 252, 258, 260, 264, 267 nm (cyclohexane).
Comment: Absorption extends to approximately 292 nm (Sadtler UV No. 95).

· **Aq photol half-life:** High: No data
Low:

Comment:

Photooxidation half-life:

· **Water:** High: $1.3X10^5$ hours (14.6 years)
Low: 3208 hours (134 days)

Comment: Based upon measured rate constant for reaction with hydroxyl radical in water (Mill, T et al. (1978)).

· **Air:** High: 97.2 hours (4.05 days)
Low: 9.72 hours

Comment: Scientific judgement based upon estimated rate constant for reaction with hydroxyl radical in air (Atkinson, R (1987A)).

Reduction half-life: High: No data
Low:

Comment:

Hydrolysis:

· **First-order hydr half-life:**
Comment:

· **Acid rate const $(M(H+)\text{-}hr)^{-1}$:** No data
Comment:

· **Base rate const $(M(OH-)\text{-}hr)^{-1}$:**
Comment:

Benzene

CAS Registry Number: 71-43-2

Half-lives:

- **Soil:** High: 384 hours (16 days); Low: 120 hours (5 days)

Comment: Scientific judgement based upon unacclimated aqueous aerobic biodegradation half-life.

- **Air:** High: 501 hours (20.9 days); Low: 50.1 hours (2.09 days)

Comment: Based upon photooxidation half-life in air.

- **Surface Water:** High: 384 hours (16 days); Low: 120 hours (5 days)

Comment: Scientific judgement based upon unacclimated aqueous aerobic biodegradation half-life.

- **Ground Water:** High: 17280 hours (24 months); Low: 240 hours (10 days)

Comment: Scientific judgement based upon unacclimated aqueous aerobic (low $t_{1/2}$) and anaerobic (high $t_{1/2}$) biodegradation half-life.

Aqueous Biodegradation (unacclimated):

- **Aerobic half-life:** High: 384 hours (16 days); Low: 120 hours (5 days)

Comment: Based upon river die-away data (high $t_{1/2}$) (Vaishnav, DD and Babeu, L (1987)) and upon sea water die-away test data (low $t_{1/2}$) (Van der Linden, AC (1978)).

- **Anaerobic half-life:** High: 17280 hours (24 months); Low: 2688 hours (16 weeks)

Comment: Scientific judgement based upon unacclimated aqueous anaerobic biodegradation screening test data (Horowitz, A et al. (1982)).

- **Removal/secondary treatment:** High: 100%; Low: 44%

Comment: Removal percentages based upon data from continuous activated sludge biological treatment simulators (Stover, EL and Kincannon, DF (1983); Feiler, HD et al. (1979)).

Photolysis:

- **Atmos photol half-life:** High: 16152 hours (673 days); Low: 2808 hours (117 days)

Comment: Scientific judgement based upon measured photolysis half-lives in deionized water (Hustert, K et al. (1981)).

· **Max light absorption (nm):** lambda max is approximately 239, 244, 249, 255, 261, 268 nm (cyclohexane).

Comment: Absorption in cyclohexane extends to approximately 285 nm; absorption in the gas phase extends to approximately 275 nm (Howard, PH and Durkin, PR (1975)).

· **Aq photol half-life:**

High:	16152 hours	(673 days)
Low:	2808 hours	(117 days)

Comment: Scientific judgement based upon measured photolysis half-lives in deionized water (Hustert, K et al. (1981)).

Photooxidation half-life:

· **Water:**

High:	3.21×10^5 hours	(36.6 years)
Low:	8021 hours	(334 days)

Comment: Based upon measured rate constant for reaction with hydroxyl radical in water (Guesten, H et al. (1981)).

· **Air:**

High:	501 hours	(20.9 days)
Low:	50.1 hours	(2.09 days)

Comment: Based upon measured rate constant for reaction with hydroxyl radical in air (Atkinson, R (1985)).

Reduction half-life:

High: No data
Low:

Comment:

Hydrolysis:

· **First-order hydr half-life:**
Comment:

· **Acid rate const $(M(H+)\text{-}hr)^{-1}$:** No hydrolyzable groups
Comment:

· **Base rate const $(M(OH\text{-})\text{-}hr)^{-1}$:**
Comment:

GROUNDWATER CHEMICALS DESK REFERENCE

JOHN H. MONTGOMERY
LINDA M. WELKOM

LEWIS PUBLISHERS

BENZENE

Synonyms: Annulene; Benxole; Benzol; Benzole; Benzolene; Bicarburet of hydrogen; Carbon oil; Coal naphtha; Coal tar naphtha; Cyclohexatriene; Mineral naphthalene; Motor benzol; NCI-C55276; Nitration benzene; Phene; Phenyl hydride; Pyrobenzol; Pyrobenzole; RCRA waste number U019; UN 1114.

Structural Formula:

CHEMICAL DESIGNATIONS

CAS Registry Number: 71-43-2

DOT Designation: 1114

Empirical Formula: C_6H_6

Formula Weight: 78.11

RTECS Number: CY 1400000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear, colorless to light yellow watery-liquid with an aromatic or gasoline-like odor.

Boiling Point: 80.100 °C [1].

Henry's Law Constant: 0.00548 atm·m^3/mol at 25 °C [2]; 0.00538 atm·m^3/mol [3].

Ionization Potential: 9.25 eV [4]; 9.56 eV [5].

Log K_{oc}: 1.69 [6]; 1.92 [7]; 1.96, 2.00 [8].

Log K_{ow}: 2.13 [9]; 2.11 [10]; 1.56, 2.15 [11]; 2.12 [12]; 1.95 [13].

Melting Point: 5.533 °C [1].

Solubility in Organics: Freely miscible with ethanol, ether, glacial acetic acid, acetone, chloroform, and carbon tetrachloride [14].

Solubility in Water: 1,780 mg/L at 20 °C [15]; 820 mg/L at 22 °C [16]; 1,800 mg/L at 25 °C [17]; 0.093 vol% at 20 °C [18]; 1,790 mg/L at 25 °C [19]; 1,750 mg/L at 25 °C [20]; 1,850 mg/L at 30 °C [21]; 1,755 mg/L at 25 °C [22]; 1,740 mg/L at 25 °C [23]; 1,780 mg/L at 25 °C [24]; 1,791 mg/L at 25 °C [25]; 0.153 wt% at 0 °C, 0.163 wt% at 10 °C, 0.175 wt% at 20 °C, 0.180 wt% at 25 °C, 0.190 wt% at 30 °C, 0.206 wt% at 40 °C, 0.225 wt% at 50 °C, 0.250 wt% at 60 °C, 0.277 wt% at 70 °C, 0.344 wt% at 80 °C, 0.393 wt% at 90 °C, 0.504 wt% 107.4 °C [26]; 1,678 ppm at 0 °C, 1,755 ppm at 25 °C [27]; 1,740 mg/L at 25 °C, 1,391 mg/L in artificial seawater at 25 °C [28]; 1,710 mg/L at 20 °C [29]; 1,696 ppm at 25.00 °C [30]; 1,860 ppm at 25 °C [31]; 1,800 ppm at 25 °C [32]; 1,000 mg/L in fresh water at 25 °C, 1,030 mg/L in salt water at 25 °C [33]; 0.18775 wt% at 23.5 °C [34]; 0.0233 M at 25 °C [35].

Specific Density: 0.8765 at 20/4 °C [36]; 0.87895 at 20/4 °C, 0.87366 at 25/4 °C [37]; 0.8784 at 20/4 °C, 0.8680 at 30/4 °C, 0.8572 at 40/4 °C [38]; 0.87378 at 25/4 °C [39].

Transformation Products: A mutant of *Pseudomonas putida* dihydroxylyzed benzene into *cis*-benzene glycol accompanied by partial dehydrogenation yielding catechol [40]. Bacterial dioxygenases can cleave catechol at the *ortho-* and *meta-* positions to yield *cis,cis*-muconic acid and α-hydroxymuconic semialdehyde, respectively [41].

Vapor Density: 3.19 g/L at 25 °C, 2.70 (air = 1).

Vapor Pressure: 60 mm at 15 °C, 76 mm at 20 °C, 118 mm at 30 °C [15]; 95.2 mm at 25 °C [42]; 760 mm at 80.1 °C, 1,520 mm at 103.8 °C, 3,800 mm at 142.5 °C, 7,600 mm at 178.8 °C, 15,200 mm at 221.5 °C [36]; 100 mm at 26.075 °C [1]; 397 mm at 60.3 °C, 556 mm at 70.3 °C, 764 mm at 80.3 °C, 1,031 mm at 90.3 °C, 1,370 mm at 100.3 °C [43].

FIRE HAZARDS

Flash Point: -11 °C [4].

Lower Explosive Limit (LEL): 1.3% [4].

Upper Explosive Limit (UEL): 7.1% [4].

HEALTH HAZARD DATA

Immediately Dangerous to Life or Health (IDLH): 2,000 ppm (carcinogen) [44].

Permissible Exposure Limits (PEL) in Air: 10 ppm (≈30 mg/m^3), 10-minute 50 ppm ceiling [45]; 0.1 ppm TWA, 1 ppm 15-minute ceiling [4]; 10 ppm TWA [46].

MANUFACTURING

Selected Manufacturers:

Commonwealth Oil Refining Co., Inc.
Penuelas, PR 00724

Phillips Petroleum Co.
Phillips Puerto Rico Core, Inc.
Banco Popular Center
Hato Rey, PR 00936

Shell Chemical Co.
Petrochemical Division
P.O. Box 2463
Houston, TX 77001

Uses: Manufacture of ethylbenzene (preparation of styrene monomer), dodecylbenzene (for detergents), cyclohexane (for nylon), nitrobenzene, aniline, maleic anhydride, diphenyl, benzene hexachloride, benzene sulfonic acid, phenol, dichlorobenzene, insecticides, pesticides, fumigants, explosives; aviation fuel, flavors, perfume, medicine, dyes, and other organic chemicals; paints, coatings, plastics and resins; food processing; photographic chemicals; nylon intermediates; paint removers; rubber cement; antiknock gasoline; solvent.

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Groundwater Chemicals Desk Reference

VOLUME 2

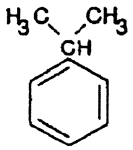
John H. Montgomery

LEWIS PUBLISHERS

ISOPROPYLBENZENE

Synonyms: Cumene; Cumol; Isopropylbenzol; (1-Methylethyl)benzene; 2-Phenylpropane; RCRA waste number U055; UN 1221.

Structural Formula:



CHEMICAL DESIGNATIONS

CAS Registry Number: 98-82-8

DOT Designation: 1918

Empirical Formula: C_9H_{12}

Formula Weight: 120.19

RTECS Number: GR 8575000

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless liquid.

Boiling Point: 152.4 °C [1]; 164.6 °C [2].

Henry's Law Constant: 1.47 x 10^{-2} atm·m^3/mol at 25 °C [3].

Ionization Potential: 8.69 eV [4]; 9.13 eV [5].

Log K_{oc}: 3.45 using method of Karickhoff and others [6].

Log K_{ow}: 3.66 [7]; 3.51 [8].

Melting Point: -96 °C [1]; -96.8 °C [2].

Solubility in Organics: Soluble in acetone, alcohol, benzene, ether [1], and carbon tetrachloride [9].

Solubility in Water: 48.3 ppm at 25 °C [10]; 50.5 ppm at 25 °C [11]; 65.3 ppm at 25 °C, 42.5 ppm in seawater at 25 °C [12]; 73 mg/L at 25.0 °C [13]; 50 mg/L at 20 °C [14]; 0.299 mmol/L in 0.5 M NaCl at 25 °C [15]; 0.495, 0.510, 0.568, and 0.638 mmol/L at 15, 25, 35, and 45 °C, respectively [16]; 500 mg/L in artificial seawater at 25 °C [17].

Specific Density: 0.8618 at 20/4 °C [1].

Transformation Products: Major products reported from the photooxidation of isopropylbenzene with nitrogen oxides include nitric acid and benzaldehyde [18]. A *n*-hexane solution containing isopropylbenzene and spread as a thin film (4 mm) on cold water (10 °C) was irradiated by a mercury medium pressure lamp. In 3 h, 22% of the applied isopropylbenzene photooxidized into α,α-dimethylbenzyl alcohol, 2-phenylpropionaldehyde, and allylbenzene [19]. When isopropylbenzene was incubated with *Pseudomonas putida*, the substrate was converted to *ortho*-dihydroxy compounds in which the isopropyl part of the compound remained intact [20]. Oxidation of isopropylbenzene by *Pseudomonas desmolytica* S44B1 and *Pseudomonas convexa* S107B1 yielded 3-isopropylcatechol and a ring fission product, (+)-2-hydroxy-7-methyl-6-oxooctanoic acid [21].

Vapor Density: 4.91 g/L at 25 °C, 4.15 (air = 1).

Vapor Pressure: 1 mm at 2.9 °C, 10 mm at 38.3 °C, 40 mm at 66.1 °C, 100 mm at 88.1 °C, 400 mm at 129.2 °C, 760 mm at 152.4 °C [1]; 3.2 mm at 20 °C [14]; 4.6 mm at 25 °C [2].

FIRE HAZARDS

Flash Point: 39 °C [22]; 46 °C [9].

Lower Explosive Limit (LEL): 0.9% [23].

Upper Explosive Limit (UEL): 6.5% [23]; 8.8% [24].

MANUFACTURING

Selected Manufacturers: E.I. DuPont de Nemours & Co., Inc., Chemicals, Dyes and Pigments Department, Deepwater, NJ 08023; Fluka Chemical Corp., 980 S. Second St., Ronkonkoma, NY 11779; Sigma Chemical Co., P.O. Box 14508, St. Louis, MO 63178.

Uses: M
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Olefi
Chem.
12. Suttor
Water

Uses: Manufacture of acetone, acetophenone, diisopropylbenzene, α-methylstyrene, and phenol, polymerization catalysts; constituent of motor fuel, asphalt, and naphtha; catalyst for acrylic and polyester-type resins; octane booster for gasoline; solvent.

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APPENDIX C
SOIL BORING LOGS AND LITHOLOGIC DESCRIPTIONS

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Preferred Drilling Solutions
DRILLING RIG: Truck Mounted - HSA
BORING NUMBER: MPT-1330-17D
DATE: 2.27.03
GEOLOGIST: David Siefken
DRILLER: Daniel Spivey

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-8"				asphalt and lime rock								
	8"-10'												
					loose, white and light brown, fine to medium				dry				
					grained, sand - shell hash				water level - 7.2 ft bls				
	10'												
					"	"			petro odor				
	20'												
					compacted, gray, medium, grained sand-								
					with shell hash								
					some gray silt in addition to the above formation								
	30'				beginning at 25'-30'								
					copmacted, gray, fine, with some medim grained								
					sand and silt - some shell hash and								
					2" clay lenses between 30 ' and 32'								
	40'												
					loose, large, course grained, white, sand over 6 inches								
					of dense, non-plastic, olive,green,								
					clay at bottom of boring								
	42'												

Drilling Area 0
Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: MPT-1330-MW17D

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Preferred Drilling Solutions
DRILLING RIG: Truck Mounted - HSA
BORING NUMBER: MPT-1330-20s
DATE: 02.26.03
GEOLOGIST: David Siefken
DRILLER: Daniel Spivey

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-8"						asphalt and lime rock						
	8"-13'												
							fine to mediou gray and						
							brown sand with shell						
							hash						
							1-inch diameter rocks are						
							present between 3.5' and 4.5'						
	13'												

Drilling Area 0
Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: MPT-1330-MW-20s

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Preferred Drilling Solutions
DRILLING RIG: Truck Mounted - HSA
BORING NUMBER: MPT-1330-19s
DATE: 02.27.03
GEOLOGIST: David Siefken
DRILLER: Daniel Spivey

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-8"						asphalt and lime rock						
	8"-13'												
							fine to mediou gray and						
							brown sand with shell						
							hash						
							1-inch diameter rocks are						
							present between 3.5' and 4.5'						
	13'												

Drilling Area 0
Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: MPT-1330-MW-19s

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Preferred Drilling Solutions
DRILLING RIG: Truck Mounted - HSA
BORING NUMBER: MPT-1330-18s
DATE: 02.27.03
GEOLOGIST: David Siefken
DRILLER: Daniel Spivey

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-8"						asphalt and lime rock						
	8"-13'												
							fine to mediou gray and						
							brown sand with shell						
	13'						hash						

Drilling Area 0
Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: MPT-1330-MW-18s

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-1
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4"				asphalt and lime rock to 4",								
	4"-7'				with fine to medium, light brown, brown, and white, sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-2
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4"				asphalt and lime rock								
	4"-7'				with fine to medium, light brown, brown, and white, sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-3
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-7'				fine to medium, light brown, and white, sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-4
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-6"				asphalt and lime rock								
	6"-1.5'				gray clay								
	1.5'-5'				fine white and light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-5
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-6"				asphalt and lime rock								
	6"-5'				fine white and light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-6
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-6"						asphalt and lime rock						
	6"-4'						fine white and light brown sand with shell hash						
	4'-5'						gray clay						
	5'-6'						fine to medium lt brown sand with shell hash and some clay						

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-7
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine very light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-8
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-5'				fine light brown sand with shell hash								
	5'-6'				fine light brown sand with shell hash and some gray clay								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-9
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium white and light brown sand								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-10
DATE: 09.30.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4"				grass and organic materialand shell hash								
	4"-5'				fine to medium light brown sand with shell hash								
	5'-6'				fine light brown sand with increased percentage of shell hash								
					and mottles of black silt								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-11
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-12
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-13
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area
Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-14
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 255 / Site 1330
BORING NUMBER: SB-15
PROJECT NUMBER: N4265
DATE: 10.01.02
DRILLING COMPANY: Precision
GEOLOGIST: David Siefken
DRILLING RIG: ATV mounted DPT rig
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* 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. #: ______

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-16
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-6"				asphalt and lime rock								
	6"-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-17
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area

Remarks: _____

Background (ppm): _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-18
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-19
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-1'				asphalt and lime rock								
	1'-7'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-20
DATE: 10.01.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-7'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-21
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-4"				asphalt and lime rock								
	4"-5'				fine to medium light brown sand with shell hash								
	5'-6'				trace of gray clay in fornation listed above								
	6'-7'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-22
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-4"				asphalt and lime rock								
	4"-7'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: CTO 255 / Site 1330
BORING NUMBER: SB-23
PROJECT NUMBER: N4265
DATE: 10.02.02
DRILLING COMPANY: Precision
GEOLOGIST: David Siefken
DRILLING RIG: ATV mounted DPT rig
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4"				asphalt and lime rock								
	4"-7'				fine to medium light brown sand with shell hash								

* 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. #: ______

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-24
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-25
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: CTO 255 / Site 1330
PROJECT NUMBER: N4265
DRILLING COMPANY: Precision
DRILLING RIG: ATV mounted DPT rig
BORING NUMBER: SB-26
DATE: 10.02.02
GEOLOGIST: David Siefken
DRILLER: Shane Nowlane

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	PID/FID Reading (ppm): Sampler BZ	PID/FID Reading (ppm): Borehole**	PID/FID Reading (ppm): Driller BZ**
	0-1'				asphalt and lime rock								
	1'-6'				fine to medium light brown sand with shell hash								

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: _____

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

TITLE: Mayport Naval Station, Mayport, Fl.	**LOG of WELL:** MPT-8-MW5D		**BORING NO.** MPT-8-MW5D
CLIENT: SOUTHERN DIVISION, NAVFACENGCOM			**PROJECT NO:** 7533-84
CONTRACTOR: GROUNDWATER PROTECTION, INC.		**DATE STARTED:** 1/11/93	**COMPLTD:** 1/13/93
METHOD: MUD ROTARY	**CASE SIZE:** 4"	**SCREEN INT.:** 60-70'	**PROTECTION LEVEL:** D
TOC ELEV.: 13.29 FT.	**MONITOR INST.:** F.I.D.	**TOT DPTH:** 87.0FT.	**DPTH TO ▽** 9.20 FT.
LOGGED BY: Felix Rizk	**WELL DEVELOPMENT DATE:** 1/18/93		**SITE:** #8

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0.0	ORGANIC SOIL - dark brown, sandy, w/ plant matter (top		OL		
							SP	POST-HOLE	
5			40%	0.0	SAND - fine, tan, moist			1,2,5,5	
					SAND - fine to medium, tan, shelly, moist				
					SAND - fine, lt. gray, wet				
10			40%	50	ORGANIC SOIL - dark brown, silty, w/ plant matter over SAND - fine, silty, dk. gray, wet		OL SM	2,6,5,6	
15			50%	30	SAND - fine, light gray, silty, moist			7,10,10,11	
20			70%	0.0	SAND - fine, light gray, silty, wet			17,26,37,41	
25			50%	0.0	Same as above			8,18,38,40	
30									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Mayport Naval Station, Mayport, Fl.	**LOG of WELL:** MPT-8-MW5D		**BORING NO.** MPT-8-MW5D
CLIENT: SOUTHERN DIVISION, NAVFACENGCOM			**PROJECT NO:** 7533-84
CONTRACTOR: GROUNDWATER PROTECTION, INC.		**DATE STARTED:** 1/11/93	**COMPLTD:** 1/13/93
METHOD: MUD ROTARY	**CASE SIZE:** 4"	**SCREEN INT.:** 60-70'	**PROTECTION LEVEL:** D
TOC ELEV.: 13.29 FT.	**MONITOR INST.:** P.I.D.	**TOT DPTH:** 87.0FT.	**DPTH TO ▽** 8.20 FT.
LOGGED BY: Felix Rizk	**WELL DEVELOPMENT DATE:** 1/18/93		**SITE:** #8

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
			60%	0.0	Same as above		SM	16,17,34,37	
35			50%	0.0	SAND - fine, light gray, silty (top 2") over CLAY - olive gray, silty ,laminated (6") over SAND - fine, light gray, wet		CL SP	10,11,25,20	
40			50%	0.0	SAND - fine, light gray, interlayered with olive gray, silty clay		CL SP CL SP CL SP	11,14,35,37	
45			50%	0.0	Same as above		CL SP CL SP	19,32,84,30	
50			50%	0.0	Same as above		CL SP	30,35,90,R	
55			50%	0.0	SANDY SHELL unit over CLAYEY SAND unit (bottom		GM SC GM	9,8,4,8	
60									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Mayport Naval Station, Mayport, Fl.	**LOG of WELL:** MPT-8-MW5D		**BORING NO.** MPT-8-MW5D
CLIENT: SOUTHERN DIVISION, NAVFACENGCOM			**PROJECT NO:** 7533-84
CONTRACTOR: GROUNDWATER PROTECTION, INC.		**DATE STARTED:** 1/11/93	**COMPLTD:** 1/13/93
METHOD: MUD ROTARY	**CASE SIZE:** 4"	**SCREEN INT.:** 60-70'	**PROTECTION LEVEL:** D
TOC ELEV.: 13.29 FT.	**MONITOR INST.:** F.I.D.	**TOT DPTH:** 87.0FT.	**DPTH TO ▽** 9.20 FT.
LOGGED BY: Felix Rizk	**WELL DEVELOPMENT DATE:** 1/18/93		**SITE:** #8

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 2				
			80%	0.0	SHELL - shell hash unit, grading downward from fine to coarse (top 8") over CLAY - olive gray, silty, medium plasticity, wet		GM CL GM	2,4,6,2	
65			50%	0.0	SHELL - shell hash unit, grades downward into Clay -olive gray, silty, wet		CL	5,8,5,6	
							SP		
70			50%	0.0	SAND - fine to medium, dark gray, coatings of organic matter and sulfurous odor, moist			17,28,28,38	
							CL		
75			60%	0.0	CLAY - greenish gray, silty, stiff, med. to low plasticity, dry			15,30,31,70	
80			100%	0.0	CLAY - light gray, nodular, stiff to hard, low plasticity, slightly moist			18,41,80,R	
85			100%	5.0	CLAY - light gray, black nodules, mod. stiff, low plasticity, slightly moist			8,10,18,27	
					Boring Terminated at 87 feet				
90									

 ABB ENVIRONMENTAL SERVICES, INC.

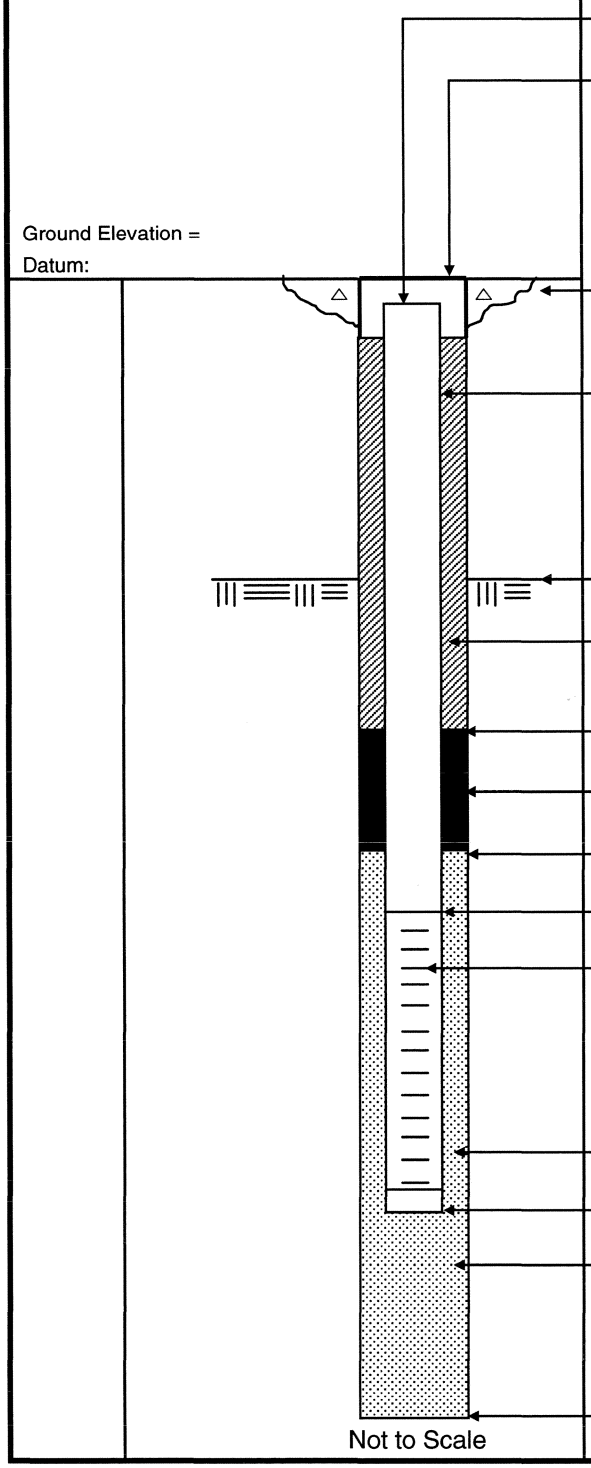
APPENDIX D
WELL COMPLETION LOGS

Tetra Tech NUS, Inc.

WELL No.: MPT-1330-MW17D

SHALLOW MONITORING WELL SHEET

PROJECT:	CTO 255/ Site 1330	DRILLING Co.:	Preferred Drilling Solutions	BORING No.:	MW17D
PROJECT No.:	N4265	DRILLER:	Greg Campbell	DATE COMPLETED:	02/27/03
SITE:	Site 1330 / Bravo Pier	DRILLING METHOD:	H.S.A.	NORTHING:	
GEOLOGIST:	David Siekfen	DEV. METHOD:	Submersible	EASTING:	



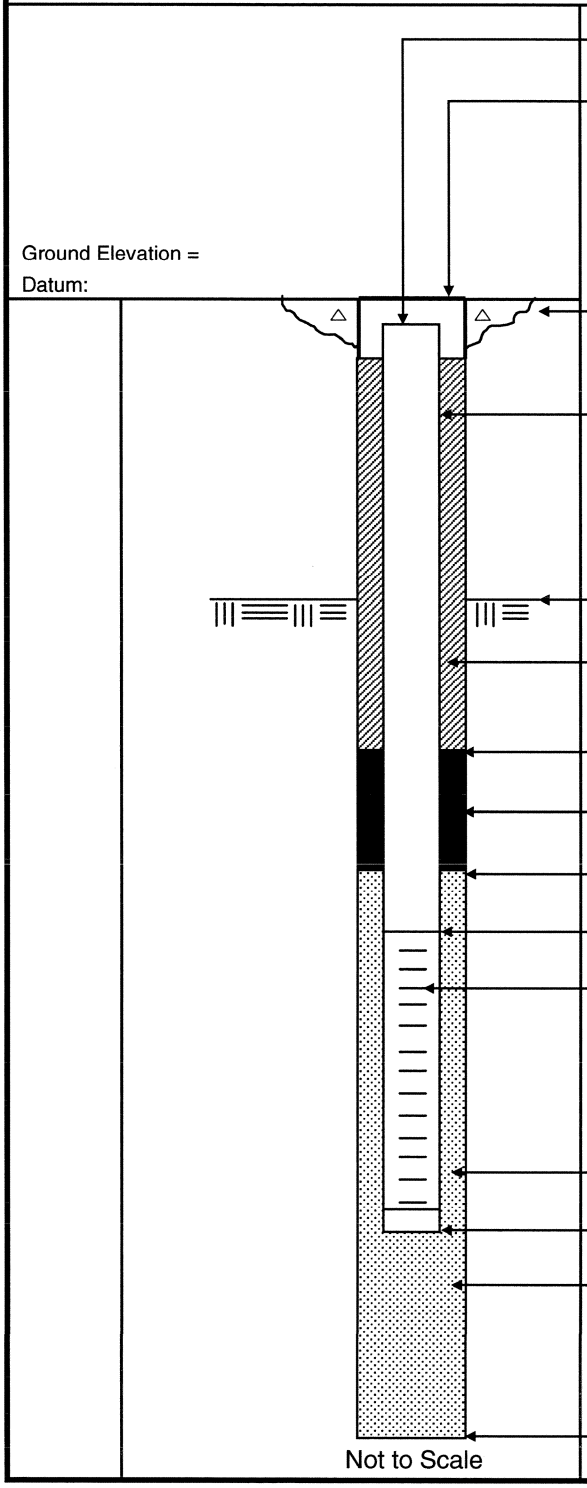
Elevation / Depth of Top of Riser:		NA /
Elevation / Height of Top of Surface Casing:		NA /
I.D. of Surface Casing:	NA	
Type of Surface Casing:	8" Manhole	
Type of Surface Seal:	QUIKRETE	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	8"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	TYPE 1 PORTLAND GROUT	
Elevation / Depth of Seal:		/ 31.0
Type of Seal:	30/65 SAND	
Elevation / Depth of Top of Filter Pack:		/ 33.0
Elevation / Depth of Top of Screen:		/ 35.0
Type of Screen:	PVC	
Slot Size x Length:	0.010 -INCH	
I.D. of Screen:	2"	
Type of Filter Pack:	20/30	
Elevation / Depth of Bottom of Screen:		/ 40.0
Elevation / Depth of Bottom of Filter Pack:		/ 40.0
Type of Backfill Below Well:		
Elevation / Total Depth of Borehole:		/ 40.5

Tetra Tech NUS, Inc.

WELL No.: MPT-1330-MW18

SHALLOW MONITORING WELL SHEET

PROJECT:	CTO 255/ Site 1330	DRILLING Co.:	Preferred Drilling Solutions	BORING No.:	MW18
PROJECT No.:	N4265	DRILLER:	Greg Campbell	DATE COMPLETED:	02/27/03
SITE:	Site 1330 / Bravo Pier	DRILLING METHOD:	H.S.A.	NORTHING:	
GEOLOGIST:	David Siekfen	DEV. METHOD:	Submersible	EASTING:	



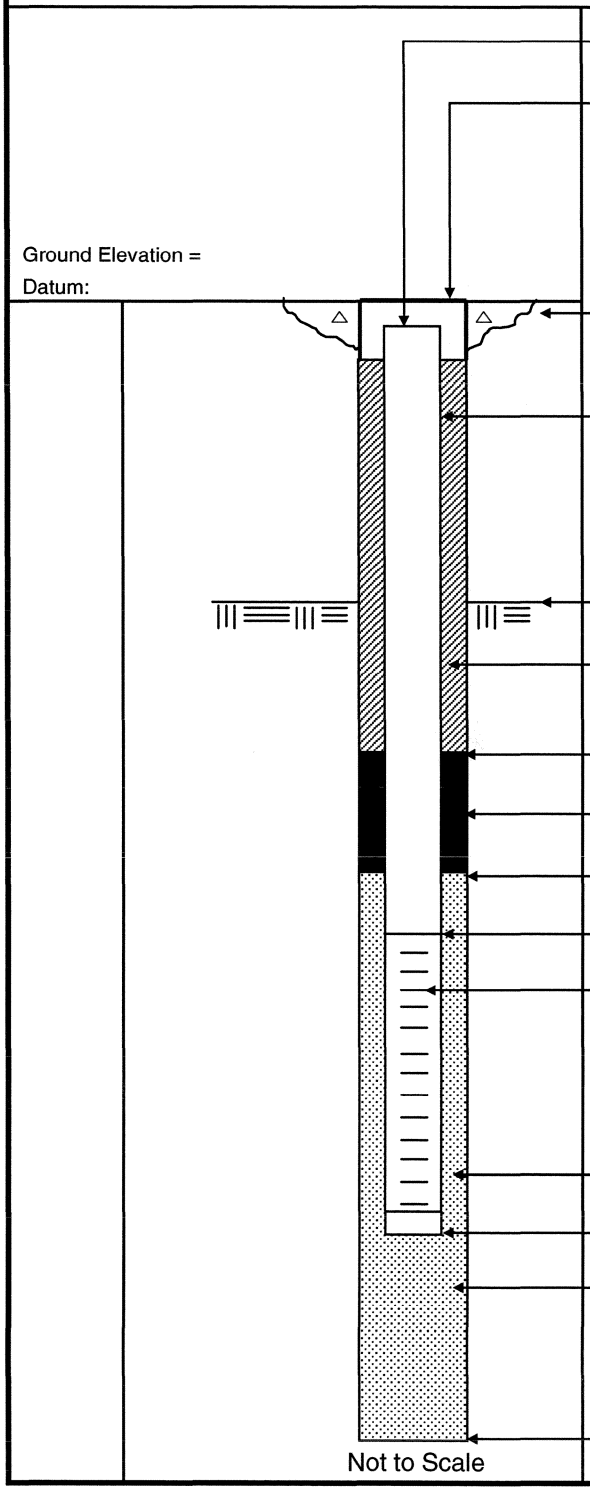
Elevation / Depth of Top of Riser:		NA /
Elevation / Height of Top of Surface Casing:		NA /
I.D. of Surface Casing:	NA	
Type of Surface Casing:	8" Manhole	
Type of Surface Seal:	QUIKRETE	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	8"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	TYPE 1 PORTLAND GROUT	
Elevation / Depth of Seal:		/ 1.5
Type of Seal:	30/65 SAND	
Elevation / Depth of Top of Filter Pack:		/ 2.5
Elevation / Depth of Top of Screen:		/ 3.0
Type of Screen:	PVC	
Slot Size x Length:	0.010 -INCH	
I.D. of Screen:	2"	
Type of Filter Pack:	20/30	
Elevation / Depth of Bottom of Screen:		/ 13.0
Elevation / Depth of Bottom of Filter Pack:		/ 13.0
Type of Backfill Below Well:		
Elevation / Total Depth of Borehole:		/ 13.5

Tetra Tech NUS, Inc.

WELL No.: MPT-1330-MW19

SHALLOW MONITORING WELL SHEET

PROJECT:	CTO 255/ Site 1330	DRILLING Co.:	Preferred Drilling Solutions	BORING No.:	MW19
PROJECT No.:	N4265	DRILLER:	Greg Campbell	DATE COMPLETED:	02/27/03
SITE:	Site 1330 / Bravo Pier	DRILLING METHOD:	H.S.A.	NORTHING:	
GEOLOGIST:	David Siekfen	DEV. METHOD:	Submersible	EASTING:	



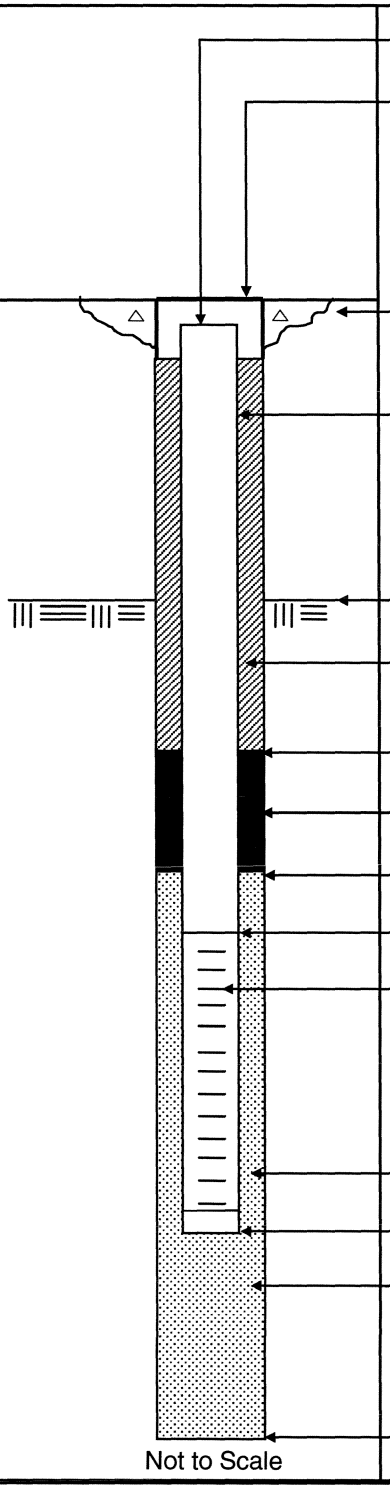
Elevation / Depth of Top of Riser:		NA /
Elevation / Height of Top of Surface Casing:		NA /
I.D. of Surface Casing:	NA	
Type of Surface Casing:	8" Manhole	
Type of Surface Seal:	QUIKRETE	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	8"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	TYPE 1 PORTLAND GROUT	
Elevation / Depth of Seal:		/ 1.5
Type of Seal:	30/65 SAND	
Elevation / Depth of Top of Filter Pack:		/ 2.5
Elevation / Depth of Top of Screen:		/ 3.0
Type of Screen:	PVC	
Slot Size x Length:	0.010 -INCH	
I.D. of Screen:	2"	
Type of Filter Pack:	20/30	
Elevation / Depth of Bottom of Screen:		/ 13.0
Elevation / Depth of Bottom of Filter Pack:		/ 13.0
Type of Backfill Below Well:		
Elevation / Total Depth of Borehole:		/ 13.5

Tetra Tech NUS, Inc.

WELL No.: MPT-1330-MW20

SHALLOW MONITORING WELL SHEET

PROJECT:	CTO 255/ Site 1330	DRILLING Co.:	Preferred Drilling Solutions	BORING No.:	MW20
PROJECT No.:	N4265	DRILLER:	Greg Campbell	DATE COMPLETED:	02/26/03
SITE:	Site 1330 / Bravo Pier	DRILLING METHOD:	H.S.A.	NORTHING:	
GEOLOGIST:	David Siekfen	DEV. METHOD:	Submersible	EASTING:	



Elevation / Depth of Top of Riser:		NA /
Elevation / Height of Top of Surface Casing:		NA /
I.D. of Surface Casing:	NA	
Type of Surface Casing:	8" Manhole	
Type of Surface Seal:	QUIKRETE	
I.D. of Riser:	2"	
Type of Riser:	PVC	
Borehole Diameter:	8"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	TYPE 1 PORTLAND GROUT	
Elevation / Depth of Seal:		/ 1.5
Type of Seal:	30/65 SAND	
Elevation / Depth of Top of Filter Pack:		/ 2.0
Elevation / Depth of Top of Screen:		/ 4.0
Type of Screen:	PVC	
Slot Size x Length:	0.010 -INCH	
I.D. of Screen:	2"	
Type of Filter Pack:	20/30	
Elevation / Depth of Bottom of Screen:		/ 14.0
Elevation / Depth of Bottom of Filter Pack:		/ 14.0
Type of Backfill Below Well:		
Elevation / Total Depth of Borehole:		/ 14.5

APPENDIX E
FIELD DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MPT-1330-MW-18S
Sample Location:
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3.14.03 / Time: 0945	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	CL	7.30	0.14	18.8	5.7	0.39		-87

PURGE DATA

Date: 3-14-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2								
Well Casing Material: PVC								
Total Well Depth (TD): 13				see data sheets				
Static Water Level (WL): 5.63								
One Casing Volume(gal/L): 4.9								
Start Purge (hrs): 0850								
End Purge (hrs): 0940								
Total Purge Time (min): 50								
Total Vol. Purged (gal): 15								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	DS
TRPH	Flo Pro	H2SO4	1 L amber	
VOC + MTBE &	8260 B	HCL	(3) 40 ml	
Total Lead	200.7	HNO3	250 ml (plastic)	
EDB	504.2	sodium thiosulfate	(2) 40 ml	

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.: MPT-1330-DUP-01

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** MPT- 1330- MW- 18s

PROJECT NUMBER: 4265 **DATE:**

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0850	5.63								
0910	5.72	300	7.29	0.14	28	0.35	18.7	~~-96~~	-96 orp
0920	5.71	300	7.30	0.13	28	0.33	18.7	-78	
0930	5.72	300	7.30	0.14	6.7	0.41	18.8	-94	
0935	5.72	300	7.30	0.14	6.0	0.38	18.7	-98	
0940	5.72	300	7.30	0.14	5.7	0.39	18.8	-97	
0945	SAMPLE TIME								

SIGNATURE(S): RDL

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MPT-1330-MW-19
Sample Location: MPT-1330
Sampled By: DS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3.14.03 / Time: 1105	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	cl	6.93	.78	29.7	0	00.0	/	-317

PURGE DATA

Date: 3.14.03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2								
Well Casing Material: PVC								
Total Well Depth (TD): 13				see data sheets				
Static Water Level (WL): 5.83								
One Casing Volume(gal/L): 4.9								
Start Purge (hrs): 1030								
End Purge (hrs): 1100								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 15								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	DS
TRPH	Flo Pro	H2SO4	1 L amber	
VOC + MTBE &	8260 B	HCL	(3) 40 ml	
Total Lead	200.7	HNO3	250 ml (plastic)	
EDB	504.2	sodium thiosulfate	(2) 40 ml	

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PS

PROJECT SITE NAME: site 1330
PROJECT NUMBER: 4265

WELL ID.: MPT-1330-MW-[redacted]19
DATE: 3-14-03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
				(ms/m)				~~305~~	PS
0930	5.83	300		79	-0	0.00	29.6	-305	
0940	5.98	300	6.94	79	0	0.00	29.7	-331	
0950	5.97	300	6.92	79	0	0.00	29.6	-316	
1055	5.96	300	6.93	79	0	0.00	29.7	-317	
1100	5.96	300	6.93	78	0	0.00	29.7	-317	
1105	sample								

SIGNATURE(S): RDH

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MPT-1330-MW20
Sample Location:
Sampled By: MLF
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3.14.03 / Time: 1250	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	Cl	7.18	0.488	22.38	3.5	0.66		-309

PURGE DATA

Date: 3.14.03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0								
Well Casing Diameter: 2in								
Well Casing Material: PVC								
Total Well Depth (TD): 14.0				see data sheets				
Static Water Level (WL): 6.39								
One Casing Volume(gal/L): 5.3								
Start Purge (hrs): 1215								
End Purge (hrs): 1245								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 9.0								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	(2) 1 L amber	✓
TRPH	Flo Pro	H2SO4	1 L amber	✓
VOC + MTBE &	8260 B	HCL	(3) 40 ml	✓
Total Lead	200.7	HNO3	250 ml (plastic)	✓
EDB	504.2	sodium thiosulfate	(2) 40 ml	✓

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.: None

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** MPT 1330. MW20

PROJECT NUMBER: 4265 **DATE:** 3.14.03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments VOL
1215	6.39	300	—	—	—	—	—	—	
1220	6.39	300	7.23	0.483	15	1.32	22.53	-270	1.5
1230	6.29	300	7.22	0.493	12	0.81	22.42	-296	4.5
1235	6.39	300	7.20	0.494	10	0.80	22.40	-304	6.0
1240	6.39	300	7.19	0.490	8.0	0.70	22.37	-307	7.5
1245	6.39	300	7.18	0.488	5.5	0.66	22.38	-309	9.0
1250	Sampling	—	—	—	—	—	—	—	—

SIGNATURE(S): M Ofa

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: BP-MW1
Sample Location:
Sampled By: MCF
C.O.C. No.:
Type of Sample: Grab
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3.14.03 / Time: 0940	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other
Method: Low Flow Peristaltic	clear	6.85	0.350	54.90	0	0.67	—	ORP -302

PURGE DATA

Date: 3.14.03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0								
Well Casing Diameter: 2in								
Well Casing Material: PVC								
Total Well Depth (TD): 14.02				see data sheets				
Static Water Level (WL): 5.42								
One Casing Volume(gal/L): 6.0								
Start Purge (hrs): 0900								
End Purge (hrs): 0935								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 10.5								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	(2) 1 L amber	✓
TRPH	Flo Pro	H2SO4	(2) 1 L amber	✓
VOC + MTBE &	8260 B	HCL	(3) 40 ml	✓
Total Lead	200.7	HNO3	250 ml (plastic)	✓
EDB	504.2	sodium thiosulfate	(2) 40 ml	✓

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD: X
Duplicate ID No.:

Signature(s): MCF

MS/MSD

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** BP-MW1

PROJECT NUMBER: 4265 **DATE:** 3.14.03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments Volume
0900	5.42	300	—	—	—	—	—	—	—
0910	5.42	300	6.65	0.396	0	0.66	53.98	-258	3.0L
0915	5.42	300	6.76	0.361	0	0.63	54.90	-275	4.5L
0920	5.42	300	6.80	0.358	0	0.67	54.90	-276	6.0L
0925	5.42	300	6.81	0.354	0	0.66	54.90	-284	7.5L
0930	5.42	300	6.83	0.353	0	0.66	54.90	-294	9.0
0935	5.42	300	6.85	0.350	0	0.67	54.90	-302	10.5
0940	Sampling								

SIGNATURE(S): MCfagan

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: BP-MW3
Sample Location: MPT
Sampled By: CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3-13-03 / Time: 1415	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other
Method: Low Flow Peristaltic	cl	6.91	0.13	23.4	2.8	0	—	ORP -151

PURGE DATA

Date: 3-13-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 13.9				see data sheets				
Static Water Level (WL): 6.58								
One Casing Volume(gal): 4.5								
Start Purge (hrs): 1340								
End Purge (hrs): 1410								
Total Purge Time (min): 30								
Total Vol. Purged (gal): 13								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	CM
TRPH	Flo Pro	H2SO4	1 L amber	CM
VOC + MTBE &	8260 B	HCL	(3) 40 ml	CM
Total Lead	200.7	HNO3	250 ml (plastic)	CM
EDB	504.2	sodium thiosulfate	(2) 40 ml	CM

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Charles Mc

H.S Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** BP-MW 3
PROJECT NUMBER: 4265 **DATE:** 3-13-03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1340	6.58	0 400	—	—	—	—	—	—	Start Purge
1350	6.68	4 400	6.90	0.12	17	0	23.3	-143	
1353	6.68	5 400	6.90	0.12	15	0	23.3	-145	
1355	6.68	7 400	6.91	0.12	3.1	0	23.4	-150	
1400	6.68	9 400	6.91	0.12	3.2	0	23.4	-150	
1405	6.68	11 400	6.91	0.12	3.0	0	23.4	-151	
1410	6.68	13 400	6.91	0.12	2.8	0	23.4	-151	End Purge
				0					
1415 = Sample Time									

SIGNATURE(S): Charles McCoy

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MAY-1330-8
Sample Location: MOT
Sampled By: C. MOTZ
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3-13-03 / Time: 1320	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	Clear	7.09	.056	22.4	0	13.59	—	-24

PURGE DATA

Date: 3-13-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 13'				see data sheets				
Static Water Level (WL): 6.18								
One Casing Volume(gal/L): 4.2								
Start Purge (hrs): 1220								
End Purge (hrs): 1309								
Total Purge Time (min): 39								
Total Vol. Purged (gal/L): 20								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	cm
TRPH	Flo Pro	H2SO4	1 L amber	"
VOC + MTBE &	8260 B	HCL	(3) 40 ml	"
Total Lead	200.7	HNO3	250 ml (plastic)	"
EDB	504.2	sodium thiosulfate	(2) 40 ml	

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Charles Motz

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** MW-1330-8
PROJECT NUMBER: 4265 **DATE:** 3-13-03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1220	6.18	0 400	—	—	—	—	—	—	Start Purge
1230		4 400							
1233		5 300	7.03	55	120	9.93	22.5	-2	
1243		8 300	7.07	56	83	6.54	22.4	-24	
1253		11 300	7.08	56	85	5.48	22.4	-23	
1303		14 300	7.08	56	3.28	4.91	22.4	-24	
1313		17 300	7.09	56	0	13.53	22.4	-25	
1323		20 300	7.09	56	0	13.59	22.4	-24	
1320 = Sample Time									

SIGNATURE(S): Charles Mc

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MDT-1330-mw EX
Sample Location: mw EX
Sampled By: CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3-13-03 / Time: 1510	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ ORP	Other
Method: Low Flow Peristaltic	Clear	7.17	50	23.6	3.6	0	-220	

PURGE DATA

Date: 3-13-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): ?				see data sheets				
Static Water Level (WL): ?								
One Casing Volume(gal/L): 1.5								
Start Purge (hrs): 1445								
End Purge (hrs): 1505								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 5								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	CM
TRPH	Flo Pro	H2SO4	1 L amber	CM
VOC + MTBE &	8260 B	HCL	(3) 40 ml	CM
Total Lead	200.7	HNO3	250 ml (plastic)	CM
EDB	504.2	sodium thiosulfate	(2) 40 ml	CM

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Charles Mo

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** MPT-1330-MW XX
PROJECT NUMBER: 4265 **DATE:** 3-13-03

Time (Hrs.)	~~Water Level~~ Cum(Vol) (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1445	0	250							
1450	1.25	250	7.17	51	3.0	8	23.7	-281	
1455	2.5	250	7.17	51	6.3	8	23.6	-289	
1500	3.75	250	7.18	51	3.4	0	23.6	-290	
1505	5	250	7.17	50	3.6	0	23.6	-290	End Purge
1510 = Sample Time									

SIGNATURE(S): Charles Mc

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: BP-Dup-1
Sample Location: MDT
Sampled By: DS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3.13.03 / Time: 1350	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	cl	7.25	6.487	26.27	0	1.26		-90

PURGE DATA

Date: 3-13-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2								
Well Casing Material: AL								
Total Well Depth (TD): 29				see data sheets				
Static Water Level (WL): 6.29								
One Casing Volume(gal/L): 3.1								
Start Purge (hrs): 1310								
End Purge (hrs): 1345								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	DS
TRPH	Flo Pro	H2SO4	1 L amber	|
VOC + MTBE &	8260 B	HCL	(3) 40 ml	|
Total Lead	200.7	HNO3	250 ml (plastic)	|
EDB	504.2	sodium thiosulfate	(2) 40 ml	|

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330 **WELL ID.:** BP-DWM-1

PROJECT NUMBER: 4265 **DATE:** 3.13.03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1310	6.29								
1320	6.43	400	7.20	0.491	220	3.13	26.11	-180	
1330	6.43	400	7.23	0.491	2.80	1.91	26.24	-188	
1340	6.43	400	7.25	0.486	2.2	1.68	26.22	-188	
1345	6.43	400	7.25	0.487	0	1.24	26.27	-190	
1350	Sample								

SIGNATURE(S): [signature]

PAGE ___ **OF** ___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Mayport NS - 1330
Project No.: N4265

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: MPT-1330-MW17D
Sample Location: MW 17D
Sampled By: DS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3-13-03 / Time: 1515	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	C1	7.60	0.766	26.60	4	0.71	/	-240

PURGE DATA

Date: 3-13-03	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0								
Well Casing Diameter: 2								
Well Casing Material: PVC								
Total Well Depth (TD): 39				see data sheets				
Static Water Level (WL): 6.14								
One Casing Volume(gal/L): 3.1								
Start Purge (hrs): 1425								
End Purge (hrs): 1505								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
PAH	8310	None	1 L amber	DS
TRPH	Flo Pro	H2SO4	1 L amber	DS
VOC + MTBE &	8260 B	HCL	(3) 40 ml	DS
Total Lead	200.7	HNO3	250 ml (plastic)	DS
EDB	504.2	sodium thiosulfate	(2) 40 ml	DC

OBSERVATIONS / NOTES

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: site 1330
PROJECT NUMBER: 4265

WELL ID.: MPT-1330-MW-17D
DATE: 3-13-03

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1425	6.14	300							
1435	7.36	300	7.48	0.796	10	0.87	26.25	-231	
1445	7.34	300	7.54	0.803	6.6	0.75	26.32	-233	
1455	7.35	300	7.59	0.781	8	0.70	26.61	-239	
1500	7.36	300	7.60	0.771	5	0.71	26.67	-242	
1505	7.36	300	7.60	0.768	4	0.71	26.60	-240	

SIGNATURE(S):

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

3/14

Project Name: cto 255 **Project No.:** 4265

Location: mayport **Personnel:** DS & CM

Weather Conditions: RAIN **Measuring Device:** Dekon-T

Tidally Influenced: Yes X No ___ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW-1330-8	3/14	3-		12.98	6.18			
DP-DUP				29.65	6.29			
DP-MW-3				13.8	6.62			
17					6.28			
18		Bailed dry			5.65			
MW-19					5.83			
MW-1					5.64			
MW-20					6.39			

* All measurements to the nearest 0.01 foot

5-11-03

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: CTO 255 **Project No.:** N4265
Location: mayport **Personnel:** ds
Weather Conditions: Clear **Measuring Device:** Dipper-T
Tidally Influenced: Yes ____ No ____ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
	5/11							
NEW MW18					6.12			
NEW MW19					6.14			
NEW MW20					7.51			
MAY-1330-MW9					6.40			
BP-MW-1					6.39			
BP-MW-3					7.18			
BP-MW-4					7.49			
BP-MW-5					7.22			
MAY-1330-2					7.44			
MAY-1330-6					7.71			

* All measurements to the nearest 0.01 foot

Deep

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of _____

Well: New MW 17D Deep
Site: 1330
Date Installed: 2-27-03
Date Developed: 3-11-03
Dev. Method: Pump
Pump Type: Submersible

Depth to Bottom (ft.): 39.4
Static Water Level Before (ft.): 6.35
Static Water Level After (ft.): 6.37
Screen Length (ft.): 5 ft
Specific Capacity: _____
Casing ID (in.): 2

Responsible Personnel: DS
Drilling Co.: Preferred Drilling Solutions Inc
Project Name: 1330
Project Number: 4265

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1230			6.95	2	6			
1250		50 gl	26.95	27.1	6.97	88	0	
1305			27.11	27.2	7.37	83	0	
1315			26.97	27.2	7.47	85	0	
1325			26.97	27.1	7.51	85	0	
1340		110 gl	26.97	27.0	7.45	85	0	
1407			27.01	26.8	7.51	85	0	
1411		165	27.01	26.8	7.51	84	0	
								Always Clear - water has slight yellow color

AREA D

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: Parking lot MW-20 | Depth to Bottom (ft.): 14.15 | Responsible Personnel: DS
Site: 1330 | Static Water Level Before (ft.): 6.44 | Drilling Co.: Preferred Drilling Solutions Inc
Date Installed: 2-27-03 | Static Water Level After (ft.): 6.77 | Project Name: CTO 255 Site 1330
Date Developed: 3-13-03 | Screen Length (ft.): 10 | Project Number: 4265
Dev. Method: Pump | Specific Capacity: ___
Pump Type: Submersible | Casing ID (in.): 2

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1505			6.44					
1510			7.97	23.1	7.53	54	990	
1515			8.06	22.8	7.26	52	990	
1520			8.14	22.5	7.23	51	230	
1525			8.12	22.5	7.24	51	30	
1528		50	8.14	22.4	7.24	51	3	
								Started gray & silty
								ended clear

AREA C

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

MW-19

Well: Near Dumpster (Area C) | Depth to Bottom (ft.): 12.94 | Responsible Personnel: DS
Site: 1330 /MPT | Static Water Level Before (ft.): 5.96 | Drilling Co.: Preferred Drilling Solutions Inc
Date Installed: 2-27-03 | Static Water Level After (ft.): 5.95 | Project Name:
Date Developed: 3-11-03 | Screen Length (ft.): 10 | Project Number:
Dev. Method: ~~Sub~~ Pump | Specific Capacity: ___
Pump Type: Submersible | Casing ID (in.): 2

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1335			5.96	28.51	7.36	.635	999+	
			6.12					
1345			9.18	29.42	6.82	.619	508	
1348			10.09	29.48	6.87	.633	96	
1351			10.20	29.35	6.88	.638	54	
1355			10.38	29.51	6.90	.643	35	
1358		55 gl	10.41	29.50	6.91	.636	10	
								started Lt. Brown to gray ended clear

AREA B

Shallow along bulk head

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: Bulk head MW-18
Site: 1330 / MPT
Date Installed: 2-27-03
Date Developed: 3-11-03
Dev. Method: Pump
Pump Type: Submersible

Depth to Bottom (ft.): 13
Static Water Level Before (ft.): 5.68
Static Water Level After (ft.): 5.70
Screen Length (ft.): 10
Specific Capacity: ___
Casing ID (in.): 2

Responsible Personnel: DS
Drilling Co.: Preferred Drilling Solutions, Inc.
Project Name: SITE 1330
Project Number: 4265

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1300			5.68	20.21	5.86	1.13	187.00	
1310		20	8.24	18.77	6.59	1.28	~~18.77~~ DS	Turbidity = 42
1315		40	8.34	18.64	6.92	1.30	21	
1318		45	8.34	18.54	6.97	1.27	20	
1321		50	8.34	18.55	7.03	1.28	15.6	
								Started gray Silty
								ended clear.

APPENDIX F
MOBILE LABORATORY ANALYTICAL RESULTS

KB LABS, INC.
6821 Southwest Archer Road
Gainesville, Florida 32608
***Telephone* (352) 367-0073**
***Fax* (352) 367-0074**
Email: kblabs@gator.net

October 17, 2002

Mark Peterson
Tetra Tech NUS, Inc.
8640 Philips Highway, Suite 16
Jacksonville, Florida 32256

RE: NS Mayport CTO255, Mayport, Florida - Final Data Report
KB Labs Project # 02-085-1

Dear Mr. Peterson:

Enclosed is the final report of the on-site analysis performed by KB Labs, Inc. at the above referenced site. Samples were analyzed from September 30 to October 2, 2002. Included are a brief project narrative, a data report narrative, tables listing quality control results, the final analytical results, and sample chain-of-custody forms. This information will also be sent electronically.

KB Labs is approved as a mobile laboratory for volatiles analyses and operates under an FDEP approved Comprehensive Quality Assurance Plan (CompQAP #980029 Revision 3). Unless otherwise stated in our CompQAP under method modifications, all data for the site referenced above were determined in accordance with published procedures under Test Methods for Evaluating Solid Waste (EPA SW-846, Update III Revised May 1997). Unless otherwise indicated on the quality control narrative accompanying the data report, the quality assurance and quality control procedures performed in conjunction with analysis of groundwater samples demonstrated that the reported data met our CompQAP requirements for accuracy and precision.

If you have any questions, please do not hesitate to call me or Kelly Bergdoll, President, at (352) 367-0073.

Sincerely,

KB Labs, Inc.

Todd Romero
Director of Operations

"KB Labs is a small, woman-owned business enterprise."

KB LABS, INC.

PROJECT NARRATIVE

Client:	TtNUS	**Driller/Sampler:**	TtNUS	**Analyst:**	Yael Hoogland
Site:	NS Mayport CTO255	**KB Labs Project Manager:**	Kelly Bergdoll	**KB Labs Project #:**	02-085-1
Onsite Dates:	9/30/02-10/2/02	**Client Project Manager:**	Mark Peterson	**Matrix:**	Water/Soil

Project Scope

On September 30 through October 2, 2002, a total of 60 samples (32 groundwaters and 28 soils) were collected at Naval Station Mayport in Mayport, Florida, by Tetra Tech NUS and relinquished to KB Labs' Mobile Laboratory. The samples were analyzed on-site for MTBE, Benzene, Ethylbenzene, Toluene, Xylenes, Naphthalene, 1- & 2-Methylnaphthalene, and Isopropylbenzene.

Analytical Procedure

All water samples were analyzed using SW846 Method 5030/8260 for waters. Ten (10) milliliters (mL) of water were purged with helium and the volatile organic compounds (VOCs) were collected on a solid-phase adsorption trap. The adsorption trap was heated and back-purged with helium and the components were separated by capillary column gas chromatography and measured with a mass spectrometer (GC/MS) operated in the electron impact full-scan mode. The individual VOCs in the samples were measured against corresponding VOC standards.

The soil samples were analyzed using SW846 Method 5030/8260. One (1) gram (g) of soil sample was added to 10 mL of laboratory reagent water, heated and analyzed like a water sample as described above.

Unless otherwise indicated, soil data is calculated based on the matrix received (i.e. wet weight basis).

Analytical Results

Laboratory results were provided to the client on an as-completed or next-day basis. Final results of the on-site analyses are provided in a hardcopy report. The data produced and reported in the field has been reviewed and approved for this final report by the Director of Operations for KB Labs.

Quality Control (QC) Data

Surrogate Recoveries – Table 1 lists the daily analytical sequence and percent recovery results for surrogate compounds, which were added to all analyses. Four (4) surrogate compounds were added to each analysis in order to continually monitor general method performance.

VOC Spike Recoveries – Table 2 lists the percent recovery results for matrix spike and laboratory control samples. A known amount of each target compound was added to selected field samples and to laboratory reagent water in order to monitor the performance of each of the target compounds in the actual matrix and in laboratory reagent water.

Method Blanks – Daily analysis of laboratory reagent water samples was performed in order to monitor the cleanliness of the analytical system.

Signature: _____ Date: 10/17/02
Title: Director of Operations

KB LABS, INC.

DATA REPORT NARRATIVE

Client:	TtNUS	**Driller/Sampler:**	TtNUS	**Analyst:**	Yael Hoogland
Site:	NS Mayport CTO255	**KB Labs Project Manager:**	Kelly Bergdoll	**KB Labs Project #:**	02-085-1
Onsite Dates:	9/30/02-10/2/02	**Client Project Manager:**	Mark Peterson	**Matrix:**	Water/Soil

1. All samples have been reviewed and, if required, updated in the Final Data Report for rounding and significant figures.

2. Upon review of the field data, the following samples have results updated in the Final Data Report:

Sample	Compounds	From	To
SB-17 GW	Isopropylbenzene	530 ug/L	1300 ug/L
MW-5 GW	Isopropylbenzene	2070 ug/L	1700 ug/L
SB-16 7' Soil	Isopropylbenzene	0.08 mg/kg	<0.01 mg/kg

3. All reporting limits were updated in the Final Data Report to meet the limits required in Table 1 of the Statement of Work.

Signature: _____

Title: Director of Operations

Date: 10/17/02

KB LABS, INC.

Table 1: Analytical Run Sequence/Surrogate Percent Recoveries

Client: TtNUS	**Driller/Sampler**: TtNUS	**Analyst:** Yael Hoogland
Site: NS Mayport CTO 255	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 02-085-1
On-site Dates: 9/30/02-10/2/02	**Client Project Manager**: Mark Peterson	**Matrix:** Water/Soil

Sample ID	Date of Analysis	Surrogate % Recovery				Surrogate Control Limits: 80%(LCL) to 120%(UCL)			
		S1*	S2*	S3*	S4*	S1*	S2*	S3*	S4*
REF	09/29/02	96	105	97	98	Pass	Pass	Pass	Pass
1UG/L	09/29/02	99	102	101	108	Pass	Pass	Pass	Pass
5UG/L	09/29/02	96	99	90	96	Pass	Pass	Pass	Pass
20UG/L	09/29/02	101	99	103	100	Pass	Pass	Pass	Pass
50UG/L	09/29/02	98	101	100	98	Pass	Pass	Pass	Pass
100UG/L	09/29/02	100	104	94	95	Pass	Pass	Pass	Pass
VSTD ISOPROPYLBENZENE	09/30/02	122	131	107	91	> UCL	> UCL	Pass	Pass
VSTD20	09/30/02	102	103	104	98	Pass	Pass	Pass	Pass
LCS	09/30/02	106	103	102	104	Pass	Pass	Pass	Pass
BLANK	09/30/02	101	99	94	103	Pass	Pass	Pass	Pass
SB-1 SOIL	09/30/02	109	125	101	109	Pass	> UCL	Pass	Pass
SB-2 SOIL	09/30/02	87	100	105	100	Pass	Pass	Pass	Pass
SB-2 1:20	09/30/02	96	114	108	101	Pass	Pass	Pass	Pass
SB-3 SOIL	09/30/02	104	115	105	100	Pass	Pass	Pass	Pass
SB-4 SOIL	09/30/02	88	102	111	98	Pass	Pass	Pass	Pass
SB-5 SOIL	09/30/02	90	99	100	92	Pass	Pass	Pass	Pass
SB-1 RE 1:50	09/30/02	123	122	96	103	> UCL	> UCL	Pass	Pass
MPT-1330 SB3-GW 1:20	09/30/02	92	103	101	91	Pass	Pass	Pass	Pass
MPT-1330 SB4-GW 1:20	09/30/02	85	97	100	94	Pass	Pass	Pass	Pass
MPT-1330 SB-5 GW 1:20	09/30/02	113	122	105	99	Pass	> UCL	Pass	Pass
MPT-1330 SB-6 GW 1:20	09/30/02	113	124	105	103	Pass	> UCL	Pass	Pass
MPT-1330 SB6 SO-5'	09/30/02	107	115	104	104	Pass	Pass	Pass	Pass
MPT-1330 SB7 SO-5'	09/30/02	100	107	105	90	Pass	Pass	Pass	Pass
MPT-1330 SB8 SO-6'	09/30/02	103	107	98	100	Pass	Pass	Pass	Pass
MPT-1330 SB9 SO-6'	09/30/02	95	99	103	90	Pass	Pass	Pass	Pass
MPT-1330 SB10 SO-6'	09/30/02	107	108	101	106	Pass	Pass	Pass	Pass
MPT-1330 SB7-GW 1:20	09/30/02	100	104	100	115	Pass	Pass	Pass	Pass
MPT-1330 SB8 GW 1:20	09/30/02	103	97	104	98	Pass	Pass	Pass	Pass
MPT-1330 SB9 GW 1:20	09/30/02	105	100	105	102	Pass	Pass	Pass	Pass
MPT-1330 SB10 GW 1:20	09/30/02	99	98	106	97	Pass	Pass	Pass	Pass
MPT-1330 SB3 GWMS	09/30/02	98	95	97	94	Pass	Pass	Pass	Pass
MPT-1330 SB3 GWMSD	09/30/02	108	100	107	96	Pass	Pass	Pass	Pass
CCS Wisopropyl/Benzene	09/30/02	98	94	103	97	Pass	Pass	Pass	Pass
CCS	09/30/02	110	103	104	92	Pass	Pass	Pass	Pass
BLANK	09/30/02	114	106	96	92	Pass	Pass	Pass	Pass
VSTD20	10/01/02	107	125	111	95	Pass	> UCL	Pass	Pass
VSTD20 MTBE	10/01/02	112	113	99	91	Pass	Pass	Pass	Pass
LCS	10/01/02	112	107	104	98	Pass	Pass	Pass	Pass

***Surrogate Compounds:**
S1 = 1,2- Dichloroethane-D4
S2 = 1,2-Difluorobenzene
S3 = Toluene-D8
S4 = 4-Bromofluorobenzene

KB LABS, INC.

Table 1: Analytical Run Sequence/Surrogate Percent Recoveries

Client: TtNUS	**Driller/Sampler**: TtNUS	**Analyst:** Yael Hoogland
Site: NS Mayport CTO 255	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 02-085-1
On-site Dates: 9/30/02-10/2/02	**Client Project Manager**: Mark Peterson	**Matrix:** Water/Soil

Sample ID	Date of Analysis	Surrogate % Recovery				Surrogate Control Limits: 80%(LCL) to 120%(UCL)			
		S1*	S2*	S3*	S4*	S1*	S2*	S3*	S4*
BLANK	10/01/02	139	114	106	94	> UCL	Pass	Pass	Pass
MPT-1330 SB08 GW	10/01/02	148	127	107	118	> UCL	> UCL	Pass	Pass
MPT-1330 SB10 GW	10/01/02	87	116	112	104	Pass	Pass	Pass	Pass
MPT-1330 SB11 1:10 GW	10/01/02	124	132	108	97	> UCL	> UCL	Pass	Pass
MPT-1330 SB12 1:10	10/01/02	98	96	101	100	Pass	Pass	Pass	Pass
MPT-1330 SB13 GW	10/01/02	112	100	103	107	Pass	Pass	Pass	Pass
MPT-1330 SB12 SO-6'	10/01/02	100	96	99	101	Pass	Pass	Pass	Pass
MPT-1330 SB13 SO 6'	10/01/02	98	96	101	102	Pass	Pass	Pass	Pass
MPT-1330 SB14 GW 1:10	10/01/02	52	110	96	97	< LCL	Pass	Pass	Pass
MPT-1330 SB15 GW 1:10	10/01/02	90	112	105	98	Pass	Pass	Pass	Pass
MPT-1330 SB16 GW 1:20	10/01/02	92	105	99	96	Pass	Pass	Pass	Pass
MPT-1330 SB14 SO 6'	10/01/02	98	110	106	98	Pass	Pass	Pass	Pass
MPT-1330 SB15 SO 6'	10/01/02	87	96	99	95	Pass	Pass	Pass	Pass
MPT-1330 SB17 GW 1;10	10/01/02	98	98	107	95	Pass	Pass	Pass	Pass
MPT-1330 SB16 SO 7'	10/01/02	102	113	104	99	Pass	Pass	Pass	Pass
MPT-1330 SB17 SO 5'	10/01/02	104	106	103	93	Pass	Pass	Pass	Pass
MPT-1330 SB6 SO 7'	10/01/02	102	116	105	98	Pass	Pass	Pass	Pass
MPT-1330 SB1 SO 7'	10/01/02	106	108	103	91	Pass	Pass	Pass	Pass
MPT-1330 SB20 GW 1:50	10/01/02	94	93	108	97	Pass	Pass	Pass	Pass
MPT-1330 SB11 GW RE 1:20	10/01/02	103	100	100	102	Pass	Pass	Pass	Pass
MPT-1330 SB13 GW RE 1;20	10/01/02	91	98	100	96	Pass	Pass	Pass	Pass
MPT-1330 SB17 GW RE 1:20	10/01/02	89	95	98	93	Pass	Pass	Pass	Pass
MPT-1330 SB11 SO 6' RE	10/01/02	104	105	103	96	Pass	Pass	Pass	Pass
MPT-1330 SB20 SO 5'	10/01/02	110	100	101	94	Pass	Pass	Pass	Pass
MPT-1330 SB20 SO 6'	10/01/02	107	105	97	99	Pass	Pass	Pass	Pass
MPT-1330 SB20 SO 6'MS	10/01/02	110	103	106	93	Pass	Pass	Pass	Pass
MPT-1330 SB20 SO 6'MSD	10/01/02	88	94	97	98	Pass	Pass	Pass	Pass
CCS	10/01/02	100	102	106	90	Pass	Pass	Pass	Pass
BLANK	10/01/02	97	100	103	99	Pass	Pass	Pass	Pass
VSTD20 MTBE	10/02/02	99	119	99	92	Pass	Pass	Pass	Pass
VSTD20	10/02/02	124	120	95	102	> UCL	Pass	Pass	Pass
LCS	10/02/02	110	103	100	101	Pass	Pass	Pass	Pass
BLANK	10/02/02	110	104	100	87	Pass	Pass	Pass	Pass
MPT-1330 MW5 1:10	10/02/02	69	110	108	94	< LCL	Pass	Pass	Pass
MPT-1330 MW5 1:50	10/02/02	80	113	102	99	Pass	Pass	Pass	Pass
MPT-1330 MW9 1:50 RE	10/02/02	110	103	104	98	Pass	Pass	Pass	Pass
MPT-1330 SB18 SO 5'	10/02/02	67	97	100	99	< LCL	Pass	Pass	Pass
MPT-1330 SB18 GW	10/02/02	97	103	103	99	Pass	Pass	Pass	Pass

***Surrogate Compounds:**

S1 = 1,2- Dichloroethane-D4

S2 = 1,2-Difluorobenzene

S3 = Toluene-D8

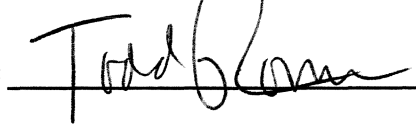
S4 = 4-Bromofluorobenzene

KB LABS, INC.

Table 1: Analytical Run Sequence/Surrogate Percent Recoveries

Client: TtNUS	**Driller/Sampler**: TtNUS	**Analyst:** Yael Hoogland
Site: NS Mayport CTO 255	**KB Labs Project Manager**: Kelly Bergdoll	**KB Labs Project No:** 02-085-1
On-site Dates: 9/30/02-10/2/02	**Client Project Manager**: Mark Peterson	**Matrix:** Water/Soil

Sample ID	Date of Analysis	Surrogate % Recovery				Surrogate Control Limits: 80%(LCL) to 120%(UCL)			
		S1*	S2*	S3*	S4*	S1*	S2*	S3*	S4*
MPT-1330 SB19 SO 6'	10/02/02	121	123	101	100	> UCL	> UCL	Pass	Pass
MPT-1330 SB19 GW 1;50	10/02/02	94	110	95	102	Pass	Pass	Pass	Pass
MPT-1330 MWXX 1:100	10/02/02	93	96	96	100	Pass	Pass	Pass	Pass
MPT-1330 SB21 GW	10/02/02	58	98	98	90	< LCL	Pass	Pass	Pass
MPT-1330 SB22 GW 1:10	10/02/02	64	94	99	93	< LCL	Pass	Pass	Pass
MPT-1330 SB23 GW 1;10	10/02/02	96	124	105	99	Pass	> UCL	Pass	Pass
MPT-1330 MW2 1:50	10/02/02	106	116	99	99	Pass	Pass	Pass	Pass
MPT-1330 SB21 GW 1:20	10/02/02	113	115	114	90	Pass	Pass	Pass	Pass
MPT-1330 MW11 1:50	10/02/02	91	96	95	104	Pass	Pass	Pass	Pass
MPT-1330 MW3 1:10	10/02/02	99	105	98	96	Pass	Pass	Pass	Pass
MPT-1330 SB24 GW 1:10	10/02/02	96	108	101	94	Pass	Pass	Pass	Pass
MPT-1330 MW 3 RE	10/02/02	100	112	106	107	Pass	Pass	Pass	Pass
MPT-1330 SB25 GW 1:50	10/02/02	105	121	105	92	Pass	> UCL	Pass	Pass
MPT-1330 SB21 SO 7'	10/02/02	89	104	95	106	Pass	Pass	Pass	Pass
MPT-1330 SB22 SO 7'	10/02/02	123	130	92	96	> UCL	> UCL	Pass	Pass
MPT-1330 SB23 SO 7'	10/02/02	117	120	98	92	Pass	Pass	Pass	Pass
MPT-1330 SB24 SO 6'	10/02/02	101	106	93	99	Pass	Pass	Pass	Pass
MPT-1330 SB26 SO 6'	10/02/02	121	116	97	96	> UCL	Pass	Pass	Pass
MPT-1330 SB26 SO 6'MS	10/02/02	123	131	97	97	> UCL	> UCL	Pass	Pass
MPT-1330 SB26 SO 6'MSD	10/02/02	89	97	92	104	Pass	Pass	Pass	Pass
MPT-1330 SB24 GW 1:50 RE	10/02/02	111	124	105	103	Pass	> UCL	Pass	Pass
MPT-1330 SB26 GW RE	10/02/02	111	120	98	102	Pass	Pass	Pass	Pass
CCS	10/02/02	111	129	105	81	Pass	> UCL	Pass	Pass
Comments:	Although some surrogates may be out of the control percent recovery range (80% to 120%), other supporting QC, such as matrix spikes, matrix spike duplicates, method blanks, and laboratory control samples, are performed by KB Labs to further validate reported data.								

Signature: 

Title: Director of Operations

Date: 10/17/02

***Surrogate Compounds:**
S1 = 1,2- Dichloroethane-D4
S2 = 1,2-Difluorobenzene
S3 = Toluene-D8
S4 = 4-Bromofluorobenzene

KB LABS, INC.

Table 2: VOC Spike Compound Percent Recoveries

Client: TtNUS	**Driller/Sampler**: TtNUS	**Analyst:** Yael Hoogland
Site: NS Mayport CTO 255	**KB Labs Project Manager:** Kelly Bergdoll	**KB Labs Project No.:** 02-085-1
On-site Dates: 9/30/02-10/2/02	**Client Project Manager:** Mark Peterson	**Matrix**: Water/Soil

Matrix Spike/Matrix Spike Duplicate (MS/MSD):

Samples: MPT-1330-SB3 GW MS
MPT-1330 SB3 GW MSD
Date of Analysis: 9/30/2002

Matrix Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower	Upper	RPD	MS	MSD	RPD	MS	MSD	RPD
2-Methylnapthalene	70	130	20	91	96	6	Pass	Pass	Pass
1-Methylnapthalene	70	130	20	82	95	14	Pass	Pass	Pass
Benzene	63	135	20	73	78	6	Pass	Pass	Pass
Toluene	66	130	20	77	82	6	Pass	Pass	Pass
Isopropylbenzene	70	130	20	81	57	36	Pass	< LCL	> RPDL
Ethylbenzene	64	136	20	84	89	6	Pass	Pass	Pass
m,p-Xylene	55	143	20	87	85	2	Pass	Pass	Pass
o-Xylene	62	136	20	79	78	1	Pass	Pass	Pass
Naphthalene	0	233	20	86	85	2	Pass	Pass	Pass

Note: Control Limits are based on a semi-annual historical evaluation of mobile unit.

Samples: MPT-1330 SB20 SO6' MS
MPT-1330 SB20 SO6' MSD
Date of Analysis: 10/1/2002

Matrix Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower	Upper	RPD	MS	MSD	RPD	MS	MSD	RPD
2-Methyl Napthalene	70	130	20	94	94	0	Pass	Pass	Pass
1-Methyl Napthalene	70	130	20	91	98	7	Pass	Pass	Pass
Benzene	63	135	20	84	80	5	Pass	Pass	Pass
Toluene	66	130	20	85	79	7	Pass	Pass	Pass
Isopropylbenzene	70	130	20	63	68	8	< LCL	< LCL	Pass
Ethylbenzene	64	136	20	87	81	8	Pass	Pass	Pass
m,p-Xylene	55	143	20	86	87	1	Pass	Pass	Pass
o-Xylene	62	136	20	83	85	3	Pass	Pass	Pass
Naphthalene	0	233	20	86	88	3	Pass	Pass	Pass

Note: Control Limits are based on a semi-annual historical evaluation of mobile unit.

KB LABS, INC.

Table 2: VOC Spike Compound Percent Recoveries

Client: TtNUS	**Driller/Sampler**: TtNUS	**Analyst:** Yael Hoogland
Site: NS Mayport CTO 255	**KB Labs Project Manager:** Kelly Bergdoll	**KB Labs Project No.:** 02-085-1
On-site Dates: 9/30/02-10/2/02	**Client Project Manager:** Mark Peterson	**Matrix**: Water/Soil

Samples: MPT-1330 SB26 SO 6' MS
MPT-1330 SB26 SO 6' MSD
Date of Analysis: 10/2/2002

Matrix Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower	Upper	RPD	MS	MSD	RPD	MS	MSD	RPD
2-Methyl Naphthalene	70	130	20	72	90	22	Pass	Pass	> RPDL
1-Methyl Napthalene	70	130	20	77	84	8	Pass	Pass	Pass
Benzene	63	135	20	98	78	22	Pass	Pass	> RPDL
Toluene	66	130	20	88	90	2	Pass	Pass	Pass
Isopropylbenzene	70	130	20	66	63	5	< LCL	< LCL	Pass
Ethylbenzene	64	136	20	90	89	2	Pass	Pass	Pass
m,p-Xylene	55	143	20	85	88	3	Pass	Pass	Pass
o-Xylene	62	136	20	84	87	3	Pass	Pass	Pass
Naphthalene	0	233	20	75	84	12	Pass	Pass	Pass

Note: Control Limits are based on a semi-annual historical evaluation of mobile unit.

Laboratory Control Spikes (LCS):

Samples: LCS 1
LCS 2
LCS 3
Date of Analysis: 9/30/2002
10/1/2002
10/2/2002

Spike Compounds	Control Limits			Percent Recoveries			Control Limit Checks		
	Lower		Upper	LCS#1	LCS#2	LCS#3	LCS#1	LCS#2	LCS#3
MTBE	70	to	130	91	NA	NA	Pass	NA	NA
2-Methyl Napthalene	70	to	130	123	79	81	Pass	Pass	Pass
1-Methyl Napthalene	70	to	130	132	74	73	> UCL	Pass	Pass
Benzene	70	to	130	97	84	83	Pass	Pass	Pass
Toluene	70	to	130	91	86	86	Pass	Pass	Pass
Isopropylbenzene	70	to	130	NA	74	74	NA	Pass	Pass
Naphthalene	70	to	130	NA	78	83	NA	Pass	Pass
Ethylbenzene	70	to	130	90	85	89	Pass	Pass	Pass
m,p-Xylene	70	to	130	97	96	89	Pass	Pass	Pass
o-Xylene	70	to	130	98	82	88	Pass	Pass	Pass

Note: Control limits are based on method guidance.

Signature: Todd Rhoden

Title: Director of Operations

Date: 10/17/02

KB LABS, INC.

Final Data Report

Project Number 02-085-1

NS Mayport CTO255

September 30, October 1-2, 2002

Prepared for: Tetra Tech NUS

Well ID	Analysis Date	Matrix	Dilution Factor	MtBE	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Isopropylbenzene	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene
SB-1	9/30/02	Water	10/50	<50	<10	<10	<10	<10	<10	**1600**	<50	<50	<50
SB-2	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**760**	<100	<100	<100
SB-3	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**740**	<100	<100	<100
SB-4	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**520**	<100	<100	<100
SB-5	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**560**	<100	<100	<100
SB-6	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**1600**	<100	<100	<100
SB-7	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**530**	<100	<100	<100
SB-8	10/1/02	Water	1	<5	<1	<1	<1	<1	<1	**56.8**	<5	<5	<5
SB-9	9/30/02	Water	20	<100	<20	<20	<20	<20	<20	**520**	<100	<100	<100
SB-10	10/1/02	Water	1	<5	<1	<1	<1	<1	<1	**3.8**	<5	<5	<5
SB-11	10/1/02	Water	10/20	<50	<10	<10	<10	<10	<10	**820**	<50	<50	<50
SB-12	10/1/02	Water	10	<50	<10	<10	<10	<10	<10	**540**	<50	<50	<50
SB-13	10/1/02	Water	1/20	<5	<1	<1	<1	<1	<1	**940**	<5	<5	<5
SB-14	10/1/02	Water	10	<50	<10	<10	<10	<10	<10	**480**	<50	<50	<50
SB-15	10/1/02	Water	10	<50	<10	<10	<10	<10	<10	**83**	<50	<50	<50
SB-16	10/1/02	Water	20	<100	<20	<20	<20	<20	<20	**640**	<100	<100	<100
SB-17	10/1/02	Water	10/50	<50	<10	<10	<10	<10	<10	**1300**	<50	<50	<50
SB-18	10/2/02	Water	1	<5	<1	<1	<1	<1	<1	**12.6**	<5	<5	<5
SB-19	10/2/02	Water	50	<250	<50	<50	<50	<50	<50	**1800**	<250	<250	<250
SB-20	10/1/02	Water	50	<250	<50	<50	<50	<50	<50	**1400**	<250	<250	<250
SB-21	10/2/02	Water	1/20	<5	<1	<1	<1	<1	<1	**360**	<5	<5	<5
SB-22	10/2/02	Water	10	<50	<10	<10	<10	<10	<10	**310**	<50	<50	<50
SB-23	10/2/02	Water	10	<50	<10	<10	<10	<10	<10	**710**	<50	<50	<50
SB-24	10/2/02	Water	10/50	<50	<10	<10	<10	<10	<10	**1700**	<50	<50	<50
SB-25	10/2/02	Water	50	<250	<50	<50	<50	<50	<50	**650**	<250	<250	<250
SB-26	10/2/02	Water	1	<5	<1	<1	<1	<1	<1	**10.6**	<5	<5	<5
MW 2	10/2/02	Water	50	<250	<50	<50	<50	<50	<50	**470**	<250	<250	<250
MW 3	10/2/02	Water	1	<5	<1	<1	<1	<1	<1	**7.1**	<5	<5	<5
MW 5	10/2/02	Water	50	<250	<50	<50	<50	<50	<50	**1700**	<250	<250	<250
MW 9	10/2/02	Water	10/50	<50	<10	<10	<10	<10	<10	**2500**	<50	<50	<50

Reporting units for waters are ug/L and for soils are mg/Kg.

KB LABS, INC.

Final Data Report

Project Number 02-085-1

NS Mayport CTO255

September 30, October 1-2, 2002

Prepared for: Tetra Tech NUS

Well ID	Analysis Date	Matrix	Dilution Factor	MtBE	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Isopropylbenzene	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene
MW 11	10/2/02	Water	50	<250	<50	<50	<50	<50	<50	**210**	<250	<250	<250
MW XX	10/2/02	Water	100	<500	<100	<100	<100	<100	<100	**3100**	<500	<500	<500
SB-1 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-1 7'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-2 6'-7'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-3 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-4 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-5 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-6 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-6 7'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-7 5'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-8 6'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-9 6'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-10 6'	9/30/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-11 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-12 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-13 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-14 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-15 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-16 7'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-17 5'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-18 5'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-19 6'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-20 5'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-20 6'	10/1/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-21 7'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-22 7'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-23 7'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-24 6'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
SB-26 6'	10/2/02	Soil	1	<0.01	<0.007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02

Reporting units for waters are ug/L and for soils are mg/Kg.

CHAIN-OF-CUSTODY RECORD

KB LABS
Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

MOBILE UNIT # KB 1

CLIENT NAME	PROJECT NAME & ADDRESS
TetraTech	Mayport NS.

SAMPLERS	CONTACT PERSON	BATCH # (Lab Use Only)
Precision	Dave	

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES	BTEX, MTBE, Naph, 1,3,5 TMB			COMMENT
MPT-1330-SB1-SO-	093002	1210		✓	093002	1210		S	1		✓			
MPT-1330-SB1-GW		1215		✓		1215		GW	2					
MPT-1330-SB2-SO-6'-7'		1330		✓		1330		S	1					
MPT-1330-SB2-GW		1336		✓		1336		GW	2					
SB3-GW		1400		✓		1410		GW	2					
SB3-SO-5'		1342		✓		1410		S	1					
SB4-SO-5'		1354		✓		1410		S	1					
SB4-GW		1435		✓		1440		GW	2					
SB5-SO-5'		1425		✓		1450		S	1					
SB5-GW		1505		✓		1506		GW	2					
SB6-SO-5'		1514		✓		1534		S	1					clay
SB6-GW		1535		✓		1540		GW	2					
SB7-SO-5'		1528		✓		1600		S	1					
SB7-GW		1602		✓		1610		GW	2					
SB8-SO-5'		1606		✓		1620		S	1					

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
			0436 02

Remarks and Observations
1 cooler
a few preserved vials

pg 1 of 2.

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

MOBILE UNIT # KB1

CLIENT NAME	PROJECT NAME & ADDRESS
TetraTech	Mayport NS.
SAMPLERS	**CONTACT PERSON**
Precision	Dave

BATCH # (Lab Use Only)

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES			COMMENT
MPT-1330-SB8-GW	093002	1635 ~~093002~~		✓	093002	1635	GW	GW	2		✓		YSH 093002
SB-9-GW	"	1650		✓	"	1655		GW	2		✓		
SB-9-SO-6'	"	1615		✓	"	1710		S	1				
SB10-GW	"	1705		✓	"	1705		GW	2				
SB10-SO-6'	"	1628		✓	"	1705		S	1				

YSH 09302

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
			0930 | 02

Remarks and Observations
Have extension cord
+ 3 cones.

Pg 2 of 2

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

CHAIN-OF-CUSTODY RECORD

Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

MOBILE UNIT # KB2

CLIENT NAME: TetraTech
PROJECT NAME & ADDRESS: Mayport NS
SAMPLERS: Precision
CONTACT PERSON: Dave
BATCH # (Lab Use Only)

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	BTEX MTBE EDB 1,2 DCA NAPH	COMMENT
MPT-1330-SB11-SO-6'	10/02	0839		✓	10/02	0850		S	1		✓	
SB11-GW		0840		✓		〃		GW	2	✓		
SB13-SO-6'		0853		✓		0915		S	1			
SB12-SO-6'		0915		✓		0925		S	1			
SB12-GW		0930		✓		0935		GW	2	✓		
SB13-GW		0955		✓		0956		GW	2	✓		
SB14-SO-6'		1207		✓		1255		S	1			
SB14-GW		1220		✓		〃		GW	2	✓		
SB15-SO-6'		1227		✓		〃		S	1			
SB15-GW		1252		✓		1255		GW	2	✓		
SB16-SO-7'		1319		✓		1335	SB16	S	1			
SB16-GW		1331		✓		1335		GW	2	✓		
SB17-SO-5'		1452		✓		1535		S	1			
SB17-GW		1510		✓		1535		GW	2	✓		
SB16-SO-7'		~~1700~~ 1630		✓		~~1630~~ 1700	SB 6	S	1		✓	

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
			10/01/02

Remarks and Observations

pg 1 of 2

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

CHAIN-OF-CUSTODY RECORD

Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

MOBILE UNIT # MCB 1

CLIENT NAME: TetraTech
PROJECT NAME & ADDRESS: Mayport NS
SAMPLERS: Precision
CONTACT PERSON: Dave
BATCH # (Lab Use Only)

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES	BTEX, etc	COMMENT
MPT-1330-SB1-50-7'	100102	1625		✓	100102	1705		S	1		✓	
SB20-50-5'	"	1707		✓	"	1725		S	1		✓	
SB20-50-6'	"	1710		✓	"	1725		S	1		✓	
SB20-GW	"	1720		✓	"	1725		GW	2		✓	

JSH 100102

Precleaned Containers Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Date / Time: 10 01 02

Remarks and Observations

pg 2 of 2

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

CHAIN-OF-CUSTODY RECORD

KB LABS Mobile Laboratory Services
6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

MOBILE UNIT #

CLIENT NAME: TetraTech

PROJECT NAME & ADDRESS: Mayport N.S. Jax

SAMPLERS: Precision

CONTACT PERSON: Dave

BATCH # (Lab Use Only):

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES; DVR & Isopropyl Benzene

PRESERVATION: C Chilled; H HCL; Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	DVR & Isopropyl Benzene			COMMENT
MPT-1330-~~SB~~ MW-9	100202	0845		✓	100202	0920	MW-9	GW	2		✓			
-MW-5		0940		✓		0945					✓			
-SB18-SO-5'		1045		✓		1115	5'	S	1		✓			
-SB18-GW		1055		✓		1115		GW	2		✓			
-SB19-SO-6'		1129		✓		1150	6'	S	1		✓			
-MW XX		1130		✓		1150		GW	2		✓			
-SB19-GW		1145		✓		1150		GW	2		✓			
-SB21-SO-7'		1302		✓		1325	7'	S	1		✓			
-SB21-GW		1310		✓		1325		GW	2		✓			
-SB22-SO-7'		1317		✓		1325	7'	S	1		✓			
-SB22-GW		1325		✓		1330		GW	2		✓			
-SB23-SO-7'		1336		✓		1355	7'	S	1		✓			
-SB23-GW		1350		✓		1355		GW	2		✓			
-MW-2		1440		✓		1445		GW	~~4~~ 2		✓			
MW-11		1520		✓		1530		GW	2		✓			

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
[signature]	1002 / 02	[signature]	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
[signature]		[signature]	1002 / 02

Remarks and Observations

1 case soil jars.

pg 1 of 2

Matrix Types: S Soil; SW Surface Water; GW Ground Water; SG Soil Gas

Mobile Laboratory Services

6821 SW Archer Road
Gainesville, FL 32608
TEL (352) 367-0073
FAX (352) 367-0074

CHAIN-OF-CUSTODY RECORD

MOBILE UNIT #

CLIENT NAME: T.T.

PROJECT NAME & ADDRESS: Mayport NS Jax

SAMPLERS: P

CONTACT PERSON: Dave

BATCH # (Lab Use Only)

IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS: VOLATILES, BTEX etc

PRESERVATION
C Chilled
H HCL
Ot Other (see Remarks)

SAMPLE FIELD ID.\ NUMBER	DATE SAMPLED	TIME SAMPLED	COMP.	GRAB	DATE REC'D	TIME REC'D	STATION LOCATION / No.	SAMPLE MATRIX	NUMBER OF CONTAINERS	VOLATILES	BTEX etc			COMMENT
MPT-1330-MW3	100202	1545		✓	100202	1600		GW	2		✓			
SB24-GW		1625				1640		GW	2					
SB24-SO-6'		1610				1640		S	1					
SB25-GW		1715				1740		GW	2					
SB26-GW		1720				1740		GW	2					
SB26-SO-6'		1650				1740		S	1					
										YSH	100202			

Precleaned Containers Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks and Observations
Relinquished by: (Signature) [signature]	Date / Time	Received by: (Signature) [signature]	Date / Time 1002 02	pg 2 of 2

Matrix Types S Soil SW Surface Water GW Ground Water SG Soil Gas

Did I get the cooler back?

APPENDIX G
FIXED-BASE LABORATORY ANALYTICAL RESULTS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. PETERSON** **DATE:** **APRIL 30, 2003**

FROM: **BERNARD F SPADA III** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOC/EDB/PAH/TPH**
CTO 255, NS MAYPORT
SDG 150129

SAMPLES: 13/Aqueous

BP-DWM-1	BP-MW-1	BP-MW-3
MPT-1330-8	MPT-1330-DUP-01	MPT-1330-MW-17D
MPT-1330-MW-18	MPT-1330-MW-19	MPT-1330-MW-20
MPT-1330-MW-XX	MPT-1330-POST EQUIP	MPT-1330-PRE EQUIP
MPT-1330-TB		

OVERVIEW

The sample set for CTO 255, NS Mayport, SDG 150129 consists of nine (9) environmental aqueous samples, one (1) trip blank, two (2) equipment blanks, and one (1) field duplicate. All environmental samples were analyzed for volatile organic compounds (VOC), ethylene dibromide (EDB), polynuclear aromatic hydrocarbons (PAH), and total petroleum hydrocarbons (TPH) by SW-846 Methods 8260B and 8310 and Florida PRO. Ethylene dibromide was analyzed by EPA Method 504.1. The trip blank (MPT-1330-TB) was analyzed for VOC only. The field duplicate pair included in this SDG is MPT-1330-MW-18 and MPT-1330-DUP-01.

The samples were collected by Tetra Tech NUS on March 13 and 14, 2003 and analyzed by Severn Trent Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Methods 8260B and 8310, EPA 504.1, and Florida-PRO analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
* • Holding times
- Initial and continuing calibration
* • Laboratory method and field quality control blank results
* • Field Duplicate Precision
- Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatiles

The continuing calibration analyzed on 3/19/03 at 13:51 exceeded the 25% difference quality control criteria for bromomethane. No qualifications were made on this basis because all results for bromomethane were non-detected.

The laboratory did not meet the reporting limits requested in the laboratory statement of work for 1,1,2,2-tetrachloroethane, bromodichloromethane, chlorodibromomethane, cis-1,3-dichloropropene, isopropylbenzene, and trans-1,3-dichloropropene. No qualifications were made on this basis.

Samples BP-DMW-1, BP-MW-1, and MPT-1330-MW-17D were re-analyzed at a dilution because the concentration of isopropylbenzene present exceeded the linear calibration range of the instrument. The results from the diluted analysis for isopropylbenzene were transposed to the original analysis and used for validation.

The reporting limit for n-propylbenzene on the EDD did not match the Form I in sample MPT-1330-8. The reporting limit from the Form I was added to the database and used for validation.

Samples MPT-1330-MW-17D, MPT-1330-MW-19, MPT-1330-MW-20, and MPT-1330-MW-XX were analyzed at a dilution because the concentration of isopropylbenzene present exceeded the linear calibration range of the instrument. The samples were not analyzed un-diluted. This accounts for the elevated reporting limits for non-detected compounds in the aforementioned samples.

All positive results below the reporting limit were qualified as estimated (J) due to uncertainty near the detection limit.

EDB

The laboratory did not provide the EDD for EDB with the initial submittal. The re-submitted EDD was received on 4/22/03.

PAH

The EDD was missing the result for 1-methylnaphthalene in sample MPT-1330-8. The result from the Form I was entered into the database and used for validation.

TPH

The EDD did not match the Form I for all samples. The results from the Form Is were entered into the database and used for validation.

The surrogate C39 exceeded the percent recovery quality control criteria in samples MPT-1330-DUP-01 and MPT-1330-PRE EQIP. No qualifications were made on this basis because all results were non-detected.

The LCSD exceeded the percent recovery quality control criteria for TPH. No qualifications were made on this basis because the LCS was compliant.

The laboratory did not include the Form Is for samples MPT-1330-DUP-01, MPT-1330-POST EQUIP, and MPT-1330-PRE EQUIP in the data package. The laboratory provided the forms upon request.

Additional Comments

None.

EXECUTIVE SUMMARY

Laboratory Performance Issues: The laboratory did not meet the reporting limits as stated in the laboratory contract. Several Form Is were missing from the data package. The initial submission of the EDD did not contain EDB.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS
Bernard F. Spada III
Chemist/Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	BP-DWM-1
samp_date	3/13/2003
lab_id	C3C150129005
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.2	U	

nsample	BP-MW-1
samp_date	3/14/2003
lab_id	C3C150129006
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	0.29	J	P
ACENAPHTHENE	0.37	J	P
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.43		
BENZO(A)ANTHRACENE	0.11	J	P
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.13	J	P
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	1.3		
FLUORENE	0.35		
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	1.1		
PYRENE	0.89		

nsample	BP-MW-3
samp_date	3/13/2003
lab_id	C3C150129002
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	0.15	J	P
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	5.9		
ACENAPHTHYLENE	0.63	J	P
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.69		
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.24		

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-8	nsample	MPT-1330-DUP-01	nsample	MPT-1330-MW-17D
samp_date	3/13/2003	samp_date	3/14/2003	samp_date	3/13/2003
lab_id	C3C150129001	lab_id	C3C150129010	lab_id	C3C150129003
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:	MPT-1330-MW-18	DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.2	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.11	J	P

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	0.31	J	P
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.038	J	P
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.2	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-18	nsample	MPT-1330-MW-19	nsample	MPT-1330-MW-20
samp_date	3/14/2003	samp_date	3/14/2003	samp_date	3/14/2003
lab_id	C3C150129007	lab_id	C3C150129008	lab_id	C3C150129009
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.11	J	P

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	0.42	J	P
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	5.5		
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2		
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.38		
FLUORENE	2.4		
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	0.59	J	P
PHENANTHRENE	0.28		
PYRENE	0.21		

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	0.61	J	P
ACENAPHTHYLENE	0.39	J	P
ANTHRACENE	0.068	J	P
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.12	J	P
FLUORENE	0.11	J	P
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	0.4	J	P
PHENANTHRENE	0.12	J	P
PYRENE	0.071	J	P

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-18	nsample	MPT-1330-MW-19	nsample	MPT-1330-MW-20
samp_date	3/14/2003	samp_date	3/14/2003	samp_date	3/14/2003
lab_id	B350982*7	lab_id	B350982*8	lab_id	B350982*9
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/L	units	MG/L	units	MG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.9		

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	1.1		

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-XX
samp_date	3/13/2003
lab_id	B350982*4
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	1.4		

nsample	MPT-1330-POST EQUIP
samp_date	3/14/2003
lab_id	B350982*1
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

nsample	MPT-1330-PRE EQUIP
samp_date	3/14/2003
lab_id	B350982*1
qc_type	NM
units	MG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-XX	nsample	MPT-1330-POST EQUIP	nsample	MPT-1330-PRE EQUIP
samp_date	3/13/2003	samp_date	3/14/2003	samp_date	3/14/2003
lab_id	C3C150129004	lab_id	C3C150129012	lab_id	C3C150129011
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	4	J	P
2-METHYLNAPHTHALENE	12		
ACENAPHTHENE	5.5		
ACENAPHTHYLENE	5	U	
ANTHRACENE	0.57	J	P
BENZO(A)ANTHRACENE	1	U	
BENZO(A)PYRENE	1	U	
BENZO(B)FLUORANTHENE	1	U	
BENZO(G,H,I)PERYLENE	1	U	
BENZO(K)FLUORANTHENE	1	U	
CHRYSENE	1	U	
DIBENZO(A,H)ANTHRACENE	1	U	
FLUORANTHENE	1.5		
FLUORENE	5		
INDENO(1,2,3-CD)PYRENE	1	U	
NAPHTHALENE	1.7	J	P
PHENANTHRENE	6.4		
PYRENE	0.85	J	P

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.2	U	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	1	U	
2-METHYLNAPHTHALENE	1	U	
ACENAPHTHENE	1	U	
ACENAPHTHYLENE	1	U	
ANTHRACENE	0.2	U	
BENZO(A)ANTHRACENE	0.2	U	
BENZO(A)PYRENE	0.2	U	
BENZO(B)FLUORANTHENE	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U	
BENZO(K)FLUORANTHENE	0.2	U	
CHRYSENE	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U	
FLUORANTHENE	0.2	U	
FLUORENE	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U	
NAPHTHALENE	1	U	
PHENANTHRENE	0.2	U	
PYRENE	0.2	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-8	nsample	MPT-1330-DUP-01	nsample	MPT-1330-MW-17D
samp_date	3/13/2003	samp_date	3/14/2003	samp_date	3/13/2003
lab_id	B350982*1	lab_id	B350982*1	lab_id	B350982*3
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/L	units	MG/L	units	MG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:	MPT-1330-MW-18	DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	0.3	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	BP-DWM-1
samp_date	3/13/2003
lab_id	C3C150129005
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	0.66	J	P
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

nsample	BP-DWM-1
samp_date	3/13/2003
lab_id	C3C150129005
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample	BP-MW-1
samp_date	3/14/2003
lab_id	C3C150129006RE
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1.6		
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1.1		
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1		
ISOPROPYLBENZENE	120		
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	BP-MW-1
samp_date	3/14/2003
lab_id	C3C150129006RE
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	0.42	J	P
TOTAL XYLENES	0.57	J	P
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample	BP-MW-3
samp_date	3/13/2003
lab_id	C3C150129002
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

nsample	BP-MW-3
samp_date	3/13/2003
lab_id	C3C150129002
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-8
samp_date	3/13/2003
lab_id	C3C150129001
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

nsample	MPT-1330-8
samp_date	3/13/2003
lab_id	C3C150129001
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample	MPT-1330-DUP-01
samp_date	3/14/2003
lab_id	C3C150129010
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	MPT-1330-MW-18

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-DUP-01
samp_date	3/14/2003
lab_id	C3C150129010
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	MPT-1330-MW-18

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample	MPT-1330-MW-17D
samp_date	3/13/2003
lab_id	C3C150129003
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	2	U	
1,1,2,2-TETRACHLOROETHANE	2	U	
1,1,2-TRICHLOROETHANE	2	U	
1,1-DICHLOROETHANE	2	U	
1,1-DICHLOROETHENE	2	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	2	U	
1,2-DICHLOROPROPANE	2	U	
2-CHLOROETHYL VINYL ETHER	4	U	
BENZENE	2	U	
BROMODICHLOROMETHANE	2	U	
BROMOFORM	2	U	
BROMOMETHANE	1	J	P
CARBON TETRACHLORIDE	2	U	
CHLOROBENZENE	2	U	
CHLORODIBROMOMETHANE	2	U	
CHLOROETHANE	2	U	
CHLOROFORM	2	U	
CHLOROMETHANE	2	U	
CIS-1,2-DICHLOROETHENE	2	U	
CIS-1,3-DICHLOROPROPENE	2	U	
ETHYLBENZENE	2	U	
ISOPROPYLBENZENE	210		
METHYL TERT-BUTYL ETHER	2	U	
METHYLENE CHLORIDE	2	U	
N-BUTYLBENZENE	2	U	
N-PROPYLBENZENE	2	U	
SEC-BUTYLBENZENE	2	U	
TERT-BUTYLBENZENE	0.6	J	P
TETRACHLOROETHENE	2	U	

nsample	MPT-1330-MW-17D
samp_date	3/13/2003
lab_id	C3C150129003
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	2	U	
TOTAL XYLENES	2	U	
TRANS-1,2-DICHLOROETHENE	2	U	
TRANS-1,3-DICHLOROPROPENE	2	U	
TRICHLOROETHENE	2	U	
VINYL CHLORIDE	2	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-18
samp_date	3/14/2003
lab_id	C3C150129007
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

nsample	MPT-1330-MW-18
samp_date	3/14/2003
lab_id	C3C150129007
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

nsample	MPT-1330-MW-19
samp_date	3/14/2003
lab_id	C3C150129008
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	50	U	
1,1,2,2-TETRACHLOROETHANE	50	U	
1,1,2-TRICHLOROETHANE	50	U	
1,1-DICHLOROETHANE	50	U	
1,1-DICHLOROETHENE	50	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	50	U	
1,2-DICHLOROPROPANE	50	U	
2-CHLOROETHYL VINYL ETHER	100	U	
BENZENE	50	U	
BROMODICHLOROMETHANE	50	U	
BROMOFORM	50	U	
BROMOMETHANE	50	U	
CARBON TETRACHLORIDE	50	U	
CHLOROBENZENE	50	U	
CHLORODIBROMOMETHANE	50	U	
CHLOROETHANE	50	U	
CHLOROFORM	50	U	
CHLOROMETHANE	50	U	
CIS-1,2-DICHLOROETHENE	50	U	
CIS-1,3-DICHLOROPROPENE	50	U	
ETHYLBENZENE	50	U	
ISOPROPYLBENZENE	1700		
METHYL TERT-BUTYL ETHER	50	U	
METHYLENE CHLORIDE	50	U	
N-BUTYLBENZENE	50	U	
N-PROPYLBENZENE	50	U	
SEC-BUTYLBENZENE	50	U	
TERT-BUTYLBENZENE	50	U	
TETRACHLOROETHENE	50	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-19
samp_date	3/14/2003
lab_id	C3C150129008
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	50	U	
TOTAL XYLENES	50	U	
TRANS-1,2-DICHLOROETHENE	50	U	
TRANS-1,3-DICHLOROPROPENE	50	U	
TRICHLOROETHENE	50	U	
VINYL CHLORIDE	50	U	

nsample	MPT-1330-MW-20
samp_date	3/14/2003
lab_id	C3C150129009
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	75	U	
1,1,2,2-TETRACHLOROETHANE	75	U	
1,1,2-TRICHLOROETHANE	75	U	
1,1-DICHLOROETHANE	75	U	
1,1-DICHLOROETHENE	75	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	75	U	
1,2-DICHLOROPROPANE	75	U	
2-CHLOROETHYL VINYL ETHER	150	U	
BENZENE	75	U	
BROMODICHLOROMETHANE	75	U	
BROMOFORM	75	U	
BROMOMETHANE	67	J	P
CARBON TETRACHLORIDE	75	U	
CHLOROBENZENE	75	U	
CHLORODIBROMOMETHANE	75	U	
CHLOROETHANE	75	U	
CHLOROFORM	75	U	
CHLOROMETHANE	75	U	
CIS-1,2-DICHLOROETHENE	75	U	
CIS-1,3-DICHLOROPROPENE	75	U	
ETHYLBENZENE	75	U	
ISOPROPYLBENZENE	2000		
METHYL TERT-BUTYL ETHER	75	U	
METHYLENE CHLORIDE	75	U	
N-BUTYLBENZENE	75	U	
N-PROPYLBENZENE	75	U	
SEC-BUTYLBENZENE	75	U	
TERT-BUTYLBENZENE	75	U	
TETRACHLOROETHENE	75	U	

nsample	MPT-1330-MW-20
samp_date	3/14/2003
lab_id	C3C150129009
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	75	U	
TOTAL XYLENES	75	U	
TRANS-1,2-DICHLOROETHENE	75	U	
TRANS-1,3-DICHLOROPROPENE	75	U	
TRICHLOROETHENE	75	U	
VINYL CHLORIDE	75	U	

PROJ_NO: 4265

SDG: 150129 MEDIA: WATER DATA FRACTION:

nsample	MPT-1330-MW-XX	nsample	MPT-1330-MW-XX	nsample	MPT-1330-POST EQUIP
samp_date	3/13/2003	samp_date	3/13/2003	samp_date	3/14/2003
lab_id	C3C150129004	lab_id	C3C150129004	lab_id	C3C150129012
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids	0	Pct_Solids	0	Pct_Solids	0
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	90	U	
1,1,2,2-TETRACHLOROETHANE	90	U	
1,1,2-TRICHLOROETHANE	90	U	
1,1-DICHLOROETHANE	90	U	
1,1-DICHLOROETHENE	90	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	90	U	
1,2-DICHLOROPROPANE	90	U	
2-CHLOROETHYL VINYL ETHER	180	U	
BENZENE	90	U	
BROMODICHLOROMETHANE	90	U	
BROMOFORM	90	U	
BROMOMETHANE	66	J	P
CARBON TETRACHLORIDE	90	U	
CHLOROBENZENE	90	U	
CHLORODIBROMOMETHANE	90	U	
CHLOROETHANE	90	U	
CHLOROFORM	90	U	
CHLOROMETHANE	90	U	
CIS-1,2-DICHLOROETHENE	90	U	
CIS-1,3-DICHLOROPROPENE	90	U	
ETHYLBENZENE	90	U	
ISOPROPYLBENZENE	3200		
METHYL TERT-BUTYL ETHER	90	U	
METHYLENE CHLORIDE	90	U	
N-BUTYLBENZENE	90	U	
N-PROPYLBENZENE	90	U	
SEC-BUTYLBENZENE	90	U	
TERT-BUTYLBENZENE	90	U	
TETRACHLOROETHENE	90	U	

Parameter	Result	Val Qual	Qual Code
TOLUENE	90	U	
TOTAL XYLENES	90	U	
TRANS-1,2-DICHLOROETHENE	90	U	
TRANS-1,3-DICHLOROPROPENE	90	U	
TRICHLOROETHENE	90	U	
VINYL CHLORIDE	90	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	0.02	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	2	U	
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. PETERSON**	**DATE:**	**NOVEMBER 20, 2002**
FROM:	**BERNARD F SPADA III**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION- VOA CTO 255, NS MAYPORT SDG 40335**		

SAMPLES: 3/Aqueous

TRIP BLANK 100202 MPT-1330-MW-9S MPT-1330-SB-3-GW

2/Soil

MPT-1330-SB-2S-SO 6' MPT-1330-SB-3-SO 5'

OVERVIEW

The sample set for CTO 255, NS Mayport, SDG 40335 consists of two (2) environmental soil samples, two (2) environmental aqueous samples, and one (1) trip blank. All samples were analyzed for volatile organic compounds (VOC) by SW-846 Method 8260B.

The samples were collected by Tetra Tech NUS on September 30 and October 2, 2002 and analyzed by Severn Trent Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8260B analytical and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
- * Holding times
- Initial and continuing calibration
- * Laboratory method and field quality control blank results
- Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

The text of this report is formulated to address only gross non-compliances resulting in the rejection of data and the elimination of false positives.

Volatiles

The environmental aqueous samples were analyzed at dilutions due to the concentration of target analytes present. This accounts for the elevated reporting limits for all non-detected compounds in the environmental aqueous samples.

The aqueous initial calibration analyzed on 10/7/02 was below the 0.05 relative response factor (RRF) quality control criteria for bromomethane. All results for bromomethane in the aqueous samples were rejected (UR).

The aqueous continuing calibration on 10/8/02 was below the 0.05 RRF quality control criteria for bromomethane and 2-chloroethylvinyl ether. All results for the aforementioned compounds in the aqueous samples were rejected (UR).

The aqueous continuing calibration on 10/8/02 exceeded the 50% difference (%D) quality control criteria for 2-chloroethylvinyl ether. No qualifications were made on this basis because 2-chloroethylvinyl ether was qualified for a more severe RRF non-compliance.

The Form I's were missing 1,1,1-trichloroethane and 1,1,2-trichloroethane. The laboratory submitted the data upon request.

Ethylene dibromide was not analyzed via Method 504. It was reported in the VOC fraction by Method 8260B.

Percent solids content was not reported on sample form Is for the soil samples.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Qualifications were made based on calibration non-compliances. The laboratory did not report all target compounds in the initial laboratory data submission.

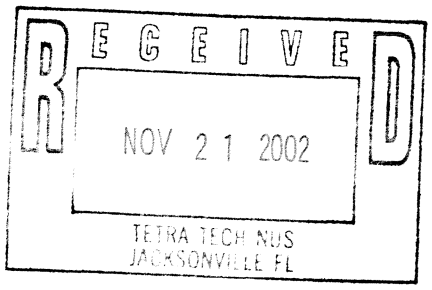
Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Bernard F. Spada III
Chemist/Data Validator



Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
N01 = Internal Standard Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4265

SDG: 40335 MEDIA: WATER DATA FRACTION: OV

nsample	MPT-1330-MW-9s
samp_date	10/2/2002
lab_id	C2J040335003
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	60	U	
1,1,2,2-TETRACHLOROETHANE	60	U	
1,1,2-TRICHLOROETHANE	60	U	
1,1-DICHLOROETHANE	60	U	
1,1-DICHLOROETHENE	60	U	
1,2-DIBROMOETHANE	60	U	
1,2-DICHLOROETHANE	60	U	
1,2-DICHLOROPROPANE	60	U	
2-CHLOROETHYL VINYL ETHER	300	UR	C
BENZENE	60	U	
BROMODICHLOROMETHANE	60	U	
BROMOFORM	60	U	
BROMOMETHANE	60	UR	C
CARBON TETRACHLORIDE	60	U	
CHLOROBENZENE	60	U	
CHLORODIBROMOMETHANE	60	U	
CHLOROETHANE	60	U	
CHLOROFORM	60	U	
CHLOROMETHANE	60	U	
CIS-1,2-DICHLOROETHENE	60	U	
CIS-1,3-DICHLOROPROPENE	60	U	
ETHYLBENZENE	60	U	
ISOPROPYLBENZENE	1700		
METHYL TERT-BUTYL ETHER	60	U	
METHYLENE CHLORIDE	120	U	
N-BUTYLBENZENE	60	U	
N-PROPYLBENZENE	60	U	
SEC-BUTYLBENZENE	60	U	
TERT-BUTYLBENZENE	60	U	
TETRACHLOROETHENE	60	U	

nsample	MPT-1330-MW-9s
samp_date	10/2/2002
lab_id	C2J040335003
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	60	U	
TOTAL XYLENES	180	U	
TRANS-1,2-DICHLOROETHENE	60	U	
TRANS-1,3-DICHLOROPROPENE	60	U	
TRICHLOROETHENE	60	U	
VINYL CHLORIDE	60	U	

nsample	MPT-1330-SB-3-GW
samp_date	9/30/2002
lab_id	C2J040335001
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	30	U	
1,1,2,2-TETRACHLOROETHANE	30	U	
1,1,2-TRICHLOROETHANE	30	U	
1,1-DICHLOROETHANE	30	U	
1,1-DICHLOROETHENE	30	U	
1,2-DIBROMOETHANE	30	U	
1,2-DICHLOROETHANE	30	U	
1,2-DICHLOROPROPANE	30	U	
2-CHLOROETHYL VINYL ETHER	150	UR	C
BENZENE	30	U	
BROMODICHLOROMETHANE	30	U	
BROMOFORM	30	U	
BROMOMETHANE	30	UR	C
CARBON TETRACHLORIDE	30	U	
CHLOROBENZENE	30	U	
CHLORODIBROMOMETHANE	30	U	
CHLOROETHANE	30	U	
CHLOROFORM	30	U	
CHLOROMETHANE	30	U	
CIS-1,2-DICHLOROETHENE	30	U	
CIS-1,3-DICHLOROPROPENE	30	U	
ETHYLBENZENE	30	U	
ISOPROPYLBENZENE	640		
METHYL TERT-BUTYL ETHER	30	U	
METHYLENE CHLORIDE	60	U	
N-BUTYLBENZENE	30	U	
N-PROPYLBENZENE	30	U	
SEC-BUTYLBENZENE	30	U	
TERT-BUTYLBENZENE	30	U	
TETRACHLOROETHENE	30	U	

PROJ_NO: 4265

SDG: 40335 MEDIA: WATER DATA FRACTION: OV

nsample	MPT-1330-SB-3-GW
samp_date	9/30/2002
lab_id	C2J040335001
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	30	U	
TOTAL XYLENES	90	U	
TRANS-1,2-DICHLOROETHENE	30	U	
TRANS-1,3-DICHLOROPROPENE	30	U	
TRICHLOROETHENE	30	U	
VINYL CHLORIDE	30	U	

nsample	TRIP BLANK-~~072702~~ 100302
samp_date	10/2/2002
lab_id	C2J040335005
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
2-CHLOROETHYL VINYL ETHER	5	UR	C
BENZENE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	UR	C
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	2	U	
N-BUTYLBENZENE	1	U	
N-PROPYLBENZENE	1	U	
SEC-BUTYLBENZENE	1	U	
TERT-BUTYLBENZENE	1	U	
TETRACHLOROETHENE	1	U	

nsample	TRIP BLANK-~~072702~~ 100202
samp_date	10/2/2002
lab_id	C2J040335005
qc_type	NM
units	UG/L
Pct_Solids	0
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	1	U	
TOTAL XYLENES	3	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
VINYL CHLORIDE	1	U	

11-20-02
JDJ

PROJ_NO: 4265

SDG: 40335 MEDIA: SOIL DATA FRACTION: OV

nsample	MPT-1330-SB-2S-SO 6'
samp_date	10/2/2002
lab_id	C2J040335004
qc_type	NM
units	UG/KG
Pct_Solids	100
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	4.6	U	
1,1,2,2-TETRACHLOROETHANE	4.6	U	
1,1,2-TRICHLOROETHANE	4.6	U	
1,1-DICHLOROETHANE	4.6	U	
1,1-DICHLOROETHENE	4.6	U	
1,2-DIBROMOETHANE	4.6	U	
1,2-DICHLOROETHANE	4.6	U	
1,2-DICHLOROPROPANE	4.6	U	
2-CHLOROETHYL VINYL ETHER	9.3	U	
BENZENE	4.6	U	
BROMODICHLOROMETHANE	4.6	U	
BROMOFORM	4.6	U	
BROMOMETHANE	9.3	U	
CARBON TETRACHLORIDE	4.6	U	
CHLOROBENZENE	4.6	U	
CHLORODIBROMOMETHANE	4.6	U	
CHLOROETHANE	9.3	U	
CHLOROFORM	4.6	U	
CHLOROMETHANE	9.3	U	
CIS-1,2-DICHLOROETHENE	4.6	U	
CIS-1,3-DICHLOROPROPENE	4.6	U	
ETHYLBENZENE	4.6	U	
ISOPROPYLBENZENE	4.6	U	
METHYL TERT-BUTYL ETHER	4.6	U	
METHYLENE CHLORIDE	4.6	U	
N-BUTYLBENZENE	4.6	U	
N-PROPYLBENZENE	4.6	U	
SEC-BUTYLBENZENE	4.6	U	
TERT-BUTYLBENZENE	4.6	U	
TETRACHLOROETHENE	4.6	U	

nsample	MPT-1330-SB-2S-SO 6'
samp_date	10/2/2002
lab_id	C2J040335004
qc_type	NM
units	UG/KG
Pct_Solids	100
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	4.6	U	
TOTAL XYLENES	14	U	
TRANS-1,2-DICHLOROETHENE	4.6	U	
TRANS-1,3-DICHLOROPROPENE	4.6	U	
TRICHLOROETHENE	4.6	U	
VINYL CHLORIDE	9.3	U	

nsample	MPT-1330-SB-3-SO 5'
samp_date	9/30/2002
lab_id	C2J040335002
qc_type	NM
units	UG/KG
Pct_Solids	100
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	2.5	U	
1,1,2,2-TETRACHLOROETHANE	2.5	U	
1,1,2-TRICHLOROETHANE	2.5	U	
1,1-DICHLOROETHANE	2.5	U	
1,1-DICHLOROETHENE	2.5	U	
1,2-DIBROMOETHANE	2.5	U	
1,2-DICHLOROETHANE	2.5	U	
1,2-DICHLOROPROPANE	2.5	U	
2-CHLOROETHYL VINYL ETHER	5	U	
BENZENE	2.5	U	
BROMODICHLOROMETHANE	2.5	U	
BROMOFORM	2.5	U	
BROMOMETHANE	5	U	
CARBON TETRACHLORIDE	2.5	U	
CHLOROBENZENE	2.5	U	
CHLORODIBROMOMETHANE	2.5	U	
CHLOROETHANE	5	U	
CHLOROFORM	2.5	U	
CHLOROMETHANE	5	U	
CIS-1,2-DICHLOROETHENE	2.5	U	
CIS-1,3-DICHLOROPROPENE	2.5	U	
ETHYLBENZENE	2.5	U	
ISOPROPYLBENZENE	2.5	U	
METHYL TERT-BUTYL ETHER	2.5	U	
METHYLENE CHLORIDE	2.5	U	
N-BUTYLBENZENE	2.5	U	
N-PROPYLBENZENE	2.5	U	
SEC-BUTYLBENZENE	2.5	U	
TERT-BUTYLBENZENE	2.5	U	
TETRACHLOROETHENE	2.5	U	

PROJ_NO: 4265

SDG: 40335 MEDIA: SOIL DATA FRACTION: OV

nsample	MPT-1330-SB-3-SO 5'
samp_date	9/30/2002
lab_id	C2J040335002
qc_type	NM
units	UG/KG
Pct_Solids	100
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOLUENE	2.5	U	
TOTAL XYLENES	7.5	U	
TRANS-1,2-DICHLOROETHENE	2.5	U	
TRANS-1,3-DICHLOROPROPENE	2.5	U	
TRICHLOROETHENE	2.5	U	
VINYL CHLORIDE	5	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. PETERSON** **DATE:** **JUNE 11, 2003**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- VOA/PAH/PETROLEUM HYDROCARBON**
CTO 255, NS MAYPORT
SDG 80215

SAMPLES: 1/Soil

MPT-1330-SB-1 (7)

OVERVIEW

The sample set for CTO 255, NS Mayport, SDG 80215 consists of one (1) soil environmental sample. The sample was analyzed for volatile organic compounds (VOCs), 1,2-dibromoethane (EDB), polynuclear aromatic hydrocarbons (PAHs), and petroleum hydrocarbons.

The sample was collected by TetraTech NUS on April 5, 2003 and analyzed by STL Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using SW-846 Method 8260B, 8270C, and modified 8015 (Florida-PRO) analysis and reporting protocols. The data contained in this SDG were validated with regard to the following parameters:

- Data completeness
* • Holding times
* • Initial/continuing calibrations
* • Laboratory method and trip blank results
* • Field Duplicate Results
* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatiles

The continuing calibration analyzed on 4/14/03 at 07:02 exceeded the 25% difference quality control criteria for 2-chloroethyl vinyl ether. No qualifications were made on this basis because all results for 2-chloroethyl vinyl ether were non-detected.

The laboratory did not meet the reporting limits requested in the laboratory statement of work for bromodichloromethane, dibromochloromethane, cis-1,3-dichloropropene, 1,1,2,2-tetrachloroethane, and trans-1,3-dichloropropene. No qualifications were made on this basis.

PAHs

No qualification of the data was necessary.

Petroleum Hydrocarbons

The EDD did not match the Form I for sample MPT-1330-SB-1 (7). The TPH result from the Form I was entered into the database and used for validation.

Additional Comments:

Positive results less than the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: The TPH result in the database did not match the result on the Form I.

Other factors affecting data quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99) and the NFESC guidelines IRCDQM (Sept., 1999). The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Edward Sedlmyer
Tetra Tech NUS

Edward Sedlmyer
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

PROJ_NO: 4265

SDG: 80215 MEDIA: SOIL DATA FRACTION: OV

nsample	MPT-1330-SB-1 (7)	nsample	MPT-1330-SB-1 (7)
samp_date	4/5/2003	samp_date	4/5/2003
lab_id	C3D080215001	lab_id	C3D080215001
qc_type	NM	qc_type	NM
units	UG/KG	units	UG/KG
Pct_Solids	86	Pct_Solids	86
DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	5.8	U	
1,1,2,2-TETRACHLOROETHANE	5.8	U	
1,1,2-TRICHLOROETHANE	5.8	U	
1,1-DICHLOROETHANE	5.8	U	
1,1-DICHLOROETHENE	5.8	U	
1,2-DIBROMOETHANE	5.8	U	
1,2-DICHLOROETHANE	5.8	U	
1,2-DICHLOROPROPANE	5.8	U	
2-CHLOROETHYL VINYL ETHER	12	U	
BENZENE	5.8	U	
BROMODICHLOROMETHANE	5.8	U	
BROMOFORM	5.8	U	
BROMOMETHANE	5.8	U	
CARBON TETRACHLORIDE	5.8	U	
CHLOROBENZENE	5.8	U	
CHLORODIBROMOMETHANE	5.8	U	
CHLOROETHANE	5.8	U	
CHLOROFORM	5.8	U	
CHLOROMETHANE	5.8	U	
CIS-1,2-DICHLOROETHENE	5.8	U	
CIS-1,3-DICHLOROPROPENE	5.8	U	
ETHYLBENZENE	5.8	U	
ISOPROPYLBENZENE	5.8	U	
METHYL TERT-BUTYL ETHER	5.8	U	
METHYLENE CHLORIDE	5.8	U	
N-BUTYLBENZENE	5.8	U	
N-PROPYLBENZENE	5.8	U	
SEC-BUTYLBENZENE	5.8	U	
TERT-BUTYLBENZENE	5.8	U	
TETRACHLOROETHENE	5.8	U	
TOLUENE	5.8	U	
TOTAL XYLENES	5.8	U	
TRANS-1,2-DICHLOROETHENE	5.8	U	
TRANS-1,3-DICHLOROPROPENE	5.8	U	
TRICHLOROETHENE	5.8	U	
VINYL CHLORIDE	5.8	U	

PROJ_NO: 4265

SDG: 80215 MEDIA: SOIL DATA FRACTION: PAH

nsample	MPT-1330-SB-1 (7)
samp_date	4/5/2003
lab_id	C3D080215001
qc_type	NM
units	UG/KG
Pct_Solids	86
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1-METHYLNAPHTHALENE	390	U	
2-METHYLNAPHTHALENE	390	U	
ACENAPHTHENE	390	U	
ACENAPHTHYLENE	390	U	
ANTHRACENE	390	U	
BENZO(A)ANTHRACENE	42	J	P
BENZO(A)PYRENE	59	J	P
BENZO(B)FLUORANTHENE	110	J	P
BENZO(G,H,I)PERYLENE	39	J	P
BENZO(K)FLUORANTHENE	390	U	
CHRYSENE	42	J	P
DIBENZO(A,H)ANTHRACENE	390	U	
FLUORANTHENE	390	U	
FLUORENE	390	U	
INDENO(1,2,3-CD)PYRENE	33	J	P
NAPHTHALENE	390	U	
PHENANTHRENE	390	U	
PYRENE	42	J	P

PROJ_NO: 4265

SDG: 80215 MEDIA: SOIL DATA FRACTION: PET

nsample	MPT-1330-SB-1 (7)
samp_date	4/5/2003
lab_id	B351285*1
qc_type	NM
units	MG/KG
Pct_Solids	91
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
TOTAL PETROLEUM HYDROCARBONS	12	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

TETRA TECH NUS INC

Client Sample ID: MPT-1330-SB-1 (7)

GC/MS Volatiles

Lot-Sample #...:	C3D080215-001	Work Order #...:	FLHR11AE	Matrix.....:	SOLID
Date Sampled...:	04/05/03	Date Received..:	04/08/03	MS Run #.....:	3104057
Prep Date.....:	04/14/03	Analysis Date..:	04/14/03		
Prep Batch #...:	3105106	Analysis Time..:	12:32		
Dilution Factor:	1	Initial Wgt/Vol:	5 g	Final Wgt/Vol..:	5 mL
% Moisture.....:	14	Analyst ID.....:	016328	Instrument ID..:	HP4
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	5.8	ug/kg	0.49
Bromodichloromethane	ND	5.8	ug/kg	0.61
Bromoform	ND	5.8	ug/kg	0.34
Bromomethane	ND	5.8	ug/kg	0.55
n-Butylbenzene	ND	5.8	ug/kg	0.33
sec-Butylbenzene	ND	5.8	ug/kg	0.45
tert-Butylbenzene	ND	5.8	ug/kg	0.36
Carbon tetrachloride	ND	5.8	ug/kg	0.59
Chlorobenzene	ND	5.8	ug/kg	0.49
Dibromochloromethane	ND	5.8	ug/kg	0.56
Chloroethane	ND	5.8	ug/kg	2.8
2-Chloroethyl vinyl ether	ND	12	ug/kg	8.3
Chloroform	ND	5.8	ug/kg	0.75
Chloromethane	ND	5.8	ug/kg	0.47
1,2-Dibromoethane (EDB)	ND	5.8	ug/kg	0.69
1,1-Dichloroethane	ND	5.8	ug/kg	0.52
1,2-Dichloroethane	ND	5.8	ug/kg	0.66
cis-1,2-Dichloroethene	ND	5.8	ug/kg	0.45
trans-1,2-Dichloroethene	ND	5.8	ug/kg	0.43
1,1-Dichloroethene	ND	5.8	ug/kg	0.41
1,2-Dichloropropane	ND	5.8	ug/kg	0.60
cis-1,3-Dichloropropene	ND	5.8	ug/kg	0.44
trans-1,3-Dichloropropene	ND	5.8	ug/kg	0.52
Ethylbenzene	ND	5.8	ug/kg	0.46
Isopropylbenzene	ND	5.8	ug/kg	0.41
Methylene chloride	ND	5.8	ug/kg	0.90
Methyl tert-butyl ether	ND	5.8	ug/kg	0.60
n-Propylbenzene	ND	5.8	ug/kg	0.49
1,1,2,2-Tetrachloroethane	ND	5.8	ug/kg	0.85
Tetrachloroethene	ND	5.8	ug/kg	0.34
Toluene	ND	5.8	ug/kg	0.57
1,1,1-Trichloroethane	ND	5.8	ug/kg	0.39
1,1,2-Trichloroethane	ND	5.8	ug/kg	0.55
Trichloroethene	ND	5.8	ug/kg	0.63
Vinyl chloride	ND	5.8	ug/kg	0.66
Xylenes (total)	ND	5.8	ug/kg	1.3

(Continued on next page)

TETRA TECH NUS INC

Client Sample ID: MPT-1330-SB-1 (7)

GC/MS Volatiles

Lot-Sample #...: C3D080215-001 Work Order #...: FLHR11AE Matrix.....: SOLID

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	102	(61 - 130)
Toluene-d8	93	(60 - 143)
4-Bromofluorobenzene	91	(47 - 158)
Dibromofluoromethane	102	(59 - 138)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

TETRA TECH NUS INC

Client Sample ID: MPT-1330-SB-1 (7)

GC/MS Semivolatiles

Lot-Sample #...:	C3D080215-001	Work Order #...:	FLHR11AC	Matrix.....:	SOLID
Date Sampled...:	04/05/03 09:15	Date Received..:	04/08/03 10:30	MS Run #.....:	3105261
Prep Date.....:	04/15/03	Analysis Date..:	04/23/03		
Prep Batch #...:	3105518	Analysis Time..:	08:55		
Dilution Factor:	1	Initial Wgt/Vol:	30 g	Final Wgt/Vol..:	1 mL
% Moisture.....:	14	Analyst ID.....:	007062	Instrument ID..:	722
		Method.....:	SW846 8270C		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Naphthalene	ND	390	ug/kg	40
Acenaphthylene	ND	390	ug/kg	35
Acenaphthene	ND	390	ug/kg	30
Fluorene	ND	390	ug/kg	34
Phenanthrene	ND	390	ug/kg	37
Anthracene	ND	390	ug/kg	37
Fluoranthene	ND	390	ug/kg	36
Pyrene	**42 J**	**390**	**ug/kg**	**42**
Benzo(a)anthracene	**42 J**	**390**	**ug/kg**	**38**
Chrysene	**42 J**	**390**	**ug/kg**	**38**
Benzo(b)fluoranthene	**110 J**	**390**	**ug/kg**	**52**
Benzo(k)fluoranthene	ND	390	ug/kg	50
Benzo(a)pyrene	**59 J**	**390**	**ug/kg**	**35**
Indeno(1,2,3-cd)pyrene	**33 J**	**390**	**ug/kg**	**27**
Dibenzo(a,h)anthracene	ND	390	ug/kg	26
Benzo(ghi)perylene	**39 J**	**390**	**ug/kg**	**34**
2-Methylnaphthalene	ND	390	ug/kg	40
1-Methylnaphthalene	ND	390	ug/kg	69

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
2,4,6-Tribromophenol	58	(35 - 116)
2-Fluorobiphenyl	52	(43 - 110)
2-Fluorophenol	58	(11 - 116)
Nitrobenzene-d5	53	(42 - 110)
Phenol-d5	60	(25 - 115)
Terphenyl-d14	55	(37 - 137)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

FORM 1
FL PRO ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

51285-1

Lab Name: STL TAMPA Contract:

Lab Code: E84282 Case No.: SAS No.: SDG No.: STLP03

Matrix: (soil/water) SOIL Lab Sample ID: MPT-1330-SB-1 (7)

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 1D22L33

Level: (low/med) LOW Date Received: 04/09/03

% Moisture: 9 decanted: (Y/N) N Date Extracted:04/18/03

Concentrated Extract Volume: 2(mL) Date Analyzed: 04/22/03

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
68334-30-5	FLPROTPH	12	U

FORM I FL PRO