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CONTAMINATION ASSESSMENT PLAN FOR TANK SITES 163B, 1586 AND F365 NS MAYPORT FL

6/1/2002

TETRA TECH NUS

Contamination Assessment Plan
for
Tank Sites 163B, 1586, and G365

Naval Station Mayport
Mayport, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

Contract Task Order 0247

June 2002

02JAX0115

CONTAMINATION ASSESSMENT PLAN
FOR
TANK SITES 163B, 1586, AND G365

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 0247

JUNE 2002

PREPARED UNDER THE SUPERVISION OF:

Mark A. Peterson

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

APPROVED FOR SUBMITTAL BY:

Mark T. Perry for

DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

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ACRONYMS

AES	Aerostar Environmental Services, Inc.
AST	Aboveground Storage Tank
bls	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
CAP	Contamination Assessment Plan
COC	Constituents of Concern
CTO	Contract Task Order
DOT	Department of Transportation
DPT	Direct Push Technology
EDB	Ethylene Dibromide
EDC	Dichloroethane
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Range Organics
FOL	Field Operations Leader
ft	Foot/Feet
GAG	Gasoline Analytical Group
GCTLs	Groundwater Cleanup Target Levels
IDW	Investigation Derived Waste
KAG	Kerosene Analytical Group
Mg/L	Milligrams per Liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MTBE	Methyl-Tert-Butyl Ether
NA	Natural Attenuation
NAVSTA	Naval Station
Navy	United States Navy
NTUs	Nephelometric Turbidity Units
OES	Omega Environmental Services, Inc.
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
PPVOH	Priority Pollutant Volatile Organic Halocarbons
PVC	Polyvinyl Chloride
PWC	Navy Public Works Center
QC	Quality Control

ACRONYMS (Continued)

SAR	Site Assessment Report
SCTLs	Soil Cleanup Target Levels
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
TCR	Tank Closure Report
TOM	Task Order Manager
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOAs	Volatile Organic Aromatics
VOCs	Volatile Organic Compounds
VOHs	Volatile Organic Hydrocarbons

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) has prepared this Contamination Assessment Plan (CAP) for the Tank Sites 163B, 1586, and G365, Naval Station (NAVSTA) Mayport, Mayport, Florida. This CAP was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0247, for the Comprehensive Long-term Environmental Action Navy III Contract Number N62467-94-D-0888.

1.1 OBJECTIVE

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

2.0 SITE DESCRIPTION

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and approximately 12 miles to the northeast of downtown Jacksonville and adjacent to the town of Mayport. 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 and west. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport located to the west between the station and the St. Johns River.

Within the NAVSTA are the three subject former storage tank sites. Figure 2-1 shows the locations of the three sites. The first site, Tank Site 163B, was once located along the southern wall of Building 163 and consisted of a former aboveground storage tank (AST) and a cement block secondary containment area. The AST and secondary containment area were removed in March 2000. The former AST location is immediately surrounded by Building 163 and a paved area.

Tank Site 1586, is a former underground storage tank (UST) once located along the northeastern wall of Building 1586. This UST was removed in April 2000. During the removal, a spill of free product occurred in the vicinity of the tank pit. The reported volume of the spill was approximately 1,400 gallons. Building 1586, an open grassy area, and a sidewalk surround this site.

Tank Site G365 (fire station) was located along the eastern side of Building 365. The site consisted of a former AST and a secondary containment area. The former AST was removed in March 2000 and a new AST has been installed on a cement slab where the former AST was located. This AST is the fuel source for an emergency generator. A grassy area surrounds the cement pad to the north, south, and west.

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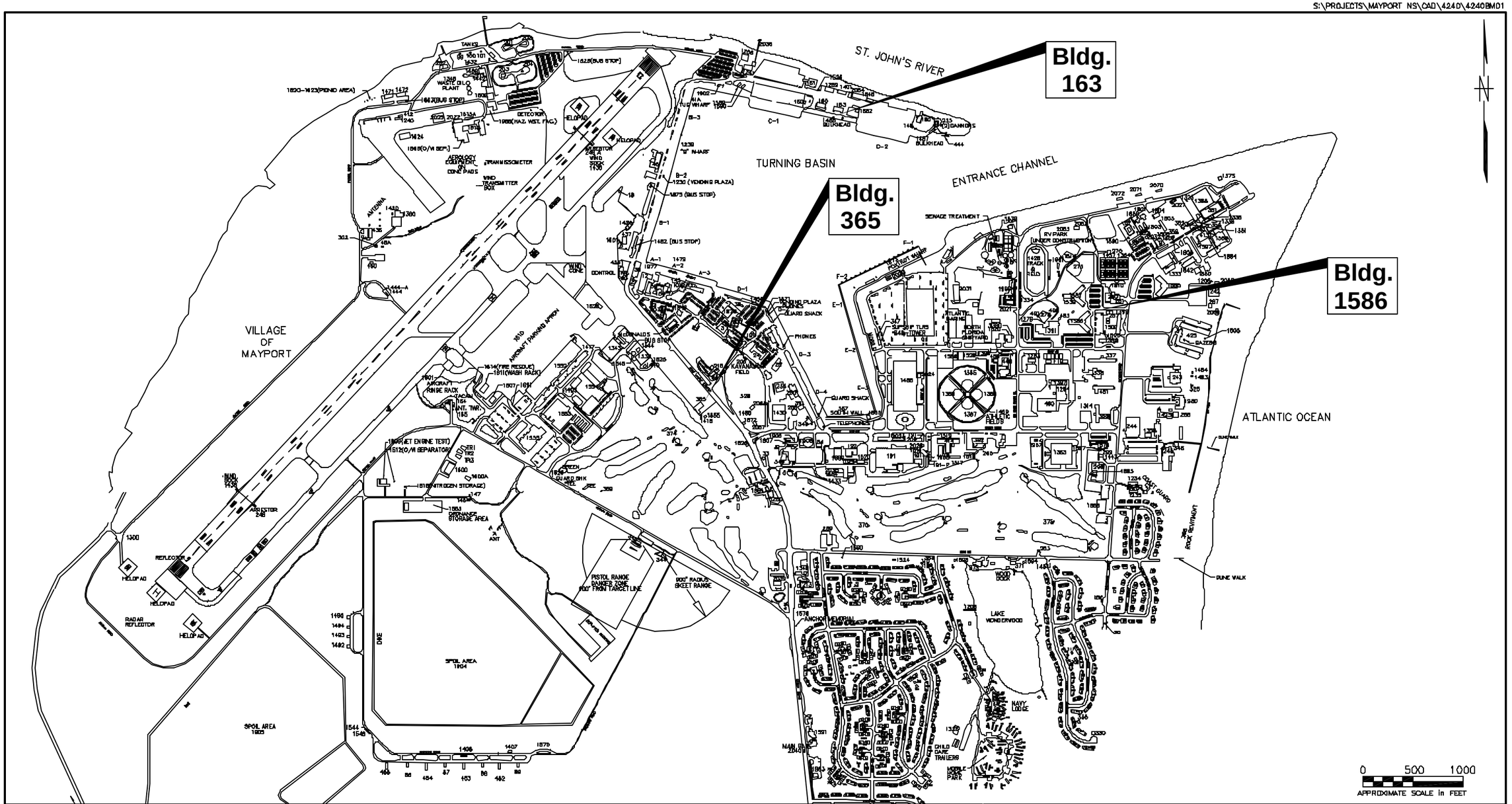

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 4/16/02
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COST/SCHED–AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY — SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND

SITE LOCATIONS MAP
CONTAMINATION ASSESSMENT PLAN
TANK SITES 163B, 1586, AND G365
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4240
APPROVED BY DATE
APPROVED BY DATE
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FORM CADD NO. SDIV_BH.DWG – REV 0 – 1/20/98

3.0 SITE HISTORY

3.1 TANK SITE 163B

Site 163B consisted of a 500-gallon steel, diesel fuel AST. The tank was originally installed in 1959 and was surrounded with a concrete block secondary containment area. A site plan map is provided as Figure 3-1. Omega Environmental Services, Inc. (OES) of Atlanta, Georgia removed the tank in March 2000. Aerostar Environmental Services, Inc. (AES) of Jacksonville, Florida conducted the environmental assessment and reported the closure activities in the Tank Closure Report (TCR) (AES, 2000a).

The TCR stated that the AST was inspected for soundness of its integrity, and no cracks or pinholes were observed. During the excavation, 16 soil vapor samples were collected for vapor headspace screening from the tank pit. Three of the 16 screened soil samples were considered excessively contaminated. Additional soil samples were collected from the location of the highest vapor headspace reading for laboratory analysis. These samples were analyzed for Volatile Organic Aromatics (VOAs) by United States Environmental Protection Agency (USEPA) Method 8021/5035, Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Method 8310, and Total Recoverable Petroleum Hydrocarbons (TRPHs) by Florida Petroleum Range Organics (FL-PRO) method. A soil sample collected from 4 feet (ft) below land surface (bls) exceeded the Florida Department of Environmental Protection (FDEP) Soil Cleanup Target Levels (SCTLs) as indicated in Chapter 62-770, FAC for VOAs, PAHs, and TRPH.

The TCR also indicated that one temporary well was installed in the area with the greatest potential of contamination. Groundwater from this well was analyzed for VOAs by USEPA Method 602, including methyl-tert-butyl ether (MTBE) and PAHs by USEPA Method 610. Results of the laboratory analysis did indicate PAH petroleum constituents present, but below the FDEP Groundwater Cleanup Target Levels (GCTLs).

3.2 TANK SITE 1586

Tank Site 1586 has been the focus of an ongoing Site Assessment to evaluate the extent of petroleum hydrocarbons in soil and groundwater that resulted from a ruptured fuel line. This work included the installation of eight monitoring wells and numerous soil borings. The results of this investigation indicated that Tank Site 1586 was a candidate for natural attenuation (NA). Subsequent monitoring of the site conducted in 1999 and 2000 indicated that petroleum constituents were below GCTLs and therefore the site was eligible for closure. However, on April 30, 2000, the contractor installing a new 5,000-gallon double-walled fiberglass UST in the same tank pit as the previously removed 4,000-gallon fuel oil UST,

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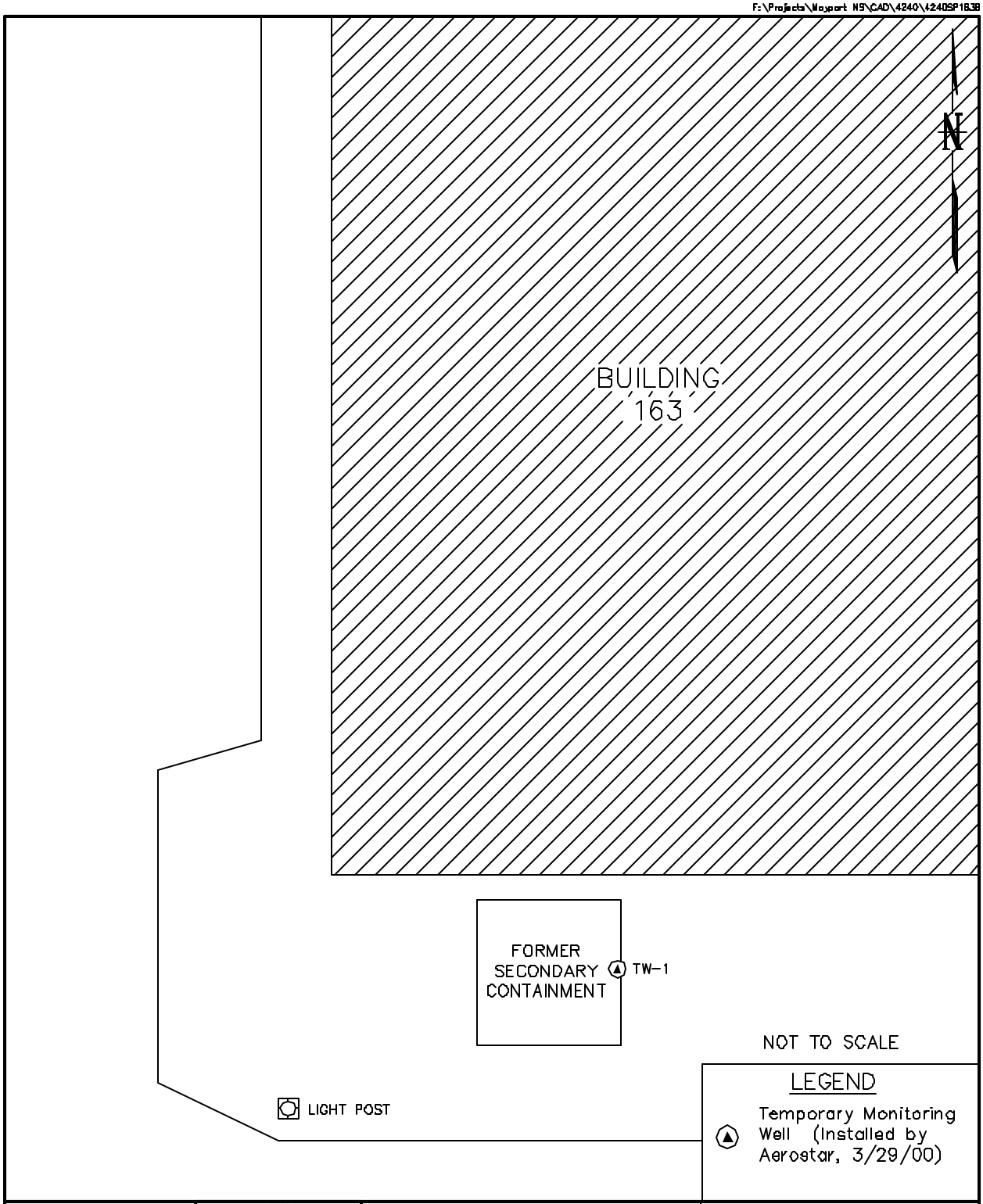

DRAWN BY LK DATE 4/17/02		BUILDING 163 SITE PLAN CONTAMINATION ASSESSMENT PLAN TANK SITES 163B, 1586, AND G365 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240
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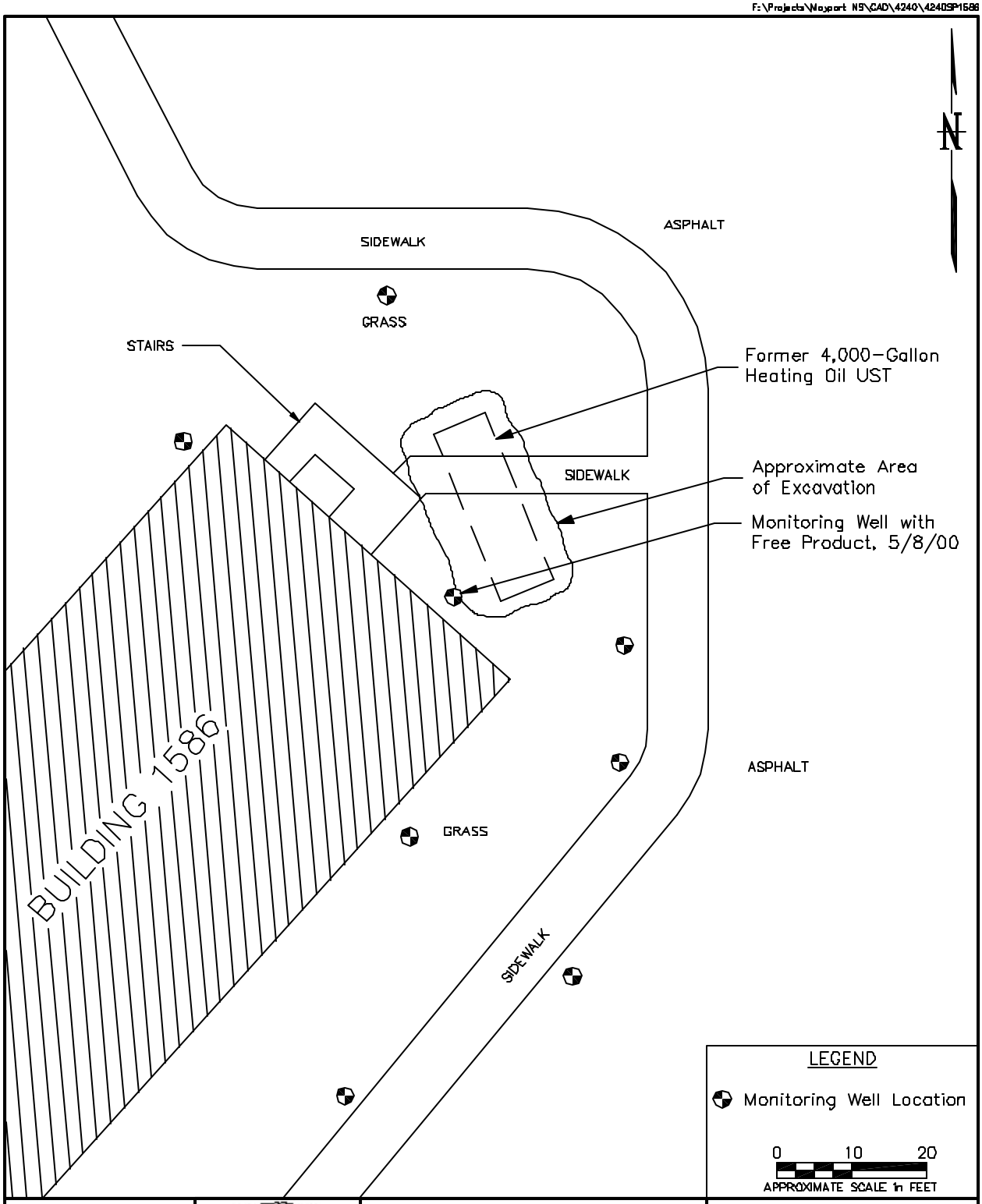

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COST/SCHED-AREA			APPROVED BY DATE
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spilled 1,400 gallons of fuel oil. The release was reported to Mr. Jim Cason of FDEP. The contractor installed free product recovery wells. However, free product extraction was not initiated.

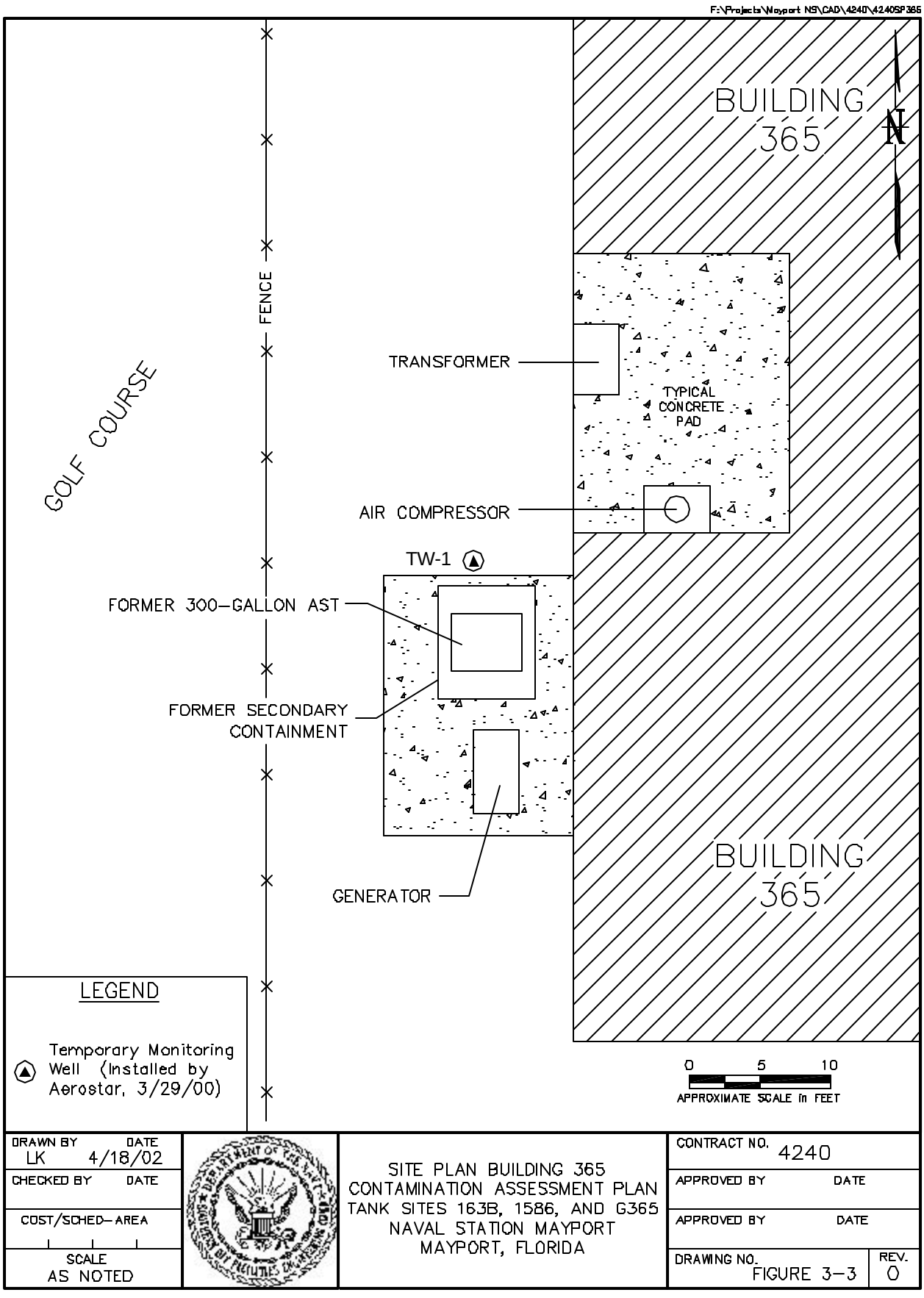
Monitoring activities indicated that as much as 3 ft of free product was present in a well adjacent to the tank pit. As a result, FDEP has required that a site investigation be conducted to determine the extent of free product occurrence and to determine the appropriate remedial technique.

3.3 TANK SITE G365

Tank Site G365 consisted of a 300-gallon, steel, diesel fuel AST installed in a concrete block, secondary containment area. OES removed the tank in March 2000. Once the AST was removed, a new double walled 350-gallon diesel AST was installed in the same location. A site plan map is provided as Figure 3-3. AES conducted the environmental assessment and reported it in the TCR (AES 2000c).

The TCR AST was inspected for soundness of its integrity, and no cracks or pinholes were observed. During tank closure operations, 12 soil vapor samples were collected for screening from the tank pit. No soil vapor headspace readings exceeded the FDEP action level for excessively contaminated soil as defined by Chapter 62-770, FAC. Additional soil samples were collected and they were analyzed for VOAs by USEPA Method 8021/5035, PAHs by USEPA Method 8310, and TRPH by Method FL-PRO. One soil sample was collected for laboratory analysis from 1 ft bls near the discharge point of the secondary containment structure. No petroleum parameters analyzed were detected in this sample.

During closure, AES (2000c) installed a temporary monitoring well near the former secondary containment drainpipe. Groundwater from this well was analyzed for VOAs by USEPA Method 602, including MTBE, and PAHs by USEPA Method 610. Laboratory results recorded toluene to exceed the FDEP GCTLs per Chapter 62-770, FAC.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BUILDING 365
N
FENCE
GOLF COURSE
TRANSFORMER
TYPICAL CONCRETE PAD
AIR COMPRESSOR
TW-1
FORMER 300-GALLON AST
FORMER SECONDARY CONTAINMENT
GENERATOR
BUILDING 365
LEGEND
Temporary Monitoring Well (Installed by Aerostar, 3/29/00)
0 5 10
APPROXIMATE SCALE In FEET
DRAWN BY LK DATE 4/18/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED
SITE PLAN BUILDING 365
CONTAMINATION ASSESSMENT PLAN
TANK SITES 163B, 1586, AND G365
NAVAL STATION MAYPORT
MAYPORT, FLORIDA
CONTRACT NO. 4240
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3-3
REV. 0

4.0 OBJECTIVE AND SCOPE OF PROPOSED ASSESSMENT

The objective of the proposed assessment described in this workplan is as follows:

- Determine if petroleum contamination exists in the soil and/or groundwater at the site.
- Meet the requirements of Chapter 62-770.600, FAC for completion of a SAR.
- Gather information to support a "No Further Action" proposal, Natural Attenuation Monitoring Plan, or Remedial Action Plan as required.

The work in the following sections will be completed in accordance with the FDEP's Standard Operating Procedures (SOPs).

At the end of each day in the field, the Field Operations Leader (FOL) will complete a Daily Activities Record for any subcontractor activities (Appendix A).

4.1 SOIL INVESTIGATION AND DPT GROUNDWATER SCREENING

TtNUS proposes to conduct the investigation in two phases. During the first phase, direct push technology (DPT) techniques will be used to advance soil borings, set temporary piezometers (tank sites 163B and G365 only), and to collect soil and groundwater samples for mobile laboratory analysis of benzene, toluene, ethylbenzene and total xylenes (BTEX), naphthalene, and diesel range organics. Site plans showing the proposed initial DPT locations are presented as Figure 4-1, 4-2, and 4-3 for Tank Sites, 163B, 1586, and G365, respectively. The field geologist will choose four of the locations shown at Tank Sites 163B and G365 to install temporary piezometers. The four piezometers at each site will be field surveyed to allow determination of groundwater flow direction for each site.

Soil samples will be collected beginning at approximately 1 ft bls and continue at 2-ft intervals to approximately 1 ft into the saturated zone. Soil samples collected during this effort will be field screened using an organic vapor analyzer (OVA) - flame ionization detector (FID). In the absence of any OVA response, the sample will be collected from approximately 1 ft above the water table. A soil-boring log will be maintained for each location and will include the OVA-FID data. Split samples from select locations will be submitted to the mobile laboratory for analysis. Groundwater samples will be collected from the shallow portions approximately 6 to 10 ft bls of the saturated zone; however, limited deep (approximately 25 ft to 40 ft bls) samples will be collected to screen for vertical migration of contaminants.

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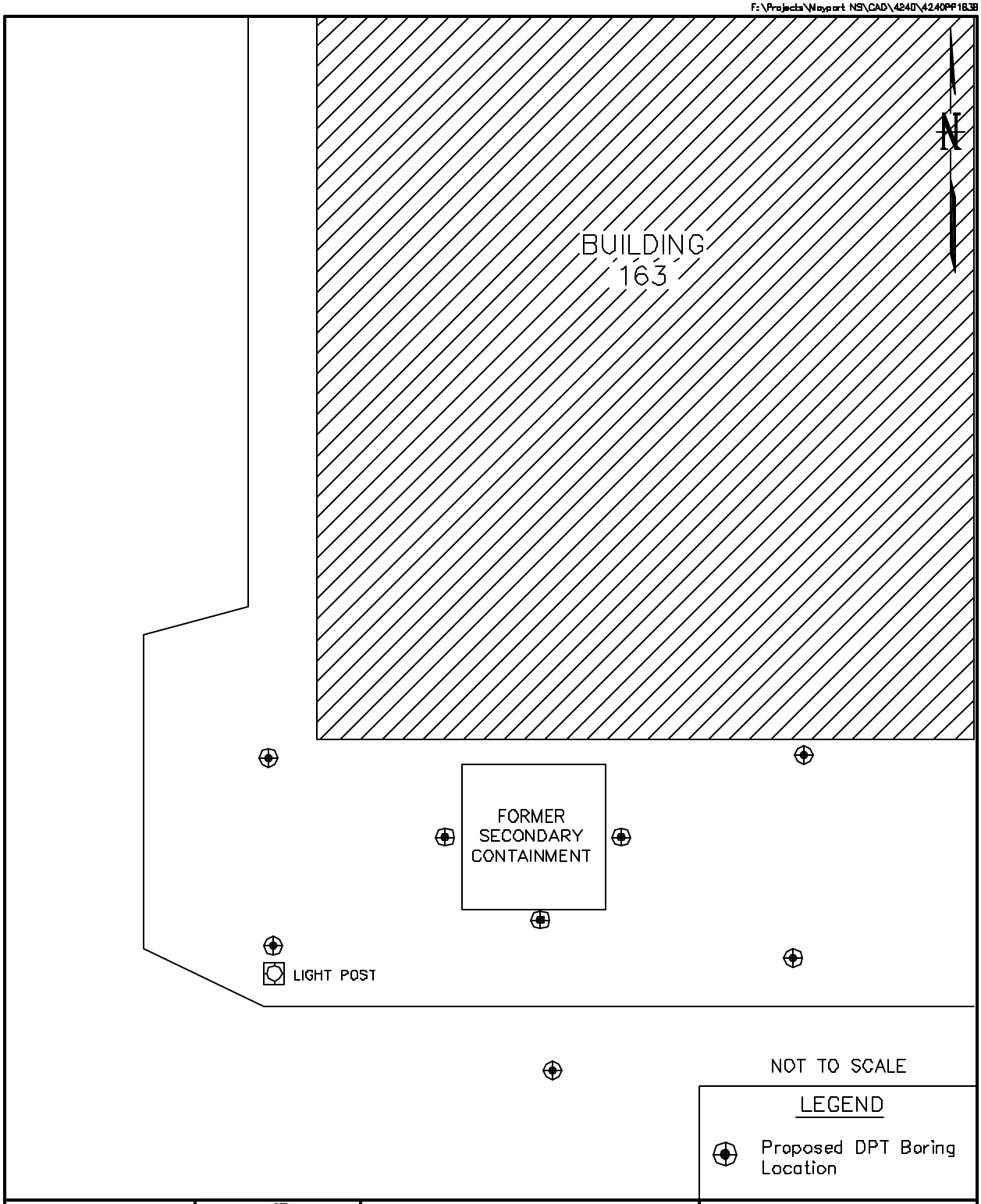

DRAWN BY LK DATE 4/17/02		PROPOSED DPT BORING LOCATIONS BUILDING 163 CONTAMINATION ASSESSMENT PLAN TANK SITES 163B, 1586, AND G365 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240
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COST/SCHED–AREA			APPROVED BY DATE
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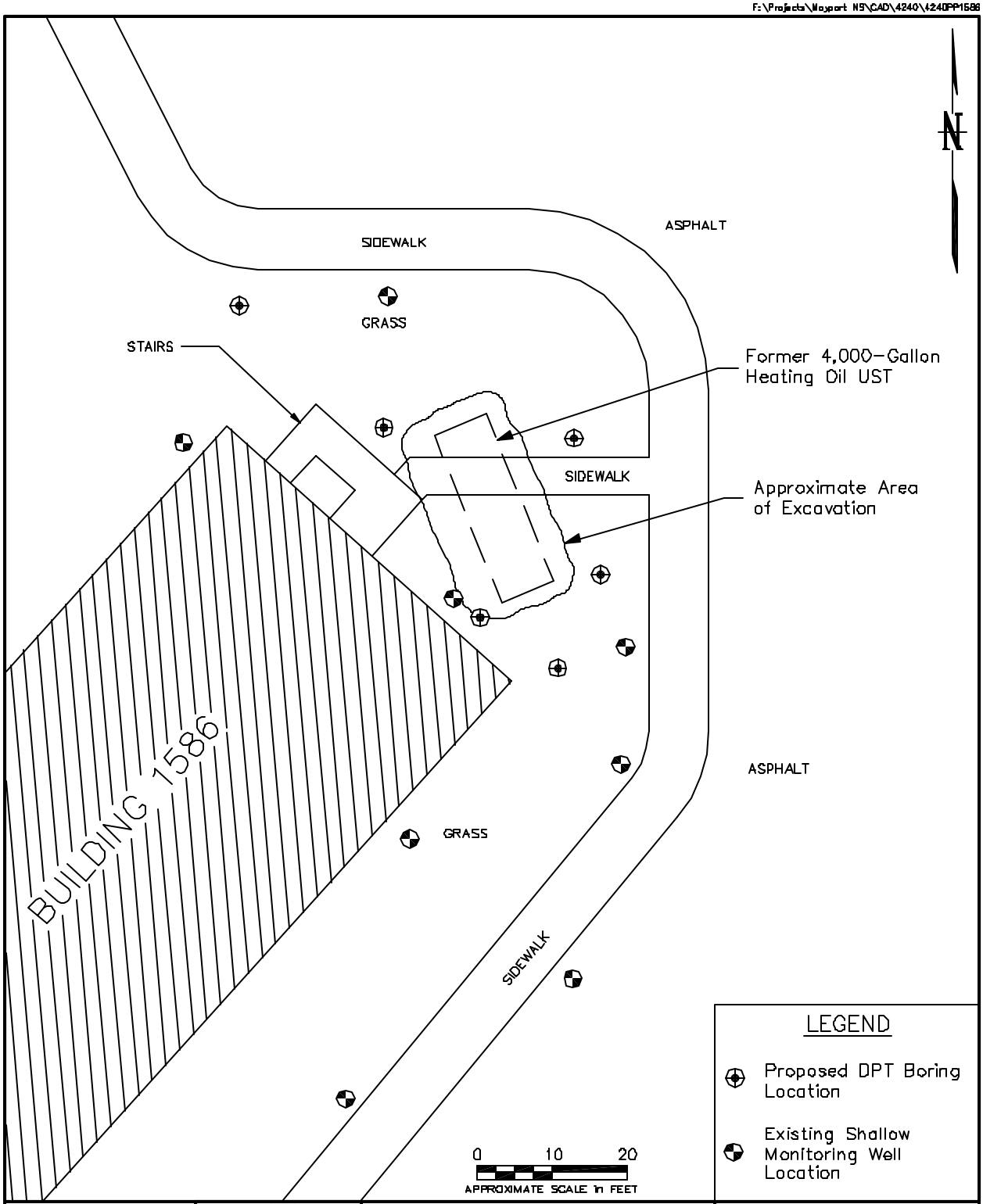

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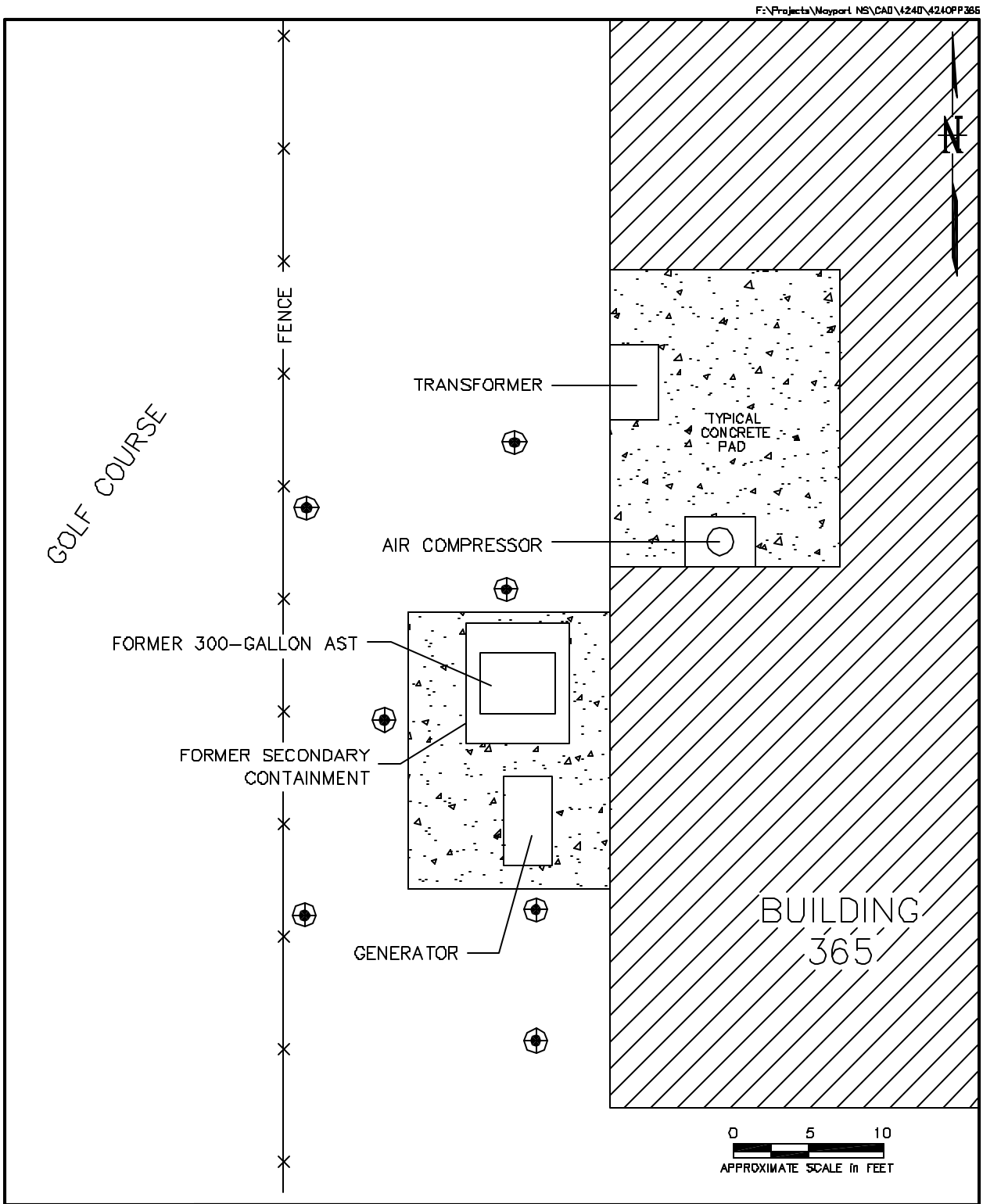

DRAWN BY LK DATE 4/22/02		PROPOSED DPT BORING LOCATIONS BUILDING 365 CONTAMINATION ASSESSMENT PLAN TANK SITES 163B, 1586, AND G365 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240
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A deep boring will be completed in the area that appears to have the greatest concentration of petroleum contaminants.

At the end of the first phase of activities, confirmatory soil samples will be collected and submitted to a fixed based laboratory as required in Chapter 62-770, FAC. A soil and sediment sample log sheet will be maintained for each of these samples (Appendix A). These samples will be analyzed for the Gasoline Analytical Group (GAG) and Kerosene Analytical Group (KAG) constituents of concern (COCs) required in Chapter 62-770, FAC, and shown on Table 4-1. For the purposes of these investigations, each former tank site will be considered the sole source area requiring three soil samples [Chapter 62-770.600(3)(e), FAC] be collected from locations representing low, medium, and high field screening responses.

4.2 GROUNDWATER INVESTIGATION

The second phase of the investigation will be based on results of the first phase, and will involve the installation of up to five permanent shallow monitoring wells (approximately 12 to 15 ft deep) and one vertical extent well (approximately 30 to 40 ft deep) at each site using a truck-mounted drill rig and hollow stem augers. The actual number of designated monitoring wells will be determined based on the results of the initial DPT investigation. The shallow wells will be positioned to intersect the water table such that about 3 ft of screen is exposed above the water table to allow for seasonal fluctuations and tidal fluctuations. The number and design of proposed wells will be presented to the NAVSTA Mayport Partnering Team prior to beginning well installation. A boring log, monitoring well sheet, and certificate of conformance will be maintained for each well installation (Appendix A).

Following well installation and development, groundwater samples will be collected from each of the new wells and delivered to a certified laboratory for analysis of the COCs included in the GAG and KAG. The quantity and type of groundwater samples to be analyzed are provided in Table 4-1. A second round of groundwater samples may be collected, if deemed necessary, following review of the SAR by the FDEP.

A registered surveyor will survey the permanent monitoring wells installed during the site assessment. Horizontal positioning will be measured and plotted with respect to the Florida State Plane Coordinate System and the North American Datum of 1983. The top of casing elevation of each permanent monitoring well will be surveyed with respect to the North American Vertical Datum of 1988 and referenced to site features (building corners, etc.).

Aquifer testing will not be necessary to determine aquifer characteristics, since extensive aquifer data for NAVSTA Mayport has been obtained and documented by the United States Geological Survey. This data will be referenced and used if appropriate.

Table 4-1
Fixed-Based Laboratory Sample Summary

Contamination Assessment Plan
Tank Sites 163B, 1586, and G365
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method (1)	Environmental Samples (2)	IDW Samples (3)	Duplicate Samples	MS/MSD (4)	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER								
BTEX, MTBE, PPVOHs, and 1,2-EDC	SW-846 USEPA 8021B or 8260B	18	0	3	3	3	3	30
PAH (6)	SW-846 USEPA 8310	18	0	3	3	3	0	27
Lead, total	SW-846 USEPA 6010B	18	0	3	3	3	0	27
EDB	USEPA 504.1	18	0	3	3	3	0	27
TRPH	FL-PRO	18	0	3	3	3	0	27
SOIL								
BTEX and MTBE	SW-846 USEPA 8021B or 8260B	9	0	3	3	3	0	18
PAHs (6)	SW-846 USEPA 8310	9	0	3	3	3	0	18
VOHs	SW-846 USEPA 8021B	0	3	0	0	0	0	3
TRPH	FL-PRO	9	0	3	3	3	0	18
Metals (5)	SW846 USEPA 6010B	0	3	0	0	0	0	3

(1) Method referenced reflects FDEP requirements.
(2) Environmental samples include 6 groundwater samples and 3 confirmatory soil samples. If a reduced number of monitoring wells can delineate the site a lesser number will be used. The number of wells installed will be based on the field investigation results.
(3) Investigation derived waste (IDW) sample numbers are based upon disposing of 55-gallon drums (one composite sample per site) of soil. Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water. Soil analytical for volatiles, PAHs, and TRPH (collected from environmental samples) will be used to characterize soil for proper disposal. In accordance with Chapter 62-713, FAC, an additional discrete and composite sample will be collected for volatile organic hydrocarbons (VOHs) and metals, respectively, from the soil IDW generated in order to complete the soil characterization for proper disposal.
(4) MS/MSD = Matrix Spike/Matrix Spike Duplicate.
(5) Total analyses for arsenic, cadmium, chromium, and lead.
(6) Includes 1-methylnaphthalene (MN), 2-MN and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.
(7) PPVOHs = Priority Pollutant Volatile Organic Halocarbons
(8) EDB = ethylene dibromide
(9) EDC = dichloroethane

TtNUS will utilize existing information on potable wells to complete the potable well survey.

4.3 MONITORING WELL CONSTRUCTION, DEVELOPMENT, AND SAMPLING

The drilling subcontractor, prior to initiation of drilling activities, will obtain well installation permits as necessary. Permanent monitoring wells will be installed using hollow stem auger drilling techniques. Monitoring wells will be constructed of 2-inch inside diameter, Schedule 40, flush-joint polyvinyl chloride (PVC) riser and flush-joint 0.010-inch factory-slotted well screen. Shallow monitoring well screen sections will be approximately 10 ft in length and positioned to intersect the water table. Vertical extent monitoring wells will be single-cased and constructed with approximately 5 ft of 0.010-inch, factory-slotted, Schedule 40 PVC well screen and the necessary length of Schedule 40 PVC riser. After the borings are drilled to the desired depth, wells will be installed through the augers. A diagram showing typical well construction design is presented as Figure 4-4.

The monitoring wells will be developed no sooner than 24 hours after placement of grout to remove fine sediment from around the screened interval of the well. Wells will be developed by bailing and surging, or by pumping, as determined by the field geologist. Field parameters (pH, temperature, turbidity, and specific conductance) will be measured at equally spaced timed intervals during well development. Wells will be developed a maximum of one hour or until the field measurements become stable and the development water is visibly clear. Water quality stabilization will be determined using the following criteria:

- Temperature $\pm$ 0.2º Celsius
- pH $\pm$ 0.2 standard units
- Specific conductivity $\pm$ 5 percent of reading

These data will be recorded on a monitoring well development record (Appendix A). No sooner than 24 hours after development, groundwater samples will be collected from monitoring wells in accordance with FDEP SOPs. Prior to obtaining samples, synoptic water levels and total well depths will be measured and recorded on a groundwater level measurement sheet (Appendix A). A second round of water levels will be collected no sooner than one month later on the same data sheet.

The wells will be purged using a peristaltic pump using low flow quiescent purging techniques per FDEP SOPs. The data will be recorded on a low flow purge data sheet (Appendix A). Depending on the groundwater parameters, up to five well volumes may be purged. If wells are purged dry with less than three well volumes removed, the water level in the well will be allowed to recover enough to collect five

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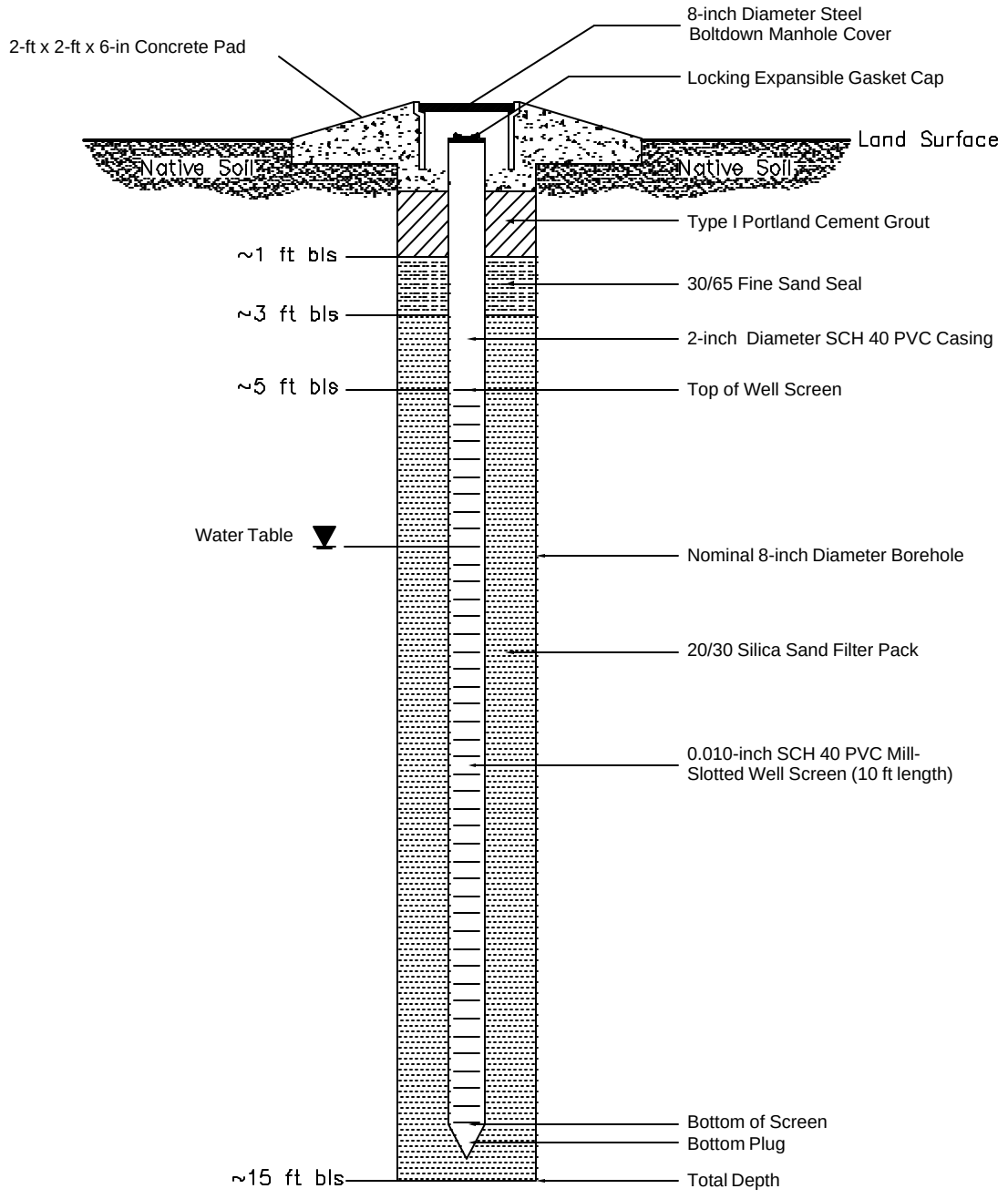


DRAWN BY LLK DATE 04/22/02		WELL CONSTRUCTION DIAGRAM CONTAMINATION ASSESSMENT PLAN TANK SITES 163B, 1586, AND G365 NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED–AREA			APPROVED BY DATE
SCALE NOT TO SCALE			DRAWING NO. FIGURE 4–4 REV. 0

field readings (pH, temperature, turbidity, dissolved oxygen, and specific conductance) prior to collecting a water sample. If the well does not purge dry using the low flow purging technique, groundwater characteristics will be taken after each well volume of water is purged, or at 2 to 10-minute intervals, depending on the flow rate. Stabilization will be defined according to the following scenarios:

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

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

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

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

If stabilization is not achieved, five screen volumes must be removed prior to samples being collected in the appropriate sample containers. Samples to be analyzed for volatile constituents will be collected first and immediately sealed in 40-milliliter (ml) vials so that no headspace exists. Samples will be analyzed for compounds listed in Table 4-1. The data acquired during sampling will be recorded on a groundwater sample log sheet (Appendix A).

4.4 EQUIPMENT DECONTAMINATION

The equipment involved in well installation and well sampling activities will be decontaminated prior to and during the respective field activities in accordance with the FDEP SOPs.

4.5 WASTE HANDLING

Drill cuttings from the DPT screening survey and well installations, and water from the well development and purging and sampling will be collected and containerized in Department of Transportation (DOT) approved (17-E or 17-H) 55-gallon drums. Each drum will be sealed, labeled, and transported to a drum staging area, pending investigation-derived waste (IDW) analytical results. For this investigation, the confirmatory soil sample analytical data will be used to characterize the soil IDW for disposal. In addition, to satisfy the requirements of Chapter 62-713, FAC, one discrete and one composite soil sample will be collected from the drums of soil IDW. Table 4-1 lists and describes the sample requirements for the soil IDW samples. Groundwater analytical results from the mobile and fixed-based laboratories will be used for aqueous IDW disposal. The method of off-site disposal will be determined by these analytical results. IDW will be transported to the IDW staging area at NAVSTA Mayport pending disposal arrangements.

A lined decontamination pad will be constructed and used to collect the water from steam cleaning of drilling equipment. Decontamination materials generated during the site investigation will be containerized for proper disposal.

4.6 SAMPLE HANDLING

Sample handling includes the selection of sample containers, preservatives, allowable holding times, and analytical methods. In addition, sample identification, packaging, and shipping will be addressed. Sample handling procedures will be in accordance with the FDEP SOP's.

4.7 SAMPLE PACKAGING, SHIPPING, AND NOMENCLATURE

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

- Sample labels
- Chain-of-Custody labels
- Appropriate labels applied to shipping coolers

- Chain-of Custody Forms
- Federal Express Air Bills

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

1	2	3	4
General Site Name	**Facility Number**	**Sample Identifier**	**Sequence Number**

Where:

1	General Site Name	MPT
2	Facility Number	Building Number
3	Sample Identifier	DPT groundwater location number; monitoring well identification number and soil boring identification number
4	Sequence number	See below

TtNUS personnel will assign identification numbers to DPT locations, specifically for groundwater samples (e.g., DP01, etc.). They will also assign identification numbers to monitoring wells (e.g., 1S for first shallow well, 2S for second shallow well, 1I for intermediate well, etc.). Soil borings associated with this effort will begin at SB01 and continue numbering in a consecutive fashion (e.g., SB02, SB03, etc.).

For soil samples, the sequence number will be representative of the lower depth of the soil sample (e.g., a soil sample collected from the 1- to 3-ft interval of a soil boring will have a sequence number of 3, a sample from the 3- to 5-ft interval will have a sequence number of 5). For groundwater samples collected with the DPT equipment, the sequence number will be representative of the lower depth of the groundwater sample (e.g., a groundwater sample collected from the 6- to 10-ft interval would have a sequence number of 10). Groundwater samples collected from permanent monitoring wells will have a sequence number beginning at 01 and continuing consecutively, based on the sampling round. This assumes that if permanent wells are located during the screening effort, the samples collected for field screening will have a sequence number 01 and the samples collected during the second phase of this investigation will have the sequence number 02.

For example, a groundwater sample collected from shallow monitoring well number eight at the Tank Site 1586 during the first groundwater sampling round would have the following nomenclature:

MPT-1586-MW8S-01

A soil sample collected from the 3- to 5-ft interval at boring SB02 would have the following nomenclature:

MPT-1586-SB02-05

4.8 SAMPLE CUSTODY

The chain-of-custody begins with the release of the empty sample bottles from the laboratory and must be documented and maintained from that point forward. To maintain custody of the sample bottles or samples, they must be in someone's physical possession, in a locked room or vehicle, or sealed with an intact custody seal. When the possession of the bottles or samples is transferred from one person to another it will be documented in the field logbook and on the chain-of-custody.

4.9 QUALITY CONTROL (QC) SAMPLES

In addition to periodic calibration of field equipment and appropriate documentation on a field calibration sheet (Appendix A), QC samples will be collected or generated during environmental sampling activities. QC samples will be collected in accordance with the requirements established during the Plan of Action negotiations.

Trip Blanks – Trip Blank(s) are required if the samples will be analyzed for volatile organic compounds (VOCs). Trip Blanks are prepared by the laboratory providing the VOC vials and are prepared by filling the preserved vials with analyte-free water. Trip Blank frequency is given is Table 4-2.

Equipment Blanks – Equipment blanks are required for sampling equipment used during the investigation. At least one blank is required for each water and solid matrix. Equipment blank frequency is provided in Table 4-2.

Field Duplicate - Field duplicates are samples collected independently at a sample location during a single act of sampling under representative field conditions. Field duplicate sample frequencies are provided in Table 4-2. The duplicates shall be analyzed for the same parameters in the laboratory as indicated in Table 4-1.

Matrix Spike (MS) – At least one sample in a sample set (or 5 percent, whichever is greater) with similar matrices shall be prepared and analyzed by the specified method. If a set contains samples of different matrices, MSs should be prepared and analyzed for each matrix type.

Matrix Spike Duplicate (MSD) – At least one sample or 5 percent of all samples in a sample sets with a similar matrix shall be selected and analyzed in duplicate. If a sample set contains samples of different matrices, (e.g., effluent and drinking water), the duplicates or MSDs should be analyzed for each matrix.

Table 4-2
Quality Control Sample Frequency

Contamination Assessment Plan
Tank Sites 163B, 1586, and G365
Naval Station Mayport
Mayport, Florida

Number of Samples	Trip Blank (VOC)	Equipment Blank	Duplicate
10+	One per cooler	Minimum of 1 then 5%	Minimum of one then 10%
5-9	NR	One *	One
less than 5	NR	One *	NR

NR = Not required
* Note: For 9 or fewer samples, pre-cleaned equipment blank or a field cleaned equipment blank is required. Field-cleaned equipment blank must be collected if equipment is cleaned in the field.

4.10 SITE MANAGEMENT AND BASE SUPPORT

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

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

1. SOUTHNAVFACENGCOM Engineer in Charge
   Ms. Beverly Washington
   (843) 820-5581

2. FDEP
   Mr. Jim Cason
   (850) 921-4230

3. NAVSTA Mayport Facilities
   Mr. Jan Bovier
   (904) 270-6730 Extension 212

NAVSTA Mayport personnel will provide the following support functions:

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

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

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

NAVSTA Mayport personnel will aid in arranging the following:

- Personnel identification badges, vehicle passes, and/or entry permits.
- A secure staging area (approximately 2,000 square ft) for storing equipment and supplies.
- A supply (e.g., fire hydrant, stand pipe, etc.) of large quantities of potable water for equipment cleaning, sampling, etc.
- As required, provide escorts for contract personnel working in secured areas.

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

Mr. Mark Peterson, is the Task Order Manager (TOM) for CTO 0247 and will be the primary point of contact for the base and the FOL. He is responsible for cost and schedule control as well as technical performance. Mr. Peterson will provide senior level review and oversight during field activities.

4.10.1 Contingency Plan

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

5.0 PROPOSED LABORATORY ANALYSIS

During the field-screening portion of this assessment, a mobile laboratory will analyze soil and groundwater samples for BTEX, naphthalene, and diesel range organics.

A fixed-based laboratory will be used to analyze soil and groundwater samples for constituents identified in Chapter 62-770.600(4), FAC and Table 4-1. Soil samples will be analyzed for the COCs of the GAG and KAG, which include BTEX and MTBE, 1-methylnaphthalene, 2-methylnaphthalene and the 16 method-listed PAHs included in Table A of 62-770, FAC, and TRPH. Groundwater samples from the monitoring wells will be analyzed for parameters in the GAG and KAG in accordance with Chapter 62-770.600(2), FAC. COCs included in these groups are BTEX and MTBE, 1-methylnaphthalene, 2-methylnaphthalene and the 16 method listed PAHs included in Table A of Chapter 62-770, FAC, 1,2-EDC and the other PPVOHs, total lead, EDB, and TRPH.

To comply with Chapter 62-713, FAC, a fixed-based laboratory will analyze additional soil IDW samples for VOHs and total metals (arsenic, cadmium, chromium, and lead). This data, combined with the soil confirmatory data will be used to characterize the soil IDW for proper disposal.

6.0 PROPOSED SCHEDULE

Field activities, including DPT soil and groundwater screening, monitoring well installation and development, sampling, surveying, aquifer testing, and IDW management at Tank Sites 163B, 1586, and 365G are proposed to begin in June 2002 and take approximately nine months to complete. The following is the anticipated schedule for activities associated with this investigation:

- Utility Clearances 1 week
- DPT and Mobile Lab Mobilization 1 day
- DPT and Mobile Lab Investigation 4 days
- Drilling Coordination and Mobilization 2 days
- Monitoring Well Installation and Development 10 days
- Monitoring Well Sampling 6 days
- Monitoring Well Re-sampling (if needed) 3 days
- Off-site Laboratory Analyses 21 days
- IDW Management/Disposal 2 days

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

Assuming that nothing unusual is found during this scope of work, once the fieldwork is complete and the laboratory analytical data is received and processed, the SAR will be prepared.

REFERENCES

AES (Aerostar Environmental Services, Inc.), 2000a. Tank Closure Report, Naval Air Station Mayport Building 163 Jacksonville, Florida. Prepared for US Navy, Naval Air Station Mayport. May.

AES, 2000b. Tank Closure Report, Naval Air Station Mayport Building 1586, Jacksonville, Florida. Prepared for US Navy, Naval Air Station Mayport. May.

AES, 2000c. Tank Closure Report, Naval Air Station Mayport Building 365 Jacksonville, Florida. Prepared for US Navy, Naval Air Station Mayport. May.

FDEP, 2002. DEP-SOP-001/01. January.

APPENDIX A

FIELD FORMS

Tetra Tech NUS, Inc.

DAILY ACTIVITIES RECORD

PROJECT NAME:	Tank Sites 163B, 1586, and G365	**PROJECT NUMBER:**	N4240
CLIENT:	SOUTHNAVFACENGCOM	**LOCATION:**	NAVSTA Mayport
DATE:		**ARRIVAL TIME:**	
Tt NUS PERSONNEL:		**DEPARTURE TIME:**	
CONTRACTOR:		**DRILLER:**	

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

LOCATION	FOOTAGE			

COMMENTS:

APPROVED BY:

Tt NUS REPRESENTATIVE

DRILLER

DATE:

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: Tank Sites 163B, 1586, and G365
PROJECT NUMBER: N4240
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER:
DATE:
GEOLOGIST:
DRILLER:

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

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ☐

Remarks: _____

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NS Mayport Tank Sites 163B, 1586 & G365
Project No.: N4240

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

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

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

GRAB SAMPLE DATA:

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

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	LAB

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

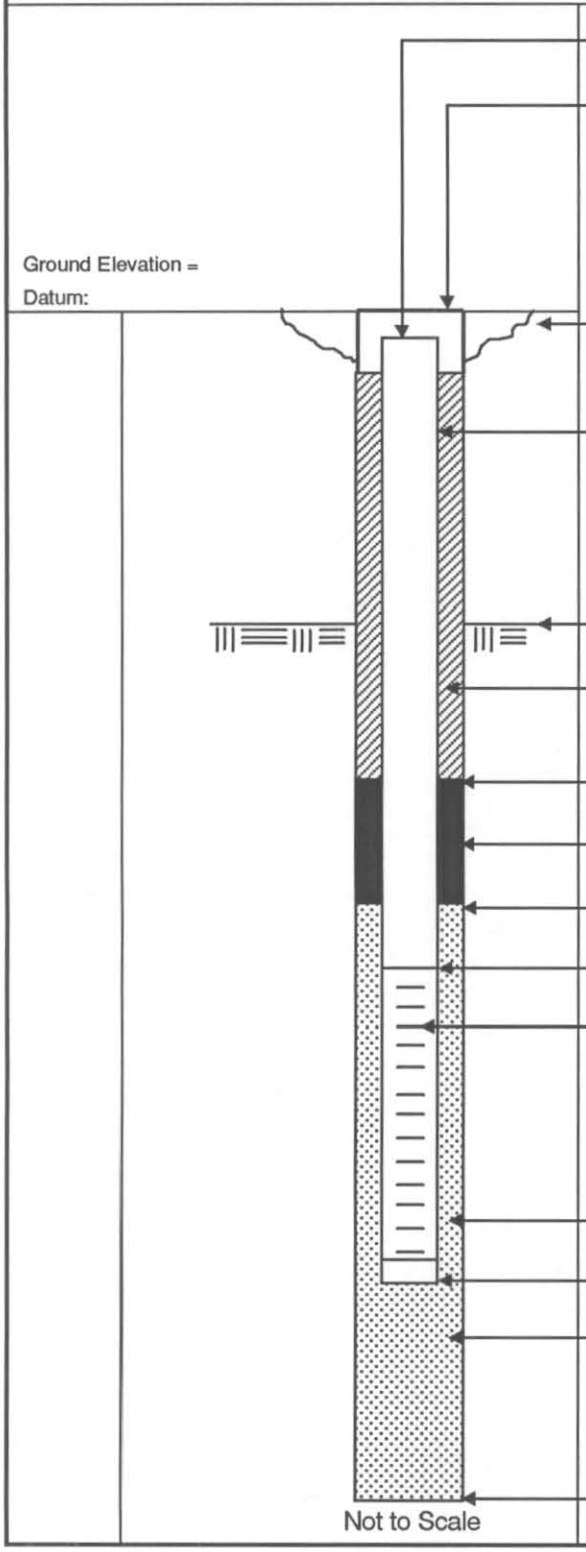
Signature(s):

Tetra Tech NUS, Inc.

WELL No.: _____

MONITORING WELL SHEET

PROJECT:	NS Mayport Tank Sites 163B, 1586 & G365	DRILLING Co.:		BORING No.:	
PROJECT No.:	N4240	DRILLER:		DATE COMPLETED:	
SITE:		DRILLING METHOD:		NORTHING:	
GEOLOGIST:		DEV. METHOD:		EASTING:	



Elevation / Depth of Top of Riser: /

Elevation / Height of Top of Surface Casing: /

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel

Type of Surface Seal: _____

I.D. of Riser: 3/4"

Type of Riser: PVC

Borehole Diameter: 2"

Elevation / Depth Top of Rock: /

Type of Backfill: _____

Elevation / Depth of Seal: /

Type of Seal: 30/65 Sand

Elevation / Depth of Top of Filter Pack: /

Elevation / Depth of Top of Screen: /

Type of Screen: PVC

Slot Size x Length: _____

I.D. of Screen: _____

Type of Filter Pack: Prepacked

Elevation / Depth of Bottom of Screen: /

Elevation / Depth of Bottom of Filter Pack: /

Type of Backfill Below Well: _____

Elevation / Total Depth of Borehole: /

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ____

Well: _____ Depth to Bottom (ft.): _____ Responsible Personnel: _____
Site: _____ Static Water Level Before (ft.): _____ Drilling Co.: _____
Date Installed: _____ Static Water Level After (ft.): _____ Project Name: Site Assessment NS Mayport Tank Sites 163B, 1586 & G365
Date Developed: _____ Screen Length (ft.): _____ Project Number N4240
Dev. Method: _____ Specific Capacity: _____
Pump Type: _____ Casing ID (in.): _____

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

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Site Assessment Tank Sites 163B, 1586 & G365 **Project No.:** N4240

Location: NS Mayport **Personnel:**

Weather Conditions: **Measuring Device:**

Tidally Influenced: Yes ___ No _X_ **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

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Page___ of ___

Project Site Name: *NS Mayport Tank Sites 163B, 1586 & G365*
Project No.: *N4240*

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

Sample ID No.: _____
Sample Location: _____
Sampled By: _____
C.O.C. No.: _____
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: / Time:	Visual	Standard	mS/cm	°C	NTU	mg/l	%	
Method: Low Flow Peristaltic								

PURGE DATA

Date:	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm):	
Well Casing Diameter:	
Well Casing Material:	
Total Well Depth (TD):	
Static Water Level (WL):	
One Casing Volume(gal/L):	
Start Purge (hrs):	
End Purge (hrs):	
Total Purge Time (min):	
Total Vol. Purged (gal/L):	

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Laboratory	Collected

OBSERVATIONS / NOTES

Laboratory:

phone:
fax:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: *NS Mayport Tank Sites 163B, 1586 & G365*
PROJECT NUMBER: N4240

WELL ID.: _____
DATE: _____

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments

SIGNATURE(S): _____

Tetra Tech NUS, Inc.

DOCUMENTATION OF FIELD CALIBRATION

PROJECT NAME : **Site Assessment**

SITE NAME: **NS Mayport Tank Sites 163B, 1586 & G365**

PROJECT No.: N4240

INSTRUMENT NAME/MODEL: ____________

MANUFACTURER: ____________

SERIAL NUMBER: ____________

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