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RAPID ASSESSMENT REPORT FOR SITE 8 BUILDING 650 ZONE H CNC CHARLESTON SC

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Rapid Assessment Report For Site 8, Building 650

Zone H
Charleston Naval Complex
North Charleston, South Carolina

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0068

August 1999

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RAPID ASSESSMENT REPORT

FOR

SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

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PREPARED UNDER THE SUPERVISION OF:

PAUL E. CALLIGAN, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
TALLAHASSEE, FLORIDA

APPROVED FOR SUBMITTAL BY:

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

CERTIFICATION PAGE

I certify that the information contained in this report and on any attachments is true, accurate, and complete to the best of my knowledge, information, and belief.

Approved By: 3/3/99

Gregory D. Swanson, P.E.
South Carolina Registration No. 17132
SCDHEC UST Site Rehabilitation Contractor Class I & II No. 24

TABLE OF CONTENTS

Section		Page
1.0	**INTRODUCTION**	**1-1**
1.1	SITE DESCRIPTION	1-1
1.2	SITE HISTORY	1-2
1.3	RECEPTOR SURVEY RESULTS	1-3
1.4	REGIONAL GEOLOGY AND HYDROGEOLOGY	1-4
2.0	**ASSESSMENT INFORMATION**	**2-1**
2.1	SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY	2-1
2.1.1	Site Geology	2-1
2.1.2	Site Hydrogeology	2-1
2.2	ASSESSMENT RESULTS	2-2
2.3	FIELD SCREENING ASSESSMENT	2-3
2.3.1	Soil Vapor Assessment	2-3
2.3.2	Soil Mobile Lab Results	2-4
2.3.3	Groundwater Mobile Lab Results	2-4
2.4	CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER	2-5
2.4.1	Chemicals of Concern in Soil	2-5
2.4.2	Chemicals of Concern in Groundwater	2-5
2.5	ANALYTICAL DATA	2-6
2.6	AQUIFER CHARACTERISTICS AND EVALUATION	2-6
2.7	FATE AND TRANSPORT MODEL DESCRIPTION	2-6
2.8	PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN	2-6
3.0	**TIER 1 EVALUATION**	**3-1**
3.1	COMPARISON OF ANALYTICAL RESULTS WITH RBSLs	3-1
3.2	SITE CONCEPTUAL EXPOSURE MODEL	3-1
3.3	EXPOSURE PATHWAY ANALYSIS	3-1
3.4	IDENTIFICATION OF DATA REQUIREMENTS	3-2
3.5	SITE-SPECIFIC TARGET LEVELS	3-2
3.6	RECOMMENDATIONS	3-2
4.0	**REFERENCES**	**4-1**

TABLE OF CONTENTS(Continued)

TABLES

1 GROUNDWATER ELEVATIONS
2 GROUNDWATER FIELD MEASUREMENTS
3 GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
4 SUMMARY OF OVA SOIL SCREENING RESULTS, DECEMBER 1998 AND JANUARY 1999
5 SUMMARY OF LABORATORY SOIL SCREENING RESULTS, DECEMBER 1998 AND JANUARY 1999
6 SUMMARY OF GROUNDWATER SCREENING RESULTS, DECEMBER 1998 AND JANUARY 1999
7 SUMMARY ANALYTICAL RESULTS FOR SOIL SAMPLES CHEMICALS OF CONCERN
8 SUMMARY ANALYTICAL RESULTS FOR GROUND WATER SAMPLES CHEMICALS OF CONCERN

FIGURES

1 SITE LOCATION MAP
2 SITE VICINITY MAP
3 SITE MAP AND SAMPLING LOCATIONS
4 GEOLOGIC CROSS SECTION A TO A'
5 GEOLOGIC CROSS SECTION B TO B'
6 GROUNDWATER POTENTIOMETRIC MAP, FEBRUARY 20,1999
7 GROUNDWATER POTENTIOMETRIC MAP, MARCH 5, 1999
8 SOIL BENZO(A)FLOURANTHENE CONCENTRATION MAP
9 SOIL BENZO(B)FLOURANTHENE CONCENTRATION MAP
10 SOIL CHRYSENE CONCENTRATION MAP
11 GROUNDWATER NAPHTHALENE CONCENTRATION MAP

APPENDICES

A UNDERGROUND STORAGE TANK ASSESSMENT REPORT - UST 650
B GEOLOGIC BORING LOGS
C FIELD SAMPLING DATA SHEETS
D SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA
E AQUIFER CHARACTERIZATION GRAPHS

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 8 (Building 650) which includes a closed underground storage tank (UST) system which supplied fuel oil to Building 650 at Charleston Naval Complex (CNC) Zone H, in North Charleston, South Carolina. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan approval letter dated November 4, 1998.

TtNUS performed the following actions during the RA:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, evaluate public and private potable wells, locate utilities, locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed the previously prepared Underground Storage Tank Assessment Report for UST 650 to determine boring locations and monitoring well placements;
- Conducted a site survey to identify utilities and to construct a site plan;
- Performed a direct push investigation to collect soil samples for field screening using an organic vapor analyzer and collect soil and groundwater samples for mobile lab screening analysis of benzene, toluene, ethyl benzene, total xylenes (BTEX), and diesel range organics.
- Installed four temporary monitoring wells to approximately 12 feet below land surface (bls);
- Installed shallow permanent monitoring wells to approximately 12 feet bls, and a vertical delineation well to approximately 27 feet bls;
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260 and PAHs using USEPA Method 8270;
- Performed groundwater natural attenuation sampling;
- Collected soil samples for laboratory analysis for BTEX and naphthalene using USEPA Method 8260, polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270, total organic carbon (TOC) using USEPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods; and

- Surveyed monitoring well and piezometer top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

Conclusion

No Chemicals of Concern (CoC) analytes were detected in the onsite soils at concentrations that exceed the SCDHEC Risk Based Screening Levels (RBSLs) for a clayey soil matrix less than 5 feet above groundwater. Groundwater analysis from the March 5, 1999 sampling event indicated no CoC analytes were detected in groundwater at concentrations that exceed the SCDHEC RBSLs. No free product was detected in the groundwater during the RA investigation.

Recommendation

No further action is recommended for this site since concentrations of the detected CoCs were below their respective RBSLs for groundwater and soil.

1.0 INTRODUCTION

Building 650 (Site 8) contained a closed underground storage tank (UST) system located at the Charleston Naval Complex (CNC), Zone H in North Charleston, South Carolina. This Rapid Assessment (RA) was performed by Tetra Tech NUS, Inc.'s (TtNUS) Tallahassee Florida office located at 1401 Oven Park Drive, Suite 102, Tallahassee, Florida, 32312 (telephone number 850-385-9899) on behalf of the U.S. Navy Southern Division (SouthDiv) Naval Facilities Engineering Command (NAVFAC), 2155 Eagle Drive, North Charleston, South Carolina (telephone no. 843-820-7307). Authorization to conduct the RA for the Site was issued by NAVFAC under Contract Task Order (CTO) 0068 and a work plan for performing the assessment was prepared by Brown and Root Environmental (Brown and Root Environmental, Site Assessment Plan Zone H –UST, Charleston Naval Complex, 1998). The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan approval letter dated November 4, 1998. Fieldwork necessary to complete the RA was initiated in December 1998 and completed in March 1999, by TtNUS.

1.1 SITE DESCRIPTION

The CNC is in the city of North Charleston, on the west bank of the Cooper River in Charleston County, South Carolina as shown on Figure 1. This installation consists of two major areas: an undeveloped dredge materials area on the east bank of the Cooper River on Daniel Island in Berkley County, and a developed area on the west bank of the Cooper River. The developed portion of the base is on the peninsula bounded on the west by the Ashley River and on the east by the Cooper River. The site is located within the developed portion of the base as shown on Figure 2.

The area surrounding CNC is "mature urban," having long been developed with commercial, industrial and residential land use. Commercial areas are primarily west of CNC; industrial areas are primarily to the north of the base along Shipyard Creek. A site vicinity map, which exhibits adjacent properties and structures, vicinity roads, current utilities, and vicinity surface drainage, is included as Figure 2.

Site 8 consists of a closed UST previously located approximately 20 feet from the southeast corner of Building 650 as shown on Figure 3. The UST, designated UST 650, was a steel 1,000-gallon heating oil tank installed in 1969. The date the UST system was taken off line is unknown [Supervisor of Ship Building, Conversion, and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston (SPORTENDETCHASN), 1996].

1.2 SITE HISTORY

In 1901, the U.S. Navy acquired 2,250 acres near Charleston to a build a shipyard and the first naval officer was assigned duty in early 1902. Subsequently, buildings and a dry-dock were constructed in the Naval Yard. The dry-dock was completed in 1909 along with several other brick buildings and the main power plant, which is still in operation today. The first ship was placed in dry-dock and work began on fleet vessels in 1910. World War I brought about an expansion of the yards, facilities, land area, and work force. The yard built two gunboats, several submarine chasers, and tugs in addition to performing repairs and other services to the fleet. In 1933, building activity had increased principally in construction of several Coast Guard tugs, a Coast Guard cutter, and a Navy gunboat, creating the need for more facilities and a much larger work force. In 1943 civilian work force peaked with almost 26,000 employees divided among three daily shifts. In 1956, construction began on piers, barracks, and buildings for mine warfare ships and personnel. Later in the decade, the facility became a major homeport for combatant ships and submarines of the U.S. Atlantic Fleet [Ensafe/Allen & Hoshall (E/A&H), 1996].

In 1993, major cuts in defense spending, as a result in part to the end of the cold war, caused CNC to be added to the list of bases scheduled for closure under the Defense Base Closure and Realignment Act (BRAC). BRAC regulates the closure and transition of property back to the community (E/A&H, 1996). With the scheduled closure of the base, operations were scaled back and environmental cleanup proceeded to make the property available for redevelopment after closure. As part of the environmental cleanup process, the UST at Building 650 was removed.

Between September and October 1996, UST 650 was removed, cleaned, and recycled as scrap metal. At the time of removal the tank was reported to be in good condition without corrosion, pitting, or visible holes. The supply and return piping for the UST were removed at the same time as the tank. The UST piping consisted of ¾ inch copper lines. At the time of removal the piping was reported in good condition (SPORTENVDETCHASN, 1996).

During the removal of the UST, a slight sheen was reported on groundwater within the excavation. Soil and groundwater samples collected during the UST Closure contained detectable levels of Polynuclear Aromatic Hydrocarbons (PAHs) above the risk based screening levels (RBSLs) established in the "Risk Base Corrective Action (RBCA) for Petroleum Releases" (SCDHEC, 1998). Since no holes were observed in the tank, the petroleum constituents were attributed to over spills during past fillings. The berm soil excavated from the tank pit contained PAH concentrations below the RBCA RBSLs, and were returned to the pit (SPORTENVDETCHASN, 1996). The Underground Storage Tank Assessment Report for UST 650 is included in Appendix A.

1.3 RECEPTOR SURVEY RESULTS

A survey of the site vicinity was conducted by TtNUS personnel to identify potential receptors for petroleum hydrocarbon contamination. The site plan (Figure 2) depicts the public utilities located within 250 feet of the former UST location. Specific information concerning the depth of utilities below land surface (bls) is currently unavailable. However, according to facility personnel, utility lines are typically located approximately 2 to 6 feet bls (SPORTENVDETCHASN, 1999). The following utility receptors were located:

- Water utility: Water utility lines border the west side of Halsey Street and the north side of Dyess Avenue. A water line originates from the northeast side of Building 650 and extends north connecting to the water line along Dyess Avenue. A water line also extends north from Building 648 to the water line on Dyess Avenue. The nearest downgradient water lines originate from Building 650 and Building 648. The water line from Building 650 is located approximately 20 feet north of UST 650. The water line entering Building 648 is located approximately 250 northeast of UST 650.

- Sanitary sewer utility: A sanitary sewer line originates from the northwest side of Building 650 and connects with the sanitary sewer lines at the northeast corner of the Halsey Street and Dyess Avenue intersection. A sanitary sewer line borders Halsey Street on the east and extends along Halsey Street towards the north. A sanitary sewer line also borders the west side of Halsey street and extends along Halsey Street towards the south. No sanitary sewer lines were located downgradient of UST 650 within 250 feet.

- Natural gas utility: A natural gas line extends along the east edge of Halsey Street. No natural gas lines were located within 250 feet downgradient of UST 650.

- Storm sewer utility: A storm sewer utility line extends along the western edge of Halsey street. A storm sewer utility line also extends along the north and south sides of Dyess Avenue. Storm water drains connecting to the storm sewer lines on Dyess Avenue are located in the parking lot area north and east of Building 650. The nearest downgradient storm sewer line is from the storm drain east of Building 650 located approximately 190 feet downgradient of UST 650.

- Electrical utility: A subsurface electrical utility line extends from an overhead power pole drop to an electrical transformer. This electrical line is located upgradient and approximately 20 feet from former UST 650.

- Basements: Building basements are not present at CNC.

A survey of groundwater users within a seven-mile radius of CNC was performed for the Final RCRA Facility Investigation Report for Zone H. According to this report, a survey of groundwater users within a seven-mile radius of CNC was conducted by the South Carolina Water Resources Commission to ascertain the extent of any shallow groundwater usage. Results of the water use investigation revealed that no drinking water wells, which utilize the shallow aquifer, are located within a four-mile radius of CNC (A/E&H, 1996). Irrigation wells were not identified within 1000 feet of the site. Numerous monitoring wells are located within 1000 feet of the site.

The nearest surface water body to the site is the Cooper River. The Cooper River locate is approximately 950 feet north-northeast and downgradient of the site.

There are no city, county, or state zoning ordinances as the property (CNC) is currently owned by the federal government. Information concerning zoning ordinances was obtained from the SOUTHDIV Remedial Project Manager located at 2155 Eagle Drive, North Charleston, South Carolina (telephone no. 843-820-7307).

1.4 REGIONAL GEOLOGY AND HYDROGEOLOGY

CNC is located in Charleston County, South Carolina, in the Lower South Carolina Coastal Plan Physiographic Province on the Cooper River side of the Charleston Peninsula. The peninsula is formed by the confluence of the Cooper and Ashley Rivers. Topography in the area is typical of the South Carolina lower coastal plain and is characterized by having low-relief plains broken by the meandering streams and rivers, flowing toward the coast past occasional marine terrace escarpments.

The geology and hydrogeology of the Charleston area is described in the Final RCRA Facility Investigation Report for Zone H NAVBASE Charleston (E/A&H, 1996). According to this report, the geology of the Charleston area is typical of the southern Atlantic Coastal Plain. Cretaceous-age and younger sediments thicken seaward and are underlain by older igneous and metamorphic basement rock. Surface exposures consist of recent/or Pleistocene sands, silts and clays of high organic content referred to as the Wando Formation. Underlying the Wando Formation, increasing with age, are the Oligocene-age Cooper Group and the Eocene–age Santee Limestone. The Cooper Group is comprised of the Parkers Ferry, Ashley, and Harleyville Formations.*The formation of particular importance in the Cooper Group is the Ashley Formation, which was formerly referred to as the Cooper Marl in most regional geologic

literature. In more recent geologic nomenclature, the name "Cooper" has been given to a group of formations which includes the Ashley Formation, a pale-green to olive-brown, sandy phosphatic limestone or marl, which is locally muddy and/or sandy. The Ashley Formation in the Vicinity of Charleston is encountered at a depth of approximately 30 to 70 feet bls. The relief of the top of the Ashely Formation is associated with an erosional basin and includes the Cooper Unit. The Ashley Formation has been identified as being approximately 300 feet thick (E/A&H, 1996).

Groundwater occurs under water table or poorly confined conditions within the Pleistocene deposits overlying the Ashley Formation of the Cooper Group. Transmissitivey in the Pleistocene aquifer are generally less than 1,000 feet per day and well yields are variable, ranging from 0 to 200 gallons per minute (gpm). The groundwater contains high concentrations of iron and is commonly acidic at shallow depths (E/A&H, 1996).

The Cooper Group is hydrogeologically significant mainly because of its low permeability. In most locales, its sandy, finely granular limestone produces little or no water, but instead acts as confining material causing artesian conditions in the underlying Santee Limestone. Yields from wells in the Santee are usually less than 300 gallons per minute (gpm) (E/A&H, 1996).

2.0 ASSESSMENT INFORMATION

2.1 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

2.1.1 Site Geology

Twenty-one direct push soil borings (CNC08-B01 through CNC08-B21) were advanced at Site 8 under the supervision of a TtNUS geologist between December 1998 and February 1999 (Figure 3). These borings ranged in depth from 3 to 12 feet bls and provided soil samples to characterize the subsurface lithology. On February 4 through February 5, 1999, six shallow monitoring wells (CNC08-M01 through CNC08-M06) were installed to a depth of 12 feet bls and grab soil samples were collected to describe the subsurface lithology. On February 5 1999 a vertical delineation monitoring well (CNC08-M07) was installed and during the drilling process lithologic samples were collected using split spoon samplers to characterize the subsurface lithology from 15 feet to a depth 27 feet bls.

Based on lithologic descriptions from the soil borings and monitoring wells the subsurface soil consists of interlayers of light brown silty sand, clayey sand and sandy clay near the surface to approximately 4 feet bls. Dark gray to brown units of silty sand, sandy silt, clayey silt, and silty clays underlay the site from approximately 4 feet to 12 feet bls. A dark gray, sticky, soft, mucky clay was encountered in samples collected from CNC08-M07 from approximately 15 to 27 feet bls (see Figures 4 and 5). Boring logs are presented in Appendix B.

2.1.2 Site Hydrogeology

Six shallow water table monitoring wells, CNC08-M01, CNC08-M02, CNC08-M03, CNC08-M04, CNC08-M05 and CNC08-M06, and one deep vertical delineation monitoring well, CNC08-M07, were installed as part of this RA investigation (see Figure 3). The shallow monitoring wells were completed to a depth of 12 feet bls. Each shallow monitoring well was completed using 10 feet of 0.01-inch machine slotted Schedule 40 polyvinyl chloride (PVC) screen that bracketed the water table. Monitoring well CNC08-M07 was completed as a Type III monitoring well with 6-inch diameter PVC surface casing grouted to a depth of 20 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to a depth of 27 feet and a 2-inch diameter PVC monitoring well was installed with a 5-foot, 0.01-inch machine slotted PVC screen. Well construction logs for the RA monitoring wells are presented in Appendix B. At the completion of the well installations, a South Carolina registered professional surveyor surveyed each monitoring well location and the top of casing elevation.

Four temporary small diameter PVC piezometers, CNC08-P01, CNC08-P02, CNC08-P03, and CNC08-P04 were installed in borings CNC08-B07, CNC08-B10, CNC08-B11, and CNC08-B01, respectively. Each piezometer was constructed of 1-1/4-inch diameter Schedule 80 PVC threaded casing and well screen. The screen section of each piezometer was installed to bracket the water table. Piezometer CNC08-P01 was completed with a 5-foot screen section installed from 3 to 8 feet bls. Piezometers CNC08-P02, CNC08-P03, and CNC08-P04 were constructed with 10 foot screen section completed at 12 feet bls. The piezometers were installed across the water table and surveyed by a TtNUS geologist to a local reference point. The groundwater elevation data obtained from the piezometers was used in conjunction with the field screening data to aid in the placement of permanent monitoring wells.

Groundwater at Site 8 was encountered at depths ranging from approximately 3 to 6 feet bls during the RA investigation. The recorded water-level data, including piezometer well water-level measurements collected during the RA are presented in Table 1. Groundwater elevation measurements were recorded from the site monitoring wells on February 20, 1999 and March 5, 1999. Figures 6 and Figure 7 presents the groundwater poteniometric surface recorded during the field events on February 20 and March 5, 1999, respectively. The potentiometric surface maps depict a groundwater flow direction generally toward the northeast.

As part of the Final RCRA Facility Investigation Report for Zone H (E/A&H, 1996), a tidal influence investigation was conducted. The objective of the investigation was to provide long-term water level monitoring to determine the effects of the tidal fluctuation on wells and groundwater flow throughout Zone H. During the tidal study water levels were recorded in 19 wells throughout Zone H over a period of four days. Measurements were recorded every hour using data loggers. The four day period spanned nine high and nine low tides.

Results of the tidal survey identified the maximum fluctuation in shallow monitoring wells to be 1.12 feet with monitoring wells located closer to the tidal source being more influenced by tidal changes than wells on the peninsula. The heterogeneity of the aquifer material may limit or accentuate the tidal response in some wells. Tidal influence from Shipyard Creek appears to be greater than that of the Cooper River (possibly because of the quay wall along the river). The report concluded that the minimal fluctuations in the groundwater levels were not expected to play a significant role in directing contaminant transport in any direction other than that determined by the natural groundwater gradient (E/A&H, 1996).

2.2 ASSESSMENT RESULTS

Twenty-one soil borings were completed as part of the screening portion of the soil investigation at Site 8. Four soil borings were completed to collect soil samples for analysis at a fixed base laboratory to confirm the Chemicals of Concern (CoC). The soil borings for screening evaluation were completed using a Direct Push Technology (DPT) rig. Samples were collected to evaluate subsurface soil vapors, soil contaminant concentration (via a mobile laboratory), and groundwater contaminant concentrations (via a mobile laboratory). The soil samples were collected from a maximum depth of 4 feet bls. The soil and groundwater samples collected for mobile laboratory screening were analyzed for benzene, toluene, ethyl benzene, xylenes (BTEX), and diesel range organics.

Soil samples for CoC evaluation were collected on January 20, 1999 and analyzed for BTEX, and naphthalene using EPA Method 8260; and Polynuclear Aromatic Hydrocarbons (PAHs) using EPA method 8270. One sample was collected for total organic carbon (TOC) analysis using EPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) using EPA Method 9071 and grain size analysis using sieve and hydrometer analysis. The sample collection was conducted in accordance with SCDHEC guidance document "Standard Limited Assessment" (June 1997). Lithologic logs for each soil boring are presented in Appendix B. The soil boring locations are shown on Figure 3 and the assessment results are presented in Section 2.3.1.

A comprehensive groundwater monitoring event was conducted on March 5, 1999. Groundwater sampling was conducted using a peristaltic pump and low flow, quiescent techniques. The monitoring wells were sampled in accordance with SCDHEC's guidance document "South Carolina Risk-Based Corrective Action for Petroleum Releases" (January 1998). Each well was purged of three to six well volumes or until water quality parameters of pH, temperature, and conductivity stabilized. The field data sheets are included in Appendix C. A summary of the field parameter measurements is presented in Table 2. Groundwater samples were analyzed for BTEX, MTBE, and naphthalene using EPA Method 8260 and PAHs using EPA method 8270. Three of the groundwater samples were also analyzed for the following natural attenuation parameters: dissolved oxygen, alkalinity, carbon dioxide, sulfide, ferrous iron, nitrite, manganese, nitrogen/nitrate, sulfate and methane. Groundwater natural attenuation data is summarized on Table 3.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Each of the twenty-one soil borings completed were evaluated for soil vapors as part of the soil screening assessment at Site 8. Organic vapor analyzer (OVA) headspace measurements were recorded at 1-foot intervals from ground surface to the top of the water table. Table 4 summarizes the soil vapor screening results. Figure 3 presents the soil boring locations.

Soil vapor concentrations ranged from not detected to 130 parts per million (ppm). Soil samples from fourteen soil boring locations contained vapor concentrations ranging from not detected to 5 ppm. The highest soil vapor concentrations were detected at borings CNC08-B06 (130 ppm), CNC08-B10 (102 ppm), CNC08-B12 (50 ppm), CNC08-B16 (20 ppm), and CNC08-B18 (80 ppm). With the exception of soil borings CNC08-B10 and CNC08-B16, the highest soil vapor concentrations generally increased with depth in each individual soil boring with the highest concentration being reported at the water table.

The soil vapor assessment was used as a screening method to assist in identifying locations for collection of soil samples and groundwater monitoring wells. Soil sample and monitoring well locations were determined, in part, based on this data.

2.3.2 Soil Mobile Lab Results

One soil sample collected from each soil boring was analyzed in a mobile laboratory for benzene, toluene, ethyl benzene, total xylenes and diesel range organics using USEPA Method 8260. The soil samples were selected based on the soil vapor screening results with the additional criteria that the samples originate in the vadose zone above the water table. Table 5 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 5, benzene, and ethylbenzene were not detected in any of the mobile laboratory soil samples. Toluene was detected in two samples, CNC08-B10 (141.07 parts per billion (ppb)) and CNC08-B16 (2.4 ppb), and total xylene in one sample, CNC08-B10 (1.41 ppb). Diesel range organics were detected in three samples, CNC08-B10 (1,411.43 ppb), CNC08-B12 (93,327.85 ppb), and CNC08-B13 (409.55 ppb). The petroleum constituents identified in the mobile laboratory samples correlate with the boring locations where the highest soil vapor concentrations were detected.

The mobile laboratory soil analysis was used as a screening method to assist in identifying locations for collection of soil samples for fixed base laboratory analysis and locations for groundwater monitoring wells. Soil sample and monitoring well locations were determined in part based on this data.

2.3.3 Groundwater Mobile Lab Results

One groundwater sample was collected from each piezometer well location CNC08-P01, CNC08-P02, CNC08-P03, and CNC08-P04, and from soil borings CNC08-B12, CNC08-B14, CNC08-B16, CNC08-B18, CNC08-B19, CNC08-B20, and CNC08-B21. Each groundwater sample was analyzed by a mobile laboratory for benzene, toluene, ethylbenzene, total xylenes and diesel range organics using USEPA Method 8260. Table 6 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 6, benzene, ethylbenzene, and total xylenes concentrations were reported below detection limits in all samples. Toluene was detected at a concentration of 0.50 ppb from piezometer CNC08-P04. Diesel range organics were reported in piezometer CNC08-P02 and boring CNC08-B14 at concentrations of 10,292.81 ppb and 241.85 ppb, respectively.

The mobile laboratory groundwater analysis was used as a screening method to assist in identifying locations for permanent groundwater monitoring wells.

2.4 CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

2.4.1 Chemicals of Concern in Soil

Five subsurface soil samples (plus 1 duplicate sample) were collected from the Site 8 area for determination of CoCs. The soil boring locations are shown on Figure 3 and Table 7 summarizes the CoCs detected in the soil samples. Soil CoCs were detected in samples 08SLB0602 [benzo (a) anthracene - 342 microgram per kilogram (µg/kg), benzo (b) flouranthene - 524 µg/kg and chrysene - 363 µg/kg] and 08SLB0301 [benzo (b) flouranthene - 412 µg/kg]. These constituents were all detected at concentrations below the Risk Based Screening Levels (RBSL) for clay-rich soils. The RBSL for clay rich soils was used based on a grain size analysis completed on sample 08SLB1203 indicating a clayey sand matrix. Soil analytical data sheets and grain size analysis reports are provided in Appendix D. Figures 8, 9, and 10 identifies the areal distribution of benzo (a) flouranthene, benzo (b) flouranthene, and chrysene detected in site soils during soil sampling conducted for the RA.

2.4.2 Chemicals of Concern in Groundwater

Table 8 presents the analytical results for CoCs detected in the groundwater samples. Groundwater analytical data sheets for the March 5, 1999 field event are presented in Appendix D. Naphthalene was the only groundwater CoC detected above method detection limits in the groundwater samples collected from the water table monitoring wells and the vertical delineation well. Naphthalene was detected at 5.72 micrograms per liter (μg/l) which is less than the groundwater naphthalene RBSL of 10 μg/l. Figure 11 illustrates the groundwater areal distribution of naphthalene for the March 5, 1999 sampling event.

2.5 ANALYTICAL DATA

All analytical data from October 1996 Underground Storage Tank Assessment Report are presented in Appendix A. Soil analytical data generated during this RA are summarized in Table 7. Groundwater analytical data generated during this RA are summarized in Table 8. The completed soils and groundwater analytical data for this RA is included in Appendix D.

2.6 AQUIFER CHARACTERISTICS AND EVALUATION

Groundwater levels were measured from the site monitoring wells on February 20, 1999 and March 5, 1999. The groundwater flow direction across the former UST location is toward the north-northeast as illustrated on Figures 6 and 7. The hydraulic gradient between monitoring wells CNC08-M06 and CNC08-M04 on February 20, 1999 and March 5, 1999 was 0.0082 and 0.0092 ft/ft, respectively.

As part of the Final RCRA Facility Investigation Report for Zone H, rising and falling head slug tests were conducted on 19 shallow monitoring wells throughtout Zone H to determine the hydraulic conductivity of the surfical aquifer (E/A&H, 1996). Slug tests were conducted by instantaneously adding (falling head) or removing (rising head) a volume (slug) of water from the well and measuring the recovering water level with a data logger. A hydraulic conductivity value was then calculated for the rising head test and for the falling head test. The average hydraulic conductivity for each well was determined by calculating the geometric mean of the rising and falling head values. Because hydraulic conductivity data are lognormally distributed, the geometric mean was determined to be the most representative measure of central tendancy.

The well construction details and boring logs for each well tested during the RCRA investigation were reviewed to determine which wells were most representative of the conditions present at Site 8. To make this determination the screened interval, lithology and proximity to the site were evaluated. Based on this

evaluation, monitoring well NBCH653001 was selected as the most representative well. NBCH653001 is located accross the street from the site and is completed to a depth of approximately 13 feet with a 10 foot screened interval. The boring log indicates that the lithology consists of alternating sand, silty sand, clayey sand, and sandy clay, similar to the lithology observed at Site 8. The geometric mean of the rising and falling head conductivities for NBCH653001 was 0.631 feet per day.

Potential movement of groundwater at the site may be described in terms of transportation by natural flow system in the saturated zone, assuming groundwater flow follows Darcy's Law. Darcy's Law may be expressed as:

$$V = \left(\frac{K}{n}\right) x\, i$$

where:

V = average velocity

K = hydraulic conductivity = 0.631 ft/day

n = effective porosity = 0.47
(from sieve results of 38.3% sand & 38.5% clay and Figure C1 in SCDHEC, 1998)

i = average hydraulic gradient = 0.0082 ft/ft

therefore:

$$V = \left(\frac{0.631\ \text{ft/day}}{0.47}\right) x\ 0.0082\ \text{ft/ft}$$

$$V = 0.011\ \text{ft/day}$$

In summary, the seepage velocity of the surficial aquifer was calculated to be approximately 4.0 feet per year based on a hydraulic conductivity of 0.631 feet per day, a hydraulic gradient of 0.0082 feet per foot, and a porosity of 47% for clayey sand and sandy clay. Aquifer characterization graphs are provided in Appendix E.

2.7 FATE AND TRANSPORT MODEL DESCRIPTION

No soil or groundwater concentrations exceeded the SCDHEC RBSLs, therefore evaluation of Site 8 will stop at Tier 1. Fate and transport modeling is not required for Tier 1 evaluation.

2.8 PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN

Since fate and transport modeling was not performed, predication and attenuation of chemicals of concern was not evaluated.

3.0 TIER 1 EVALUATION

3.1 COMPARISON OF ANALYTICAL RESULTS WITH RBSLs

Soil samples collected on January 20, 1999 were analyzed for BTEX and PAH constituents. Three PAH compounds (benzo(a)anthracene, benzo(b)fluoranthene, and chyrsene) were detected in the subsurface soil at the site. However, no analyte concentration exceeded its RBSL for clayey soil less than 5 ft above groundwater.

Groundwater samples collected on March 5, 1999 were analyzed for BTEX, MTBE, and PAH. Naphthalene was the only analyte detected in the groundwater at the site with a concentration of 5.72 µg/L. This concentration is below the SCDHEC RBSL. A comparison of soil and groundwater concentrations to RBSLs is summarized in Tables 7 and 8.

3.2 SITE CONCEPTUAL EXPOSURE MODEL

This section focuses on the current and future land use issues concerning the site. Figure 1 shows that the site is surrounded by the City of North Charleston and, therefore, is in an urban setting. The site is a former post office for CNC. The facility is included in the BRAC activities, therefore the future use of the facility is unknown.

The City of Charleston provides drinking water for CNC. A water well survey conducted as part of the Final RCRA Facility Investigation for Zone H did not reveal the presence of any shallow water supply wells within 1,000 ft of the site.

The CNC is located on the Cooper River with the site located approximately 950 ft from the river. Groundwater at the site flows to the north and northeast, toward the river.

3.3 EXPOSURE PATHWAY ANALYSIS

This section presents the receptor characterizations of the potentially exposed populations in the vicinity of the site and identifies the potentially complete exposure pathways for those receptors. SCDHEC requires that only those exposure pathways with COC concentrations exceeding Tier 1 RBSL concentrations are examined in a Tier 2 Risk-Based Corrective Action Report. Since there were no COC concentrations exceeding the RBSLs, an exposure pathway analysis is not required.

3.4 IDENTIFICATION OF DATA REQUIREMENTS

No additional data is required.

3.5 SITE-SPECIFIC TARGET LEVELS

Site-specific target levels (SSTLs) were not required because soil and groundwater concentrations did not exceed RBSLs.

3.6 RECOMMENDATIONS

Concentrations of detected CoCs were below their respective RBSLs for soil and groundwater, therefore no further action is recommended for this site.

4.0 REFERENCES

Brown & Root Environmental, Inc. 1998, Site Assessment Plan Zone H – UST, Charleston Naval Complex, Charleston, South Carolina submitted to Southern Division NAVFACENGCOM, September 1998.

Ensafe/Allen & Hoshall, Inc. 1996, Final RCRA Facility Investigation for Zone H, Naval Base Charleston, Charleston, South Carolina, July 5, 1996.

SCDHEC (South Carolina Department of Health and Environmental Control) 1997. South Carolina Standard Limited Assessment, June 1997.

SCDHEC (South Carolina Department of Health and Environmental Control) 1998. South Carolina Risk Based Corrective Action for Petroleum Releases, January 1998.

SPORTENDETCHASN, 1996, Underground Storage Tank (UST) Assessment Report UST, Charleston Naval Base Complex, North Charleston, SC, October 4, 1996.

SPORTENDETCHASN, 1999, Personal Contact between Paul Calligan TtNUS and Copes Wannamacker SPORTENDCHASN, June 17, 1999.

TABLE 1

GROUNDWATER ELEVATIONS
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well No.	Total Depth of Well (ft)	Top of Casing Elevation, ft (MSL)	Date Measured	Depth to Water, ft (BTOC)	Groundwater Elevation, ft (MSL)
CNC08-M01	12	8.87	2/20/99	3.17	5.70
			3/5/99	3.90	4.97
CNC08-M02	12	8.26	2/20/99	2.68	5.58
			3/5/99	3.44	4.82
CNC08-M03	12	9.27	2/20/99	3.90	5.37
			3/5/99	4.66	4.61
CNC08-M04	12	9.29	2/20/99	4.02	5.27
			3/5/99	4.77	4.52
CNC08-M05	12	9.05	2/20/99	3.36	5.69
			3/5/99	4.07	4.98
CNC08-M06	12	8.62	2/20/99	2.86	5.76
			3/5/99	3.55	5.07
CNC08-M07	27	8.85	2/20/99	2.32	6.53
			3/5/99	5.36	3.49

Well No.	Total Depth of Well (ft)	Top of Casing Elevation, ft (LRS)	Date Measured	Depth to Water, ft (BTOC)	Groundwater Elevation, ft (LRS)
CNC08-P01	8	Not Surveyed	12/6/98	6.45	No Elevation
CNC08-P02	12	100.00	12/17/98	6.41	93.59
			12/20/98	6.60	93.40
CNC08-P03	12	99.94	2/20/99	6.33	93.61
			12/20/98	6.44	93.50
CNC08-P04	12	100.23	2/20/99	6.61	93.62
			12/20/98	6.72	93.51

Notes:
MSL - Mean Sea Level
BTOC - Below Top of Casing
LSR - Local Relative Survey
ft - feet

TABLE 2

GROUNDWATER FIELD MEASUREMENTS
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Purge Method	Purge Volume (gallons)	Tempature (°C)	pH	Conductivity uMHOS/cm	Turbidity (NTU)
CNC08-M01	3/5/99	PP	6.5	15.9	7.28	2.1	6.7
CNC08-M02	3/5/99	PP	7.0	17.0	6.83	9.8	7.6
CNC08-M03	3/5/99	PP	6.0	18.7	6.87	9.1	2.8
CNC08-M04	3/5/99	PP	6.0	18.3	7.1	4.8	5.6
CNC08-M05	3/5/99	PP	8.0	15.3	7.60	1.3	3.9
CNC08-M06	3/5/99	PP	3.0	16.3	7.7	2.3	>200
CNC08-M07	3/5/99	PP	3.6	17.7	7.43	28.6	9.1

°C - Degree Celcius
PP - Peristaltic pump, low flow purge
umHOS/cm - Micro MHOS per Centimeter
NTU - Nephelometric Turbidity Units
Note: Measurements taken at end of purging.

TABLE 3

GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Dissolved Oxygen (%)	Akalinity (mg/l)	Carbon Dioxide (mg/l)	Sulfide (mg/l)	Ferrous Iron (mg/l)	Nitrite (mg/l)	Manganese (mg/l)	Nitrogen/ Nitrate (mg/l) *	Sulfate (mg/l) *	Methane (ug/l) *
CNC08-M01	3/5/99	0.0	470	180	0.06	0.09	0.009	0.2	ND	435	350
CNC08-M03	3/5/99	0.0	1,620	612	0.01	2.68	0.066	22.0	ND	995	380
CNC08-M06	3/5/99	3.90	430	150	0.01	0.16	0.021	0.0	ND	212	310

% - Percent
* - Fixed base laboratory analysis
ND - Not Detected
mg/l - miligrams per liter
ug/l - micrograms per liter

TABLE 4

SUMMARY OF OVA SOIL SCREENING RESULTS
DECEMBER 1998 AND JANUARY 1999
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (PPM)
CNC08-B01	08SSB0101	1	ND
	08SSB0102	2	ND
	08SSB0103	3	1
	08SSB0104	4	2
CNC08-B02	08SSB0201	1	ND
	08SSB0202	2	ND
	08SSB0203	3	ND
CNC08-B03	08SSB0301	1	5
	08SSB0302	2	ND
	08SSB0303	3	1
CNC08-B04	08SSB0401	1	ND
	08SSB0402	2	2
	08SSB0403	3	4
CNC08-B05	08SSB0501	1	ND
CNC08-B06	08SSB0601	1	ND
	08SSB0602	2	130
CNC08-B07	08SSB0701	1	ND
	08SSB0702	2	ND
	08SSB0703	3	ND
CNC08-B08	08SSB0801	1	ND
	08SSB0802	2	2
	08SSB0803	3	1
CNC08-B09	08SSB0901	1	ND
	08SSB0902	2	ND
	08SSB0903	3	ND
CNC08-B10	08SSB1001	1	102
	08SSB1002	2	30
CNC08-B11	08SSB1101	1	ND
	08SSB1102	2	ND
	08SSB1104	4	ND
CNC08-B12	08SSB1201	1	1
	08SSB1202	2	2
	08SSB1203	3	50
CNC08-B13	08SSB1301	1	NR
	08SSB1302	2	NR
	08SSB1303	3	NR
CNC08-B14	08SSB1401	1	1
	08SSB1402	2	ND
	08SSB1403	3	1
CNC08-B15	08SSB1501	1	NR
	08SSB1502	2	NR
	08SSB1503	3	NR
CNC08-B16	08SSB1601	1	20
	08SSB1602	2	1
	08SSB1603	3	1
	08SSB1604	4	5

TABLE 4 (CONTINUED)

SUMMARY OF OVA SOIL SCREENING RESULTS
DECEMBER 1998 AND JANUARY 1999
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (PPM)
CNC08-B17	08SSB1701	1	ND
	08SSB1702	2	1
	08SSB1703	3	1
	08SSB1704	4	1
CNC08-B18	08SSB1801	1	30
	08SSB1802	2	8
	08SSB1803	3	60
	08SSB1804	4	80
CNC08-B19	08SSB1901	1	ND
	08SSB1902	2	ND
	08SSB1903	3	4
	08SSB1904	4	2
CNC08-B20	08SSB2001	1	ND
	08SSB2002	2	ND
	08SSB2003	3	2
	08SSB2004	4	ND
CNC08-B21	08SSB2101	1	ND
	08SSB2102	2	2
	08SSB2103	3	1
	08SSB2104	4	2

Notes:
OVA - Organic vapor analyzer equipped with a flame ionization detector
PPM - Parts per million
ND – Not detected
NR – No reading

TABLE 5

SUMMARY OF LABORATORY SOIL SCREENING RESULTS
DECEMBER 1998 AND JANUARY 1999
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data (PPB) [1]				
			Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel Range Organics
CNC08-B01	08SFB0104	4	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B02	08SFB0202	2	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B03	08SFB0301	1	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B04	08SFB0403	3	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B05	NA						
CNC08-B06	08SFB0602	2	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B07	08SFB0702	2	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B08	08SFB0802	2	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B09	08SFB0903	3	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B10	08SFB1001	1	<0.5	141.07	<0.5	1.41	1,411.43
CNC08-B11	08SFB1104	4	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B12	08SFB1203	3	<0.5	<0.5	<0.5	<1.0	93,327.85
CNC08-B13	08SFB1303	3	<0.5	<0.5	<0.5	<1.0	409.55
CNC08-B14	08SFB1403	3	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B16	08SFB1601	1	<1.0	2.4	<1.0	<1.0	<50,000
CNC08-B17	08SFB1704	4	<1.0	<1.0	<1.0	<1.0	<50,000
CNC08-B18	08SFB1804	4	<1.0	<1.0	<1.0	<1.0	<50,000
CNC08-B19	08SFB1903	3	<1.0	<1.0	<1.0	<1.0	<50,000
CNC08-B20	08SFB2003	3	<1.0	<1.0	<1.0	<1.0	<50,000

NOTES:
[1] Laboratory screening data was analyzed using USEPA Method 8260. Compounds not detected are reported as less than the instrument detection limit.
PPB - parts per billion
NA – sample was not analyzed

TABLE 6

SUMMARY OF GROUNDWATER SCREENING RESULTS
DECEMBER 1998 AND JANUARY 1999
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Laboratory Screening Data (PPB) [1]				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel Range Organics
CNC08-P01	08GFP0101	<0.5	<0.5	<0.5	<1.0	<100
CNC08-P02	08GFP0201	<0.5	<0.5	<0.5	<1.0	10,292.81
CNC08-P03	08GFP0301	<0.5	<0.5	<0.5	<1.0	<100
CNC08-P04	08GFP0401	<0.5	0.50	<0.5	<1.0	<100
CNC08-B12	08GFB12	<0.5	<0.5	<0.5	<1.0	<100
CNC08-B14	08GFB14	<0.5	<0.5	<0.5	<1.0	241.85
CNC08-B16	08GFB16	<1.0	<1.0	<1.0	<1.0	<10,000
CNC08-B18	08GFB18	<1.0	<1.0	<1.0	<1.0	<10,000
CNC08-B19	08GFB19	<1.0	<1.0	<1.0	<1.0	<10,000
CNC08-B20	08GFB20	<1.0	<1.0	<1.0	<1.0	<10,000
CNC08-B21	08GFB21	<1.0	<1.0	<1.0	<1.0	<10,000

NOTES:
[1] Laboratory screening data was analyzed using USEPA Method 8260. Compounds not detected are reported as less than the instrument detection limit.
PPB - parts per billion

TABLE 7

SUMMARY ANALYTICAL RESULTS FOR SOIL SAMPLES
CHEMICALS OF CONCERN
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

SOIL BORING/ SAMPLE NO.	SAMPLE DATE	Benzene ug/kg	Toluene ug/kg	Ethyl-benzene ug/kg	Xylenes (TOTAL) ug/kg	Benzo(a) anthracene ug/kg	Benzo(b) flouranthene ug/kg	Benzo(k) flouranthene ug/kg	Chrysene ug/kg	Dibenzo(a,h) anthracene ug/kg	Naphthalene ug/kg
RBSL[1]		5	478	364	1119	17687	7042	5593	3146	21265	52
CNC08-B03/ 08SLB-0301	20-Jan-99	ND	ND	ND	ND	ND	412	ND	ND	ND	ND
CNC08B-06/ 08SLB-0602	20-Jan-99	ND	ND	ND	ND	324 [J]	524	ND	363 [J]	ND	ND
CNC08-B11/ 08SLB-1103	20-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08B-11/ 08SLB-1103D [2]	20-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08B-12/ 08SLB-1203	20-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZHTL00601 [3]	20-Jan-99	ND	ND	ND	ND	NA	NA	NA	NA	NA	0.676 [J]
ZHRL00201 [4]	20-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ND - not detected

NA - not analyzed

ug/kg - microgram per kilogram

[J] Indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit.

[1] RBSL - South Carolina Department of Health and Environmental Control-Risk Based Screening Levels for clay-rich soils, depth to groundwater less than 5 feet.

[2] Duplicate

[3] Trip Blank

[4] Rinsate blank

TABLE 8

SUMMARY ANALYTICAL RESULTS FOR GROUND WATER SAMPLES
CHEMICALS OF CONCERN
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

MONITORING WELL / SAMPLE NO.	SAMPLE DATE	Benzene ug/l	Toluene ug/l	Ethyl-benzene ug/l	Xylenes (TOTAL) ug/l	MTBE ug/l	Benzo(a) anthracene ug/l	Benzo(a) pyrene ug/l	Benzo(b) flouranthene ug/l	Benzo(ghi) perylene ug/l	Benzo(k) Flouranthene ug/l	Chrysene ug/l	Dibenzo(a,h) anthracene ug/l	Naphthalene ug/l
(1) RBSL		5	1000	70	10000	40	10(2)	10(2)	10(2)	10(2)	10(2)	10(2)	10(2)	10(2)
CNC08-M01 / 08GLM-0101	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M02 / 08GLM-0201	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M03 / 08GLM-0301	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M04 / 08GLM-0401	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M04 / 08GLM-0401D (3)	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M05 / 08GLM-0501	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC08-M06 / 08GLM-0601	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.72
CNC08-M07 / 08GLM-0701	05-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ZHTL01301 (4)	04-Mar-99	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND
ZHRL00401 (5)	04-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ND - not detected

NA - not analyzed

ug/l - microgram per liter

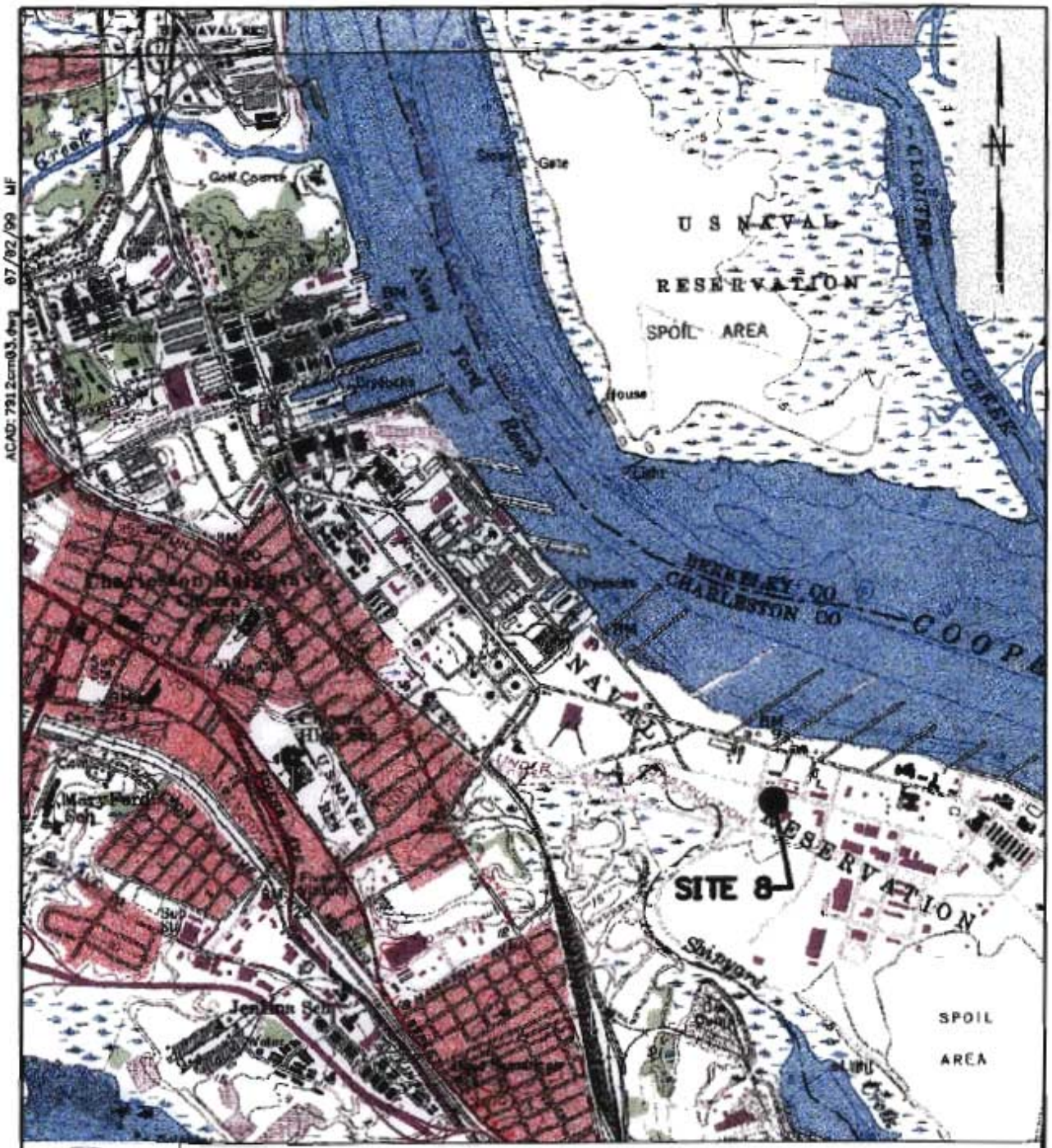
(1)SCDHEC RBSL - South Carolina Department of Health and Environmental Control-Risk Based Screening Levels for clay-rich soils, depth to groundwater less than 5 feet.

(2)The Risk Based Screening Level for Individual PAH COC is 10 ug/l for PAH's.

(3) Duplicate sample collected from CNC01-B04

(4) Trip Blank

(5) Rinsate Blank



SC

SOURCE: QUADRANGLE MAP SOUTH CAROLINA, REVISED 1979
QUADRANGLE MAP NORTH CHARLESTON REVISED, 1979

0 2000 4000
SCALE IN FEET

DRAWN BY HJP DATE 5/18/99		SITE LOCATION MAP SITE 8, BUILDING 658, ZONE H CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SC	CONTRACT NO. 7912
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV. 0

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

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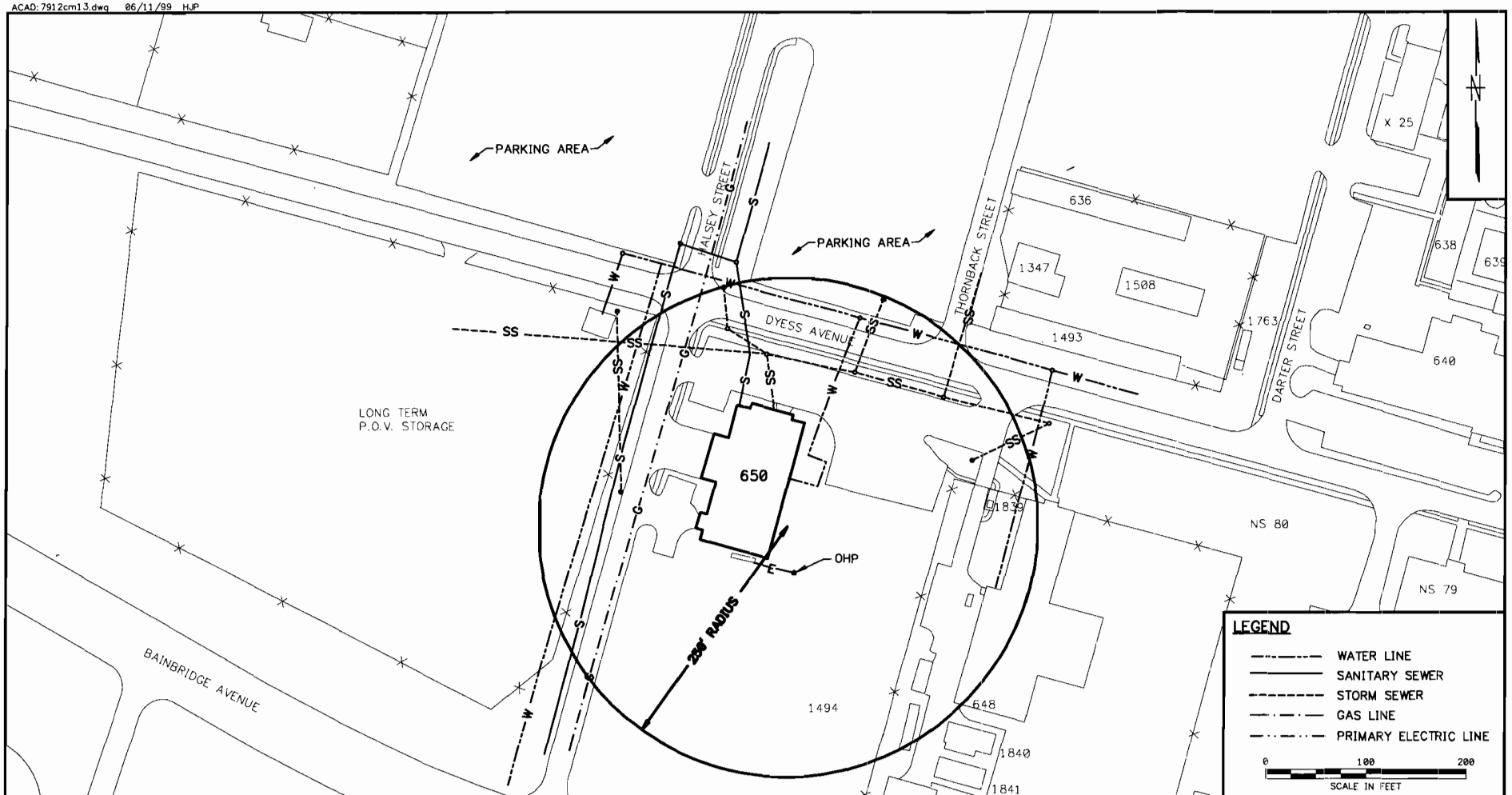
ACAD: 7912cm13.dwg 06/11/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

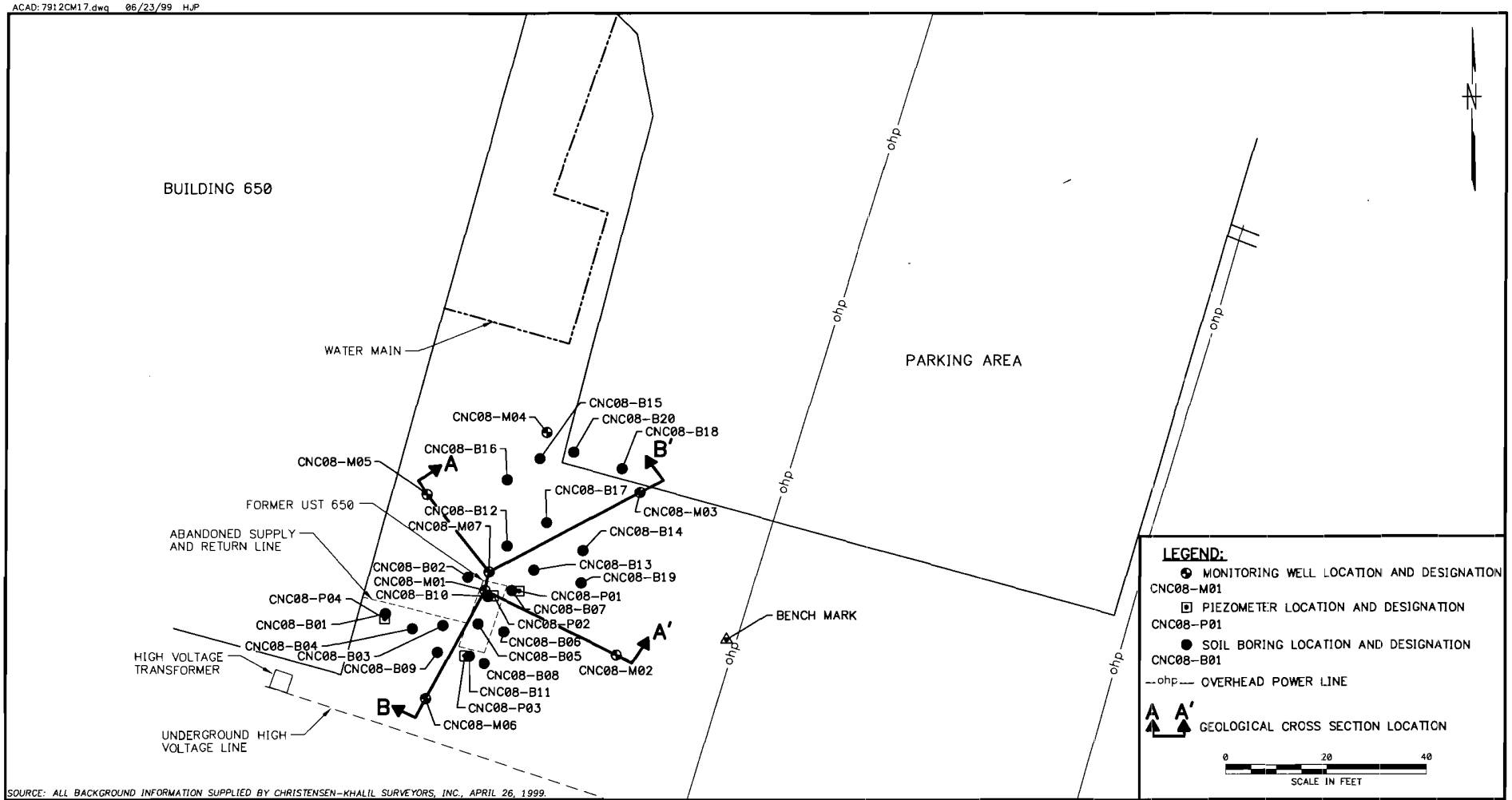
DRAWN BY KW DATE 5/24/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE VICINITY MAP
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2
REV. 0

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

ACAD: 7912CM17.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

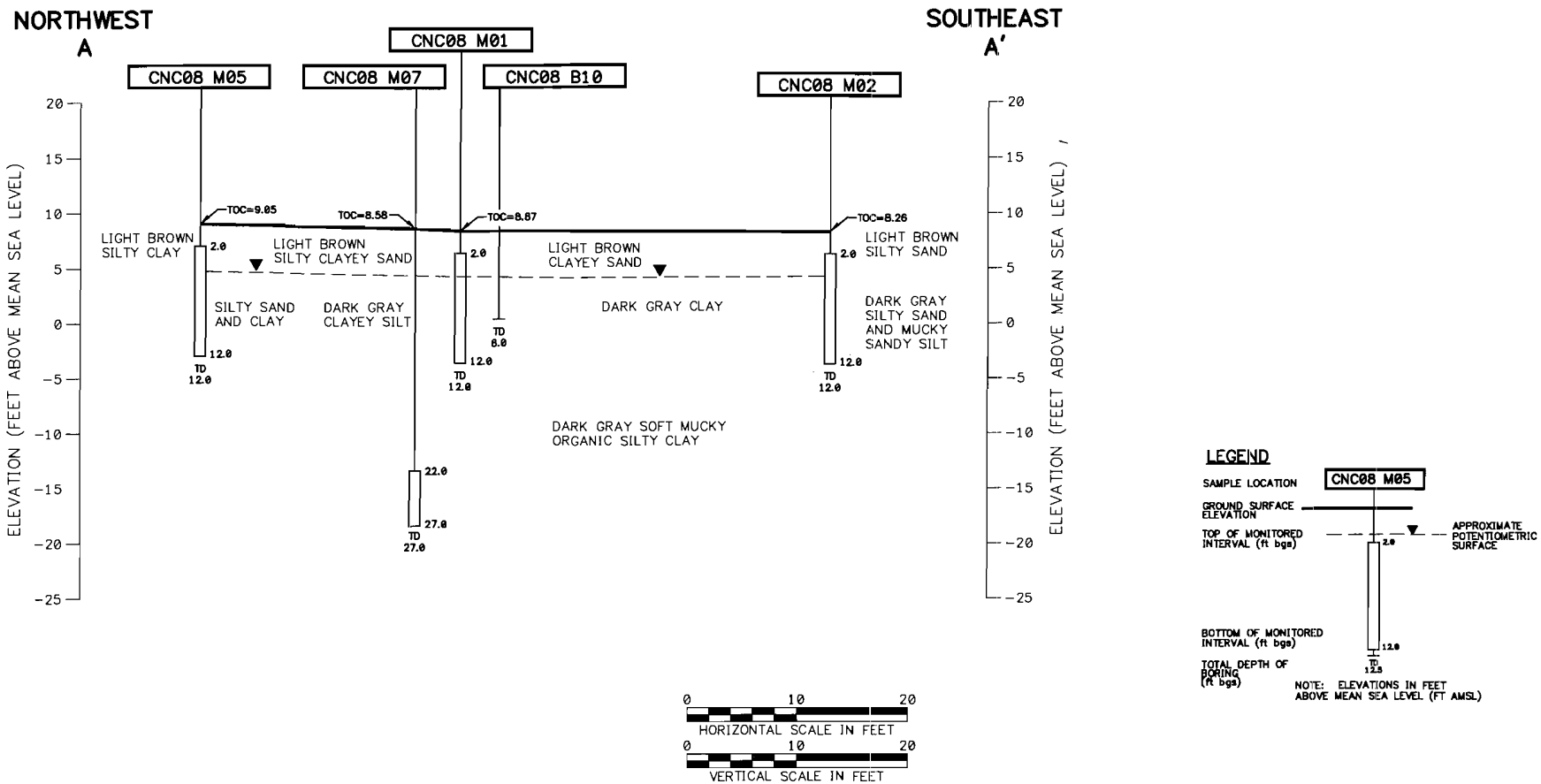
DRAWN BY DLT DATE 5/24/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE MAP AND SAMPLING LOCATIONS
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3
REV. 0

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

ACAD: 7912gx08.dwg 06/15/99 MF



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

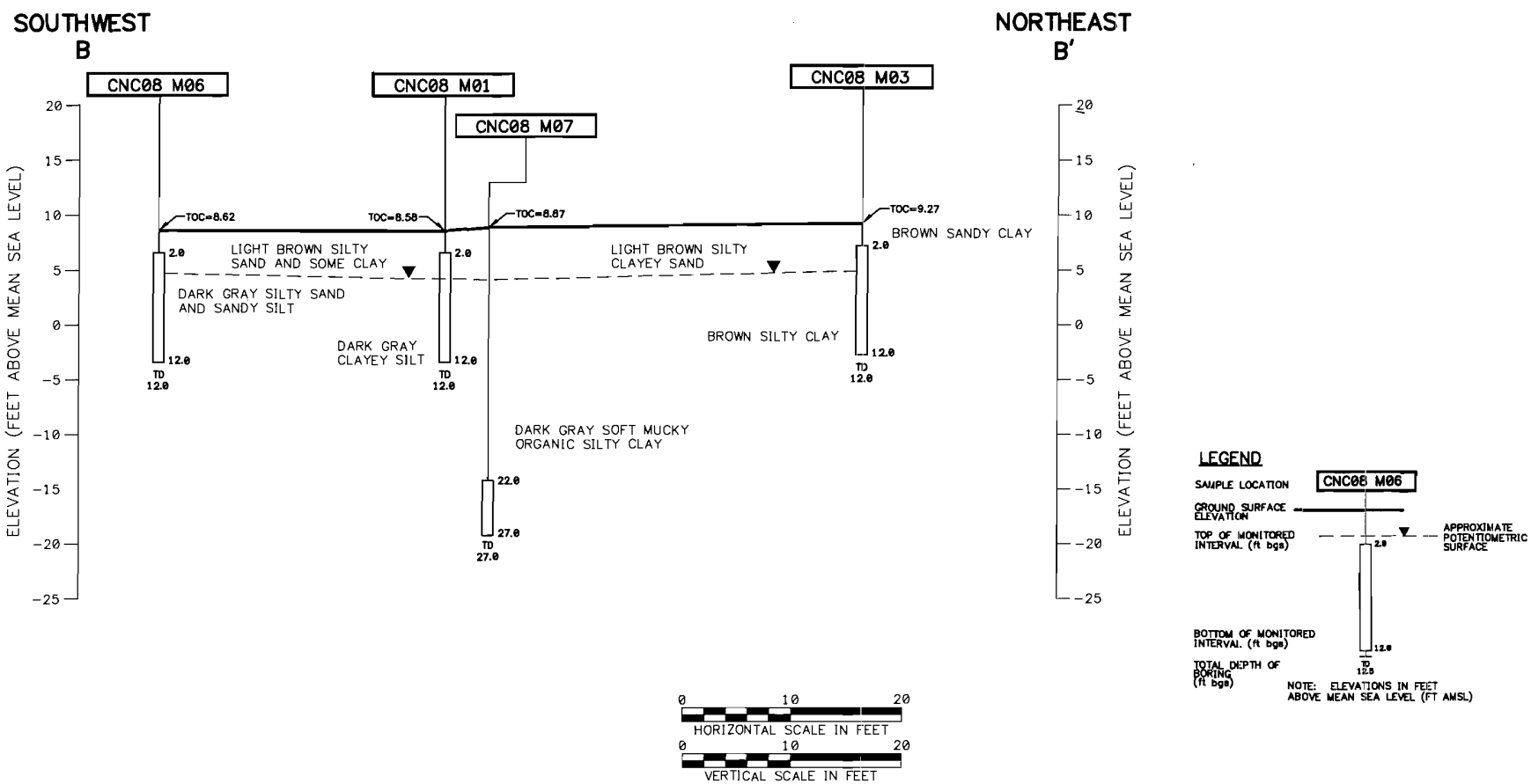
DRAWN BY MF DATE 6/15/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GEOLOGIC CROSS SECTION
A-A'
SITE 8, BUILDING 650
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 4
REV. 0

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

ACAD: 7912gx07.dwg 06/15/99 MF



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

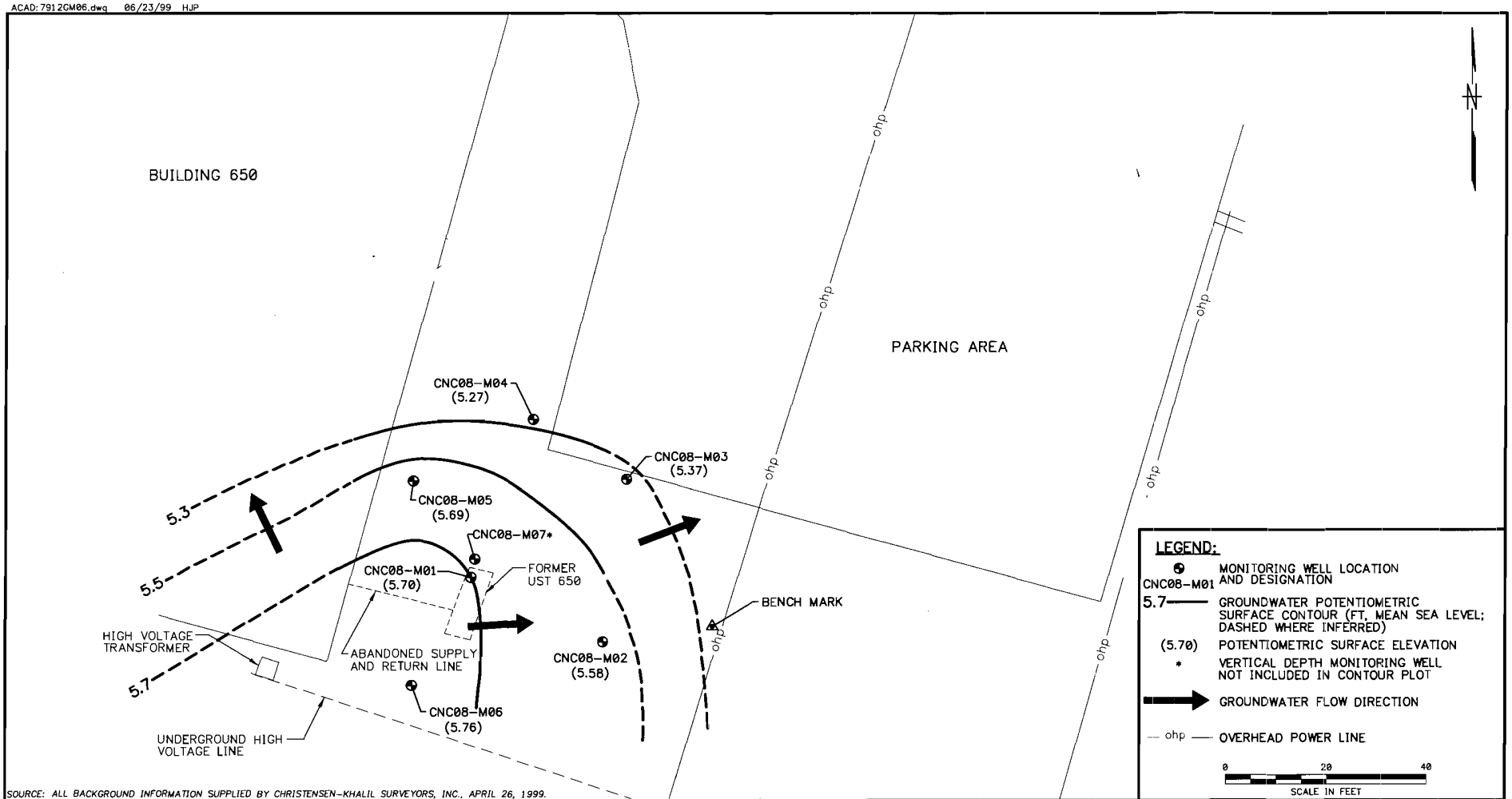
DRAWN BY MF DATE 6/15/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GEOLOGIC CROSS SECTION
B-B'
SITE 8, BUILDING 650
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 5
REV. 0

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

ACAD: 7912GM06.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

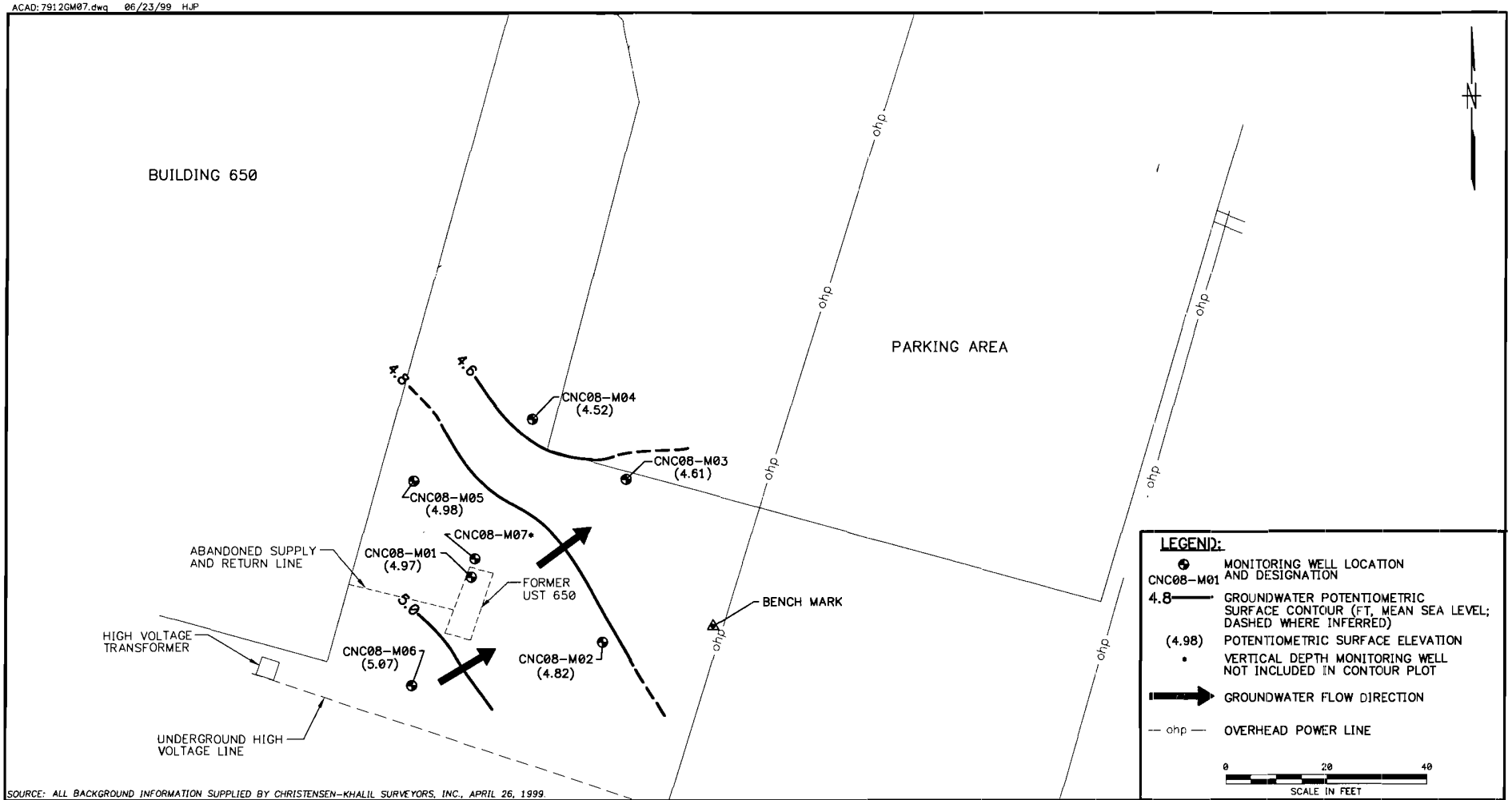
DRAWN BY DLT DATE 5/24/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER POTENTIOMETRIC MAP
(FEBRUARY 20, 1999)
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 6
REV. 0

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

ACAD: 7912GM07.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

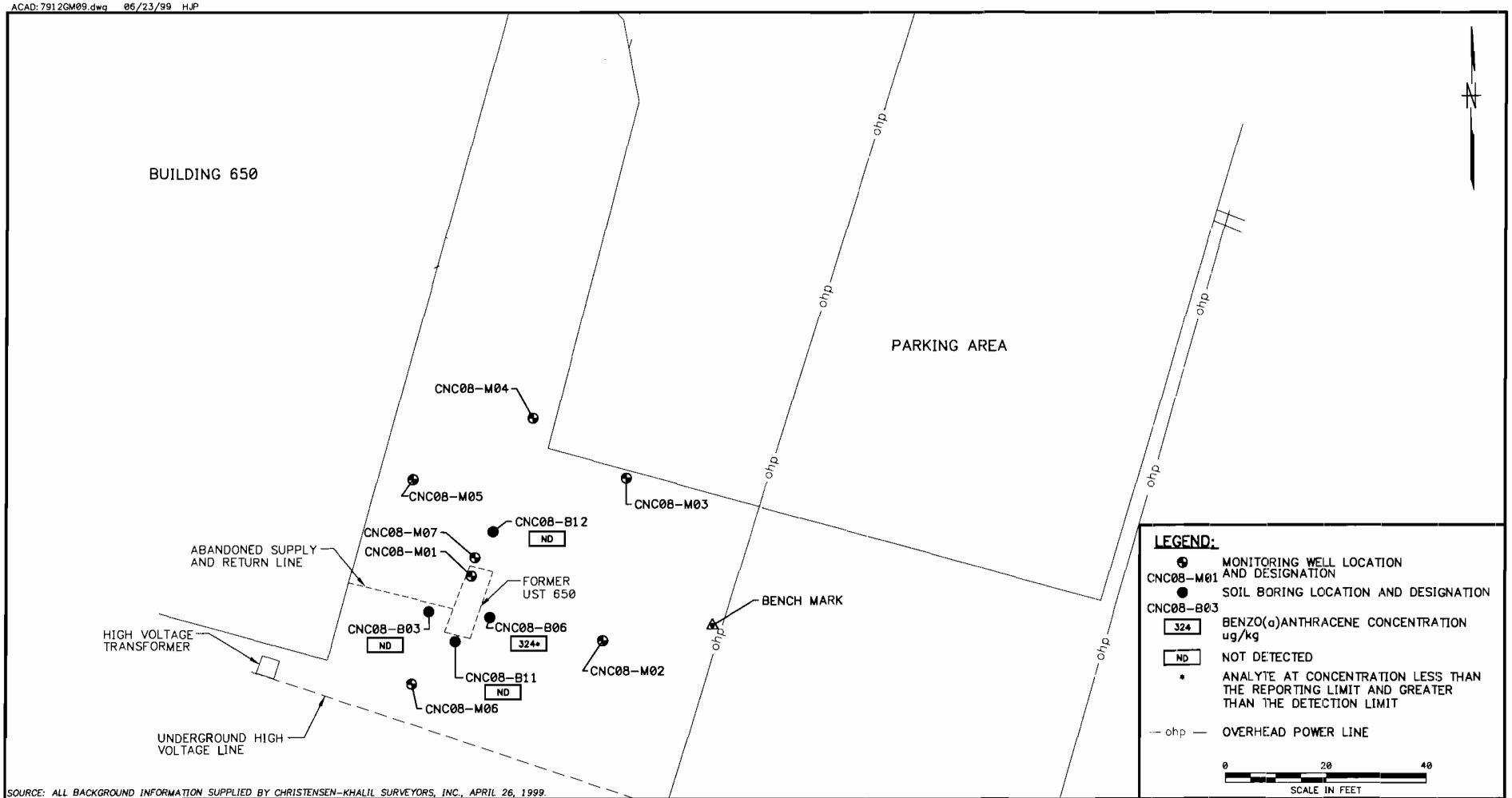
DRAWN BY DLT DATE 5/25/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER POTENTIOMETRIC MAP
(MARCH 5, 1999)
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 7
REV. 0

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

ACAD: 7912GM09.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

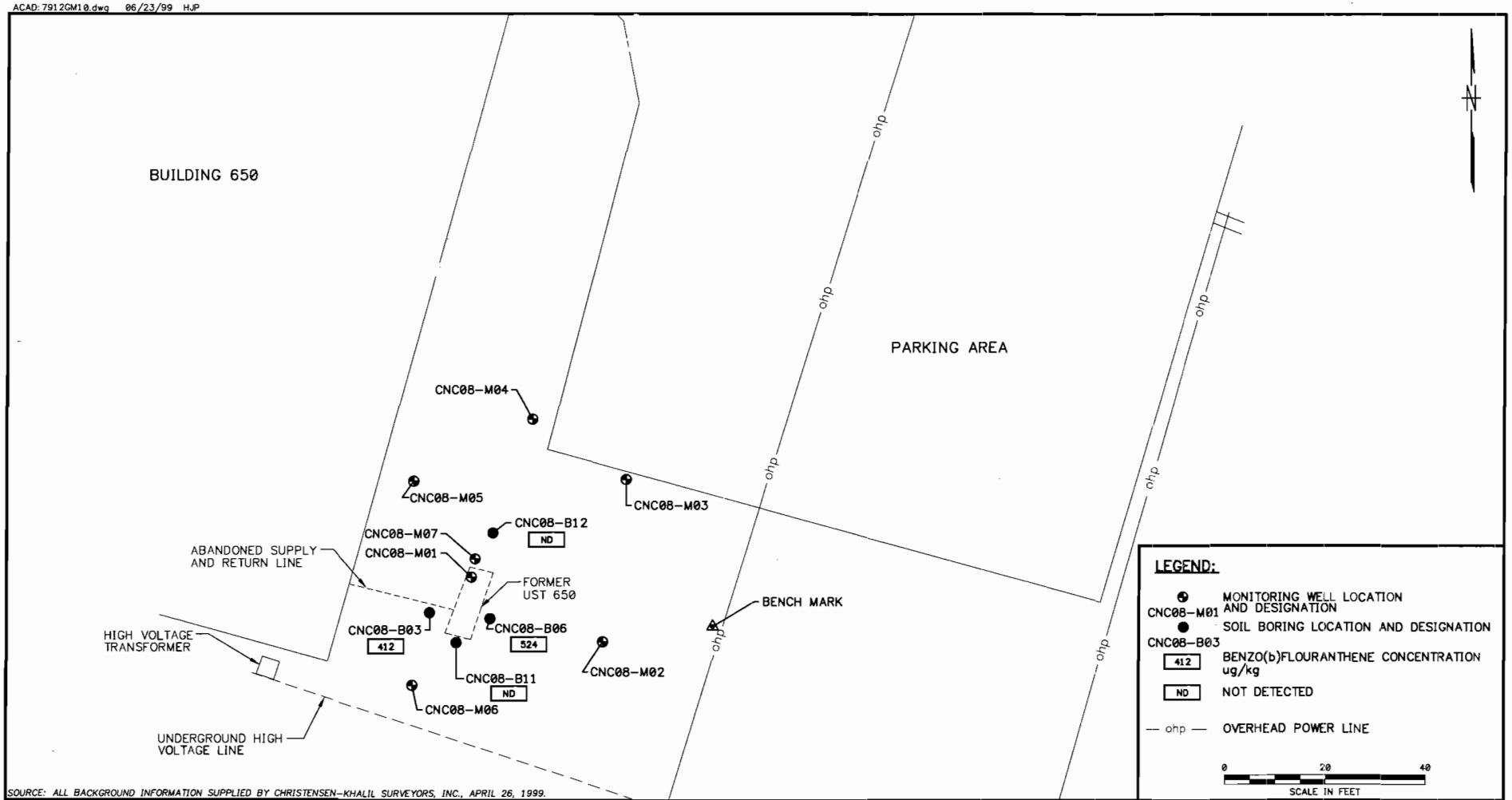
DRAWN BY DLT DATE 5/25/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SOIL BENZO(a)ANTHRACENE CONCENTRATION MAP
(JANUARY 20, 1999)
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 8
REV. 0

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

ACAD: 7912GM10.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

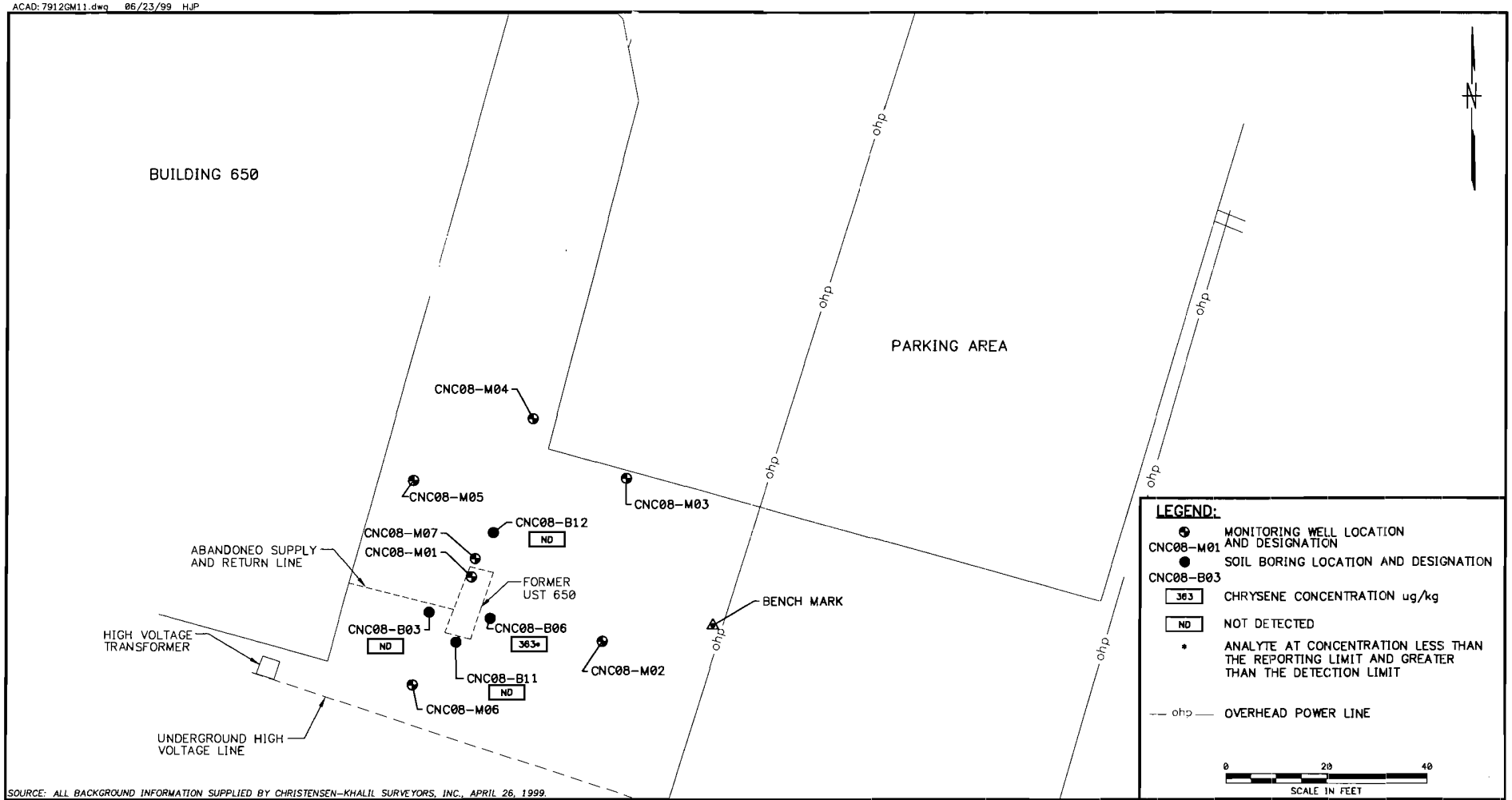
DRAWN BY DLT DATE 5/26/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SOIL BENZO(b)FLOURANTHENE CONCENTRATION MAP
(JANUARY 20, 1999)
SITE B, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 9
REV. 0

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

ACAD:7912GM11.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

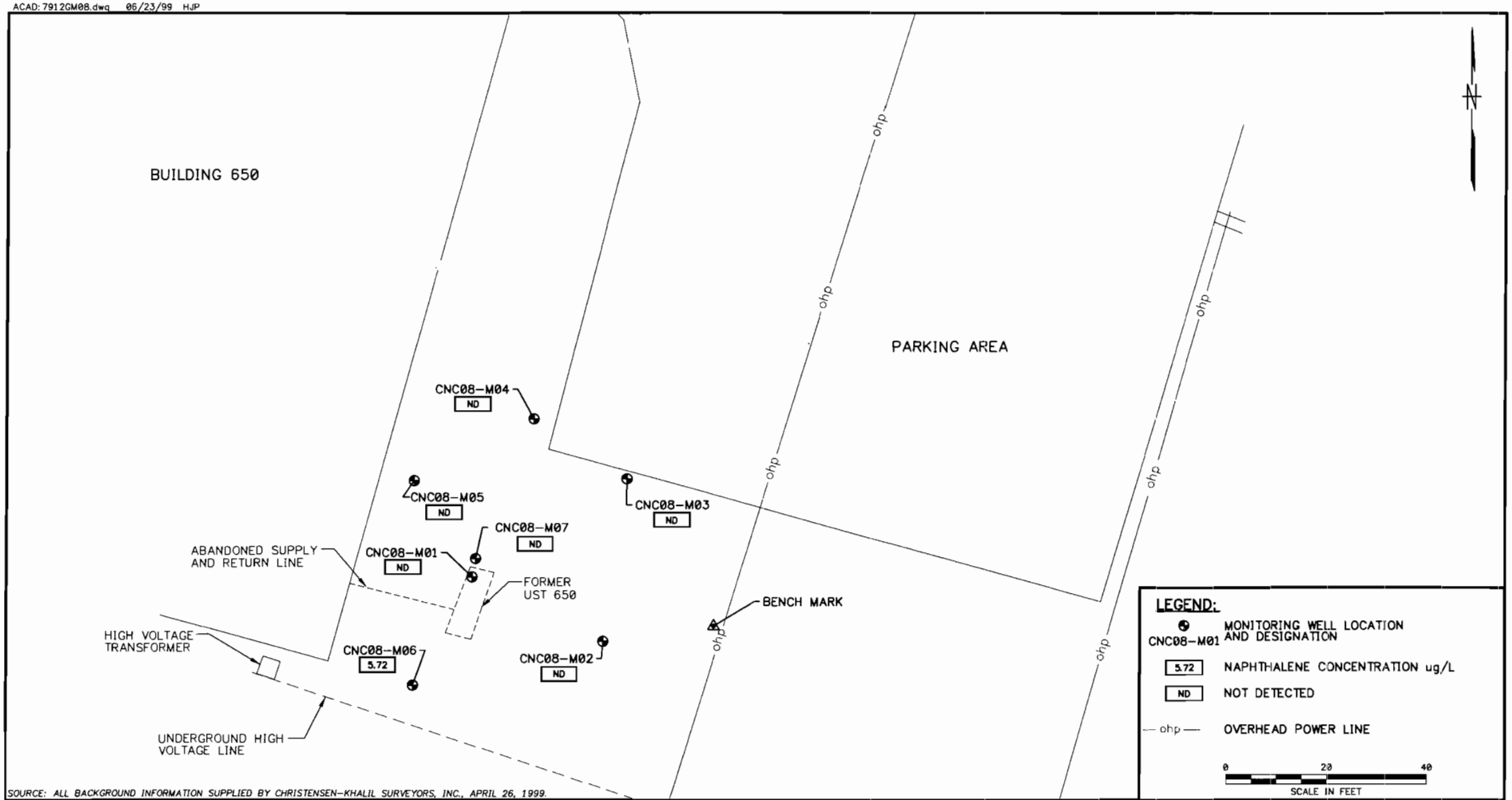
DRAWN BY DLT DATE 5/25/99
CHECKED BY DATE
COST/SCHED--AREA
SCALE AS NOTED

SOIL CHRYSENE CONCENTRATION MAP
(JANUARY 20, 1999)
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 10
REV. 0

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

ACAD: 7912GM08.dwg 06/23/99 HJP



SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-KHALIL SURVEYORS, INC., APRIL 26, 1999.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DLT DATE 5/25/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER NAPHTHALENE CONCENTRATION MAP
(MARCH 5, 1999)
SITE 8, BUILDING 650
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 11
REV. 0

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

APPENDIX A

UNDERGROUND STORAGE TANK ASSESSMENT REPORT - UST 650

APPENDIX A

650 UST CLOSURE REPORT

South Carolina Department of Health and Environmental Control (S.C.D.H.E.C.)
Underground Storage Tank (UST) Assessment Report

Date Received
State Use Only

Submit Completed Form to:
UST Regulatory Section
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201
Telephone (803) 734-5331

I OWNERSHIP OF UST(S)

Agency/Owner: Southern Division, Naval Facilities Engineering Command, Caretaker Site Office

Mailing Address: P.O. Box 190010

City: N. Charleston State: SC Zip Code: 29419-9010

Area Code: 803 Telephone Number: 743-9985 Contact Person: LCDR Paul Rose

II SITE IDENTIFICATION AND LOCATION

Site I.D. #: Unregulated

Facility Name: Charleston Naval Base Complex, Building 650

Street Address: Halsey Street

City: North Charleston, 29405-2413 County: Charleston

III CLOSURE INFORMATION

Closure Started: 27 Sept 1996 Closure Completed: 4 Oct 1996

Number of USTs Closed: 1

N/A	SPORTENVDETCHASN
Consultant	UST Removal Contractor

IV. CERTIFICATION (Read and Sign after completing entire submittal)

I certify that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate and complete.

LCDR Paul Rose
Name (Type or Print)

Signature

V. UST INFORMATION

		Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
A.	Product.....	Fuel oil					
B.	Capacity.....	1,000 gal.					
C.	Age.....	1969					
D.	Construction Material.....	Steel					
E.	Month/Year of Last Use.....	Unk.					
F.	Depth (ft.) To Base of Tank.....	6'					
G.	Spill Prevention Equipment Y/N.....	N					
H.	Overfill Prevention Equipment Y/N.....	N					
I.	Method of Closure Removed/Filled.....	R					
J.	Visible Corrosion or Pitting Y/N.....	N					
K.	Visible Holes Y/N.....	N					

L. Method of disposal for any USTs removed from the ground (attach disposal manifests)

UST 650 was removed, drained, cut open at both ends, and cleaned with a steam cleaner. It was then cut up for recycling as scrap metal. (See Attachment III.)

M. Method of disposal for any liquid petroleum, sludges, or waste waters removed from the USTs (attach disposal manifests)

The residual fuel oil, waste water, and sludge were recycled.

N. If any corrosion, pitting, or holes were observed, describe the location and extent for each UST

UST 650 had a protective coating on its exterior surface. The tank was in good condition, and suffered no corrosion, holes, or pits.

VI. PIPING INFORMATION

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
A. Construction Material.....	Copper & steel				
B. Distance from UST to Dispenser.....	24'				
C. Number of Dispensers.....	1 (see note 1)				
D. Type of System P/S.....	S				
E. Was Piping Removed from the Ground? Y/N....	Y				
F. Visible Corrosion or Pitting Y/N.....	Y				
G. Visible Holes Y/N.....	N				
H. Age.....	1969				

Note 1: UST 650 provided fuel oil to building 650's boiler.

I. If any corrosion, pitting, or holes were observed, describe the location and extent for each line.

The 3/8" copper supply and return lines were in good condition. The 2" steel vent line was corroded throughout its length, but contained no holes or pits.

VII. BRIEF SITE DESCRIPTION AND HISTORY

Building 650 is the former post office for Naval Base Charleston. UST 650 provided fuel oil to the facility's boiler.

There was a slight sheen on the groundwater in the tank pit. Soil and groundwater samples showed levels of Polynuclear Aromatic Hydrocarbons (PAHs) above the risk based screening levels (RBSLs) established in the "Risk Based Corrective Action (RBCA) for Petroleum Releases". No hole could be found in the tank on site or during cleaning operations, so the petroleum contamination is most probably due to overspill during past fillings.

The bermed soil excavated from the tank pit had elevated PAH levels, the levels were below the RBCA RBSLs, and the soil was returned to the pit.

VIII. SITE CONDITIONS

		Yes	No	Unk
A.	Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? If yes, indicate depth and location on the site map.		X	
B.	Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? If yes, indicate location on site map and describe the odor (strong, mild, etc.)		X	
C.	Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)? Bottom center of tank excavation, 6' deep	X		
D.	Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map. Name of DHEC representative authorizing soil removal: [*see note 2]		*X	
E.	Was a petroleum sheen or free product detected on any excavation or boring waters? [*see note 3] If yes, indicate location and thickness on the site map.	*X		

Note 2: Angular rock was used to fill the area covered by the groundwater. Geofabric was laid over the rock and then all soil from the excavation was returned to the tank pit.

Note 3: The groundwater had a light product sheen. This was collected with absorbent rags.

IX. SAMPLE INFORMATION

S.C.D.H.E.C. Lab Certification Number 10120

Sample #	Location	Sample Type (Soil/Water)	Depth*	Date/Time of Collection	Collected By	OVA#
SPORT 0191-1	South end of excavation.	Soil	6'	2 Oct 96 1015	R. Adkins	Not Taken
SPORT 0191-2	North end of excavation.	Soil	6'	2 Oct 96 1015	R. Adkins	Not Taken
SPORT 0191-3	Center of excavation	Water	6'	2 Oct 96 1015	R. Adkins	Not Taken
SPORT 0191-4	Vent line trough.	Soil	2'	2 Oct 96 1015	R. Adkins	Not Taken
SPORT 0191-5	Supply & return lines trough.	Soil	1'	2 Oct 96 1015	R. Adkins	Not Taken
SPORT 0191-6	Dirt pile.	Soil	-	2 Oct 96 1015	R. Adkins	Not Taken

* = Depth Below the Surrounding Land Surface

X. SAMPLING METHODOLOGY

Provide a detailed description of the methods used to collect and store (preserve) the samples.

After the removal of UST 650 soil and ground water samples were taken. Sampling was performed in accordance with SC DHEC R.61-92 Part 280 and SC DHEC UST Assessment Guidelines.

The samples are identified as follows:

	Detachment Charleston		General Engineering Labs
Soil Sample	UST650-1	=	SPORT 0191-1
Soil Sample	UST650-2	=	SPORT 0191-2
Ground Water Sample	UST650-3	=	SPORT 0191-3
Soil Sample	UST650-4	=	SPORT 0191-4
Soil Sample	UST650-5	=	SPORT 0191-5
Soil Sample	UST650-6	=	SPORT 0191-6

Sample jars were prepared by the testing laboratory. The grab method was utilized to fill the sample containers leaving as little head space as possible and immediately capped. Soil samples were extracted at the tank ends just above the ground water level. UST piping soil samples were taken under the piping at the mechanical connections. Ground water samples were taken at the bottom center of the excavation.

The samples were marked, logged, and immediately placed in sample coolers packed with ice to maintain an approximate temperature of 4° C. Tools were thoroughly cleaned and decontaminated with organic-free soap and water after each sample.

The samples remained in the custody of SPORTENVDETCHASN until they were transferred to General Engineering Laboratories for analysis as documented in the attached Chain-of-Custody Record.

XI. RECEPTORS

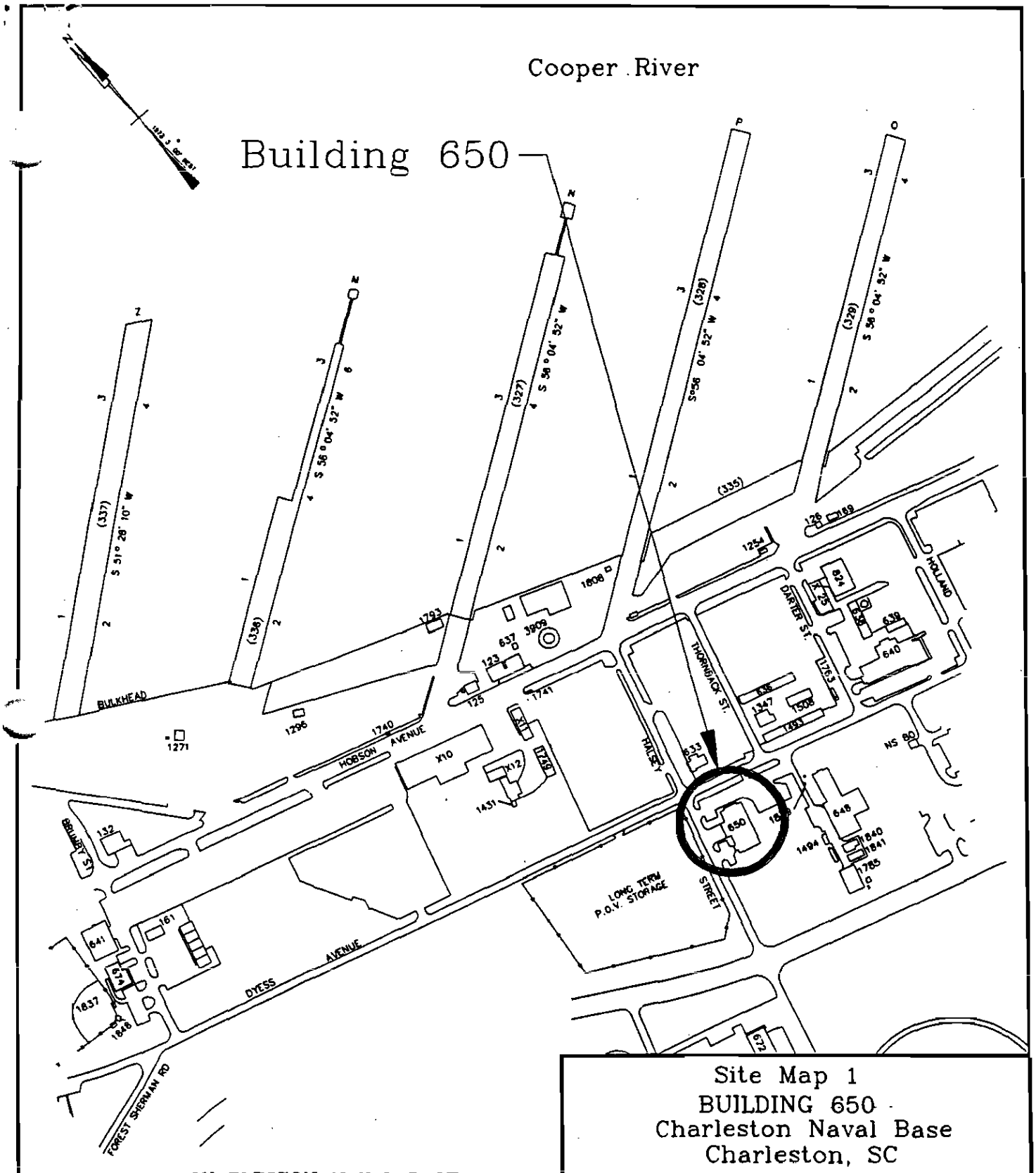
		Yes	No
A.	Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system? [*Cooper R. 946'] If yes, indicate type of receptor, distance, and direction on site map.	*X	
B.	Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system? If yes, indicate type of well, distance, and direction on site map.		X
C.	Are there any underground structures (e.g., basements) located within 100 feet of the UST system? If yes, indicate the type of structure, distance, and direction on site map.		X
D.	Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination? [*Sewer & electricity] If yes, indicate the type of utility, distance, and direction on the site map.	*X	
E.	Has contaminated soil been identified at a depth of less than 3 feet below land surface in an area that is not capped by asphalt or concrete? If yes, indicate the area of contaminated soil on the site map.		X

Attachment I

SITE MAP

You must supply a scaled site map. It should include all buildings, road names, utilities, tank and pump island locations, sample locations, extent of excavation, and any other pertinent information.

Site Maps 1, 2, and 3
Photographs 1, 2, 3, and 4



CHARLESTON NAVAL BASE
CHARLESTON, SC

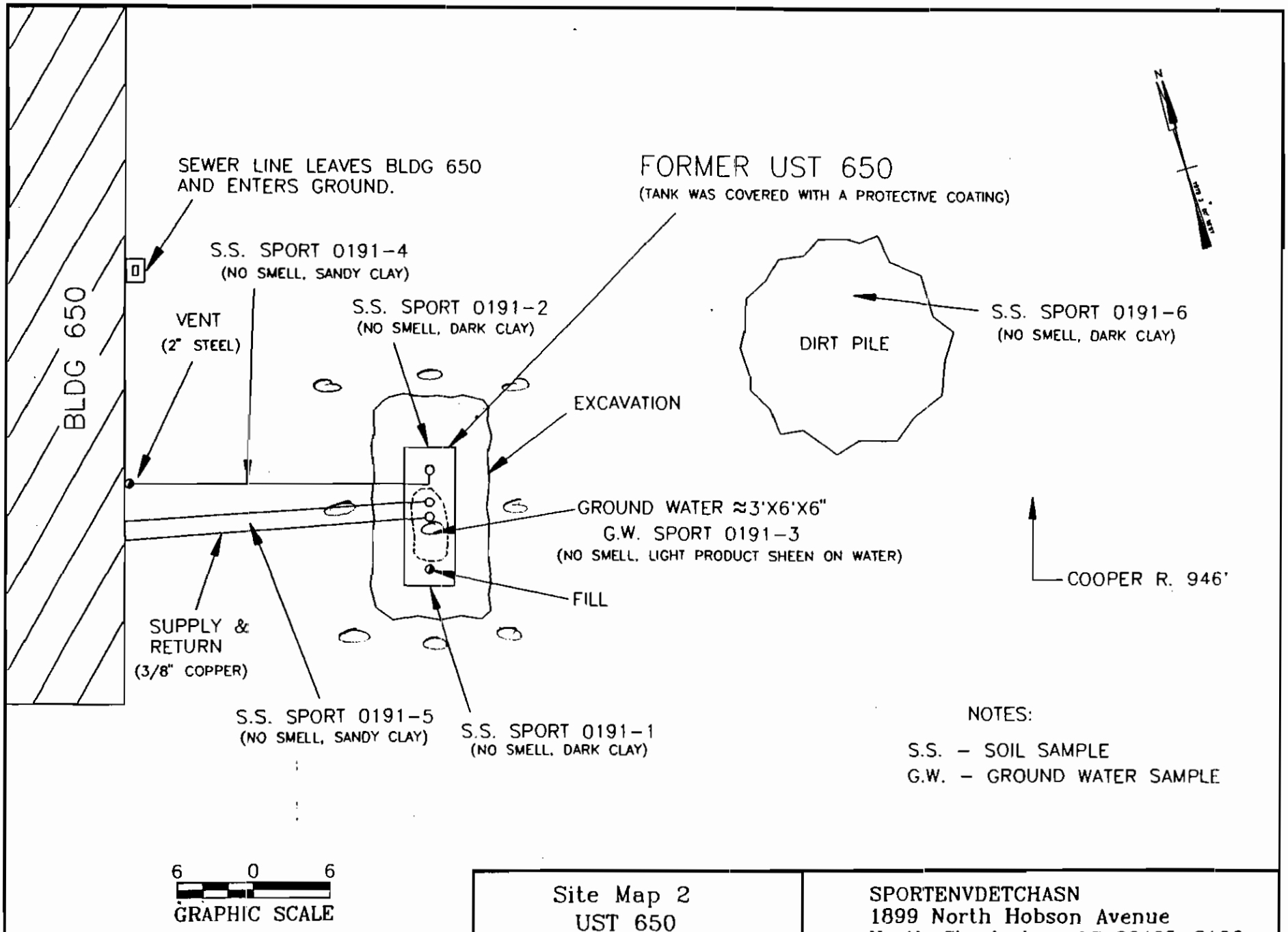
300 0 300 600

GRAPHIC SCALE

Site Map 1
BUILDING 650
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG NAME: 650_1	DWG DATE: 8 JAN 97

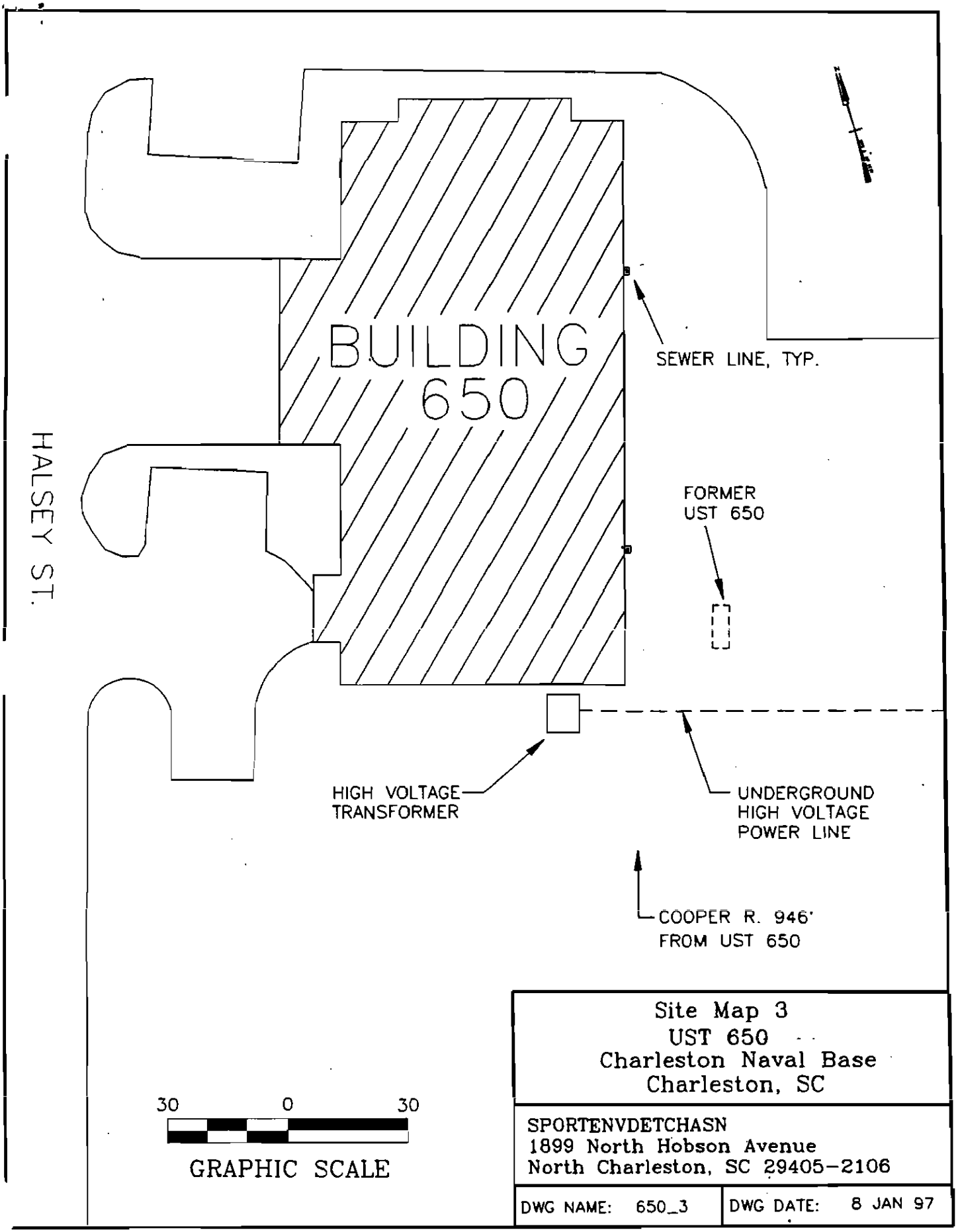


Site Map 2
UST 650
Charleston Naval Base
Charleston SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG DATE: 9 JAN 97

DWG NAME: 650_2



Site Map 3
UST 650
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

DWG NAME: 650_3	DWG DATE: 8 JAN 97

UST 650

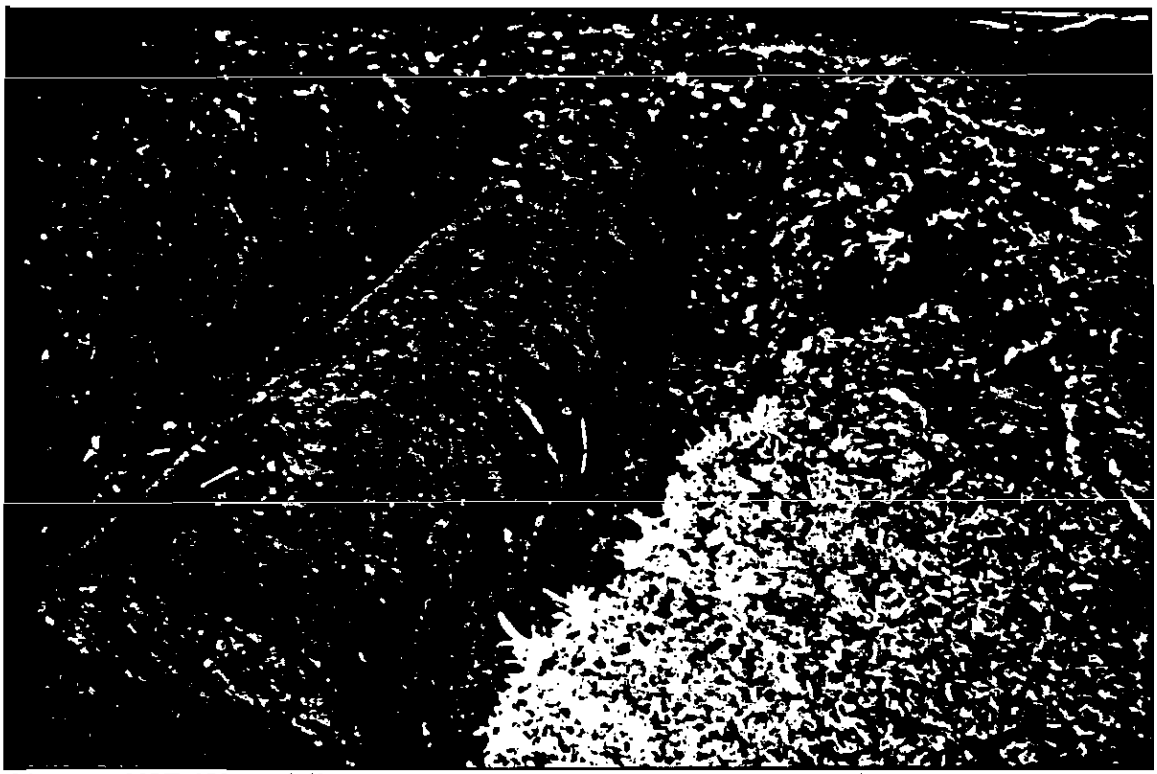


Photo 1: UST 650 partially exposed.

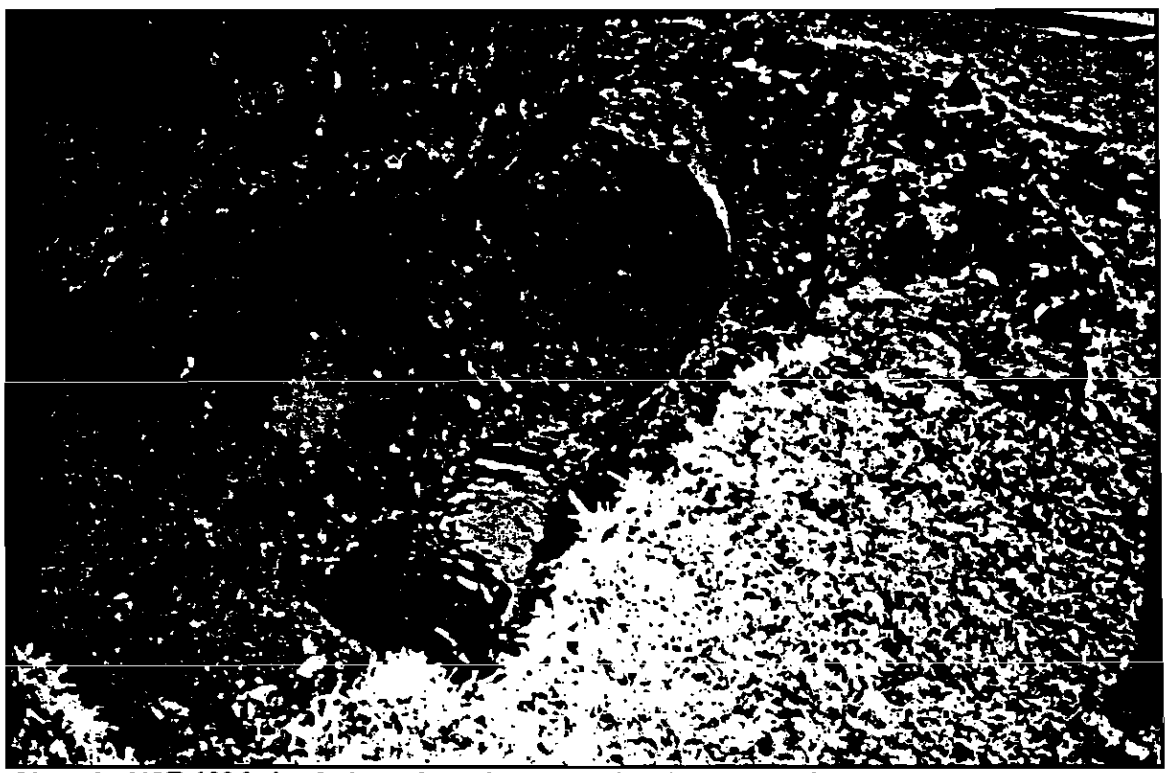


Photo 2: UST 650 being hoisted from the excavation. Note ground water.

UST 650

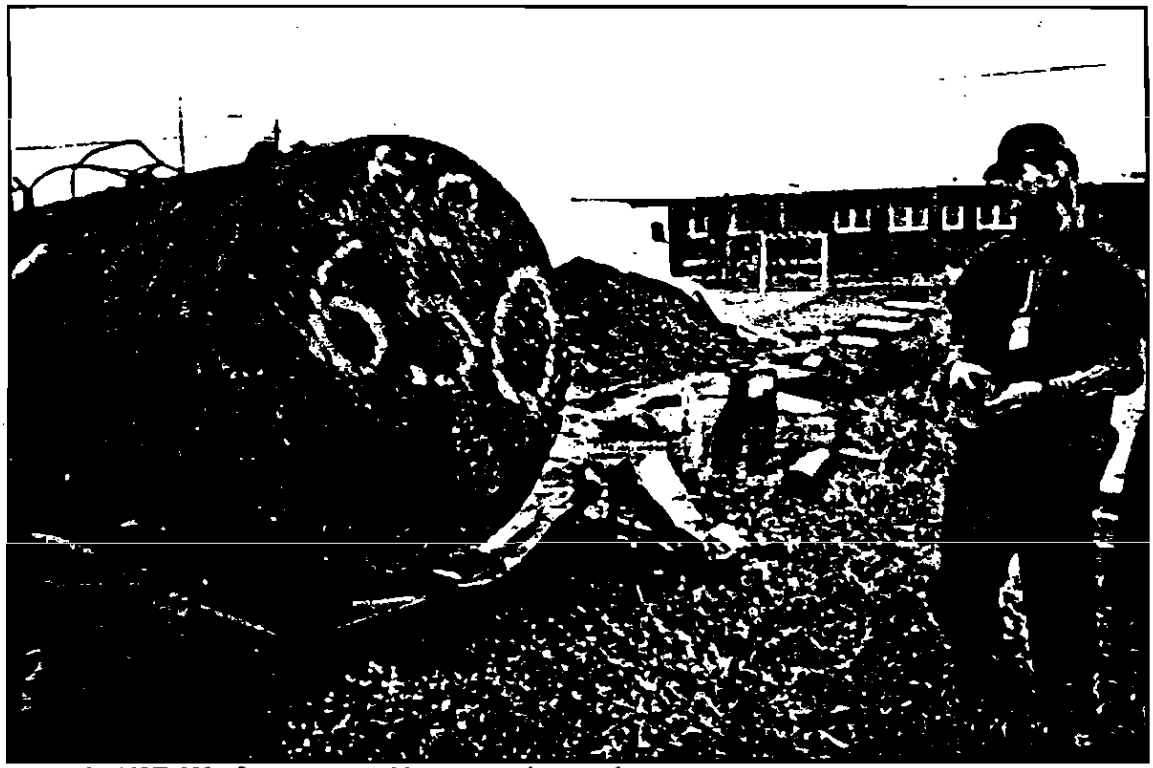


Photo 3: UST 650 after removal. Note protective coating.

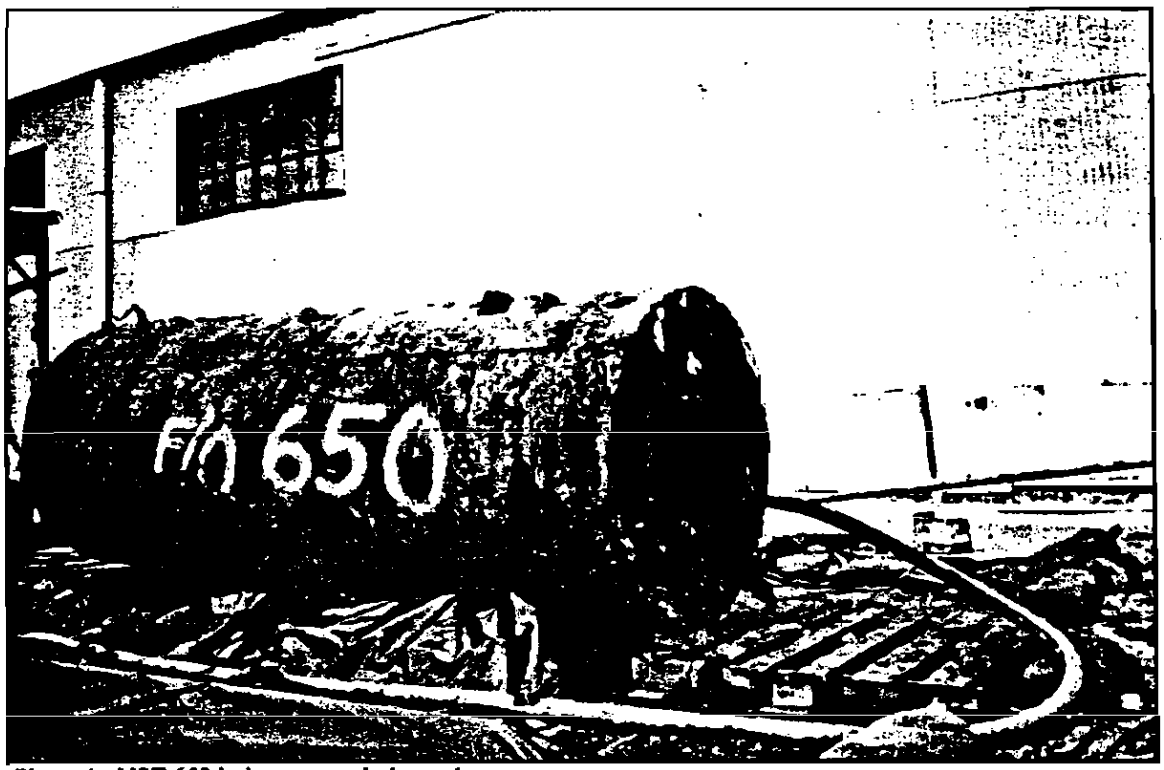


Photo 4: UST 650 being cut and cleaned.

Attachment II

ANALYTICAL RESULTS

You must submit the laboratory report and chain-of-custody form for the samples. These samples must be analyzed by a South Carolina certified laboratory.

Certified Analytical Results
Chain-of-Custody

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 14, 1996

Sample ID	: SPORT0191-1
Lab ID	: 9610069-01
Matrix	: Soil
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/09/96	1918	92006	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene		2.50	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	166	331	ug/kg	1.0	BDG	10/10/96	2241	91877	2
Acenaphthylene	U	0.00	166	331	ug/kg	1.0					
Anthracene	J	205	166	331	ug/kg	1.0					
Benzo(a)anthracene		463	166	331	ug/kg	1.0					
Benzo(a)pyrene		351	166	331	ug/kg	1.0					
Benzo(b)fluoranthene		470	166	331	ug/kg	1.0					
Benzo(ghi)perylene	J	291	166	331	ug/kg	1.0					
Benzo(k)fluoranthene	J	192	166	331	ug/kg	1.0					
Chrysene		444	166	331	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	331	ug/kg	1.0					
Fluoranthene		1610	166	331	ug/kg	1.0					
Fluorene	U	0.00	166	331	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	J	301	166	331	ug/kg	1.0					
Naphthalene	U	0.00	166	331	ug/kg	1.0					
Phenanthrene	J	311	166	331	ug/kg	1.0					
Pyrene		1420	166	331	ug/kg	1.0					

he following prep procedures were performed:
GC/MS Base/Neutral Compounds

DDT 10/08/96 2345 91877 3

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29414
(803) 556-8171 • Fax (803) 766-1178

Printed on recycled paper.

9610069-01

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745'
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID : SPORT0191-1

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	83.0	(30.0 - 115.)
Nitrobenzene-d5	M610	63.9	(23.0 - 120.)
p-Terphenyl-d14	M610	93.0	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	118.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	113.	(74.0 - 128.)
Toluene-d8	BTEX-8260	113.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	118.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	113.	(74.0 - 128.)
Toluene-d8	NAP-8260	113.	(53.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID	: SPORT0191-2
Lab ID	: 9610069-02
Matrix	: Soil
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/09/96	1848	92006	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.730	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	J	1.57	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene		715	164	330	ug/kg	1.0	BDG	10/10/96	2314	91877	2
Acenaphthylene	U	0.00	164	330	ug/kg	1.0					
Anthracene		787	164	330	ug/kg	1.0					
Benzo(a)anthracene		1520	164	330	ug/kg	1.0					
Benzo(a)pyrene		1190	164	330	ug/kg	1.0					
Benzo(b)fluoranthene		1440	164	330	ug/kg	1.0					
Benzo(ghi)perylene		718	164	330	ug/kg	1.0					
Benzo(k)fluoranthene		663	164	330	ug/kg	1.0					
Chrysene		1570	164	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	J	285	164	330	ug/kg	1.0					
Fluoranthene		2890	164	330	ug/kg	1.0					
Fluorene		380	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene		784	164	330	ug/kg	1.0					
Naphthalene	U	0.00	164	330	ug/kg	1.0					
Phenanthrene		1590	164	330	ug/kg	1.0					
Pyrene		3120	164	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds DDT 10/08/96 2345 91877 3

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87451
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 14, 1996

Sample ID : SPORT0191-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	87.0	(30.0 - 115.)
Nitrobenzene-d5	M610	49.4	(23.0 - 120.)
p-Terphenyl-d14	M610	109.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	123.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	115.	(74.0 - 128.)
Toluene-d8	BTEX-8260	116.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	123.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	115.	(74.0 - 128.)
Toluene-d8	NAP-8260	116.	(53.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 17, 1996

Sample ID	: SPORT0191-3
Lab ID	: 9610069-03
Matrix	: GroundH2O
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.320	1.00	2.00	ug/l	1.0	RMB	10/10/96	1113	91989	1
Ethylbenzene	U	0.00	1.00	2.00	ug/l	1.0					
Toluene	U	0.250	1.00	2.00	ug/l	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/l	1.0					
Methyl Tert Butyl Ether	U	0.00	1.00	2.00	ug/l	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/l	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	J	80.0	50.0	100	ug/l	10.	JCB	10/15/96	1403	91775	2
Acenaphthylene	U	0.00	50.0	100	ug/l	10.					
Anthracene	U	0.00	50.0	100	ug/l	10.					
Benzo(a)anthracene	J	87.0	50.0	100	ug/l	10.					
Benzo(a)pyrene	J	54.0	50.0	100	ug/l	10.					
Benzo(b)fluoranthene	J	94.0	50.0	100	ug/l	10.					
Benzo(ghi)perylene	U	0.00	50.0	100	ug/l	10.					
Benzo(k)fluoranthene	U	0.00	50.0	100	ug/l	10.					
Chrysene	J	58.0	50.0	100	ug/l	10.					
Dibenzo(a,h)anthracene	U	0.00	50.0	100	ug/l	10.					
Fluoranthene		396	50.0	100	ug/l	10.					
Fluorene	U	15.0	50.0	100	ug/l	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	50.0	100	ug/l	10.					
Naphthalene	U	0.00	50.0	100	ug/l	10.					
Phenanthrene		338	50.0	100	ug/l	10.					
Pyrene		303	50.0	100	ug/l	10.					

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 17, 1996

Sample ID : SPORT0191-3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

GC/MS Base/Neutral Compounds							DDT	10/07/96	1550	91775	3

Surrogate Recovery	Test	Percent%	Acceptable Limits
-Fluorobiphenyl	M610	72.0	(43.0 - 108.)
Nitrobenzene-d5	M610	56.0	(35.0 - 111.)
p-Terphenyl-d14	M610	62.0	(33.0 - 125.)
Bromofluorobenzene	BTEX-8260	90.8	(80.0 - 128.)
Dibromofluoromethane	BTEX-8260	103.	(67.7 - 135.)
Toluene-d8	BTEX-8260	91.6	(76.8 - 122.)
Bromofluorobenzene	MTBE-8260	90.8	(80.0 - 128.)
Dibromofluoromethane	MTBE-8260	103.	(67.7 - 135.)
Toluene-d8	MTBE-8260	91.6	(76.8 - 122.)
Bromofluorobenzene	NAP-8260	90.8	(80.0 - 128.)
Dibromofluoromethane	NAP-8260	103.	(67.7 - 135.)
Toluene-d8	NAP-8260	91.6	(76.8 - 122.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3510

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

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U indicates that the analyte was not detected at a concentration greater than the detection limit.

*indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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STATE	GEL	EPI
FL	E87156/87294	E87472/87456
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 17, 1996

Sample ID : SPORT0191-3

M = Method	Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

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STATE	GEL	EPA
FL	E87156/87294	E87472/87658
NC	222	
SC	10120	10032
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID	: SPORT0191-4
Lab ID	: 9610069-04
Matrix	: Soil
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	10/11/96	1134	92006	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.360	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	163	330	ug/kg	1.0	BDG	10/10/96	2346	91877	2
Acenaphthylene	U	0.00	163	330	ug/kg	1.0					
Anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	163	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	163	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Chrysene	U	0.00	163	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	163	330	ug/kg	1.0					
Fluoranthene	U	0.00	163	330	ug/kg	1.0					
Fluorene	U	0.00	163	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	163	330	ug/kg	1.0					
Naphthalene	U	0.00	163	330	ug/kg	1.0					
Phenanthrene	U	0.00	163	330	ug/kg	1.0					
Pyrene	U	0.00	163	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds DDT 10/08/96 2345 91877 3

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Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87284	E87472/87458
SC	22[illegible]	
NC	10120	18303
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID : SPORT0191-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	54.9	(30.0 - 115.)
Nitrobenzene-d5	M610	44.9	(23.0 - 120.)
p-Terphenyl-d14	M610	99.6	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	112.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	82.0	(74.0 - 128.)
Toluene-d8	BTEX-8260	110.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	112.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	82.0	(74.0 - 128.)
Toluene-d8	NAP-8260	110.	(53.4 - 163.)

M = Method	Method Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10002
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 | Report Date: October 14, 1996 |

Sample ID	: SPORT0191-5
Lab ID	: 9610069-05
Matrix	: Soil
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	10/11/96	1204	92006	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.460	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	165	330	ug/kg	1.0	BDG	10/11/96	0019	91877	2
Acenaphthylene	U	0.00	165	330	ug/kg	1.0					
Anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	165	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	165	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Chrysene	U	0.00	165	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	165	330	ug/kg	1.0					
Fluoranthene	U	0.00	165	330	ug/kg	1.0					
Fluorene	U	0.00	165	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	165	330	ug/kg	1.0					
Naphthalene	U	0.00	165	330	ug/kg	1.0					
Phenanthrene	U	0.00	165	330	ug/kg	1.0					
Pyrene	U	0.00	165	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

DIDT 10/08/96 2345 91877 3

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Laboratory Certifications

STATE	CEL	EPA
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID : SPORT0191-5

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

Comments:
Volatile Organics contained matrix interferences.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	89.4	(30.0 - 115.)
Nitrobenzene-d5	M610	67.6	(23.0 - 120.)
p-Terphenyl-d14	M610	117.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	113.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	86.0	(74.0 - 128.)
Toluene-d8	BTEX-8260	112.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	113.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	86.0	(74.0 - 128.)
Toluene-d8	NAP-8260	112.	(53.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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STATE	GEL	EPA
FL	E87156/87294	E87472/87452
NC	233	
SC	10120	10982
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 | Report Date: October 14, 1996 |

Sample ID : SPORT0191-5

M = Method	Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

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Laboratory Certifications

STATE	GEL	EPA
FL	E87156/87294	E87472/87488
NC	233	
SC	10120	10032
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: October 14, 1996

Sample ID	: SPORT0191-6
Lab ID	: 9610069-06
Matrix	: Soil
Date Collected	: 10/02/96
Date Received	: 10/02/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/09/96	1614	92006	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.940	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.770	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	BDG	10/11/96	0051	91877	2
Acenaphthylene	U	0.00	166	332	ug/kg	1.0					
Anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)anthracene		362	166	332	ug/kg	1.0					
Benzo(a)pyrene		488	166	332	ug/kg	1.0					
Benzo(b)fluoranthene		458	166	332	ug/kg	1.0					
Benzo(ghi)perylene		1290	166	332	ug/kg	1.0					
Benzo(k)fluoranthene	J	212	166	332	ug/kg	1.0					
Chrysene		452	166	332	ug/kg	1.0					
Dibenzo(a,h)anthracene	J	249	166	332	ug/kg	1.0					
Fluoranthene		740	166	332	ug/kg	1.0					
Fluorene	U	0.00	166	332	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene		720	166	332	ug/kg	1.0					
Naphthalene	U	0.00	166	332	ug/kg	1.0					
Phenanthrene		438	166	332	ug/kg	1.0					
Pyrene		764	166	332	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds

DDT 10/08/96 2345 91877 3

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87284	E87472/87458
NC	275	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hines

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 | Report Date: October 14, 1996 |

Sample ID : SPORT0191-6

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	67.0	(30.0 - 115.)
Nitrobenzene-d5	M610	49.2	(23.0 - 120.)
p-Terphenyl-d14	M610	108.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	116.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	121.	(74.0 - 128.)
Toluene-d8	BTEX-8260	119.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	116.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	121.	(74.0 - 128.)
Toluene-d8	NAP-8260	119.	(53.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.

Karen Blakeney
Reviewed By

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CHAIN OF CUSTODY RECORD

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P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1 9610069

Client Name/Facility Name: SPORTENYDETCHASN

Collected by/Company: R. Atkins SPORTENYDETCHASN

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

23526

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTEX & NAPTH	PAH	Remarks
-01	SPORTO191-1	10/2/96	1015		x		x	2																+	+	UST 650-1 SOIL
-02	SPORTO191-2	10/2/96	1015		x		x	2																x	x	UST 650-2 SOIL
-03	SPORTO191-3	10/2/96	1015				x	5																1	x	UST 650-3 GW
-04	SPORTO191-4	10/2/96	1015		x		x	2																x	x	UST 650-4 SOIL
-05	SPORTO191-5	10/2/96	1015		x		x	2																x	x	UST 650-5 SOIL
-06	SPORTO191-6	10/2/96	1015		x		x	2																x	x	UST 650-6 SOIL
07	SPORTO191-7	10/2/96	1015				x	3																1		VOA TRIP BLANK UST 650 WATER
08	SPORTO191-8	10/2/96	1015				x	1																1		VOA TRIP BLANK UST 650 SOIL

1. BTEX & NAPTH & MTBE

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	10/2/96	1130	[signature]	[signature]	10/2/96	1415	[signature]
Relinquished by: [signature]	Date: 10/2/96	Time: 14:45	Received by lab by: [signature]	Date: 10-2-96	Time: HAD	Remarks: Temp 6°C	

White = sample collector Yellow = file Pink = with report

Attachment III

Certificate of Disposal (tank)

APPENDIX B

GEOLOGIC BORING LOGS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B01	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 4ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: ~80% very fine to medium-grained sand, silt, roots and organic material, soft, dry, brown.		SM		
				0	SILTY SAND: As above with trace pebbles and shell material.				
				1	CLAYEY SAND: 20-60% sand, fine to medium-grained, some silt, stiff plastic clay, brown.		SC		
	08SFB0104			2	CLAYEY SAND: ~30% stiff plastic clay, silt, very fine to medium- grained sand, damp, dark gray.				
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B02	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: ~80% very fine to medium-grained sand, silt, organic material, soft, dry, brown.		SM		
				0					
	08SFB0202			0	CLAYEY SAND: ~40% soft plastic clay, fine to very fine-grained sand, dry, brown to tan.		SC		
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B03	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
	08SFB0301			5	SILTY SAND: very fine to medium-grained, 20% silt, shell fragments dry, brown.		SM		
				0					
				0	CLAYEY SAND: ~30% soft plastic clay, fine to medium-grained sand, damp, brown & gray.		SC		
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B04	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: very fine to medium-grained, 20% silt, shell fragments dry, brown.		SM		
				2					
	08SF80403			4	SANDY CLAY: ~30% fine to medium-grainded sand, soft plastic clay, damp, orangish brown.		CL		
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B05	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					SILTY SAND: fine to medium-grained, some clay, 20% silt, shell fragments, organic material, dry, brown.		SM		
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B06	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: very fine to fine-grained, some coarse, 15% silt, some clay, shell fragments, dry, brown.		SM		
	08SFB0602			130	CLAYEY SAND: ~15-20% silt & clay, fine-grained sand, wood fragments, shell fragments, dry brown		SC		
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B07	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** 3 ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: very fine to fine-grained, trace medium to coarse-grained ~25% silt, shell fragments & mica, grayish, brown.		SM		
	08SFB0702			0	CLAYEY SAND: very fine to fine-grained, ~35-40% clay, soft, sticky damp, grayish brown.		SC		
				0	As above with shell fragments, wet.				
	∇								
					SANDY CLAY: ~45% very fine to fine-grained sand, soft, non-plastic, saturated		CL		
5									
					End of Boring				
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B08	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: very fine to fine-grained, ~20% silt, dry, brown.		SM		
	08SFB0802			2	CLAYEY SAND: fine-grained, ~25% clay, some silt, soft, dry to damp, gray to brownish orange.		SC		
				0	As above, damp, dark gray & light brown.				
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B09	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/02/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: very fine to fine-grained, ~25% silt, dry, brown.		SM		
1				0	SANDY CLAY: soft, plastic, ~25% fine-grained sand, dry to damp, grayish brown.		CL		
	08SFB0803			0	As above, ~30% fine-grained sand, damp.				
					End of Boring - Met Refusal				
5									
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B10	**WELL ID:**	**PIEZOMETER ID:** CNC08-P02
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/16/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
	08SFB1001			102			SC		
				30	CLAYEY SAND: ~10-15% clay, very fine- to medium-grained, lots of shells, damp, loose, light brownish gray.				
5					SANDY CLAY: ~30% fine-grained sand, non-plastic, wet, lots of shells, dark gray.		CL		
					CLAY: very soft, silty, organic, non-plastic, wet, lots of shells, dark gray.		OL		
					LIMESTONE GRAVEL: probably the original tank pit liner.		GW		
					CLAY: lots of very fine-grained sand, mucky, organic, shells, saturated, very dark gray.		OL		
10					SILTY SAND: ~30 to 35% silt, very fine-grained, trace fine-grained, dense, wet, light brown.		SM		
					End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B11	**WELL ID:**	**PIEZOMETER ID:** CNC08-P03
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/16/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY, CLAYEY SAND: ~20% silt, 10% clay, very fine- to fine-grained, trace medium, shells, dry, loose, brown.		SC		
				0	COAL: 1" layer of coal chunks.		COAL		
					SILTY SAND: ~30% silt, trace clay, shells, very fine- to fine- grained, dense, dry, brown.		SM		
	08SFB1104			0	BRICK: 1" layer of brick pieces at 4', 6.5', and 7' bls.		BRICK		
5					SILTY SAND: as above.		SM		
							OL		
					CLAY: very soft, mucky, organic, silty, shells, saturated, gray.		BRICK OL BRICK OL		
					SAND: fine-grained, trace very fine-, some silt, loose, saturated, gray.		SM		
					SILTY SAND: ~30-40% silt, very fine- to fine-grained, trace medium, dense, wet, light brown.		OL		
10									
							SM		
					End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B12	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/17/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				1	SILTY SAND: ~25% silt, very fine- to fine-grained, cohesive, lots of shells, dense, dry, light grayish brown.		SM		
				2			CL		
	08SFB1203			50	SILTY CLAY: ~20% silt, some fine-grained sand, medium stiff, damp to wet, gray.				
					DEBRIS: brick, cinder block, pebbles, sand, clay.		DEBRIS		
5					SILTY SAND: ~40% silt, trace pebbles, very fine- to medium-grained, very poorly sorted, wet, dense, gray.		SM		
					SAND: fine-grained, trace silt, well sorted, saturated, gray.		SP		
					CLAY: mucky, organic, non-plastic, saturated, very dark gray.		OL		
					CLAY: as above with 2" sand layers near 10' bls.				
10					SILTY SAND: ~35% silt, very fine-grained, dense, wet, light brown.		SM		
					End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B13	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/17/98	**LOGGED BY:** D. Cosans
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 3ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** 3 ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					SILTY SAND: fine-grained, ~20-30% silt, dry, dense, brown.		SM		
	∇				SANDY CLAY: silty, ~30% very fine-grained sand, slightly plastic, damp, light brown.		CL		
					SAND: very fine to coarse-grained, trace silt, very poorly sorted, saturated, reddish brown. As above, ~30% fine-grained sand, damp.		SW		
5					End of Boring - Met Refusal				
10									
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B14	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/17/98	**LOGGED BY:** P.J. Jackson
METHOD: Powerprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				1	SILTY SAND: ~25% silt, very fine- to fine-grained, some large gravel at depth, loose, dry, brown.		SM		
				0			CL		
	08SFB1403			1	CLAY: silty, fine-grained sand, slightly plastic, dry to damp, light brown.				
					CLAYEY SAND: ~30% clay, fine- to medium-grained, dense, cohesive, wet, gray.		SC		
5							OL		
					CLAY: mucky, sticky, organic, lots of shells, one 3" silty fine sand layer at 6' bls, one 1" very fine-grained clean sand layer at 7.8 bls.				
10					SILTY SAND: ~40% silt, fine-grained, dense, wet, light brown.		SM		
					End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B16	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/12/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					SILTY SAND: brown, very fine- to fine-grained, lots of shell fragments, cohesive, dense, dry.		SM		
	08SFB1601			20	SILTY CLAY: 25% silty, trace fine-grained sand, damp, light brown.		CL		
				1	SILTY CLAY: same as above, softer.				
				1					
				5	CLAY: dense, stiff, damp to wet, mottled gray to light brown.				
5							SP		
					SAND: fine- to coarse-grained, saturated, loose, black.				
							GW		
					SAND/GRAVEL: fine- to coarse-grained, debris material, gravel, wet, light gray to white.				
10					No soil samples taken at 8-12' bls.				
	08GFB16				End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B17	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/12/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 4ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				0	SILTY SAND: ~20% silt, very fine- to fine-grained, shell fragments, cohesive, dry to damp, light brown to brown.		SM		
				1					
				1	SILTY CLAY: 25% silty, trace fine-grained sand, damp, light brown to orange silt.		CL		
	08SFB1704			1	ABANDONED BORING: debris and concrete, refusal.				
5									
10									
	08GFB18								
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B18	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/12/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					ASPHALT				
				30	SAND: very fine- to fine-grained sand, loose, dry, trace silt and gravel, dark brown.		SP		
					SAND: same as above, light brown to gray.				
				8	SILTY SAND/GRAVEL: 20% silty, very fine- to coarse-grained sand, gravel, olive.		GW		
				60	SILTY SAND: ~30% silty, very fine- to medium-grained, damp, dense.		SM		
	08SFB1804			80			CL		
5					SILTY CLAY: ~30% silty, wet, trace fine-grained sand, light brown to orange.				
					CLAY: trace silt, dense, stiff, wet, light brown to gray.				
					SILTY CLAY: silty, soft, wet, dark gray.				
10					No soil samples taken at 8-12' bls.				
	08SFB18				End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B19	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/12/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					SILTY SAND: ~20% silt, very fine- to fine-grained, loose, damp, brownish tan.		SM		
				0			CL		
				0	SANDY CLAY: fine- to medium-grained sand, damp, mottled orange to tan.				
	08SFB1903			4					
				2	CLAY: trace fine- to medium-grained sand, moderately soft, damp, orange to tan mottled.				
5							OL		
					SILTY CLAY: mucky, trace sand increasing with depth, shell fragments, soft, wet, dark gray.				
10					No soil samples taken at 8-12' bls.				
	08GFB19				End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B20	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/12/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					ASPHALT				
				0	SAND: very fine- to fine-grained, trace silt, dry, loose, dark brown.		SP		
				0	SANDY CLAY: fine- to coarse-grained sand, dense, damp, light tan.		CL		
					SANDY CLAY: fine-grained sand, softer, damp, gray.				
	08SFB2003			2			ML		
				0	SANDY SILT: ~40-45% fine-grained sand, soft, wet, olive.				
5					SILTY CLAY: ~15% silty, soft, wet, olive gray.		CL		
					SILTY CLAY: ~30-40% silty, mucky with depth, soft, wet, dark gray.				
10					No soil samples taken at 8-12' bls.				
	08GFB20				End of Boring				
15									

Tetra Tech NUS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** 08	**PROJECT NO.** 7921
BORING ID: CNC08-B21	**WELL ID:**	**PIEZOMETER ID:**
CONTRACTOR: U.S. Probe	**COMPLETION DATE:** 1/13/99	**LOGGED BY:** Bryan Moeller
METHOD: Geoprobe	**DIAMETER:** 3" OD	**TOTAL DEPTH:** 12ft bls
TOC ELEVATION: ft MSL	**SCREEN INTERVAL:** ft bls	**DEPTH TO ∇** ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE	RECOVERY	CORRECTED HEADSPACE (ppm)	LITHILOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
					SAND: very fine- to fine-grained, trace silt, shell fragments, dry, loose, brownish tan.		SP		
				0	CLAYEY SAND: ~15% fine-grained sand, loose, damp, brownish tan.		SC		
				2	SAND: fine-grained, trace clay, damp, loose, brownish tan.		SP		
				1			CL		
				2	CLAY: soft, damp, gray to tan to orange mottled.				
5							OL		
					SILTY CLAY: mucky, soft, organic, saturated, shell fragments increasing with depth, gray to dark gray.				
10					No soil samples taken at 8-12' bls.				
	08GFB21				End of Boring				
15									

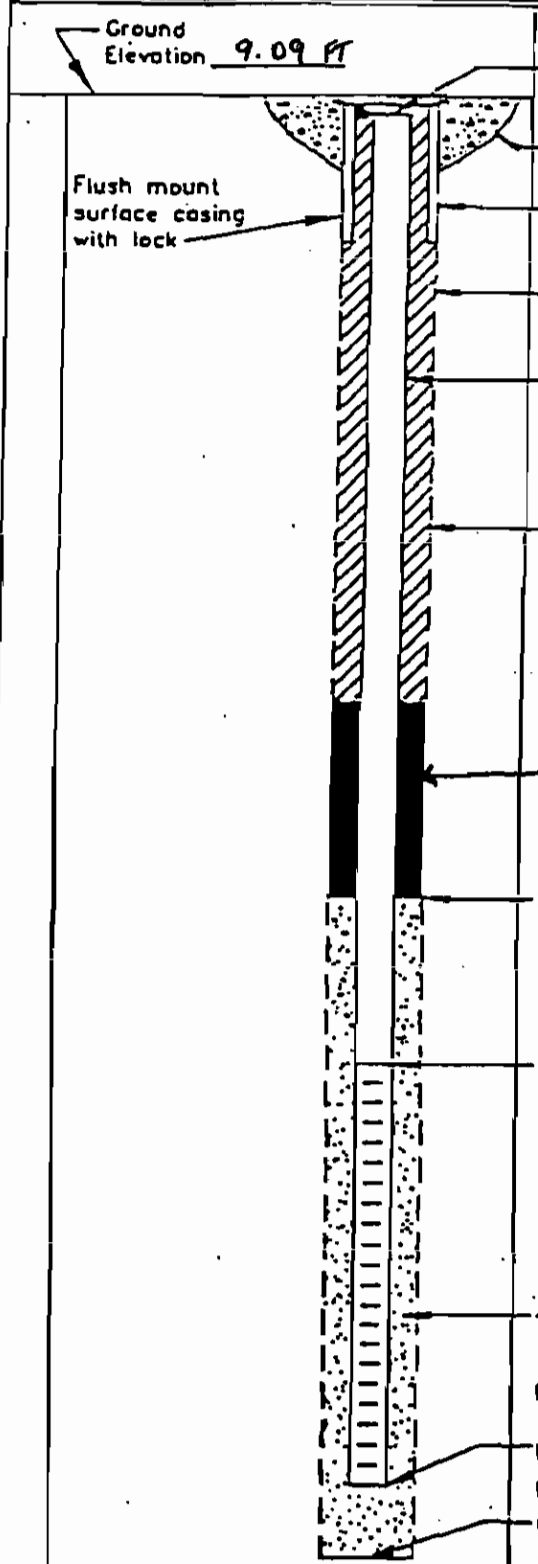
Tetra Tech NUS

MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 8.87 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE 8, BUILDING 650
BORING CNC08-M01
DATE 2/4/99

DRILLER Custom Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD over Pumping



ELEVATION TOP OF RISER: 8.87 FT

TYPE OF SURFACE SEAL: Concrete Mix

TYPE OF PROTECTIVE CASING: Steel Manhole

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-inches

TYPE OF RISER PIPE: Sch. 40 PVC

RISER PIPE I.D.: 2-inches

TYPE OF BACKFILL/SEAL: Portland Type I Cement

30/65 Standard Silica Sand Seal .5 FT/BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT/BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT/BLS

TYPE OF SCREEN: Sch. 40 PVC

SLOT SIZE x LENGTH: 0.010-inch x 10 FT

TYPE OF SAND PACK: 20/30 Standard Silica Sand

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT/BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT/BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT/BLS

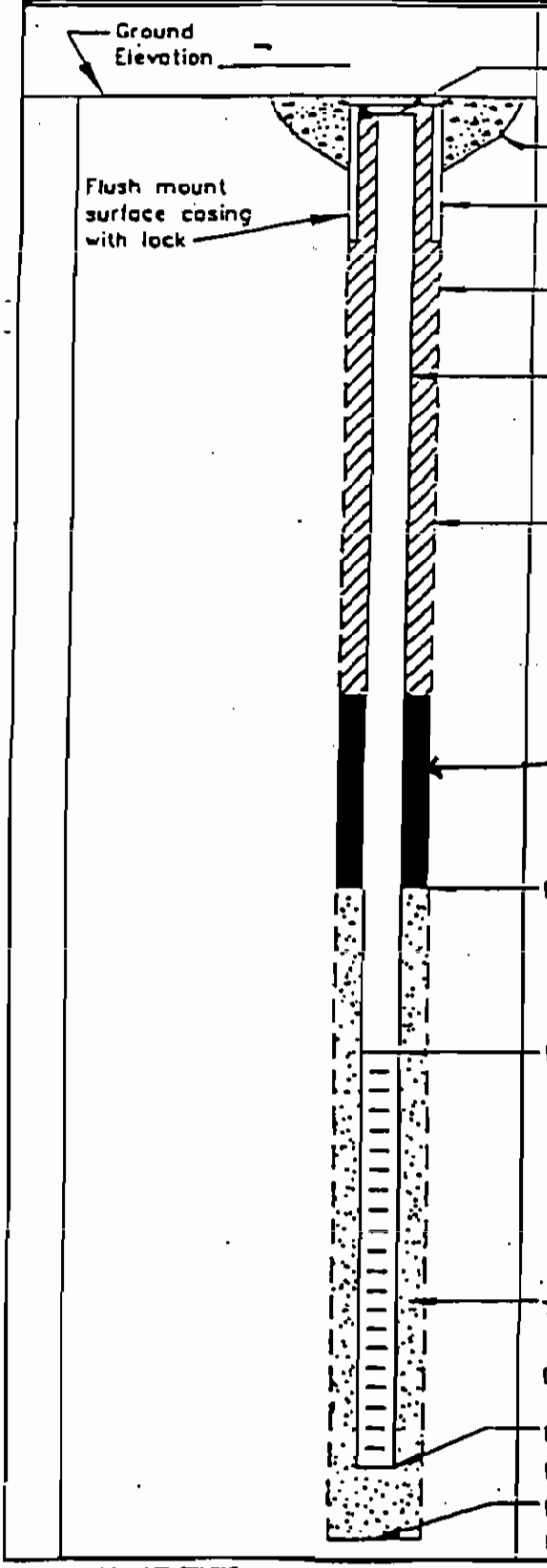
BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION TOC 8.26 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE 8, BUILDING 650
BORING CNC08-M02
DATE 2/4/99

DRILLER Custom Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD over Pumping



ELEVATION TOP OF RISER: 8.26 FT

TYPE OF SURFACE SEAL: Concrete Mix

TYPE OF PROTECTIVE CASING: Steel Manhole

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-inches

TYPE OF RISER PIPE: Sch. 40 PVC

RISER PIPE I.D.: 2-inches

TYPE OF BACKFILL/SEAL: Portland Type I Cement

30/65 Standard Silica Sand Seal 0.5 FT/BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT/BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT/BLS

TYPE OF SCREEN: Sch. 40 PVC

SLOT SIZE x LENGTH: 0.010-inch x 10 FT

TYPE OF SAND PACK: 20/30 Standard Silica Sand

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT/BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT/BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT/BLS

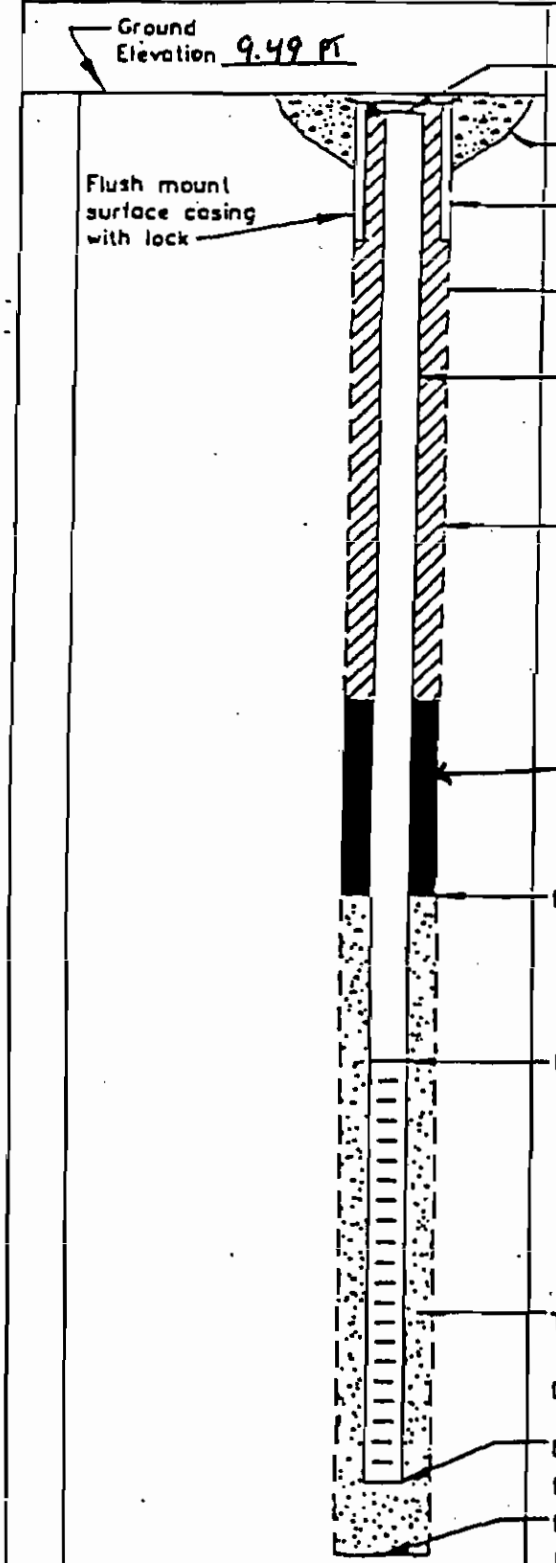
BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 9.27 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE 8, BUILDING 650
BORING CNC08-M03
DATE 2/5/99

DRILLER CUSTOM DRILLING
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD OVER PUMPING



ELEVATION TOP OF RISER: 9.27 FT

TYPE OF SURFACE SEAL: CONCRETE MIX

TYPE OF PROTECTIVE CASING: STEEL MANHOLE

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-INCHES

TYPE OF RISER PIPE: SCH. 40 PVC

RISER PIPE I.D.: 2-INCHES

TYPE OF BACKFILL/SEAL: PORTLAND TYPE I CEMENT

30/65 STANDARD SILICA SAND SEAL .5 FT/BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT/BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT/BLS

TYPE OF SCREEN: SCH. 40 PVC

SLOT SIZE x LENGTH: 0.010-INCH x 10 FT

TYPE OF SAND PACK: 20/30 STANDARD SILICA SAND

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT/BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT/BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT/BLS

BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

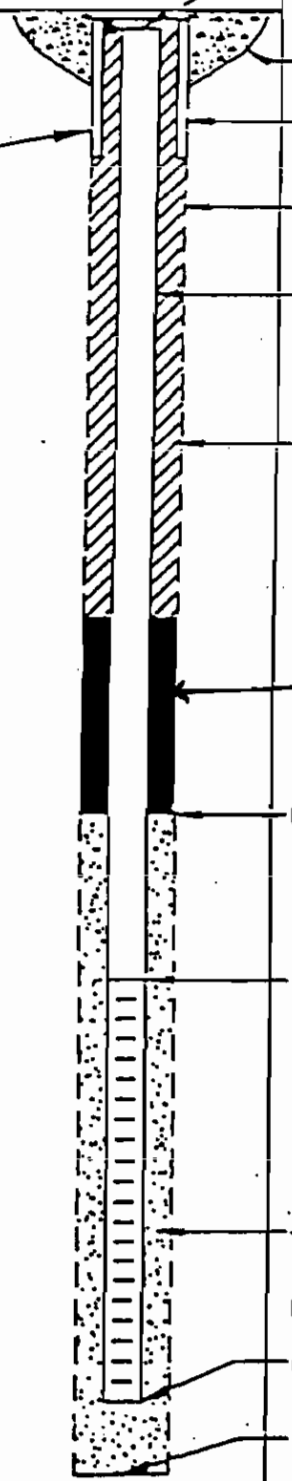
MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 9.29 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE B, BUILDING 650
BORING CNC08-M04
DATE 2-5-99

DRILLER Custom Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD over Pumping

Ground Elevation 9.57 FT



ELEVATION TOP OF RISER: 9.29 FT

TYPE OF SURFACE SEAL: Concrete Mix

TYPE OF PROTECTIVE CASING: Steel Manhole

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-inches

TYPE OF RISER PIPE: Sch. 40 PVC

RISER PIPE I.D.: 2-inches

TYPE OF BACKFILL/SEAL: Portland Type I Cement

30/65 Standard Silica Sand Seal .5 FT BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT, BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT, BLS

TYPE OF SCREEN: Sch. 40 PVC

SLOT SIZE x LENGTH: 0.010-inch x 10 FT

TYPE OF SAND PACK: 20/30 Standard Silica Sand

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT, BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT, BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT, BLS

BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

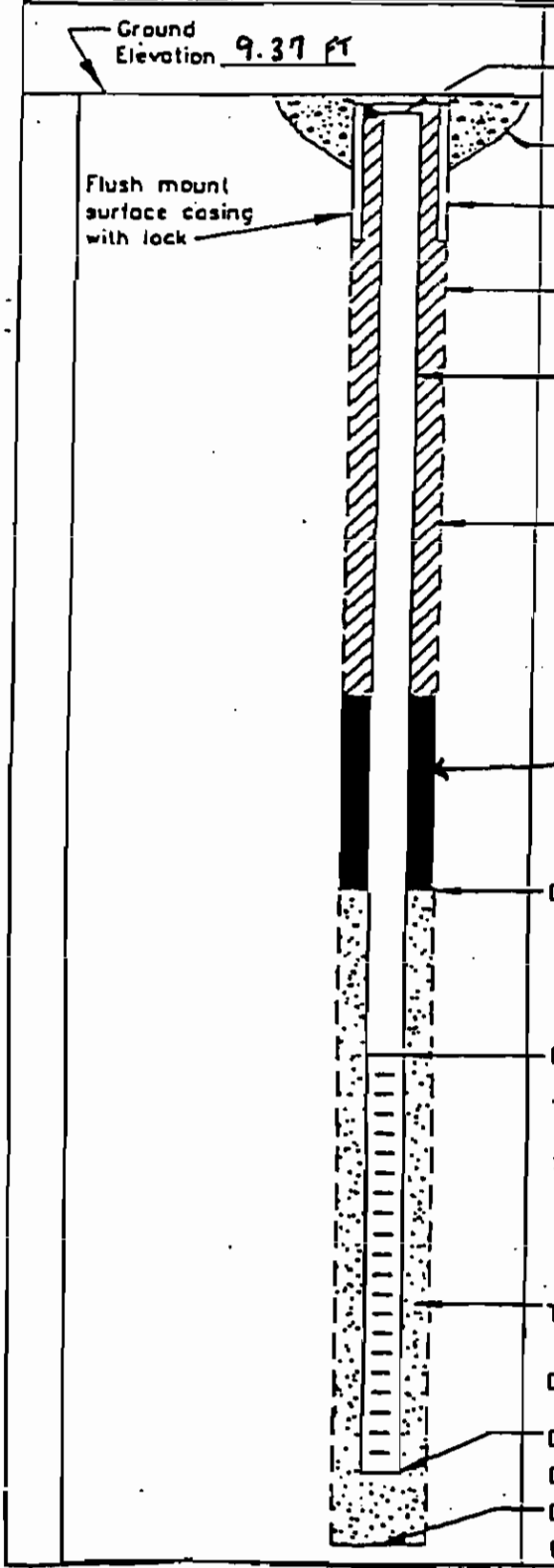
NOTE: L:\70\OCO\OBJECT.DWG

MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 9.05 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE 8, BUILDING 650
BORING CNC08-M05
DATE 2/4/99

DRILLER CUSTOM DRILLING
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD over Pumping



ELEVATION TOP OF RISER: 9.05 FT

TYPE OF SURFACE SEAL: CONCRETE MIX

TYPE OF PROTECTIVE CASING: STEEL MANHOLE

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-INCHES

TYPE OF RISER PIPE: SCH. 40 PVC

RISER PIPE I.D.: 2-INCHES

TYPE OF BACKFILL/SEAL: PORTLAND TYPE I CEMENT

30/65 STANDARD SILICA SAND SEAL .5 FT BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT, BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT, BLS

TYPE OF SCREEN: SCH. 40 PVC

SLOT SIZE x LENGTH: 0.010-INCH x 10 FT

TYPE OF SAND PACK: 20/30 STANDARD SILICA SAND

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT, BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT, BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT, BLS

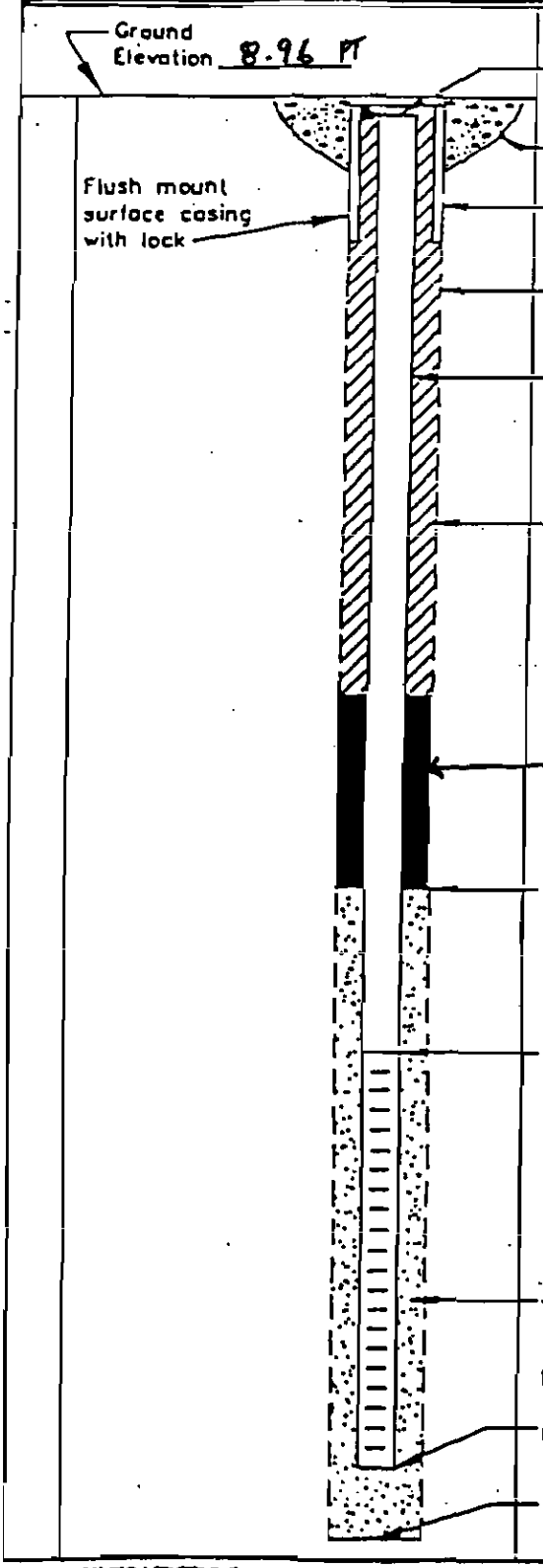
BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 8.62 FT
FIELD GEOLOGIST Pam Jackson

LOCATION SITE 8, BUILDING 650
BORING CNC08-M06
DATE 2/4/99

DRILLER CUSTOM DRILLING
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD over Pumping



ELEVATION TOP OF RISER: 8.62 FT

TYPE OF SURFACE SEAL: CONCRETE MIX

TYPE OF PROTECTIVE CASING: STEEL MANHOLE

I.D. OF PROTECTIVE CASING: NA

DIAMETER OF HOLE: 8-INCHES

TYPE OF RISER PIPE: SCH. 40 PVC

RISER PIPE I.D.: 2-INCHES

TYPE OF BACKFILL/SEAL: PORTLAND TYPE I CEMENT

30/65 STANDARD SILICA SAND SEAL .5 FT BLS

DEPTH/ELEVATION TOP OF SAND: 1 FT, BLS

DEPTH/ELEVATION TOP OF SCREEN: 2 FT, BLS

TYPE OF SCREEN: SCH. 40 PVC

SLOT SIZE x LENGTH: 0.010-INCH x 10 FT

TYPE OF SAND PACK: 20/30 STANDARD SILICA SAND

DIAMETER OF HOLE IN BEDROCK: NA

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 FT, BLS

DEPTH/ELEVATION BOTTOM OF SAND: 12.5 FT, BLS

DEPTH/ELEVATION BOTTOM OF HOLE: 12.5 FT, BLS

BACKFILL MATERIAL BELOW SAND: 12.5 FT BLS

BORING NO.: _____

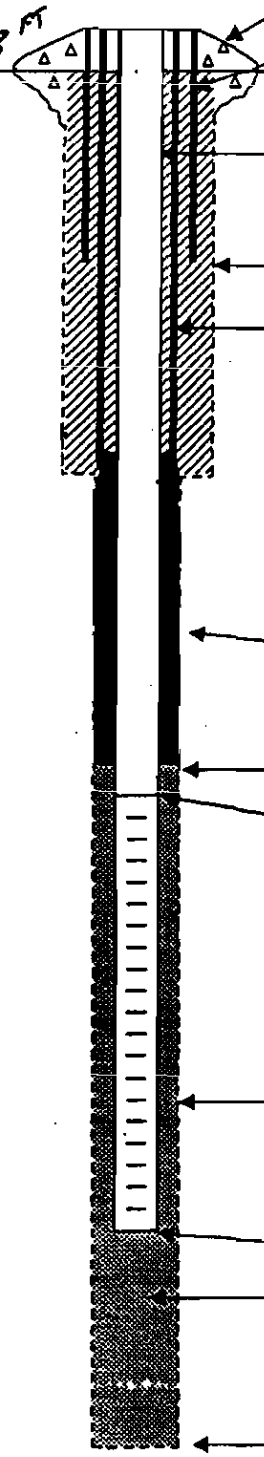
MONITORING WELL SHEET

PROJECT CNC ZONE H
PROJECT NO. CTO 0068/7912
ELEVATION T.O.C. 8.85 FT
FIELD GEOLOGIST PAM JACKSON

LOCATION SITE B BUILDING 680
BORING CNCOB-M07
DATE 2/5/99

DRILLER CUSTOM DRILLING
DRILLING METHOD HOLLOW STEM AUGER
DEVELOPMENT METHOD 5 7/8 INCH ROTARY BIT OVER PUMPING

GROUND ELEVATION 9.13 FT



TYPE OF SURFACE SEAL: CONCRETE MIX

I.D. OF SURFACE CASING: 8-INCH WELL
TYPE OF SURFACE CASING: VAULT WITH STEEL MANHOLE COVER

RISER PIPE I.D. 2 INCH
TYPE OF RISER PIPE: SCH 40 PVC

BOREHOLE DIAMETER: 10 INCHES

PERM. CASING I.D. SCH 40 PVC 6 INCH DIA
TYPE OF CASING & BACKFILL: PORTLAND TYPE I CEMENT

ELEVATION / DEPTH BOTTOM OF CASING: 20 FT / BLS

ELEVATION / DEPTH TOP OF SEAL: 19 FT / BLS
TYPE OF SEAL: 1-FOOT BENTONITE PELLET SEAL SET 19 to 20' BLS

DEPTH TOP OF SAND PACK: 20 FT/BLS

ELEVATION/DEPTH TOP OF SCREEN: 22 FT / BLS
TYPE OF SCREEN: SCH 40 PVC 0.010 SLOT

TYPE OF SAND PACK: 20/30 STANDARD SILICA SAND

BOREHOLE DIA. BELOW CASING: 8 INCHES

ELEVATION / DEPTH BOTTOM OF SCREEN: 27 FT / BLS

ELEVATION / DEPTH BOTTOM OF SAND PACK: 27.5 FT / BLS
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 STANDARD SILICA SAND

ELEVATION / DEPTH OF HOLE: 27.5 FT / BLS

APPENDIX C

FIELD SAMPLING DATA SHEETS

Site 8 3-5-99

WEATHER: sunny, 50 to 60's

PERSONNEL: Pamela Jackson
Gerry Goode

EQUIPMENTS: peristaltic pumps
teflon tubing
silicon tubing

PURPOSE: ① Collect water levels
② Calculate purge volumes
③ Purge all 7 site wells
④ Sample all 7 site wells for ~~BTEX~~ VOC's & PAH's
⑤ Sample CNC08-M01, -M03 and -M06 for natural attenuation analyses

0750 Arrive onsite. Preparing to collect water levels.

Time	Location	DTW	TD
0807	CNC08-M01	3.90	11.9
0805	CNC08-M02	3.44	11.8
0803	CNC08-M03	4.66	12.1
0801	CNC08-M04	4.77	12.0
0800	CNC08-M05	4.07	12.0
0755	CNC08-M06	3.55	12.0
0758	CNC08-M07	5.36	27.5

Site 8 3-5-99

PURGE VOLUME TABLE

Well ID	1 Vol	3 Vol	5 Vol
CWC08-MO1	1.3	3.9	6.5
CWC08-MO2	1.4	4.2	7.0
CWC08-MO3	1.2	3.6	6.0
CWC08-MO4	1.2	3.6	6.0
CWC08-MO5	1.3	3.9	6.5
CWC08-MO6	1.4	4.2	7.0
~~CWC08-MO7~~	~~22.1~~	~~66.3~~	
CWC08-MO7	3.6	10.8	18.0

PURGE DATA

LOCATION	START TIME	STOP	Total Vo
CWC08-MO1	0844	1003	6.5
CWC08-MO2	0847	0935	7.0
CWC08-MO3	1000	1005	6.0
CWC08-MO4	0835/0940	~~0900~~/1007	6.0
CWC08-MO5	0845	0957	8.0
CWC08-MO6	0845	1008	3.0
CWC08-MO7	0842	0939	3.6

0810 Setting up pumps to start purging wells.

0850 Got all wells (except MO3) purging at 0.5 L/min. Will start MO3 as soon as a pump is free.

Site 8 3-5-99

PURGE PARAMETERS

TIME	LOCATION	Vol	Temp	pH	Cond	Turb
0850	CWC08-M04	1	17.1°	6.86	5.05	24.6
0855	-M05	1	15.5°	7.41	1.27	12.66
0858	-M07	2	19.0°	7.35	23.4	3.76
0900	-M01	1	16.2°	7.40	2.58	29.8
0903	-M03	3	16.4°	6.90	9.92	14.9
0906	-M06	2	16.4°	7.89	2.33	34.6
0910	-M05	3.5	15.7°	7.62	1.29	3.30
0914	-M07	3	17.7	7.43	28.6	9.06
0920	-M02	5	16.6	6.97	10.3	13.75
0925	-M01	2	15.5	7.38	2.32	11.62
0930	-M06	2.5	16.3	7.95	2.15	20.3
0933	-M05	5	15.8	7.63	1.26	4.80
0935	-M02	7	~~16.0~~ 17.0	6.83	9.80	7.57
0939	-M07	Measured Dry				
0945	-M01	4	16.0	7.34	2.36	13.79
0950	-M04	3	17.6	7.14	4.78	8.54
0955	-M06	3	16.3	7.65	2.32	>200
0957	-M05	8	15.3	7.60	1.25	3.92
1001	-M01	~~12~~ 6.5	15.9	7.28	2.10	6.68
1005	-M03	0.5	18.4	6.84	8.35	9.44
1007	-M04	6.0	18.3	7.06	4.82	5.59
1008	-M06	measured dry				
1015	-M03	2	17.8	6.89	6.04	2.75
1035	-M03	4	18.2	6.88	8.23	3.28
1055	-M03	6	18.7	6.87	9.09	2.82

(103) Site 8 3-5-99

1100 Breaking for lunch

1200 Returned from lunch. Starting natural Attenuation Sampling. See data forms for details

1315 Finish HACH kits. P. Jackson will run colorimeter while G. Goode collects PAH, methane, and anion samples.

1430 Finished w/ natural attenuation and PAH's. Will clean up, then collect VOC's directly from teflon tubing.

TIME	LOCATION	SAMPLE ID	DUP?
1500	CNC08-M01	08GLM0101	NO
1510	CNC08-M02	08GLM0201	NO
1520	CNC08-M03	08GLM0301	NO
1530	CNC08-M04	08GLM0401	(D) yes
1540	CNC08-M05	08GLM0501	
1550	CNC08-M06	08GLM0601	
1600	CNC08-M07	08GLM0701	

1555 ~~Measured~~ Measured water in M07 at 24.42 ft btoc.

1605 Completed sample collection at Site 8.

1610 Left Site 8 for day.

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Zone H

Project No.: 7912

Sampled By: PJ/GG

Sample ID No.: 08GSM0101

Sample Location: CNC08-M01

Duplicate: ☐

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Date: 3-5-99								
Time:	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 1215

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
	x 0.01	= 0
	x 0.02	=

Notes: Initial Reaction indicated no O_2

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: 1247

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=
☑	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 47	x 10.0	= 470

Relationship	Hydroxide	Carbonate	Bicarbonate
Concentration	0 mg/L	0 mg/L	470 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: 1305

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☑	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
	x 0.1	=
	x 0.2	=
	x 1.0	=
90	x 2.0	= 180

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Zone H
Project No.: 7912
Sampled By: PJ

Sample ID No.: 08GSM0101
Sample Location: CNC08-M01
Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: ✓HACH DR-890 Colorimeter HS-C Color Chart
Analysis Time: 1330
Program No.:
Concentration: 0.06 mg/L
Filtered: ☑
Notes:

Ferrous Iron:

Equipment: ✓HACH DR-890 Colorimeter IR-18C Color Wheel
Analysis Time: 1405
Program No.:
Concentration: ~~0.0005~~ 0.09 mg/L
Filtered: ☐
Notes:

Nitrite:

Equipment: ✓HACH DR-890 Colorimeter
Analysis Time: 1350
Program No.:
Concentration: 0.009 mg/L
Reagent Blank Correction: ☐
Standard Solution: ☐ Results:
Notes: Filtered

Nitrate:

Equipment: HACH DR-890 Colorimeter
Analysis Time:
Program No.:
Concentration: mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results:
Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:____ 0.2ml:____ 0.3ml:____
Notes:

1415 Manganese 0.2 mg/L

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Zone H

Project No.: 7912

Sampled By: PJ/GG

Sample ID No.: 08GSM0301

Sample Location: CNC08-M03

Duplicate: ☐

SAMPLING DATA:

Date: 3-5-99	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Time:	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 1240

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
	x 0.01	= 0
	x 0.02	=

Notes: initial reaction indicated no O_2

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: 1250

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=
☑	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 162	x 10.0	= 1620

Relationship	Hydroxide	Carbonate	Bicarbonate
Concentration	0 mg/L	0 mg/L	1620 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: 1310

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☑	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
	x 0.1	=
	x 0.2	=
	x 1.0	=
306	x 2.0	= 612

Notes: Sample was yellow - made color change difficult to detect

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Zone H
Project No.: 7912
Sampled By: PS

Sample ID No.: 08GSM0501
Sample Location: CNC08-M03
Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: ✓ HACH DR-890 Colorimeter HS-C Color Chart
Analysis Time: 1331
Program No.:
Concentration: 0.01 mg/L
Filtered: ☑
Notes:

Ferrous Iron:

Equipment: ✓ HACH DR-890 Colorimeter IR-18C Color Wheel
Analysis Time: 1406
Program No.:
Concentration: 2.68 mg/L
Filtered: ☐
Notes:

Nitrite:

Equipment: ✓ HACH DR-890 Colorimeter
Analysis Time: 1352
Program No.:
Concentration: 0.066 mg/L
Reagent Blank Correction: ☐
Standard Solution: ☐ Results:
Notes: Filtered

Nitrate:

Equipment: HACH DR-890 Colorimeter
Analysis Time:
Program No.:
Concentration: mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results:
Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:____ 0.2ml:____ 0.3ml:____
Notes:

1420 Manganese 22.0 mg/L*
NOTE: Sample turned milky white (not violet) and opaque after addition of reagents. *Detection Limit is 20.

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Zone H
Project No.: 7912
Sampled By: PS/GG

Sample ID No.: 08GSM0601
Sample Location: CNC08-M06
Duplicate: ☐

SAMPLING DATA:

Date: 3-5-99	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Time:	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	
Method: ✓ Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 1230

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☑	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
390	x 0.01	= 3.9
	x 0.02	=

Notes: Well was purged day prior to sampling.

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: 1300

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=
☑	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 43	x 10.0	= 430

Relationship	Hydroxide	Carbonate	Bicarbonate
Concentration	0 mg/L	0 mg/L	430 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 1st.:_____ 2nd.:_____ 3rd.:_____

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: ~~1305~~ PS 1315

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☑	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
	x 0.1	=
	x 0.2	=
	x 1.0	=
~~90~~ 75	x 2.0	= ~~180~~ 150

Notes:

Standard Additions: ☐ Titrant Molarity:_____ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC08 Zone H
Project No.: 7912
Sampled By: PS

Sample ID No.: 08GSM0601
Sample Location: CNC08-M06
Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: ✓HACH DR-890 Colorimeter HS-C Color Chart
Analysis Time: 1332
Program No.:
Concentration: 0.01 mg/L
Filtered: ☑
Notes:

Ferrous Iron:

Equipment: ✓HACH DR-890 Colorimeter IR-18C Color Wheel
Analysis Time: 1408
Program No.:
Concentration: 0.16 mg/L
Filtered: ☐
Notes:

Nitrite:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1355
Program No.:
Concentration: 0.021 mg/L
Reagent Blank Correction: ☐
Standard Solution: ☐ Results:
Notes: Filtered

Nitrate:

Equipment: HACH DR-890 Colorimeter
Analysis Time:
Program No.:
Concentration: mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results:
Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:____ 0.2ml:____ 0.3ml:____
Notes:

1425 Manganese 0.0 mg/L

J9B080116

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page_____ of _____

Client Name/Facility Name: General Engineering Labs

Collected by/Company:

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Methane		Remarks
04GLM0401	3/4/99	1600	✓				3																3		4°C - 3/8/99 - JG
04GLM0701	3/4/99	1545	✓				3																3		
04GLM1001	3/4/99	1615	✓				3																3		
08GLM0101	3/5/99		✓				3																3		
08GLM0301	3/5/99		✓				3																3		
08GLM0601	3/5/99		✓				3																3		✓
																									Analyze for
																									Methane by
																									Method RSK 175

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
							James Cooper

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
						3/8/99 - 0937

White = sample collector Yellow = file Pink = with report

GENERAL ENGINEER LABORATORY

Lab Name:QUANTERRA

SDG Number: GEL002

Matrix: (soil/water) WATER
Method: RSK SOP-175
Dissolved Gasses in Water

Lab Sample ID:I9C080116 006

Sample WT/Vol: 43 / mL
Work Order: CREEE101
Dilution factor: 1
Moisture %:NA

Date Received: 03/08/99
Date Extracted:03/09/99
Date Analyzed: 03/09/99

QC Batch: 9070242

Client Sample Id: 08GLM0601

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-82-8	Methane	310	B E

GENERAL ENGINEER LABORATORY

Lab Name: QUANTERRA

SDG Number: GEL002

Matrix: (soil/water) WATER
Method: RSK SOP-175
Dissolved Gasses in Water

Lab Sample ID: I9C080116 005

Sample WT/Vol: 43 / mL
Work Order: CREEA101
Dilution factor: 1
Moisture %: NA

Date Received: 03/08/99
Date Extracted: 03/09/99
Date Analyzed: 03/09/99

QC Batch: 9070242

Client Sample Id: 08GLM0301

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-82-8	Methane	380	B E

GENERAL ENGINEER LABORATORY

Lab Name:QUANTERRA

SDG Number: GEL002

Matrix: (soil/water) WATER
Method: RSK SOP-175
Dissolved Gasses in Water

Lab Sample ID:I9C080116 004

Sample WT/Vol: 43 / mL
Work Order: CREE5101
Dilution factor: 1
Moisture %:NA

Date Received: 03/08/99
Date Extracted:03/09/99
Date Analyzed: 03/09/99

QC Batch: 9070242

Client Sample Id: 08GLM0101

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-82-8	Methane	350	B E

CHAIN OF CUSTODY RECORD

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: TENUS/Zone H, CNC

Collected by/Company: TENUS/PJACKSON

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	PAH	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Anions	Methane	Remarks
-09 08GLM0101	3-5-99	1500	✓			✓				2			3										1	3	
-10 08GLM0201		1510	✓			✓				2			~~3~~ 2												Broke 1 bottle
-11 08GLM0301		1520	✓			✓				2			3										1	3	
-12 08GLM0401		1530	✓			✓				2			3												
-10 08GLM0401D		1530	✓			✓				2			3												Duplicate
-13 08GLM0501		1540	✓			✓				2			3												
-14 08GLM0601		1550	✓			✓				2			3										1	3	
-15 08GLM0701	↓	1600	✓			✓				2			3												

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	3-5-99	1745					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[signature]	3-5-99	17:15	SEE NOTES PREVIOUS PAGE

White = sample collector Yellow = file Pink = with report

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9903259%

Client Name/Facility Name: TENUS / Zone H, CNC

Collected by/Company: TENUS / P. Jackson

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	PAH	Chloride, Fluoride, Sulfide	Nitrate/Nitrite	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	ANIONS	METHANOL	Remarks
01	ZHTL01301	—	—	✓			✓	3						3												trip blank
02	04GLM0201	3-4-99	1535	✓			✓	5			2			3												
03	04GLM0301		1540	✓			✓	5			2			3												
04	04GLM0401		1600	✓			✓	9			2			3										1	3	
05	04GLM0401D		1600	✓			✓	5			2			3												DUPLICATE
06	04GLM0401M		1600	✓			✓	5			2			3												MATRIX Spike
07	04GLM0401S		1600	✓			✓	5			2			3												MATRIX Spike DUP
08	04GLM0701		1545	✓			✓	9			2			3										1	3	
09	04GLM1001	↓	1615	✓			✓	9			2			3										1	3	
10	ZHRL0004 01	3-4-99	1715	✓			✓	5			2			3												RINSATE

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	3-5-99	1745					
Relinquished by:	Date:	Time:	Received by lab by: [signature]	Date: 3-5-99	Time: 1745	Remarks: VOC Preserved	

VOC = 8260 w/MTBE And Naphthalene
PAH = 8270
Anions = NITRATE & Sulfat

White = sample collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHRL00401

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	82.5	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	93.8	(70.6 - 152.)
Toluene-d8	MTBE-8260B	85.8	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	82.5	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	93.8	(70.6 - 152.)
Toluene-d8	NAP-8260B	85.8	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	82.5	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	93.8	(70.6 - 152.)
`oluene-d8	PP VOA-TETR	85.8	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178
Printed on recycled paper.

9903259-08

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

~~Project Description: CNC- Zone H UST (CTO68)~~

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHRL00401

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/16/99	2327	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.20	10.0	ug/l	1.0	TSD	03/10/99	0128	144101	3
ACENAPHTHYLENE	U	ND	1.30	10.0	ug/l	1.0					
ANTHRACENE	U	ND	2.30	10.0	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.80	10.0	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.00	10.0	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.70	10.0	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.50	10.0	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.60	10.0	ug/l	1.0					
CHRYSENE	U	ND	2.20	10.0	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.20	10.0	ug/l	1.0					
FLUORANTHENE	U	ND	3.10	10.0	ug/l	1.0					
FLUORENE	U	ND	2.10	10.0	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.40	10.0	ug/l	1.0					
PHENANTHRENE	U	ND	1.80	10.0	ug/l	1.0					
PYRENE	U	ND	2.50	10.0	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	63.9	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	61.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	70.1	(36.6 - 110.)

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHRL00401
Lab ID : 9903259-08
Matrix : Water
Date Collected : 03/04/99
Date Received : 03/05/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/16/99	2327	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/16/99	2327	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/16/99	2327	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client:	Tetra Tech NUS, Inc. 794 South Military Trail Deerfield Beach, Florida 33442
Contact:	Mr. Arnold Lamb
Project Description:	CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHTL01301

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHTL01301

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/16/99	1027	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	83.8	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	90.3	(66.0 - 117.)
Toluene-d8	MTBE-8260B	86.2	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	83.8	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	90.3	(66.0 - 117.)
Toluene-d8	NAP-8260B	86.2	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	83.8	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	90.3	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	86.2	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : ZHTL01301
Lab ID : 9903259-01
Matrix : Water
Date Collected : 03/05/99
Date Received : 03/05/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/16/99	1027	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/16/99	1027	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/16/99	1027	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0701

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	84.8	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	85.2	(70.6 - 152.)
Toluene-d8	MTBE-8260B	85.6	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	84.8	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	85.2	(70.6 - 152.)
Toluene-d8	NAP-8260B	85.6	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	84.8	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	85.2	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	85.6	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
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U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0701

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	1253	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.27	10.3	ug/l	1.0	TSD	03/10/99	1533	144101	3
ACENAPHTHYLENE	U	ND	1.34	10.3	ug/l	1.0					
ANTHRACENE	U	ND	2.37	10.3	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.88	10.3	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.06	10.3	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.84	10.3	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.58	10.3	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.68	10.3	ug/l	1.0					
CHRYSENE	U	ND	2.27	10.3	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.27	10.3	ug/l	1.0					
FLUORANTHENE	U	ND	3.19	10.3	ug/l	1.0					
FLUORENE	U	ND	2.16	10.3	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.50	10.3	ug/l	1.0					
PHENANTHRENE	U	ND	1.85	10.3	ug/l	1.0					
PYRENE	U	ND	2.58	10.3	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	41.9	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	40.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	39.0	(36.6 - 110.)

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STATE	GEL	EPI
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0701
Lab ID	: 9903259-15
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	1253	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	1253	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1253	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	J	0.852	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0601

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

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STATE	GEL	EPI
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0601

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	64.9	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	59.3	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	56.1	(36.6 - 110.)
Bromofluorobenzene	MTBE-8260B	85.9	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	84.8	(70.6 - 152.)
Toluene-d8	MTBE-8260B	85.3	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	85.9	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	84.8	(70.6 - 152.)
Toluene-d8	NAP-8260B	85.3	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	85.9	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	84.8	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	85.3	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 300.0
M 5	EPA 3510

Notes:
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U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0601

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	1217	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	J	6.18	2.22	10.1	ug/l	1.0	TSD	03/10/99	1502	144101	3
ACENAPHTHYLENE	U	ND	1.31	10.1	ug/l	1.0					
ANTHRACENE	U	ND	2.32	10.1	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.83	10.1	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.02	10.1	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.75	10.1	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.53	10.1	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.63	10.1	ug/l	1.0					
CHRYSENE	U	ND	2.22	10.1	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.22	10.1	ug/l	1.0					
FLUORANTHENE	U	ND	3.13	10.1	ug/l	1.0					
FLUORENE	J	2.28	2.12	10.1	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.43	10.1	ug/l	1.0					
PHENANTHRENE	J	4.35	1.82	10.1	ug/l	1.0					
PYRENE	U	ND	2.53	10.1	ug/l	1.0					
General Chemistry											
NITROGEN, NITRATE	U	ND	0.0127	0.0500	mg/l	1.0	RWS	03/06/99	0433	143999	4
SULFATE (AS SO4)		212	0.380	2.00	mg/l	10.	RWS	03/08/99	1755	143999	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	AEJ	03/08/99	1600	144101	5

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0601
Lab ID	: 9903259-14
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	1217	144578	1
NAPHTHALENE		5.72	0.600	5.00	ug/l	1.0	JWF	03/18/99	1217	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1217	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0501

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	87.4	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	87.1	(70.6 - 152.)
Toluene-d8	MTBE-8260B	89.1	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	87.4	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	87.1	(70.6 - 152.)
Toluene-d8	NAP-8260B	89.1	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	87.4	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	87.1	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	89.1	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0501

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	1143	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	TSD	03/10/99	1431	144101	3
ACENAPHTHYLENE	U	ND	1.33	10.2	ug/l	1.0					
ANTHRACENE	U	ND	2.35	10.2	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.86	10.2	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.04	10.2	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.79	10.2	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.55	10.2	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.65	10.2	ug/l	1.0					
CHRYSENE	U	ND	2.24	10.2	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.24	10.2	ug/l	1.0					
FLUORANTHENE	U	ND	3.16	10.2	ug/l	1.0					
FLUORENE	U	ND	2.14	10.2	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.47	10.2	ug/l	1.0					
PHENANTHRENE	U	ND	1.84	10.2	ug/l	1.0					
PYRENE	U	ND	2.55	10.2	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	49.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	48.0	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	44.1	(36.6 - 110.)

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0501
Lab ID	: 9903259-13
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	1143	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	1143	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1143	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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STATE	GEL	EPI
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0401D

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	73.4	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	91.4	(70.6 - 152.)
Toluene-d8	MTBE-8260B	80.5	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	73.4	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	91.4	(70.6 - 152.)
Toluene-d8	NAP-8260B	80.5	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	73.4	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	91.4	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	80.5	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0401D

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)		ND	0.600	1.00	ug/l	1.0	JWF	03/17/99	0508	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.29	10.4	ug/l	1.0	TSD	03/10/99	1604	144101	3
ACENAPHTHYLENE	U	ND	1.35	10.4	ug/l	1.0					
ANTHRACENE	U	ND	2.39	10.4	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.91	10.4	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.08	10.4	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.89	10.4	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.60	10.4	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.70	10.4	ug/l	1.0					
CHRYSENE	U	ND	2.29	10.4	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.29	10.4	ug/l	1.0					
FLUORANTHENE	U	ND	3.22	10.4	ug/l	1.0					
FLUORENE	U	ND	2.18	10.4	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.54	10.4	ug/l	1.0					
PHENANTHRENE	U	ND	1.87	10.4	ug/l	1.0					
PYRENE	U	ND	2.60	10.4	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	58.9	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	58.7	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	53.2	(36.6 - 110.)

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0401D
Lab ID	: 9903259-16
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/17/99	0508	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/17/99	0508	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/17/99	0508	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0401

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	80.8	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	79.9	(70.6 - 152.)
Toluene-d8	MTBE-8260B	82.4	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	80.8	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	79.9	(70.6 - 152.)
Toluene-d8	NAP-8260B	82.4	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	80.8	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	79.9	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	82.4	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0401

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	1108	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.22	10.1	ug/l	1.0	TSD	03/10/99	0334	144101	3
ACENAPHTHYLENE	U	ND	1.31	10.1	ug/l	1.0					
ANTHRACENE	U	ND	2.32	10.1	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.83	10.1	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.02	10.1	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.75	10.1	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.53	10.1	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.63	10.1	ug/l	1.0					
CHRYSENE	U	ND	2.22	10.1	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.22	10.1	ug/l	1.0					
FLUORANTHENE	U	ND	3.13	10.1	ug/l	1.0					
FLUORENE	U	ND	2.12	10.1	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.43	10.1	ug/l	1.0					
PHENANTHRENE	U	ND	1.82	10.1	ug/l	1.0					
PYRENE	U	ND	2.53	10.1	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	57.8	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	54.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	50.9	(36.6 - 110.)

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0401
Lab ID : 9903259-12
Matrix : Water
Date Collected : 03/05/99
Date Received : 03/05/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	1108	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	1108	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1108	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0301

M = Method	Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0301

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	55.9	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	55.9	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	53.2	(36.6 - 110.)
Bromofluorobenzene	MTBE-8260B	82.9	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	82.2	(70.6 - 152.)
Toluene-d8	MTBE-8260B	82.8	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	82.9	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	82.2	(70.6 - 152.)
Toluene-d8	NAP-8260B	82.8	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	82.9	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	82.2	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	82.8	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 300.0
M 5	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0301

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	1033	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	J	4.22	2.22	10.1	ug/l	1.0	TSD	03/10/99	0303	144101	3
ACENAPHTHYLENE	U	ND	1.31	10.1	ug/l	1.0					
ANTHRACENE	U	ND	2.32	10.1	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.83	10.1	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.02	10.1	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.75	10.1	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.53	10.1	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.63	10.1	ug/l	1.0					
CHRYSENE	U	ND	2.22	10.1	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.22	10.1	ug/l	1.0					
FLUORANTHENE	U	ND	3.13	10.1	ug/l	1.0					
FLUORENE	U	ND	2.12	10.1	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.43	10.1	ug/l	1.0					
PHENANTHRENE	U	ND	1.82	10.1	ug/l	1.0					
PYRENE	U	ND	2.53	10.1	ug/l	1.0					
General Chemistry											
NITROGEN, NITRATE	U	ND	0.0127	0.0500	mg/l	1.0	RWS	03/06/99	0420	143999	4
SULFATE (AS SO4)		995	1.52	8.00	mg/l	40.	RWS	03/08/99	1715	143999	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	AEJ	03/08/99	1600	144101	5

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0301
Lab ID	: 9903259-11
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	1033	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	1033	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1033	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0201

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	84.0	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	83.2	(70.6 - 152.)
Toluene-d8	MTBE-8260B	83.6	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	84.0	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	83.2	(70.6 - 152.)
Toluene-d8	NAP-8260B	83.6	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	84.0	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	83.2	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	83.6	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0201

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	JWF	03/18/99	0958	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	J	9.20	2.27	10.3	ug/l	1.0	TSD	03/10/99	0232	144101	3
ACENAPHTHYLENE	U	ND	1.34	10.3	ug/l	1.0					
ANTHRACENE	U	ND	2.37	10.3	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.88	10.3	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.06	10.3	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.84	10.3	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.58	10.3	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.68	10.3	ug/l	1.0					
CHRYSENE	U	ND	2.27	10.3	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.27	10.3	ug/l	1.0					
FLUORANTHENE	U	ND	3.19	10.3	ug/l	1.0					
FLUORENE	J	4.39	2.16	10.3	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.50	10.3	ug/l	1.0					
PHENANTHRENE	J	4.48	1.85	10.3	ug/l	1.0					
PYRENE	U	ND	2.58	10.3	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds AEJ 03/08/99 1600 144101 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	65.2	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	65.0	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	58.6	(36.6 - 110.)

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID	: 08GLM0201
Lab ID	: 9903259-10
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/18/99	0958	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	0958	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	0958	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0101

M = Method	Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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Laboratory Certifications

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NC	233	
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Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0101

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	56.1	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	54.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	46.7	(36.6 - 110.)
Bromofluorobenzene	MTBE-8260B	78.7	(60.2 - 139.)
Dibromofluoromethane	MTBE-8260B	92.6	(70.6 - 152.)
Toluene-d8	MTBE-8260B	82.1	(68.4 - 135.)
Bromofluorobenzene	NAP-8260B	78.7	(60.2 - 139.)
Dibromofluoromethane	NAP-8260B	92.6	(70.6 - 152.)
Toluene-d8	NAP-8260B	82.1	(68.4 - 135.)
Bromofluorobenzene	PP VOA-TETR	78.7	(60.2 - 139.)
Dibromofluoromethane	PP VOA-TETR	92.6	(70.6 - 152.)
Toluene-d8	PP VOA-TETR	82.1	(68.4 - 135.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 300.0
M 5	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: March 24, 1999

Sample ID : 08GLM0101

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)		ND	0.600	1.00	ug/l	1.0	JWF	03/17/99	0001	144578	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	J	8.50	2.22	10.1	ug/l	1.0	TSD	03/10/99	0200	144101	3
ACENAPHTHYLENE	U	ND	1.31	10.1	ug/l	1.0					
ANTHRACENE	U	ND	2.32	10.1	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.83	10.1	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.02	10.1	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.75	10.1	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.53	10.1	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.63	10.1	ug/l	1.0					
CHRYSENE	U	ND	2.22	10.1	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.22	10.1	ug/l	1.0					
FLUORANTHENE	U	ND	3.13	10.1	ug/l	1.0					
FLUORENE	J	2.53	2.12	10.1	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.43	10.1	ug/l	1.0					
PHENANTHRENE	U	ND	1.82	10.1	ug/l	1.0					
PYRENE	U	ND	2.53	10.1	ug/l	1.0					
General Chemistry											
NITROGEN, NITRATE	U	ND	0.0127	0.0500	mg/l	1.0	RWS	03/06/99	0407	143999	4
SULFATE (AS SO4)		435	0.760	4.00	mg/l	20.	RWS	03/08/99	1701	143999	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	AEJ	03/08/99	1600	144101	5

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Laboratory Certifications

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

~~Project Description: CNC- Zone H UST (CTO68)~~

cc: TETR00498

Report Date: March 24, 1999

Sample ID	: 08GLM0101
Lab ID	: 9903259-09
Matrix	: Water
Date Collected	: 03/05/99
Date Received	: 03/05/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	JWF	03/17/99	0001	144578	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/17/99	0001	144578	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/17/99	0001	144578	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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Charleston, South Carolina 29407
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Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Client Name/Facility Name: TetraTech NUS / CNC

Collected by/Company: James Bell / TTNUS

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide PAH	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type			Remarks
12 085LB1103	1-20-99	1445			✓		4						3		1										
13 085LB1103D	"	1445			✓		4						3		1										
14 085LB0602	"	1515			✓		4						3		1										
15 085LB1503	"	1538			✓		1		1																
16 085LB0301	"	1553			✓		4						3		1										
17 085LB0303	"	0955			✓		4						3		1										

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
[signature]	1-20-99					VOC = BTEX, MTBE. Standard Turnaround.

White = sample collector Yellow = file Pink = with report

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Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9901644/

Client Name/Facility Name: Tetra Tech NUS / CNC

Collected by/Company: James R. Hill / TTNUS

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/[illegible]	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide PAH	Herbicide TPH	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Grain Size	Remarks
-01	ZHTL0441	1-30-99	0730		✓			2						2											Trip Blank.
02	ZHRL0221	"	1130		✓			8		1				3		2	2								Equip. Blank.
03	03SWIDW01	"	0800		✓			5						3		1	1								
04	02SLB0103	"	0915		✓			8						3		1	1							3	
05	02SLB0103M	"	0915		✓			5						3		1	1								
06	02SLB0103S	"	0915		✓			5						3		1	1								
07	02SLB0102	"	0940		✓			4						3		1									
08	02SLB0403	"	1008		✓			4						3		1									
09	02SLB0503	"	1027		✓			4						3		1									
10	02SLB0802	"	1040		✓			4						3		1									
11	02SLB1902	"	1050		✓			1		1															
12	02SLB0802D	"	1305		✓			4						3		1									
13	03SLB1203	"	1400		✓			8						3		1	1							3	

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
James R. Hill	1-30-99					VOC = BTEX, MTBE Standard Turnaround

White = sample collector Yellow = file Pink = with report

GEOTECHNICAL SPREADSHEET

Project Number:	tetr00498	Depth:	UNKNOWN
Sample Number:	9901644-11	Tested By:	M. Yates
Boring Number:	NA	Date:	2/17/99
Location:	NA		

GRAIN-SIZE ANALYSIS

HYGROSCOPIC MOISTURE CONTENT DETERMINATION

weight of total air dried sample=	116.19
weight of container + air-dried soil=	33.72
weight of container + oven-dried soil=	32.75
weight of container=	7.05
weight of water=	0.97
weight of oven-dried soil=	25.7
weight of air-dried soil=	26.67
hygroscopic moisture correction factor=	0.96
weight of oven-dried sample for hydro. anal.=	111.54

SIEVE ANALYSIS

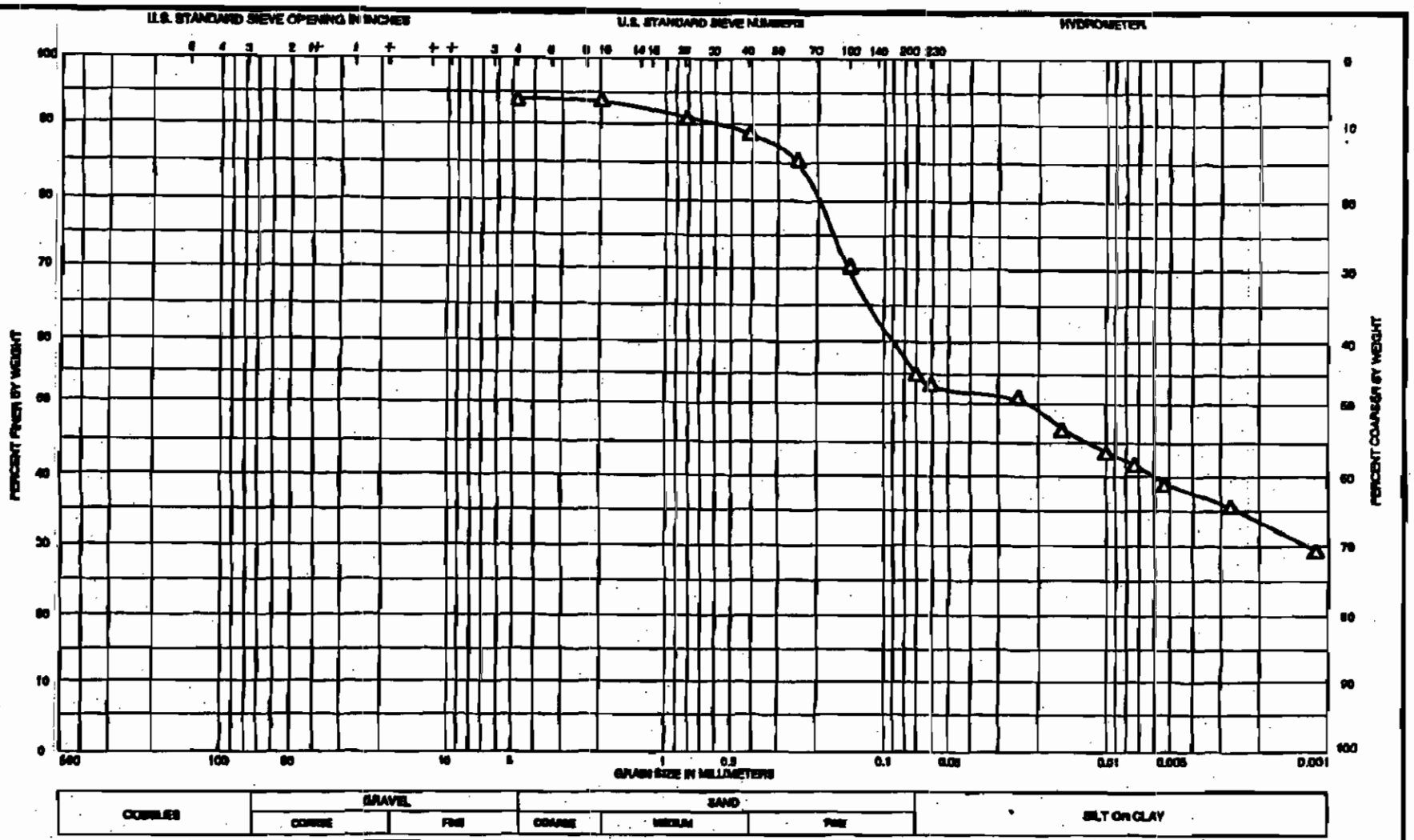
weight of oven-dried sample= 111.54

Sieve #	Weight Ret.	Weight Passed	% Passing
4	7.52	104.02	93.3
10	0	104.02	93.3
20	2.6	101.42	90.9
40	2.16	99.26	89.0
60	3.9	95.36	85.5
100	16.55	78.81	70.7
200	17.48	61.33	55.0
230	2.21	59.12	53.0
pan	0.46	58.66	52.6

HYDROMETER ANALYSIS

weight	111.54
SG	2.45

TIME	ACTUAL READING	TEMP.	COMPOSITE CORRECTION	R	LENGTH	K	DIAMETER	P
2	1.037	22	0.00325	1.03375	6.5	0.01421	.02560	51.1
5	1.034	22	0.00325	1.03075	7.3	0.01421	.01716	46.6
15	1.032	22	0.00325	1.02875	7.8	0.01421	.01026	43.6
30	1.031	22	0.00325	1.02775	8.1	0.01421	.00738	42.0
60	1.029	22	0.00325	1.02575	8.6	0.01421	.00538	39.0
250	1.027	21	0.00350	1.02350	9.1	0.01438	.00276	35.6
1440	1.023	21	0.00350	1.01950	10.2	0.01438	.00121	29.5



Sample No.	Specific Gravity	Classification	Nat w %	LL	PL	PI
#901644-11	—	CL	—			
		% GRAVEL = 6.7				
		% SAND = 38.3				
		% SILT = 16.5				
		% CLAY = 38.5				

GENERAL ENGINEERING
A Division of General Engineering Laboratories, Inc.

Project: tetr00496
Area: Tetra Tech NUS, Inc.
Boring No.
Date: February 16, 1999

GRADATION CURVES

GEOTECHNICAL ANALYSIS

GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client:	Tetra Tech NUS, Inc. 794 South Military Trail Deerfield Beach, Florida 33442
Contact:	Mr. Arnold Lamb
Project Description:	CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : ZHTL00601

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie L Davis

Reviewed By

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID	: ZHTL00601
Lab ID	: 9901644-01
Matrix	: Water
Date Collected	: 01/20/99
Date Received	: 01/20/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.300	5.00	ug/l	1.0	MAP	01/30/99	1459	141130	1
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	J	0.676	0.600	5.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					

Surrogate Recovery	Test	Percent%	Acceptable Limits
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	124.	(60.2 - 139.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	109.	(70.6 - 152.)
Toluene-d8	BTEX/NAP/MTBE-8260B	124.	(68.4 - 135.)

M = Method	Method-Description
M 1	SW846 8260B

Notes:
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ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : ZHRL00201

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	01/22/99	1300	140430	4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	66.0	(43.0 - 108.)
Nitrobenzene-d5	M610-TETR	58.6	(35.0 - 111.)
Terphenyl-d14	M610-TETR	78.1	(33.0 - 125.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	126.	(60.2 - 139.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	107.	(70.6 - 152.)
Toluene-d8	BTEX/NAP/MTBE-8260B	126.	(68.4 - 135.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	SW846 8270C
M 3	SW-846 9070
M 4	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : ZHRL00201
Lab ID : 9901644-02
Matrix : Water
Date Collected : 01/20/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.300	5.00	ug/l	1.0	MAP	01/30/99	1534	141130	1
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.27	10.3	ug/l	1.0	TSD	01/23/99	0058	140430	2
ACENAPHTHYLENE	U	ND	1.34	10.3	ug/l	1.0					
ANTHRACENE	U	ND	2.37	10.3	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.88	10.3	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.06	10.3	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.84	10.3	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.58	10.3	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.68	10.3	ug/l	1.0					
CHRYSENE	U	ND	2.27	10.3	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.27	10.3	ug/l	1.0					
FLUORANTHENE	U	ND	3.19	10.3	ug/l	1.0					
FLUORENE	U	ND	2.16	10.3	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.50	10.3	ug/l	1.0					
PHENANTHRENE	U	ND	1.85	10.3	ug/l	1.0					
PYRENE	U	ND	2.58	10.3	ug/l	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	1.22	2.00	mg/l	1.0	AAT	02/01/99	1000	141158	3

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H-UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1503

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie R Davis

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Report Date: February 08, 1999

Sample ID	: 08SLB1503
Lab ID	: 9901644-15
Matrix	: Soil
Date Collected	: 01/20/99
Date Received	: 01/20/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Organic Prep											
EVAPORATIVE LOSS @ 105 C		23.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	1
General Chemistry											
Total Organic Carbon		677	43.1	100	mg/kg	1.0	LS	02/02/99	1835	141188	

M = Method	Method-Description
M 1	EPA 3550
M 2	EPA 415.1 Modified

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1203

M = Method **Method-Description**

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Valerie A Davis

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Laboratory Certifications

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1203

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

Volatiles 8260 High Level	SLG	01/27/99	1505	140472	5
GC/MS Base/Neutral Compounds	CPU	01/22/99	2215	140432	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	0.00*	(44.7 - 110.)
Nitrobenzene-d5	M610-TETR	0.00*	(42.4 - 107.)
p-Terphenyl-d14	M610-TETR	0.00*	(45.5 - 104.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	112.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	106.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	116.	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	SW846 9071A
M 5	EPA 5035

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1203
Lab ID : 9901644-11
Matrix : Soil
Date Collected : 01/20/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.563	5.00	ug/kg	1.0	SLG	01/27/99	1228	140472	1
ETHYLBENZENE	U	ND	0.338	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.200	6.25	ug/kg	1.0					
NAPHTHALENE	U	ND	0.763	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.18	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.313	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		22.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	4100	8540	ug/kg	20.	JPA	01/26/99	1030	140432	3
ACENAPHTHYLENE	U	ND	3770	8540	ug/kg	20.					
ANTHRACENE	U	ND	2250	8540	ug/kg	20.					
BENZO(A)ANTHRACENE	U	ND	1750	8540	ug/kg	20.					
BENZO(A)PYRENE	U	ND	1840	8540	ug/kg	20.					
BENZO(B)FLUORANTHENE	U	ND	3640	8540	ug/kg	20.					
BENZO(G,H,I)PERYLENE	U	ND	2080	8540	ug/kg	20.					
BENZO(K)FLUORANTHENE	U	ND	3380	8540	ug/kg	20.					
CHRYSENE	U	ND	1400	8540	ug/kg	20.					
DIBENZ(A,H) ANTHRACENE	U	ND	2130	8540	ug/kg	20.					
FLUORANTHENE	U	ND	1670	8540	ug/kg	20.					
FLUORENE	U	ND	2930	8540	ug/kg	20.					
INDENO(1,2,3-CD)PYRENE	U	ND	2060	8540	ug/kg	20.					
PHENANTHRENE	U	ND	1540	8540	ug/kg	20.					
PYRENE	U	ND	1840	8540	ug/kg	20.					
General Chemistry											
Total Rec. Petro. Hydrocarbons		1510	64.0	128	mg/kg	1.0	AAT	02/04/99	1500	141509	4

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1103D

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie S Davis

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1103D

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

Volatiles 8260 High Level	SLG	01/27/99	1505	140472	4
GC/MS Base/Neutral Compounds	CPU	01/22/99	2215	140432	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	56.2	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	58.5	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	89.8	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	113.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	112.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	111.	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	EPA 5035

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID	: 08SLB1103D
Lab ID	: 9901644-13
Matrix	: Soil
Date Collected	: 01/20/99
Date Received	: 01/20/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.545	5.00	ug/kg	1.0	SLG	01/26/99	1716	140472	1
ETHYLBENZENE	U	ND	0.327	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.194	6.05	ug/kg	1.0					
NAPHTHALENE	U	ND	0.738	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.14	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.303	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		23.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	208	433	ug/kg	1.0	JPA	01/25/99	1825	140432	3
ACENAPHTHYLENE	U	ND	191	433	ug/kg	1.0					
ANTHRACENE	U	ND	114	433	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	88.8	433	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	93.1	433	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	184	433	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	106	433	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	171	433	ug/kg	1.0					
CHRYSENE	U	ND	71.0	433	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	108	433	ug/kg	1.0					
FLUORANTHENE	U	ND	84.9	433	ug/kg	1.0					
FLUORENE	U	ND	149	433	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	104	433	ug/kg	1.0					
PHENANTHRENE	U	ND	77.9	433	ug/kg	1.0					
PYRENE	U	ND	93.5	433	ug/kg	1.0					

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1103

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie Davis

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB1103

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

Volatiles 8260 High Level	SLG	01/27/99	1505	140472	4
GC/MS Base/Neutral Compounds	CPU	01/22/99	2215	140432	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	49.3	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	46.5	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	79.4	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	114.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	113.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	116.	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	EPA 5035

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID	: 08SLB1103
Lab ID	: 9901644-12
Matrix	: Soil
Date Collected	: 01/20/99
Date Received	: 01/20/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.500	5.00	ug/kg	1.0	SLG	01/26/99	1647	140472	1
THYLBENZENE	U	ND	0.300	5.00	ug/kg	1.0					
ERT-BUTYL METHYL ETHER		ND	0.178	5.55	ug/kg	1.0					
NAPHTHALENE	U	ND	0.677	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.04	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.278	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		20.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	200	417	ug/kg	1.0	JPA	01/25/99	1753	140432	3
ACENAPHTHYLENE	U	ND	184	417	ug/kg	1.0					
ANTHRACENE	U	ND	110	417	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	85.5	417	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	89.7	417	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	178	417	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	102	417	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	165	417	ug/kg	1.0					
CHRYSENE	U	ND	68.4	417	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	104	417	ug/kg	1.0					
FLUORANTHENE	U	ND	81.7	417	ug/kg	1.0					
FLUORENE	U	ND	143	417	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	100	417	ug/kg	1.0					
PHENANTHRENE	U	ND	75.1	417	ug/kg	1.0					
PYRENE	U	ND	90.1	417	ug/kg	1.0					

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FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone II UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB0602

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie L Davis

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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB0602

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

Volatiles 8260 High Level	SLG	01/27/99	1505	140472	4
GC/MS Base/Neutral Compounds	CPU	01/22/99	2215	140432	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	58.3	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	56.7	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	81.4	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	111.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	114.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	113.	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	EPA 5035

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

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9901644-14

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone II UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB0602
Lab ID : 9901644-14
Matrix : Soil
Date Collected : 01/20/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.540	5.00	ug/kg	1.0	SLG	01/26/99	1746	140472	1
ETHYLBENZENE	U	ND	0.324	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.192	6.00	ug/kg	1.0					
NAPHTHALENE	U	ND	0.732	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.13	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.300	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		22.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	205	427	ug/kg	1.0	JPA	01/25/99	1857	140432	3
ACENAPHTHYLENE	U	ND	188	427	ug/kg	1.0					
ANTHRACENE	U	ND	112	427	ug/kg	1.0					
BENZO(A)ANTHRACENE	J	324	87.5	427	ug/kg	1.0					
BENZO(A)PYRENE	J	322	91.8	427	ug/kg	1.0					
BENZO(B)FLUORANTHENE		524	182	427	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	104	427	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	169	427	ug/kg	1.0					
CHRYSENE	J	363	70.0	427	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	106	427	ug/kg	1.0					
FLUORANTHENE		633	83.7	427	ug/kg	1.0					
FLUORENE	U	ND	146	427	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	103	427	ug/kg	1.0					
PHENANTHRENE	J	355	76.9	427	ug/kg	1.0					
PYRENE		551	92.2	427	ug/kg	1.0					

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SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB0301

M = Method **Method-Description**

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Valerie Davis

Reviewed By

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SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID : 08SLB0301

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

The following prep procedures were performed:

Volatiles 8260 High Level	SLG	01/27/99	1505	140472	4
GC/MS Base/Neutral Compounds	CPU	01/22/99	2215	140432	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	57.0	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	52.2	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	81.8	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	121.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	113.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	117.	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	EPA 5035

Notes:
The qualifiers in this report are defined as follows:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
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Data reported in mass/mass units is reported as 'dry weight'.

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NC	233	
SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498 Report Date: February 08, 1999

Sample ID	: 08SLB0301
Lab ID	: 9901644-16
Matrix	: Soil
Date Collected	: 01/20/99
Date Received	: 01/20/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.545	5.00	ug/kg	1.0	SLG	01/26/99	1815	140472	1
ETHYLBENZENE	U	ND	0.327	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.194	6.05	ug/kg	1.0					
NAPHTHALENE	U	ND	0.738	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.14	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.303	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		15.0	1.00	1.00	wt%	1.0	GJ	01/22/99	1540	140397	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	188	392	ug/kg	1.0	JPA	01/25/99	1929	140432	3
ACENAPHTHYLENE	U	ND	173	392	ug/kg	1.0					
ANTHRACENE	U	ND	103	392	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	80.4	392	ug/kg	1.0					
BENZO(A)PYRENE	J	295	84.3	392	ug/kg	1.0					
BENZO(B)FLUORANTHENE		412	167	392	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	J	260	95.6	392	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	155	392	ug/kg	1.0					
CHRYSENE	U	ND	64.3	392	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	97.6	392	ug/kg	1.0					
FLUORANTHENE	U	ND	76.8	392	ug/kg	1.0					
FLUORENE	U	ND	134	392	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	J	262	94.5	392	ug/kg	1.0					
PHENANTHRENE	U	ND	70.6	392	ug/kg	1.0					
PYRENE	U	ND	84.7	392	ug/kg	1.0					

APPENDIX D

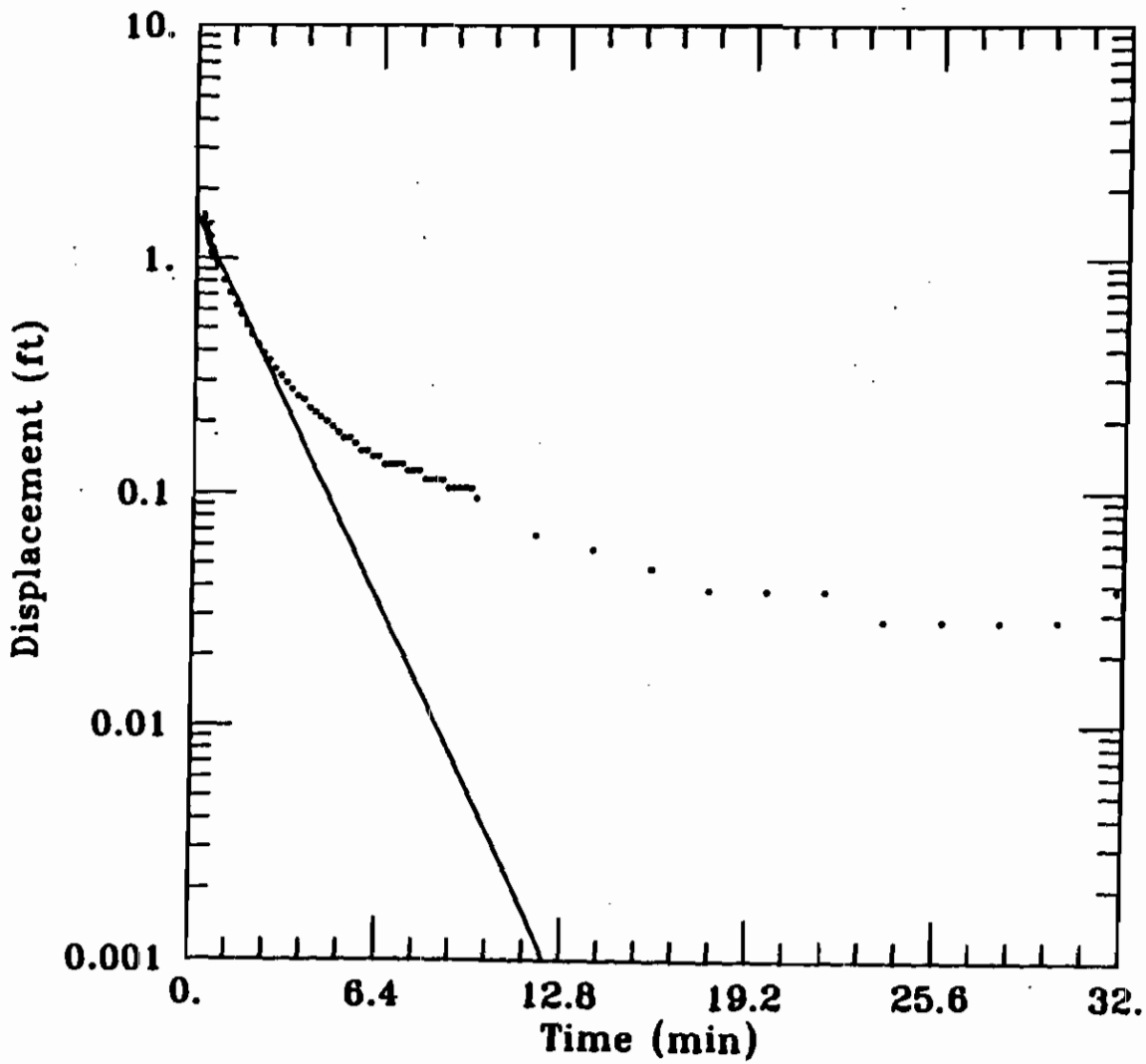
SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA

APPENDIX E

AQUIFER CHARACTERIZATION GRAPHS

Client: **CLEAN**	Company: **E/A&H**
Location: **NAS CHARLESTON**	Project: **2908-08450**

NBCH653001 Falling Head Slug Test



DATA SET:
65301FAL.AQT
01/12/95

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0 = 3. ft
rc = 0.08333 ft
rw = 0.333 ft
L = 10. ft
b = 12. ft
H = 10.5 ft

PARAMETER ESTIMATES:
K = 0.0004942 ft/min
y0 = 1.547 ft

AQTESOLV