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RAPID ASSESSMENT REPORT FOR SITE 6 BUILDING 648 ZONE H CNC CHARLESTON SC
9/1/1999
TETRA TECH

**Rapid Assessment Report
For
Site 6, Building 648**

**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

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EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 6 which includes an underground storage tank (UST) and aboveground storage tank (AST) system for Building 648 at Charleston Naval Complex (CNC) Zone H, in North Charleston, South Carolina. The UST provided heating oil to the building and the AST stored diesel fuel for the building's emergency power generator. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan and 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, to evaluate public and private potable wells, to locate utilities line areas, to locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed the previously prepared Underground Storage Tank Assessment Report for UST 648B and AST 648 to determine boring locations and monitoring well placements;
- Conducted site survey to identify utilities and to construct a site plan;
- Performed direct push investigation, collected soil and groundwater samples for field screening of total petroleum hydrocarbons using an organic vapor analyzer;
- Collected groundwater samples from direct push borings for mobile lab screening analysis for benzene, toluene, ethyl benzene, total xylenes (BTEX), and diesel range organics;
- Installed 10 temporary piezometers and one permanent piezometer;
- Installed shallow permanent monitoring wells to approximately 12 feet below land surface (bls) and a vertical delineation well to approximately 27 feet bls;
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis of analyzed for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260 and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270;
- Collected soil samples for laboratory analysis of the for BTEX, and naphthalene using USEPA Method 8260, PAHs using USEPA Method 8270, total organic carbon (TOC) using USEPA Method 415.1, total recoverable petroleum hydrocarbon (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

Five groundwater-elevation monitoring events were conducted at the site between December 2, 1998 and March 7, 1999. Free product was detected in piezometers CNC06-P01* and CNC06-P03. Product thickness ranged from a sheen to 0.64 feet in CNC06-P01*, and from 2.77 to 7.29 feet in CNC06-P03. Free product was not detected in any of the remaining wells. One groundwater sampling event was conducted on March 7, 1999. No dissolved chemicals of concern (CoCs) were detected in any well sampled except for an estimated 1.38 ug/L naphthalene in CNC06-M01 duplicate sample, which is below (SCDHEC's) Risk Based Screening Levels (RBSL) for naphthalene.

Six soil samples were collected on January 19, 1999, and analyzed for BTEX and PAHs by a fix-based laboratory. Soil concentrations were reported below SCDHEC's Risk Based Screening Levels for clay-rich soils.

The downgradient extent of hydrocarbon impact to groundwater has been delineated. Free product was present in piezometers CNC02-P01* and CNC06-P03 with thicknesses of 0.64 feet and 6.08 feet, respectively, in March 1999. Construction worker site-specific target levels (SSTLs) were calculated to evaluate the exposure pathway for groundwater CoCs. Calculated concentrations of benzene (0.31 mg/L) and naphthalene (23.35 mg/L) in groundwater in equilibrium with fuel oil at source wells CNC06-P01* and CNC06-P03 exceed the site SSTLs (0.15 mg/L for benzene and 1.63 for naphthalene. No concentrations of any CoCs in the compliance well (CNC06-M01) exceeded their SSTLs.

Recommendation

Since the dissolved hydrocarbon (benzene and naphthalene) concentrations at the source well are above the SSTLs, corrective action is required according to SCDHEC guidelines. It is recommended that free product be removed from CNC06-P01* and CNC06-P03 and monitoring continued until the benzene and naphthalene concentrations fall below the SSTLs of 0.15 mg/L and 1.63 mg/L, respectively.

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:

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1.0 INTRODUCTION

Site 6 contains a closed underground storage tank (UST) and closed aboveground storage tank (AST) system located adjacent to Building 648 at the Charleston Naval Complex (CNC), Zone H in Charleston, South Carolina. This Rapid Assessment (RA) was performed by Tetra Tech NUS, Inc.'s (TtNUS's) Tallahassee, Florida, office located at 1401 Oven Park Drive, Suite 102, Tallahassee, Florida, 32308 (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 number 843-820-7307). Authorization to conduct the RA for the Site was issued by NAVFAC under Contract Task Order (CTO) 0068. 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 performed December 2-16, 1998; and January 19-27, February 1-21, and March 7-24, 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 Berkeley 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.

Building 648 is the former Naval Base Brig that utilized UST 648B to store fuel oil which provided heating oil to the building, and AST 648 that stored diesel fuel for the building's emergency power generator. UST 648B was a 2,000-gallon steel tank and AST 648 was a 1,000-gallon steel tank. UST 648B was located approximately 15 feet north-northwest from the northwest corner of Building 648 and AST 648 was located approximately 110 feet south of UST 648B and adjacent to the west side of Building 648 (Figure 3). The UST and AST systems for Building 648 were reported older than 20 years with the date the systems being

deactivated as unknown [Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston (SPORTENDECHASN), 1996].

1.2 SITE HISTORY

In 1901, the U.S. Navy acquired 2,250 acres near Charleston to 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 home port for combatant ships and submarines of the U.S. Atlantic Fleet [Ensafe/Allan & Hoshall, Inc.(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 Realignment and Closure 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 and AST systems at Building 648 were removed on October 7, 1996.

Between September 9 and October 7, 1996, UST 648B and AST 648 were removed, cleaned, and recycled as scrap metal. At the time of removal AST 648 was reported in good condition and contained no holes. UST 648 was reported to have no significant corrosion, but a 1/4-inch hole was discovered during steam cleaning of the tank. Both UST 648B and AST 648 used 5/8-inch copper piping for supply and return lines. At the time of the removal of the tanks, the copper piping was reported in good condition. A steel vent line for UST 648B was reported as severely corroded and contained numerous holes. During removal of the UST copper return lines, four abandoned 1/2-inch steel lines were discovered beneath the copper piping. The steel lines were reported as severely corroded and containing numerous holes. Product approximately 1/4-inch in thickness was observed throughout the UST excavation and was attributed to the holes in the vent line (SPORTENDECHASN, 1996). Contaminated soil encountered during the UST excavation was placed back in the tank pit. Angular rock was used to fill the area covered

by the groundwater and geofabric was laid over the rock prior to returning the soil to the tank pit (SPORTENDECHASN, 1996).

During removal of the tanks, a groundwater sample was collected from the center of the UST excavation and analyzed for petroleum constituents. Results of the analyses reported dissolved concentrations of Polynuclear Aromatic Hydrocarbons (PAHs), except dibenz(a,h)anthracene, at concentrations above the Risk Based Screening Levels (RBSLs) for chemical of concern (CoC) constituents established by the SCDHEC (Risk-Based Corrective Action For Petroleum Releases, January 5, 1999). Laboratory analysis of soils reported naphthalene at concentrations above the soil RBSLs. Naphthalene exceeded the RBSLs in soils collected from the UST 648B tank pit excavation. Soil and groundwater sampling locations and laboratory data are provided in the Underground Storage Tank Assessment Report for UST 648B and AST 648 which 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 (see Figure 2) depicts the public utilities located within 250 feet of the former UST 648B 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 (SPORTENVDECHASN, 1999). The following utility receptors were located:

- **Water utility, sanitary sewer utility:** A sanitary sewer line originates at the north end of Building 648 and extends to the northeast toward the intersection of Dyess Avenue and Darter Street. A sewer line also extends from Building 1841 and runs northeast (east of Building 648) and ties into the sewer line distribution near the intersection of Dyess Avenue and Darter Street. No sewer lines were located downgradient of Building 648 within 250 feet of UST 648B. A water utility line is located between UST 648B and Building 648. The water line is located approximately 5 feet east of former UST 648. The water line extends north where it connects to a water main that borders the north side of Dyess Avenue.
- **Storm sewer utility:** A storm sewer utility lines is located beneath Building 648. The storm utility line exits beneath Building 648 near the northwest corner of the building. This utility line extends to the northwest where it connects to a storm drain system that connects a storm drain, located north west of UST 648B, to the main storm drain system that borders the south side of Dyess Avenue. The nearest storm drain line is located approximately 10 feet north of UST 648B.

A survey of groundwater users within a 7-mile radius of CNC was performed for the Final RCRA Facility Investigation Report for Zone H (E/A&H, 1996). According to this report, a survey of groundwater users within a 7-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 4-mile radius of CNC. Irrigation wells were not identified within 1,000 feet of the site. Numerous monitoring wells are located within 1,000 feet of the site. The nearest surface water body to UST 648B is the Cooper River located approximately 890 feet to the north-northeast.

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 number 843-820-7307).

1.4 REGIONAL GEOLOGY AND HYDROGEOLOGY

CNC is located in Charleston County, South Carolina, in the Lower South Carolina Coastal Plain 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 (E/A&H, 1996).

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 (E/A&H, 1996). 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 phosphoric 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 top of the Ashley Formation has been reported to be associated with an erosional basin and the entire Cooper Unit, including the Ashley Formation, is indicated to be approximately 300 feet thick (E/A&H, 1996).

Groundwater occurs under water table or poorly confined conditions within the recent or Pleistocene deposits overlying the Ashley Formation of the Cooper Group. Transmissivity in the Pleistocene aquifer is generally less than 1,000 feet per day and well yields are variable, ranging from 0 to 200 gallons per minute (gpm). This 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 gpm (E/A&H, 1996).

2.0 ASSESSMENT INFORMATION

2.1 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

2.1.1 Site Geology

Seventeen direct push soil borings were advanced at Site 6 under the supervision of a TtNUS geologist between December 2-7, 1998 (see Figure 3). These borings ranged in depth from 5 to 16 feet bls and provided soil samples to characterize the subsurface lithology. On January 25, 1999, six monitoring wells and one permanent monitoring well were installed to a depth of 12 feet bls and grab samples were collected to describe the subsurface lithology. On February 5 and 6, 1999, a vertical delineation well was installed. During the drilling process, lithologic samples were collected using a split-spoon sampler to characterize the subsurface lithology from 14 to 27 feet bls. A general view of the subsurface lithology is presented in Figures 4 and 5.

Based on lithologic descriptions from the soil borings and monitoring wells, the subsurface soil generally consists of mixtures of clayey sand, silty sand, silty clay and sandy clay from the ground surface to approximately 4 to feet bls. Underlying these deposits a dark gray mucky clay was encountered to a depth of 32 feet bls. Boring logs are presented in Appendix B.

2.1.2 Site Hydrogeology

Six shallow water table monitoring wells, CNC06-M01, CNC06-M02, CNC06-M03, CNC06-M04, CNC06-M05, and CNC06-M06, and one deep vertical delineation monitoring well, CNC06-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 CNC06-M07 was completed as a Type III monitoring well with 6-inch-diameter PVC surface casing grouted to a depth of 25 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to a depth of 32 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.

Ten temporary small diameter PVC piezometers, CNC06-P01 through CNC06-P10, were installed in borings CNC06-B01 through CNC06-B10, respectively. Each temporary piezometer, except CNC06-P01, was constructed of 1-1/4-inch-diameter Schedule 80 PVC threaded casing and well screen. Piezometer CNC06-P01 was completed with PVC screen section set at a depth of 5 feet bls. The remaining piezometers were completed at depths ranging from approximately 12 feet bls to 15 feet bls with 10-foot PVC screen section that bracketed the water table. The top of casing elevations were surveyed from select piezometers by a TtNUS geologist to a local reference point. The groundwater elevation data obtained from the piezometers were used in conjunction with the field screening data to aid in the placement of permanent monitoring wells.

A permanent piezometer, CNC06-P01*, was installed with 1-1/4-inch-diameter Schedule 80 PVC threaded casing and well screen. The piezometer contained a prepacked well screen consisting of 20/30 silica sand. The 1-1/4 inch-diameter screen section of the piezometer was placed inside a 2-inch-diameter Schedule 80 PVC screen prepacked with 20/30 silica sand. The permanent piezometer was completed at 12 feet bls with a 10-foot screen section that bracketed the water table. The permanent piezometer location and top of casing elevation was by a South Carolina registered professional surveyor.

Groundwater level measurements collected from the shallow monitoring wells indicates groundwater generally occurs under unconfined conditions at depths of approximately 2 to 5 feet bls in the site area. A complete round of groundwater elevation measurements were recorded from the site monitoring wells on February 4, 1999, and March 7, 1999, and are presented in Table 1. Figures 6 and 7 present the groundwater potentiometric surface for groundwater elevation measurements collected on February 20, 1999 and March 7, 1999 field events, respectively. Based on the potentiometric maps, it appears that groundwater flow is toward Dyress Avenue.

Depth to groundwater level measurements identified free product in piezometer CNC06-P01* and piezometer CNC06-P03. Free product in CNC06-P01* ranged in thickness from a sheen to 0.64 feet and free product thickness in CNC06-P03 ranged from 2.77 feet to 7.29 feet. Product thickness measurements are summarized on Table 1 and the areal extent of the free product is depicted on Figure 8.

As part of the Final RFI 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 4 days. Measurements were recorded every hour using data loggers. The 4-day period spanned nine high and nine low tide cycles.

Results of the tidal survey identified a maximum fluctuation in shallow monitoring wells of 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 Cooper 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

Seventeen soil borings were completed as part of the screening portion of the soil investigation at Site 6. Five soil borings were completed to collect soil samples for analysis at a fixed base laboratory to confirm the CoC. The soil borings for screening evaluation were completed using a Direct Push Technology (DPT) rig; and 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 9 feet bls. The soil and groundwater samples collected for mobile laboratory screening were analyzed for benzene, toluene, ethyl benzene, and total xylenes (BTEX), and diesel range organics.

Soil samples collected for fixed base laboratory analysis were analyzed for BTEX and naphthalene using U.S Environmental Protection Agency (USEPA) Method 8260; and PAHs using USEPA Method 8270. One sample was collected for total organic carbon (TOC) analysis using USEPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods. The sample collection was conducted in accordance with the 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 2.4.1.

A comprehensive groundwater monitoring event was conducted on March 7, 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, methyl tert-butyl ether (MTBE), and naphthalene using EPA Method 8260 and PAHs using EPA Method 8270.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Seventeen soil borings were completed to evaluate soil vapor concentrations as part of the soil screening assessment at Site 6. Organic vapor analyzer (OVA) headspace measurements were recorded at 1 to 2-foot intervals to the top of the water table. Table 3 summarizes the soil vapor screening results. Figure 3 presents the soil boring locations.

Soil vapor concentrations ranged from not detected to 3,500 parts per million (ppm). Three soil borings contained vapor concentrations ranging from 1,500 to 3,500 ppm. Five soil borings registered soil vapor concentrations ranging from 200 to 700 ppm. Soil vapor concentrations ranging from 10 to 60 ppm were detected in samples collected from 12 soil borings. Soil vapor concentrations generally increased with depth with the highest vapor concentrations detected from 3 to 7 feet bls and the highest concentrations at or near the water table. This is generally indicative of soil vapor concentrations resulting from contaminated groundwater as opposed to a contaminated soil source area.

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 these data.

2.3.2 Soil Mobile Lab Results

Soil samples were collected from each soil boring for analysis by a mobile laboratory. The samples were analyzed for BTEX 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 4 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 4, analytical results from the soil mobile laboratory field screening reported toluene below detection limits in all borings. Benzene and ethylbenzene concentrations each were detected in one sample at 1.78 parts per billion (ppb), and 6.85 ppb, respectively. Total xylenes of 3.04 and 3.99 ppb

were detected in two borings. Diesel range organics were detected in samples from six borings at concentrations ranging from 340.44 to 284,737.55 ppb.

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 these data.

2.3.3 Groundwater Mobile Lab Results

One groundwater sample was collected from each soil boring, except CNC06-P03 due to the presence of free product, and analyzed in a mobile laboratory for BTEX and diesel range organics using USEPA Method 8260. Table 5 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 5, benzene and ethylbenzene were reported below detection limits in all samples. Toluene was detected in three samples at concentrations ranging from 0.48 to 0.65 ppb. A total xylenes concentration was reported in one sample at 0.72 ppb. Diesel range organics were reported in samples collected from seven borings at concentrations ranging from 58.86 to 1,432.74 ppb.

The mobile laboratory groundwater analysis was used as a screening method to assist in identifying locations for permanent monitoring wells for the collection of groundwater samples for fixed base laboratory analysis

2.4 CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

2.4.1 Chemicals of Concern in Soil

Six subsurface soil samples were collected at Site 6 for fixed base laboratory analysis. The soil boring locations are shown on Figure 3 and Table 6 summarizes the CoCs detected in the soil samples. All of the soil CoCs with the exception of benzo(k)fluoranthene were reported below detection limits. Benzo(k)fluoranthene was detected in samples 06SLB0801 (403 µg/kg) at a concentration less than the RBSLs. The RBSL for clay-rich soils was used based on a grain size analysis completed on sample 06SLB0607 indicating a clay-rich matrix (Appendix D). Figure 9 shows the areal distribution of benzo(k)fluoranthene.

2.4.2 Chemicals of Concern in Groundwater

Groundwater analytical data sheets for the March 7, 1999, field event are presented in Appendix D. Table 7 presents the analytical results for CoCs detected in the groundwater samples. Only one of the groundwater CoCs, naphthalene, was detected above method detection limits in the groundwater samples. Naphthalene was detected at a concentration of 1.38 µg/L and is less than the RBSL for groundwater of 40 µg/l. Figure 10 presents the detected concentrations of naphthalene for the March 7, 1999, sampling event. None of the CoCs were detected above method detection limits in the onsite deep monitoring well CNC06-M07.

2.5 ANALYTICAL DATA

All analytical data from the 1996 Underground Storage Tank Assessment Report for UST 648B and AST 648 are presented in Appendix A. Soil analytical data generated during this RA are summarized in Table 6. Groundwater analytical data generated during this RA are summarized in Table 7. The soil and groundwater analytical reports for this RA are 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 7, 1999. The groundwater flow direction across the former UST location is toward the north as illustrated on Figures 6 and 7. The hydraulic gradient between monitoring wells CNC06-M02 and CNC06-M06 on February 20, 1999, and March 7, 1999 was 0.0158 and 0.0144 feet per foot, respectively.

As part of the Final RFI Report for Zone H, rising and falling head slug tests were conducted on 19 shallow monitoring wells throughout Zone H to determine the hydraulic conductivity of the surficial aquifer (E/A&H, 1996). Slug tests were conducted by instantaneously removing (rising head) or adding (falling head) a volume (slug) of water from the well and measuring the recovering water level with a data logger. The data were then used to calculate the hydraulic conductivity for the rising head test and the hydraulic conductivity 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 tendency.

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 6. 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 across 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 6. 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:

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

where:

V = average velocity

K = hydraulic conductivity = 0.631 ft/day

n = effective porosity = 0.48
(from sieve results of 26.3% sand & 46.0% clay and Figure C1 in SCDHEC, 1998)

i = most recent hydraulic gradient = 0.0144 ft/ft

therefore:

$$V = \left(\frac{0.631 \text{ ft/day}}{0.48} \right) \times 0.0144 \text{ ft/ft}$$

$$V = 0.0189 \text{ ft/day}$$

In summary, the seepage velocity of the surficial aquifer was calculated to be approximately 6.9 feet per year based on a hydraulic conductivity of 0.631 feet per day, a hydraulic gradient of 0.0144 feet per foot, and a porosity of 48% for sandy clay. Aquifer characterization graphs are provided in Appendix E.

2.7 FATE AND TRANSPORT

The Domenico model was the fate and transport model used to determine groundwater site-specific target levels (SSTLs) in the risk analysis. The Domenico dilution/attenuation model is presented in the SCDHEC

guidance document, *South Carolina Risk-Based Corrective Action for Petroleum Releases* (SCDHEC 1998). This model is very conservative in that it assumes an infinite mass, areal source condition through which groundwater flows. The model incorporates biological decay effects through a first-order decay process; however, this mechanism was ignored because SCDHEC guidance specifies that the decay rate must be assumed to be zero if site-specific decay rates have not been determined.

The impacted groundwater source area was modeled as 50 feet (15.00 meters) wide and 6.56 feet (2.0 meters) deep; these values are conservative defaults suggested by the American Society for Testing Materials (ASTM) *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (ASTM, 1997). The maximum source concentrations are assumed to exist throughout the source area, further compounding the conservatism of the estimate. Because of the existence of free product on-site, the maximum solubility in equilibrium with fuel oil, calculated using Raoult's Law, was used for the maximum constituent concentrations. Fuel oil constituents can vary greatly but were assumed for this investigation to be similar to kerosene, which is typically 44% naphthalene (Conoco, Inc., 1996. *CONCAWE Diesel Fuel/ Kerosene*).

Site-specific data were used for saturated hydraulic conductivity, hydraulic gradient, and fraction of organic carbon in soil (2.23E-06 m/sec, 0.0144 ft/ft, and 0.103 g-C/g-soil, respectively). The soil bulk density (1.35 g/cm³) and porosity (0.48 cm³/cm³) were determined using Figures C1 and C3 given in SCDHEC (1998), based on the sieve test results for sample 06SLB0607, 26.3% sand and 46.0% clay.

The following estimates of dispersivity were used in the Domenico model as given in SCDHEC (1998):

Parameter	Estimate
Longitudinal Dispersivity, α_x	$x/10$, where x = distance between the point of exposure and the source or compliance point
Transverse Dispersivity, α_y	$\alpha_x/3$
Vertical Dispersivity, α_z	$\alpha_x/20$

Table 8 summarizes fate and transport parameters used in modeling the SSTLs.

2.8 PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN

The most recent groundwater-gauging event shows that groundwater flow is primarily toward the north. The current extent of impact is limited to wells CNC06-P01* and CNC06-P03, which contained free

product in the latest monitoring event. Figure 8 shows the areal extent of free product. Concentrations of compounds of interest in all other monitoring wells have been non-detect, except for a concentration of 1.38 $\mu\text{g/L}$ naphthalene in the CNC06-M01 duplicate sample. Naphthalene in this sample was detected at less than the reporting limit and greater than the detection limit.

The Domenico model was used to predict the distance at which the tip of the plume is attenuated to SCDHEC RBSLs in 10 and 20 years without using degradation due to biological decay. This was done by adjusting the time to 10 years (3.15×10^8 sec) and 20 years (6.31×10^8 sec) and solving for distance (x) by trial and error. The source was assumed to be free product [i.e., the source concentration was assumed to be that of groundwater in equilibrium with fuel oil (see Section 2.6) for the entire 10- and 20- year periods]. The distance was changed separately for benzene, toluene, and naphthalene until the required distance that is necessary for the concentration to attenuate to the RBSLs was determined. Only the calculated concentrations of benzene, toluene, and naphthalene at the source (in equilibrium with free product) were greater than their respective RBSLs; therefore, these were the only chemicals for which plume distances were calculated. The model estimates that after 10 years, the concentrations of benzene, toluene, and naphthalene will be 0.005 mg/L, 1.0 mg/L, and 0.010 mg/L (RBSLs) at distances of 7.1 feet, 2.5 feet and 0.6 feet, respectively (Figure 11). Furthermore, after 20 years, the concentrations of benzene, toluene, and naphthalene are 0.005 mg/L, 1.0 mg/L, and 0.010 mg/L (RBSLs) at distances of 14.5 feet, 5.0 feet, and 1.2 feet, respectively (Figure 12). The Domenico 10-year and 20-year simulation spreadsheets are presented in Appendix F.

3.0 TIER 2 EVALUATION

3.1 COMPARISON OF ANALYTICAL RESULTS WITH RBSLs

Five groundwater-elevation gauging events were conducted at the site between December 2, 1998, and March 7, 1999. Free product was detected in piezometers CNC06-P01* and CNC06-P03 (Table 1). Product thickness ranged from a sheen to 0.64 feet in CNC06-P01*, and from 2.77 to 7.29 feet in CNC06-P03. Free product was not detected in any of the remaining wells. One groundwater sampling event was conducted on March 7, 1999. No dissolved contaminants of concern were detected in any well sampled except for an estimated 1.38 µg/L naphthalene in the CNC06-M01 duplicate sample, which is above the detection limit but below the reporting limit. No CoCs were detected in the deep well, CNC06-M07, located about 18 feet east (cross-gradient) of well CNC06-P03. For concentrations in the wells containing free product, CNC06-P01 and CNC06-P03, the maximum solubility in equilibrium with fuel oil was calculated using Raoult's Law. Fuel oil constituents can vary greatly but were assumed for this investigation to be similar to kerosene, which is typically 44% naphthalene. Results of the Raoult's Law calculations are located in Appendix F. Calculated concentrations for benzene, toluene, and naphthalene (0.31 mg/L, 4.65 mg/L, and 23.35 mg/L, respectively) in equilibrium with free product exceeded their respective RBSLs (0.005 mg/L, 1.0 mg/L, and 0.010 mg/L, respectively).

Soil samples from 17 locations were collected in December 1998. The samples were field screened for BTEX and diesel range organics using a mobile laboratory. The only BTEX compounds detected by the field laboratory included benzene at CNC06-B03 at 1.78 ppb, ethylbenzene at CNC06-B02 at 6.85 ppb, and xylenes at CNC06-B01 and CNC06-B02 (3.04 ppb and 3.98 ppb, respectively). Diesel range organics results ranged from non-detect to 284,738 ppb at soil sample location CNC06-B04. Six soil samples collected on January 19, 1999, were analyzed for BTEX and PAHs including naphthalene by a fixed-base laboratory. Soil concentrations were below RBSLs for all samples analyzed. Table 9 presents a comparison of RBSLs to the maximum soil and groundwater concentrations.

3.2 SITE CONCEPTUAL EXPOSURE MODEL

This section focuses on the current and future land use issues concerning the site. The site is the former Naval Base Brig. Figure 1 shows that the site is located in and surrounded by the CNC. 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. The future use of the property is expected to be industrial or

commercial for the foreseeable future after the property is made available for redevelopment as part of the Defense BRAC Act.

Drinking water at the site and surrounding properties is provided by the city of Charleston water treatment plants. A survey of groundwater users within a 7-mile radius of the CNC was provided by the South Carolina Water Resources Commission to ascertain the extent of any shallow groundwater usage. The survey identified no drinking water wells that are screened in the shallow aquifer within a 4-mile radius of the CNC.

Groundwater from the site flows to the north toward the Cooper River, which discharges into Charleston Harbor. Surface water drains into the storm sewer drainage system located to the northwest of the site. The nearest storm drain is located approximately 10 feet north of UST 648B. There are no city, county, or state zoning ordinances, as the federal government currently owns the CNC.

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. Tables 10 and 11 present the exposure pathway assessments for current and future use scenarios.

3.3.1 On-Site Commercial/ Industrial Worker

An on-site commercial or industrial worker is defined as a business employee who works in a commercial/ industrial capacity at the site. The future use of the property is expected to be industrial or commercial for the foreseeable future; therefore, an on-site worker was considered as a potential receptor. Incidental ingestion and dermal contact with impacted soil are expected to be negligible for commercial/industrial workers because they are located inside a building. Drinking water at this site is provided by the city; therefore, ingestion of groundwater is not a complete exposure pathway. The building foundation is assumed to be sufficient to prevent volatilization from both soil and groundwater into a commercial building, and there is no history of vapors in the commercial building. It is unlikely that any additional exposure pathways will exist for future on-site workers; therefore, no complete pathways exist for either current or future commercial/ industrial workers.

3.3.2 On-Site Visitor

An on-site visitor is defined as any person other than a worker who might come on site. On-site visitors would have the same exposure pathways as commercial workers, but their exposure duration would be much shorter. This receptor does not have to be quantified because a potential on-site visitor's chemical intake would not drive risk or cleanup levels at the site.

3.3.3 On-Site Construction Worker

An on-site construction worker is defined as a laborer who would be involved in intrusive activities on or around the site, particularly in the area of subsurface utilities. On-site construction workers could be exposed to constituents in soil by the following pathways: inhalation of volatiles from soil, dermal contact with soil, and incidental ingestion of soil. There is no soil impact above RBSLs at the site. On-site construction workers could be exposed to constituents in groundwater by the following pathways: inhalation of volatiles from groundwater, dermal contact with groundwater, and incidental ingestion of groundwater. There is a water line and a storm sewer within 5 to 10 feet of the area containing free product; therefore, the point of exposure location for the on-site construction worker was considered to be at the source.

3.3.4 On-Site Resident

An on-site resident is defined as any person making his or her home at the site. This site is expected to remain a commercial/industrial facility; therefore, the on-site resident receptor was not considered further.

3.3.5 Off-Site Resident

An off-site resident is defined as any person making his or her home near the site. This receptor's location is either an actual current residence near the site or is a vacant lot or property on which a residence could be built. The site is located in an area that will likely remain commercial/industrial, including all downgradient properties to the Cooper River. Therefore, this potential receptor was not considered further.

3.3.6 Surface Water

The Cooper River is located approximately 890 feet downgradient, to the northwest of the site. Since groundwater appears to flow to the river, this exposure pathway was considered for ingestion of surface water.

3.4 IDENTIFICATION OF DATA REQUIREMENTS

No additional data are required to calculate SSTLs for the site.

3.5 SITE-SPECIFIC TARGET LEVELS

Soil SSTLs were not required because soil concentrations did not exceed RBSLs.

Two future scenarios were considered to calculate SSTLs: on-site construction worker exposure to groundwater and the groundwater flow into the Cooper River. The minimum SSTL for the two scenarios was selected as the site SSTL for each CoC.

3.5.1 SSTLs Protective of the On-Site Construction Worker

Municipal water is supplied to the base, so shallow groundwater is not used for drinking water. Groundwater RBSLs for the construction worker were calculated for three pathways: dermal contact, incidental ingestion, and inhalation of volatiles. A target cancer risk of 1×10^{-6} and a target hazard quotient of 1 were used in the calculations. Where possible, site-specific parameters were used for site conditions. Standard defaults were used when available and applicable to a construction worker. When no standard parameters were available, conservative assumptions were used. For all pathways, the exposure frequency was assumed to be 90 days/year and the exposure duration was assumed to be 1 year. These assumptions were considered conservative based on the nature of utility work.

The dermal contact RBSLs were calculated using procedures *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment, Interim Guidance* (USEPA Peer Consultation Workshop Draft, 1998). Based on expected limited contact with groundwater, the event frequency was assumed to be 1 event/day and the event duration was assumed to be 1 hour/event. The skin surface area available for contact was 4500 cm², based on one-fourth the skin surface area given in the risk assessment guidance document for a swimming adult.

The incidental ingestion RBSLs were calculated using the equation given in *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Interim Final)*, (USEPA 1989). An incidental ingestion rate of 0.01 L/day was assumed based on a fraction (12.5%) of the incidental ingestion rate for a wading adult (0.01 L/hr), considered for an 8-hour work day. The incidental ingestion rate for wading adults is given in *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment* (USEPA Region 4, 1995).

Utility lines in the area are typically 2 to 6 feet deep. The average depth to groundwater at the point of exposure (CNC06-P03) is 6.05 feet BTOC, with a range of 3.86 to 7.38 feet BTOC. It was assumed that a construction worker might be exposed to chemicals volatilizing from standing groundwater. The inhalation RBSLs were calculated using Henry's Law:

$$RBSL_{WATER} = RBSL_{AIR}/H$$

Where H = Henry's Law constant [mg/L-air/mg/L-water]

The RBSL_{AIR} for each chemical was calculated using the equation given in the *ASTM Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (1997). SCDHEC values were used for Henry's Law constants.

A water line and a storm sewer are located within 5 to 10 feet of the area of containing free product. The point of exposure location for the on-site construction worker was considered to be at the source, and no fate and transport calculations were performed to determine the SSTL protective of the construction worker. The minimum RBSL for the three pathways was chosen as the SSTL for the construction worker.

The following table shows the calculated RBSLs for each pathway and the SSTL for the construction worker:

Chemical of Concern	Dermal	Incidental Ingestion	Inhalation	SSTL
	RBSL	RBSL	RBSL	(Minimum RBSL)
	mg/L	mg/L	mg/L	mg/L
Benzene	0.85	68.52	0.15	
Toluene	23.98	5677.78	5.38	
Ethylbenzene	6.05	2838.89	14.50	
Xylenes	102.33	56777.78	NA*	
Naphthalene	1.63	1135.56	2.63	

*No inhalation reference dose is available for xylenes; therefore, no inhalation RBSL can be calculated.

Appendix F provides the parameters and results of the RBSL and SSTL calculations.

3.5.2 SSTLs Protective of Surface Water

SSTLs were developed which would protect the Cooper River from potential impact from discharge of impacted groundwater. The Domenico model as described in Section 2.7 was used to determine the groundwater SSTLs for BTEX and naphthalene under steady state conditions. Table 8 provides fate and transport parameters used in the model. The groundwater flow is primarily toward the north toward the Cooper River, 890 feet from UST 648B (Figure 6). CNC06-P03 and CNC06-P01* contained free product, fuel oil, during at least two elevation-gauging events; therefore, the area surrounding these monitoring wells was used as the source for predicted migration. All other wells had no detections of any compounds of interest, except for an estimated concentration of 1.38J µg/L of naphthalene in the CNC06-M01 duplicate sample, which is less than the reporting limit but greater than the detection limit.

Dissolved hydrocarbon concentrations in CNC06-P03 were assumed to be the concentration of each compound in equilibrium with fuel oil, calculated using Raoult's Law. These concentrations were used in the Domenico model as the source concentrations. The distance from CNC06-P03 to the Cooper River (Figure 1), which is the nearest point of exposure other than construction worker was estimated to be 890 feet. Using the values of RBSLs (0.005 mg/L for benzene, 1 mg/L for toluene, 0.7 mg/L for ethylbenzene, 10.0 mg/l for xylenes, and 0.01 mg/L for naphthalene) at the point of exposure, the SSTLs at CNC06-P03 were calculated and compared with the calculated source concentrations in CNC06-P03. The SSTLs at the compliance well (CNC06-M01) were also calculated using the values of the RBSLs at the point of exposure.

The distance from the compliance well to the point of exposure was estimated to be 865 feet (263 meters).

Groundwater SSTLs were determined to be:

Chemical of Concern	Source SSTL [mg/L]	Compliance Point SSTL [mg/L]
Benzene	0.998	0.943
Toluene	199.5	188.5
Ethybenzene	139.7	132.0
Xylenes	1995	1885
Naphthalene	2.00	1.89

Appendix F provides the Domenico model calculations generating SSTLs.

3.5.3 Selected SSTLs

For each chemical, the SSTL calculated for the construction worker was less than the SSTL calculated for the Cooper River scenario; therefore, the construction worker scenario SSTLs were selected as the site SSTLs. The selected SSTLs and the source concentrations are:

Chemical of Concern	SSTL (mg/L)	Source Concentration (mg/L)
Benzene	0.15	0.31
Toluene	5.38	4.65
Ethylbenzene	6.05	0.1
Xylenes	102.33	0.79
Naphthalene	1.63	23.35

Note that the SSTLs for toluene, ethylbenzene, and xylenes exceed the calculated concentrations of these constituents in equilibrium with fuel oil. Free product in monitoring well CNC06-P01* and CNC06-P03 must be removed; however, the presence of toluene, ethylbenzene, and xylenes at their solubility limit concentrations would be within acceptable risk limits as defined by the SCDEHC. Appendix F provides the calculations for constituent solubilities based on Raoult's Law. Appendix F also provides a summary of groundwater SSTL results and the theoretical aqueous solubility of each constituent of interest. Comparisons of the construction worker RBSLs and groundwater SSTLs to the calculated dissolved constituents in groundwater are presented in Table 12.

3.6 **RECOMMENDATIONS**

The downgradient extent of hydrocarbon impact to groundwater has been delineated. Free product was present in CNC06-P01* and CNC06-P03 with thicknesses of 0.64 feet and 6.08 feet, respectively, in March 1999. The calculated concentrations of benzene (0.31 mg/L) and naphthalene (23.35 mg/L) in groundwater in equilibrium with fuel oil at source wells CNC06-P01* and CNC06-P03 exceed the site SSTLs (0.15 mg/L for benzene and 1.63 for naphthalene) calculated in Section 3.5. No concentrations of any compound of interest in the compliance well CNC06-M01 exceed their SSTLs. Compliance well concentrations are actual measured concentrations.

Since the dissolved hydrocarbon (benzene and naphthalene) concentrations at the source well are above the SSTLs, corrective action is required according to SCDHEC guidelines. It is recommended that free

product be removed from CNC06-P01* and CNC06-P03 and monitoring continue until the benzene and naphthalene concentrations fall below the SSTLs of 0.15 mg/L and 1.63 mg/L, respectively.

4.0 REFERENCES

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TABLE 1

**GROUNDWATER ELEVATIONS
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

PAGE 1 OF 2

Well #	Total Depth of Well (ft)	Top of Casing Elevation, ft (MSL)	Date Measured	Depth to Water, ft (BTOC)	Depth to Product, ft (BTOC)	Product Thickness (ft)	Groundwater Elevation (MSL)
CNC06-M01	12	8.97	2/20/99	3.82	ND	ND	5.15
			3/7/99	4.85	ND	ND	4.12
CNC06-M02	12	9.84	2/4/99	1.23	ND	ND	8.61
			2/4/99	3.02	ND	ND	6.82
			2/20/99	4.16	ND	ND	5.68
			3/7/99	5.15	ND	ND	4.69
CNC06-M03	12	8.88	2/20/99	3.26	ND	ND	5.62
			3/7/99	4.20	ND	ND	4.68
CNC06-M04	12	8.45	2/20/99	2.84	ND	ND	5.61
			3/7/99	3.79	ND	ND	4.66
CNC06-M05	12	8.22	2/4/99	2.17	ND	ND	6.05
			2/4/99	2.10	ND	ND	6.12
			3/7/99	3.83	ND	ND	4.39
CNC06-M06	12	8.15	2/4/99	2.46	ND	ND	5.69
			2/4/99	2.33	ND	ND	5.82
			2/20/99	3.26	ND	ND	4.89
			3/7/99	4.18	ND	ND	3.97
CNC06-M07	32	8.26	2/20/99	1.70	ND	ND	6.56
			3/7/99	2.52	ND	ND	5.74
CNC06-P01 *	12	8.54	2/4/99	-	SHEEN	SHEEN	-
			2/4/99	0.75	ND	ND	7.79
			2/4/99	0.87	ND	ND	7.67
			3/7/99	3.92	3.28	0.64	4.62

TABLE 1 (CONTINUED)

**GROUNDWATER ELEVATIONS
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 2 OF 2**

Well #	Total Depth of Well (ft)	Top of Casing Elevation (MSL)	Date Measured	Depth to Water (BTOC)	Depth to Product (BTOC)	Product Thickness (ft)	Groundwater Elevation (LRS)
CNC06-P01	4	98.26	12/2/98	4.55	ND	ND	93.71
			12/3/98	4.63	ND	ND	93.63
CNC06-P02	12	97.27	12/2/98	5.62	ND	ND	91.65
			12/3/98	4.83	ND	ND	92.44
CNC06-P03	12.5	100	12/2/98	**7.38	7.05	2.77	92.62
			12/3/98	**7.30	6.61	5.79	92.27
			1/24/99	**5.35	4.48	7.29	94.65
			2/4/99	**3.86	2.99	7.23	96.14
			3/7/99	**6.34	5.61	6.08	93.66
CNC06-P04	11	99.11	12/2/98	6.86	ND	ND	92.25
			2/3/99	4.83	ND	ND	94.28
CNC06-P05	11.8	98.98	12/2/98	7.10	ND	ND	91.88
			12/3/99	6.54	ND	ND	92.44
CNC06-P06	15	100.82	12/6/98	6.43	ND	ND	94.39
			1/26/99	6.43	ND	ND	94.39
			2/4/99	3.79	ND	ND	97.03
			3/7/99	7.31	ND	ND	93.51
CNC06-P07	12	100.53	12/6/98	8.38	ND	ND	92.15
			1/26/99	5.91	ND	ND	94.62
			3/7/99	6.62	ND	ND	93.91
CNC06-P08	12	NM					
CNC06-P09	12	NM					
CNC06-P10	11	99.93	12/6/98	9.00	ND	ND	90.93
			1/26/99	5.85	ND	ND	94.08
			2/4/99	2.96	ND	ND	96.97
			3/7/99	6.47	ND	ND	93.46

Notes:

MSL - Mean Sea Level

LRS - Local Relative Survey

BTOC - Below Top of Casing

NM - Not Measured

ND- Not Detected

ft - Feet

* Permanent Piezometer Well

**Corrected Depth to Water Measurements Based on Free Product Thickness

TABLE 2**GROUNDWATER FIELD MEASUREMENTS
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Well I.D.	Date Sampled	Purge method	Volume (gallons)	Temp. (° C)	pH	Conductivity (uMHOS/cm)
CNC06-M01	3/7/99	PP	6.0	17.9	7.06	6.72
CNC06-M02	3/7/99	PP	5.5	17.3	6.98	3.61
CNC06-M03	3/7/99	PP	6.5	18.2	6.87	8.61
CNC06-M04	3/7/99	PP	6.5	18.2	6.85	3.86
CNC06-M05	3/7/99	PP	6.5	18.9	7.00	7.47
CNC06-M06	3/7/99	PP	6.5	18.7	7.05	3.91
CNC06-M07	3/7/99	PP	5.0	18.7	7.41	22.80

Notes:

°C) - Degrees Celsius

PP - Peristaltic pump, low flow technique

uMHOS/cm - Micro HOS per centimeter

TABLE 3

**SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 6, BUILDING 648
ZONE H, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 1 OF 2**

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (PPM)
CNC06-B01	06SSB0101	1	ND
	06SSB0102	2	200
	06SSB0103	3	45
CNC06-B02	06SSB0201	1	2
	06SSB0202	2	35
	06SSB0203	3	1500
	06SSB0204	4	50
	06SSB0205	5	40
CNC06-B03	06SSB0301	1	2
	06SSB0302	2	200
	06SSB0303	3	4250
	06SSB0304	4	2750
	06SSB0306	6	3500
CNC06-B04	06SSB0401	1	10
	06SSB0402	2	14
	06SSB0403	3	9
	06SSB0405	5	38
	06SSB0407	7	30
CNC06-B05	06SSB0501	1	3
	06SSB0502	2	2
	06SSB0503	3	2
	06SSB0504	4	18
	06SSB0506	6	22
CNC06-B06	06SSB0601	1	1
	06SSB0602	2	1
	06SSB0603	3	2
	06SSB0604	4	7
	06SSB0605	5	15
	06SSB0607	7	60
CNC06-B07	06SSB0701	1	1
	06SSB0702	2	1
	06SSB0703	3	2
	06SSB0704	4	4
	06SSB0705	5	6
	06SSB0707	7	50
CNC06-B08	06SSB0801	1	5
	06SSB0802	2	4
	06SSB0803	3	2
CNC06-B09	06SSB0901	1	3
	06SSB0902	2	3
	06SSB0903	3	3
	06SSB0904	4	6
	06SSB0906	6	4

TABLE 3 (CONTINUED)

**SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 6, BUILDING 648
ZONE H, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 2 OF 2**

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (PPM)
CNC06-B10	06SSB1001	1	4
	06SSB1002	2	3
	06SSB1003	3	4
	06SSB1004	4	20
	06SSB1006	6	35
CNC06-B11	06SSB1101	1	1
	06SSB1102	2	ND
	06SSB1103	3	ND
	06SSB1104	4	15
	06SSB1105	5	15
	06SSB1107	7	220
	06SSB1109	9	300
CNC06-B12	06SSB1201	1	1
	06SSB1202	2	1
	06SSB1203	3	35
	06SSB1204	4	220
CNC06-B13	06SSB1301	1	NA
	06SSB1302	2	NA
	06SSB1303	3	NA
	06SSB1304	4	NA
CNC06-B14	06SSB1402	2	NA
	06SSB1404	4	NA
CNC06-B15	06SSB1502	2	50
	06SSB1504	4	3500
	06SSB1505	5	60
CNC06-B16	06SSB1602	2	13
	06SSB1604	4	700
CNC06-B17	06SSB1701	1	4
	06SSB1702	2	4
	06SSB1703	3	6
	06SSB1704	4	50
	06SSB1706	6	25

Notes:

OVA - organic vapor analyzer equipped with a flame ionization detector

PPM - parts per million

NS - sample was not analyzed

ND - not detected

TABLE 4

**SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 6, BUILDING 648
ZONE H, FORMER 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
CNC06-B01	06SFB0102	2	<0.5	<0.5	<0.5	3.04	57,389.03
CNC06-B02	06SFB0203	3	<0.5	<0.5	6.85	3.98	74,054
CNC06-B03	06SFB0303	3	1.78	<0.5	<0.5	<1.0	284,737.55
CNC06-B04	06SFB0405	5	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B05	06SFB0506	6	<0.5	<0.5	<0.5	<1.0	2,940.03
CNC06-B06	06SFB0607	7	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B07	06SFB0707	7	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B08	06SFB0801	1	<0.5	<0.5	<0.5	<1.0	340.44
CNC06-B09	06SFB0904	4	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B10	06SFB1006	6	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B11	06SFB1109	9	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B12	06SFB1204	4	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B13	06SFB1304	4	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B14	06SFB1404	4	<0.5	<0.5	<0.5	<1.0	748.86
CNC06-B15	06SFB1504	4	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B16	06SFB1604	4	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B17	06SFB1704	4	<0.5	<0.5	<0.5	<1.0	<100

NOTES:

⁽¹⁾ Laboratory screening data were analyzed using USEPA Method 8260. Compounds not detected are reported as less than the instrument detection limit.

PPB - parts per billion

TABLE 5

**SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 6, BUILDING 648
ZONE H, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Sample Location	Sample Identification	Laboratory Screening Data (PPB) ⁽¹⁾				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel Range Organics
CNC06-P01	06GFP0101	<0.5	<0.5	<0.5	<1.0	232.89
CNC06-P02	06GFP0201	<0.5	<0.5	<0.5	<1.0	58.86
CNC06-P03	free product					
CNC06-P04	06GFP0401	<0.5	<0.5	<0.5	<1.0	<100
CNC06-P05	06GFP0501	<0.5	0.61	<0.5	<1.0	<100
CNC06-P06	06GFP0601	<0.5	0.48	<0.5	0.72	1,432.74
CNC06-P07	06GFP0701	<0.5	0.65	<0.5	<1.0	351.90
CNC06-B08	06GFP0801	<0.5	<0.5	<0.5	<1.0	169.28
CNC06-P09	06GFP0901	<0.5	<0.5	<0.5	<1.0	133.01
CNC06-P10	06GFP1001	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B11	06GFB11	<0.5	<0.5	<0.5	<1.0	252.05
CNC06-B12	06GFB12	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B13	06GFB13	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B14	06GFB14	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B15	06GFB15	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B16	06GFB16	<0.5	<0.5	<0.5	<1.0	<100
CNC06-B17	06GFB17	<0.5	<0.5	<0.5	<1.0	<100

Notes:

⁽¹⁾ Laboratory screening data were analyzed using USEPA Method 8260. Compounds not detected are reported as less than the instrument detection limit.

PPB - parts per billion

free product - free floating petroleum product was present at this location

TABLE 6

**SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

SOIL BORING/ SAMPLE NO.	SAMPLE DATE	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Xylenes (total) (ug/kg)	Benzo(a) anthracene (ug/kg)	Benzo(b) fluoranthene (ug/kg)	Benzo(k) fluoranthene (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
CNC06-B02 / 06SLB0203	19-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06-B04 / 06SLB0405	19-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06-B05 / 06SLB0506	19-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06-B06 / 06SLB0607	19-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06-B08 / 06SLB0801	19-Jan-99	ND	ND	ND	ND	ND	403	ND	ND	ND	ND
CNC06-B09 / 06SLB0904	19-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ND - not detected

ug/kg - micrograms 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.

TABLE 7

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
 SITE 6 BUILDING 648
 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) fluoranthene (ug/l)	Benzo(ghi) perylene (ug/l)	Benzo(k) Fluoranthene (ug/l)	Chrysene (ug/l)	Dibenzo(a,h) anthracene (ug/l)	Naphthalene (ug/l)
RBSL ⁽¹⁾		5	1000	70	10000	40	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾
CNC06M01 / 06GLM0101	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M01 / 06GLM0101D ⁽³⁾	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.38 ⁽⁴⁾
CNC06M02 / 06GLM0201	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M03 / 06GLM0301	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M04 / 06GLM0401	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M05 / 06GLM0501	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M06 / 06GLM0601	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CNC06M07 / 06GLM0701	07-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ND - not detected

ug/l - micrograms per liter

⁽⁴⁾ Indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit.

⁽¹⁾ SCDHEC RBSL - South Carolina Department of Health and Environmental Control-Risk Based Screening Levels

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

⁽³⁾ Duplicate

TABLE 8

**FATE AND TRANSPORT INPUT PARAMETERS
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Parameter	Domenico Dilution/Attenuation Model ⁽¹⁾
Hydraulic Conductivity [m/sec]	2.23E-06
Hydraulic Gradient	0.0144
Porosity ^(a)	0.48
Estimated Plume Length [ft]	NA
Soil Bulk Density ^(a) [kg/L]	1.35
Partition Coefficient [L/kg]	chemical specific
Fraction of Organic Carbon in soil [g/g]	1.03E-01
First Order Decay Rate [sec ⁻¹]	0
Modeled Plume Length [ft]	NA
Modeled Plume Width [ft]	NA
Source Width ^(b) [m]	15
Source Thickness ^(b) [m]	2
Soluble Mass [kg]	Infinite ^(c)

Notes:

- (1) - *South Carolina Risk-Based Corrective Action for Petroleum Releases*, South Carolina Department of Health and Environmental Control, 1998.
- (a) - Determined from SCDHEC 1998 Tables C1 and C3
- (b) - Default value
- (c) - Assumption of the Domenico model

TABLE 9

COMPARISON OF MAXIMUM CONCENTRATIONS TO RBSLs
 SITE 6, BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Chemical of Concern	Maximum Concentration (Soil) (mg/kg)	RBSLs (Soil) (mg/kg) ^(a)	Maximum Concentration (GW) (mg/L)	Tier 1 RBSLs (GW) (mg/L) ^(b)	RBSLs (GW) Protective of On-Site Construction Worker ^(c)
Benzene	0.00178	0.005	0.31 ^(d)	0.005	0.15
Toluene	ND	0.478	4.65 ^(d)	1	5.38
Ethybenzene	0.00685	0.364	0.1 ^(d)	0.7	6.05
Xylenes	0.00398	1.119	0.79 ^(d)	10	102.33
Benzo(a)anthracene	ND	17.687	-	0.010	-
Benzo(b)fluoranthene	0.403	7.042	-	0.010	-
Benzo(k)fluoranthene	ND	5.593	-	0.010	-
Chrysene	ND	3.146	-	0.010	-
Dibenzo(a,h)anthracene	ND	21.265	-	0.010	-
Naphthalene	ND	0.052	23.35 ^(d)	0.010	1.63

(a) - From Risk-Based Corrective Action for Petroleum Releases, Table B4, Depth to GW - <5 ft, SCDHEC RBCA Guidelines, 1998.

(b) - From Risk-Based Corrective Action for Petroleum Releases, Table B1, SCDHEC RBCA Guidelines, 1998.

(c) - Calculated for dermal, incidental ingestion, and inhalation routes for the on-site construction worker (see Section 3.5.1 of the text and Appendix H).

(d) - Groundwater concentration in equilibrium with free product as calculated using Raoult's Law.

GW - Groundwater

RBSLs - Risk Based Screening Levels

ND - Not detected

NA - Not analyzed

Shaded cell indicates the concentration exceeded one of the RBSLs.

TABLE 10

**EXPOSURE PATHWAY ASSESSMENT - CURRENT USE
SITE 10, BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	No volatilization to enclosed space. No explosion hazard.	
	Explosion Hazard	No		
Groundwater	Ingestion	No	No water supply well downgradient or residential basements.	
	Dermal contact	No		
	Inhalation	No		
Surface Water	Ingestion	No	Cooper River 890 ft downgradient	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No subsurface soil with BTEX or PAHs including naphthalene above RBSLs	
	Dermal contact	No		
	Inhalation	No		

TABLE 11

EXPOSURE PATHWAY ASSESSMENT - FUTURE USE
 SITE 6, BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	No volatilization to enclosed space. No explosion hazard.	
	Explosion Hazard	No		
Groundwater	Ingestion	Yes	Future use of property expected to be industrial or commercial. Water line within 5 ft of free product plume; therefore, construction worker exposure possible.	
	Dermal contact	Yes		
	Inhalation	Yes		
Surface Water	Ingestion	Yes	Cooper River 890 ft downgradient	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No subsurface soil with BTEX or PAHs including naphthalene above RBSLs	
	Dermal contact	No		
	Inhalation	No		

TABLE 12

COMPARISON OF MAXIMUM GROUNDWATER CONCENTRATIONS TO SSTLs
 SITE 6, BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Chemical of Concern	Source Area Concentration (mg/L)	SSTLs Protective of Surface Water (Cooper River)		SSTLs Protective of Construction Workers	Minimum On-Site SSTLs ^(a)
		SSTL _{SOURCE} (mg/L)	SSTL _{COMP} (mg/L)	SSTL _{SOURCE} (mg/L)	(mg/L)
Benzene	0.31	0.998	0.943	0.15	0.15
Toluene	4.65	199.5	188.5	5.38	5.38
Ethylbenzene	0.10	139.7	132	6.05	6.05
Xylenes	0.79	1995	1885	102.33	102.33
Naphthalene	23.35	2	1.89	1.63	1.63

mg/L - milligrams per liter

GW - Groundwater

Shaded cell indicates the concentration exceeded the SSTL.

(a) The minimum on-site SSTLs are chosen as those SSTLs protective of both surface water (the Cooper River) and the on-site construction worker.

**RAPID ASSESSMENT REPORT
FOR
SITE 6, BUILDING 648**

**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**

**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0068**

SEPTEMBER 1999

PREPARED UNDER THE SUPERVISION OF:

APPROVED FOR SUBMITTAL BY:

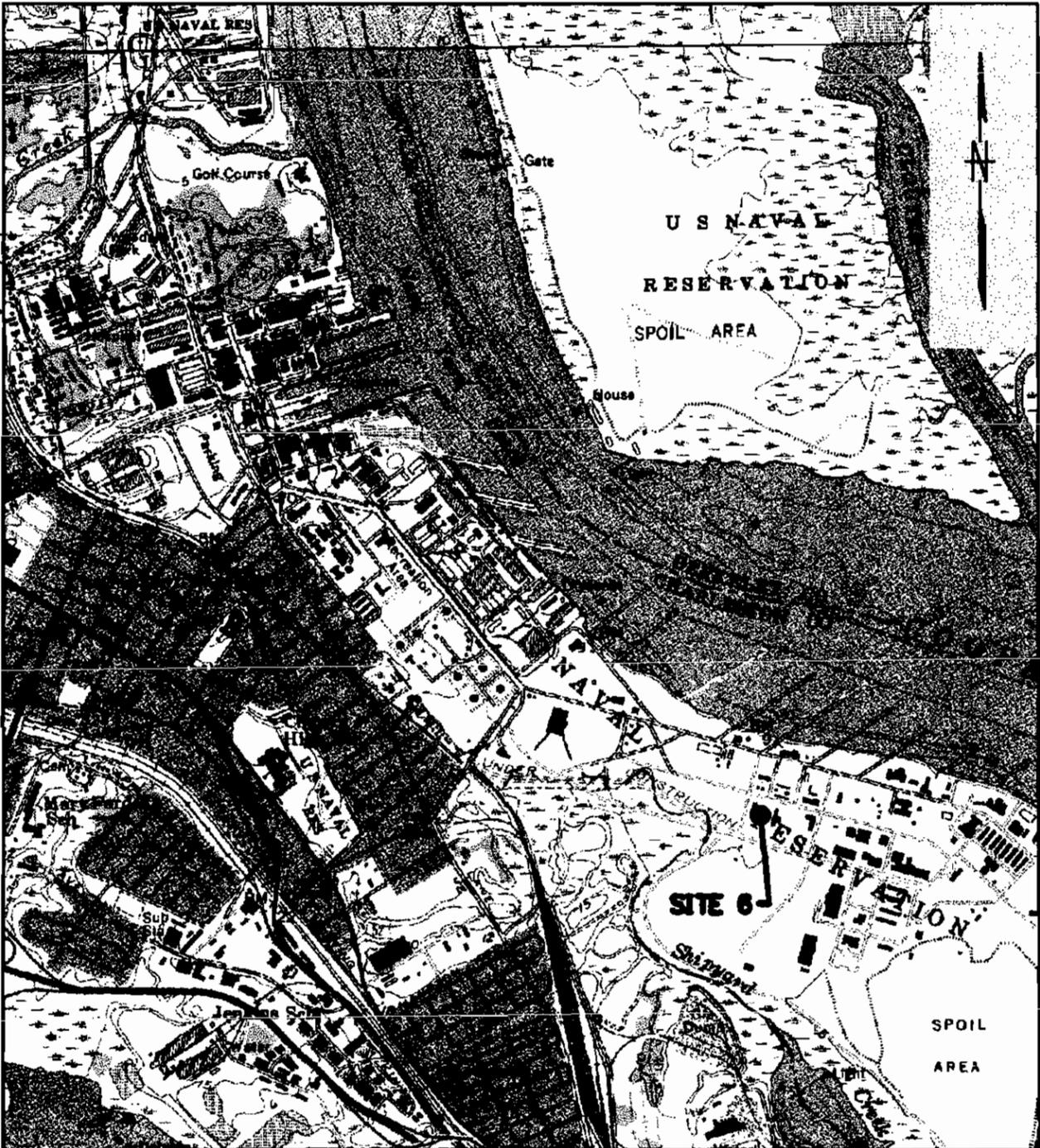


**PAUL CALLIGAN, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
TALLAHASSEE, FLORIDA**



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

ACAD: 7912cm24.dwg 07/07/99 NJS



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

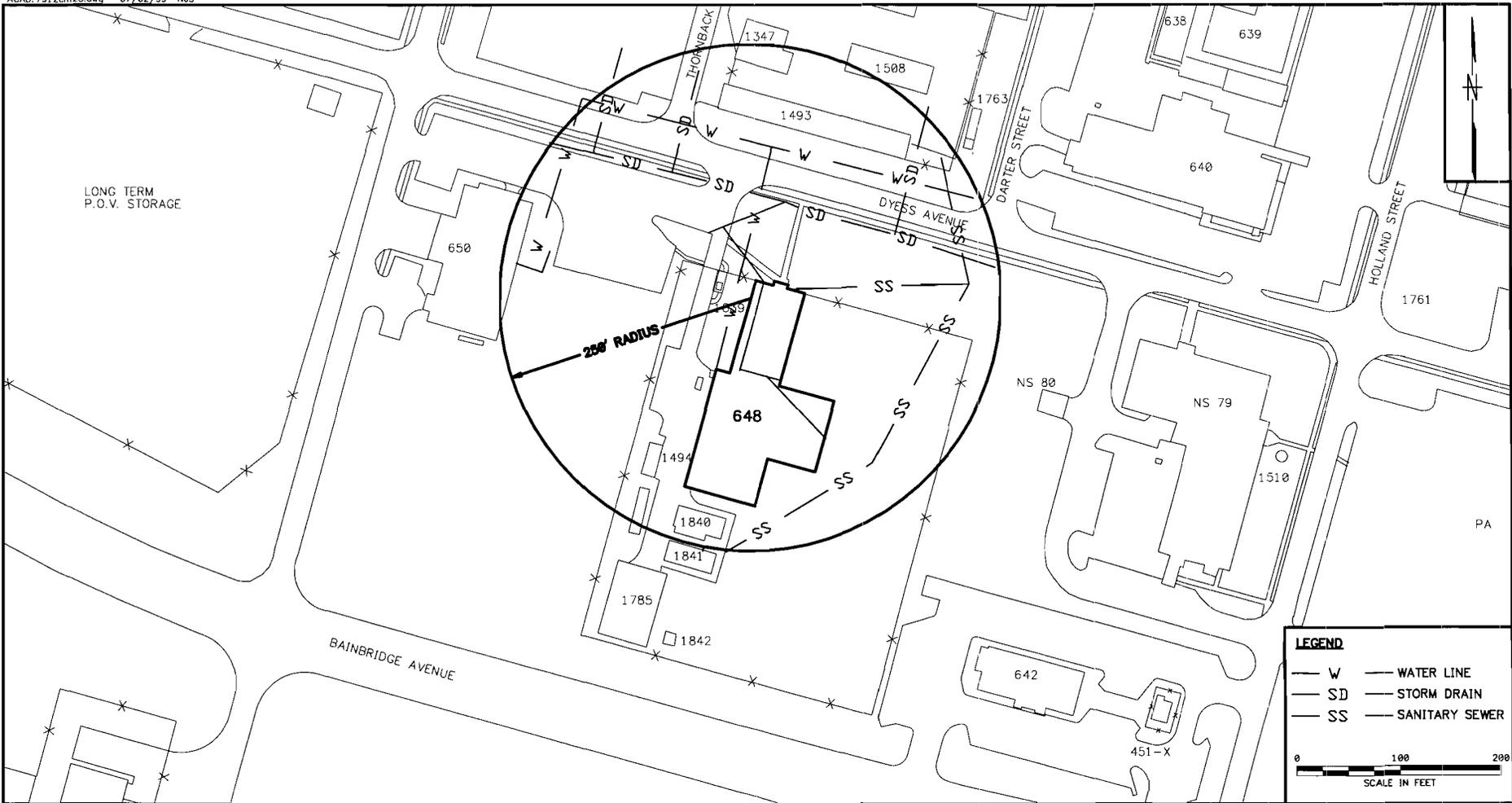


DRAWN BY HJP	DATE 7/1/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SITE LOCATION MAP
 SITE 6, BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



LEGEND

- W — WATER LINE
- SD — STORM DRAIN
- SS — SANITARY SEWER

0 100 200
SCALE IN FEET

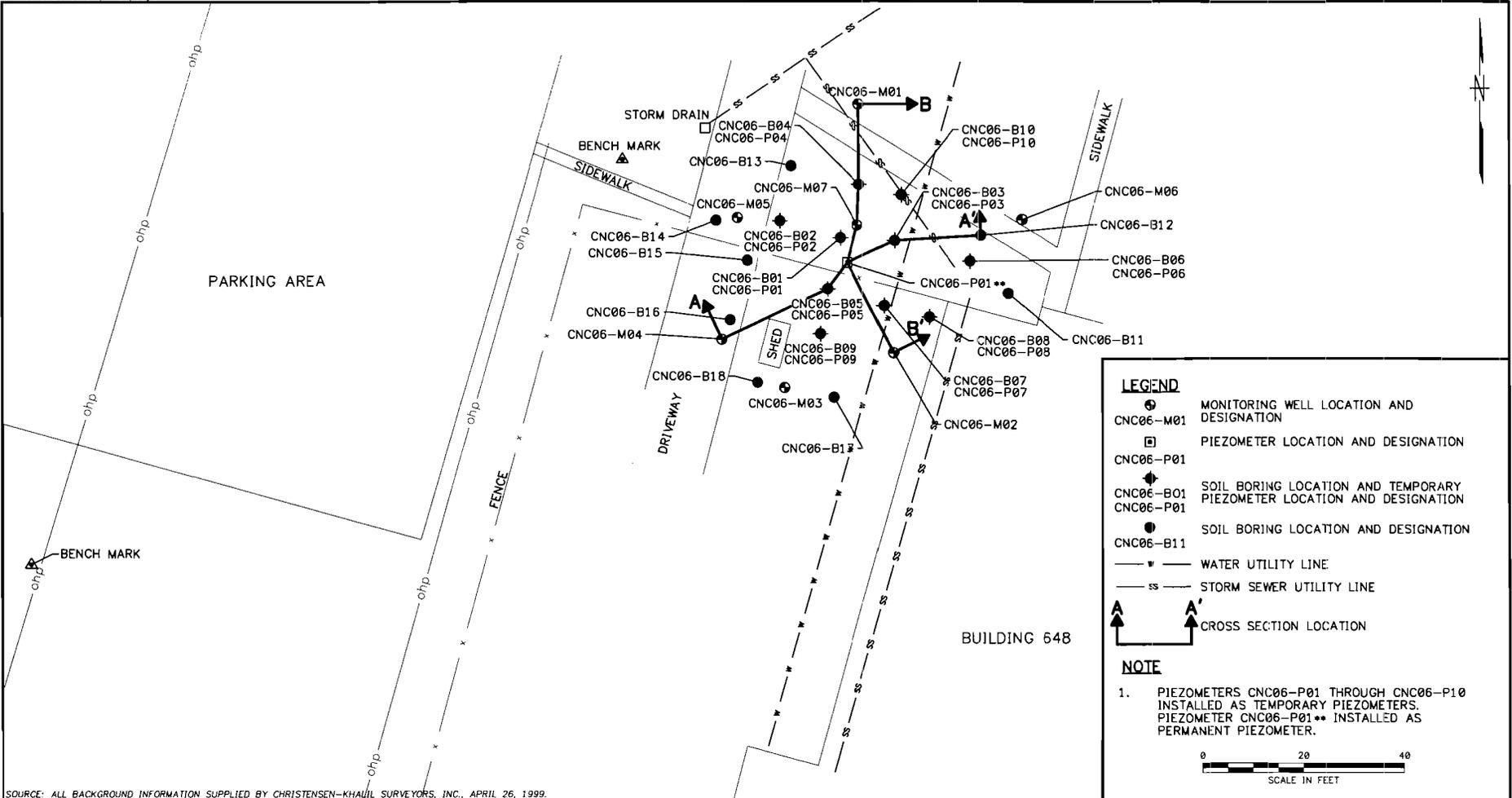
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 CHECKED BY: DATE: _____
 COST/SCHED-AREA: _____
 SCALE: AS NOTED



SITE VICINITY MAP
SITE 6, BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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



LEGEND

- MONITORING WELL LOCATION AND DESIGNATION
CNC06-M01
- PIEZOMETER LOCATION AND DESIGNATION
CNC06-P01
- ◆ SOIL BORING LOCATION AND TEMPORARY PIEZOMETER LOCATION AND DESIGNATION
CNC06-B01
CNC06-P01
- SOIL BORING LOCATION AND DESIGNATION
CNC06-B11
- W WATER UTILITY LINE
- SS STORM SEWER UTILITY LINE
- ↑ ↑ CROSS SECTION LOCATION

NOTE

1. PIEZOMETERS CNC06-P01 THROUGH CNC06-P10 INSTALLED AS TEMPORARY PIEZOMETERS. PIEZOMETER CNC06-P01** INSTALLED AS PERMANENT PIEZOMETER.



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

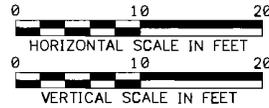
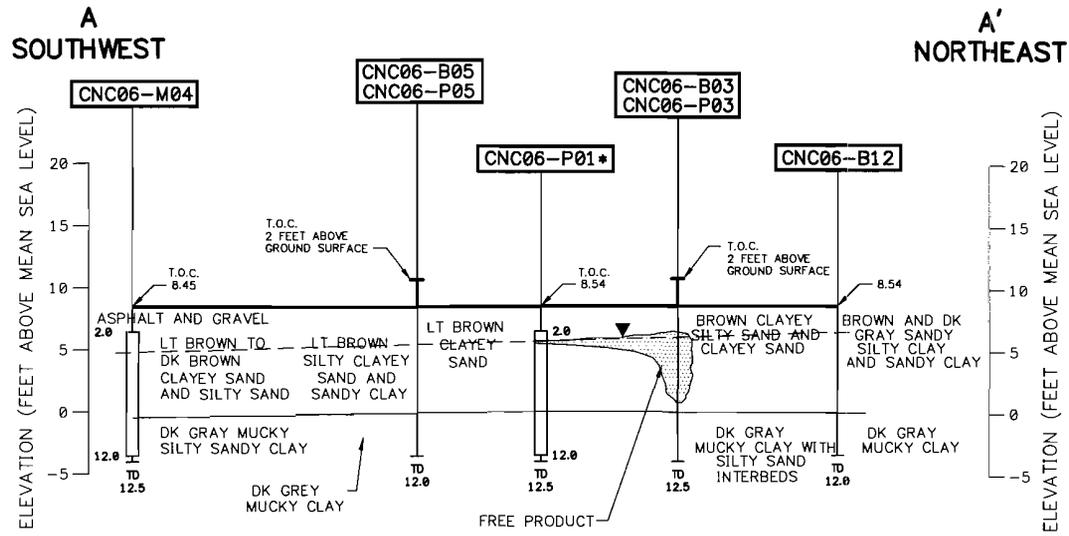
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SCALE	
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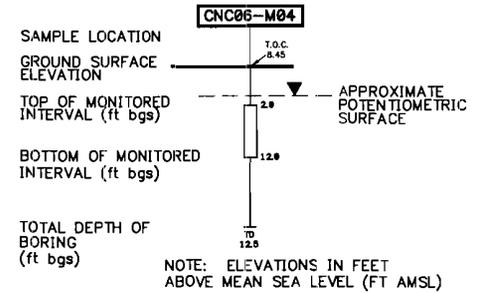


SITE MAP
SITE 6 BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 CHARLESTON, SOUTH CAROLINA

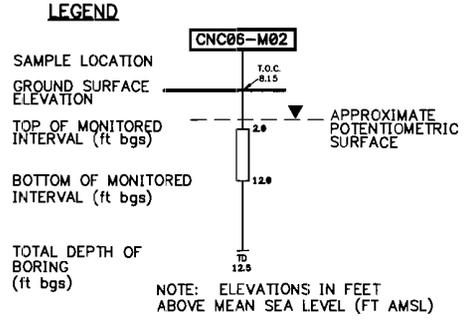
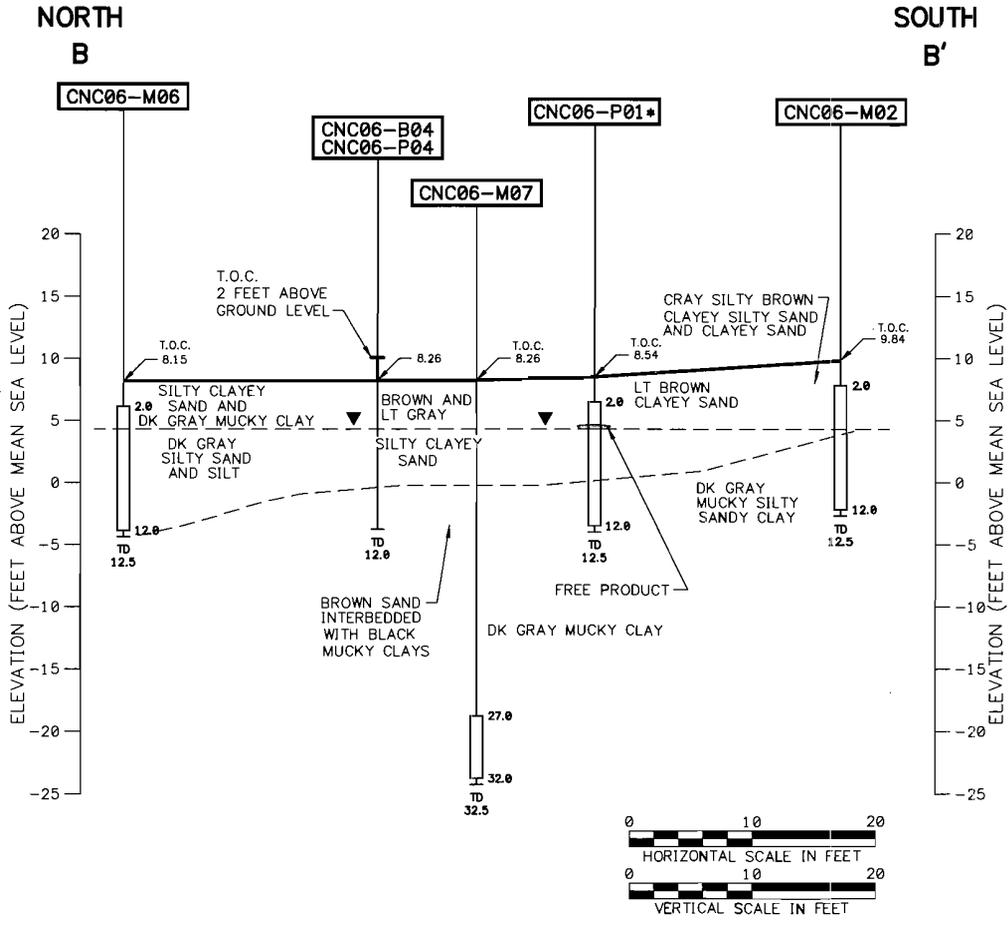
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APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV. 0



LEGEND



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		CONTRACT NO.			
							HJP	7/1/99		7912	APPROVED BY	DATE	
											APPROVED BY	DATE	
											DRAWING NO.	REV.	
							SCALE AS NOTED			GEOLOGIC CROSS SECTION A-A' SITE 6, BUILDING 648 ZONE H, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA		FIGURE 4 0	



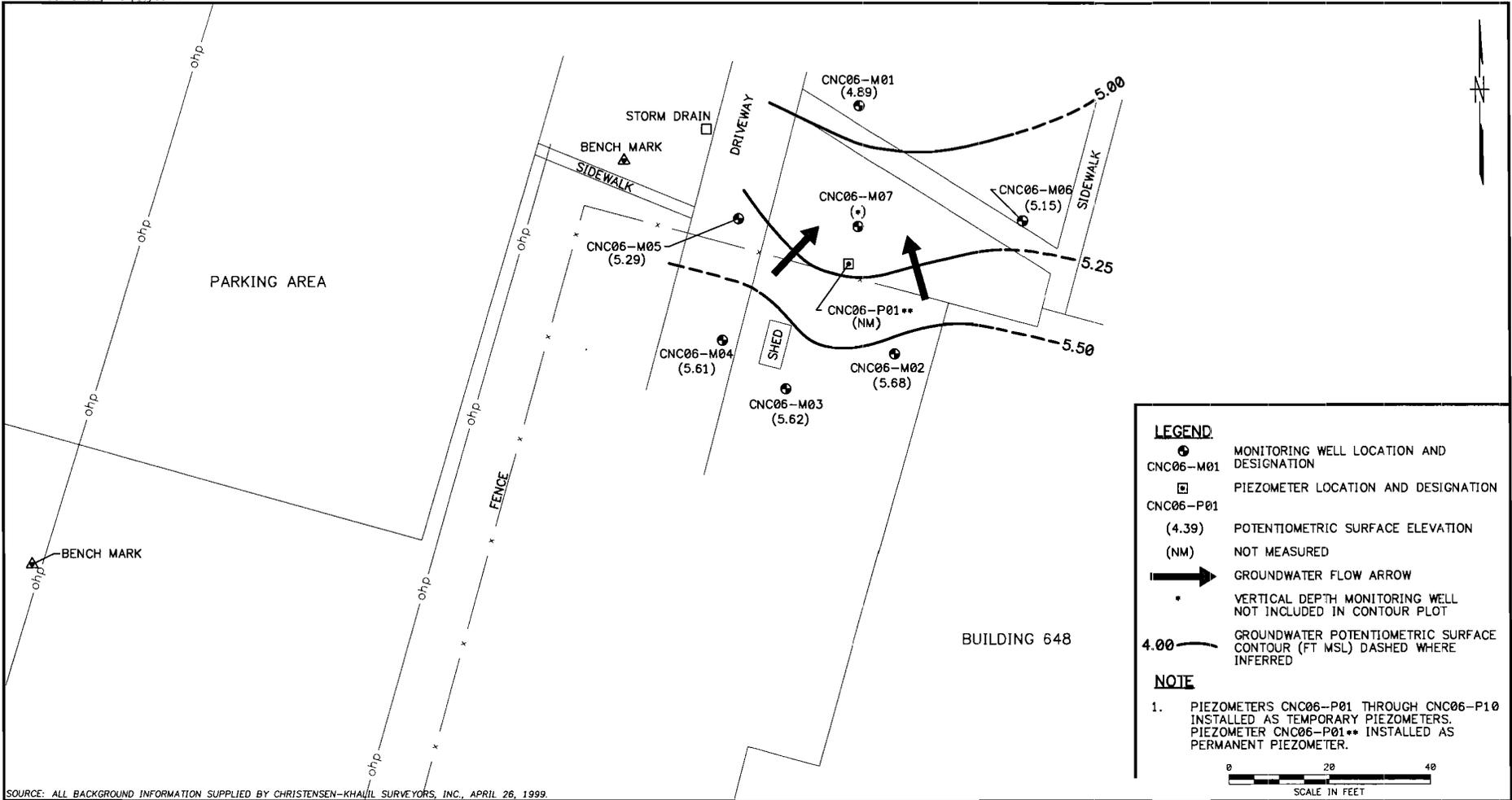
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
HJP	7/1/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



GEOLOGIC CROSS SECTION B-B'
 SITE 6, BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

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



LEGEND

- MONITORING WELL LOCATION AND DESIGNATION
- PIEZOMETER LOCATION AND DESIGNATION
- CNC06-P01 (4.39) POTENTIOMETRIC SURFACE ELEVATION
- (NM) NOT MEASURED
- GROUNDWATER FLOW ARROW
- VERTICAL DEPTH MONITORING WELL NOT INCLUDED IN CONTOUR PLOT
- 4.00 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (FT MSL) DASHED WHERE INFERRED

NOTE

- PIEZOMETERS CNC06-P01 THROUGH CNC06-P10 INSTALLED AS TEMPORARY PIEZOMETERS. PIEZOMETER CNC06-P01** INSTALLED AS PERMANENT PIEZOMETER.

0 20 40
SCALE IN FEET

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

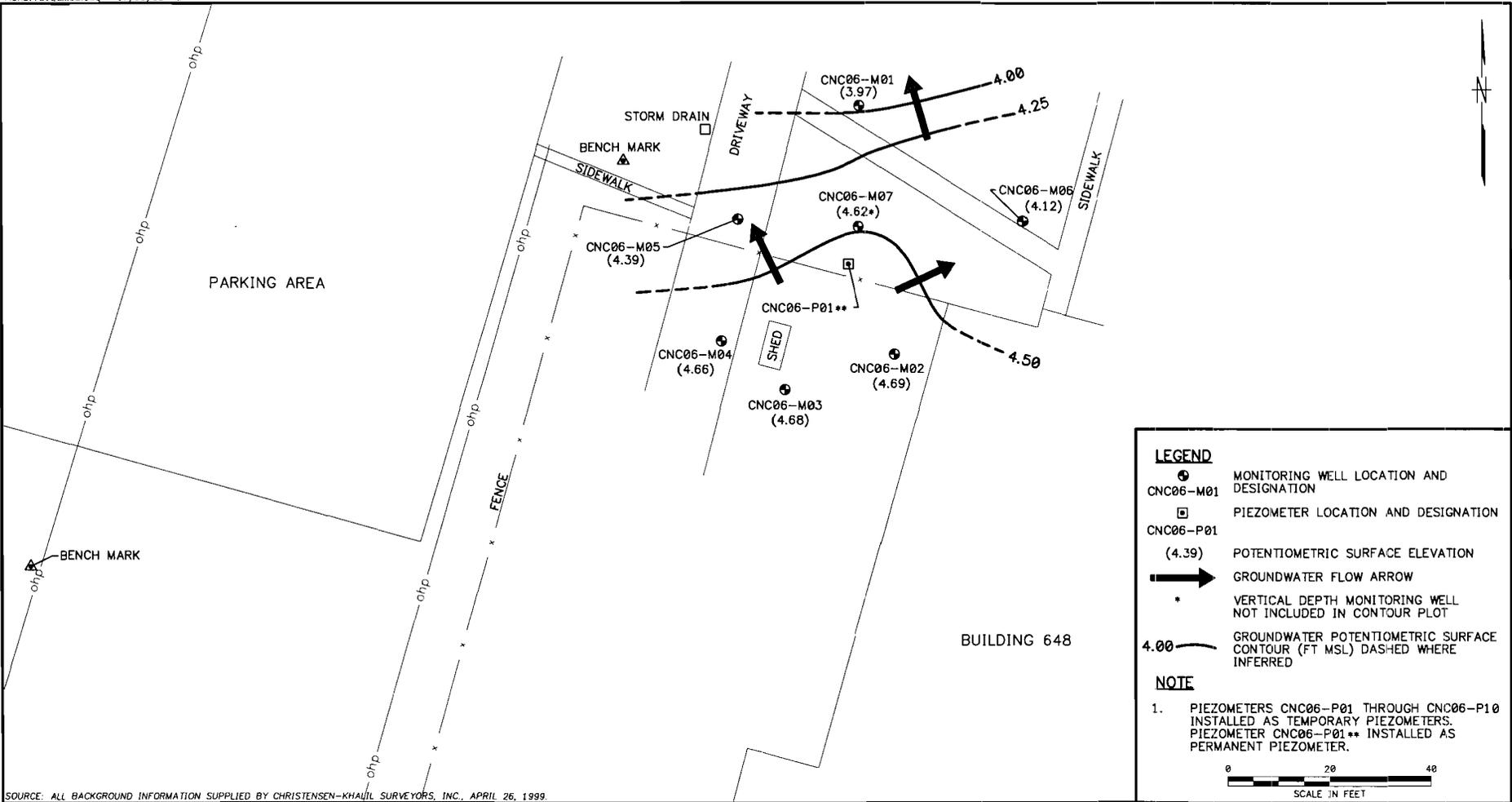
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
MF	7/16/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



GROUNDWATER POTENTIOMETRIC MAP
(FEBRUARY 20, 1999)
SITE 6 BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA

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



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

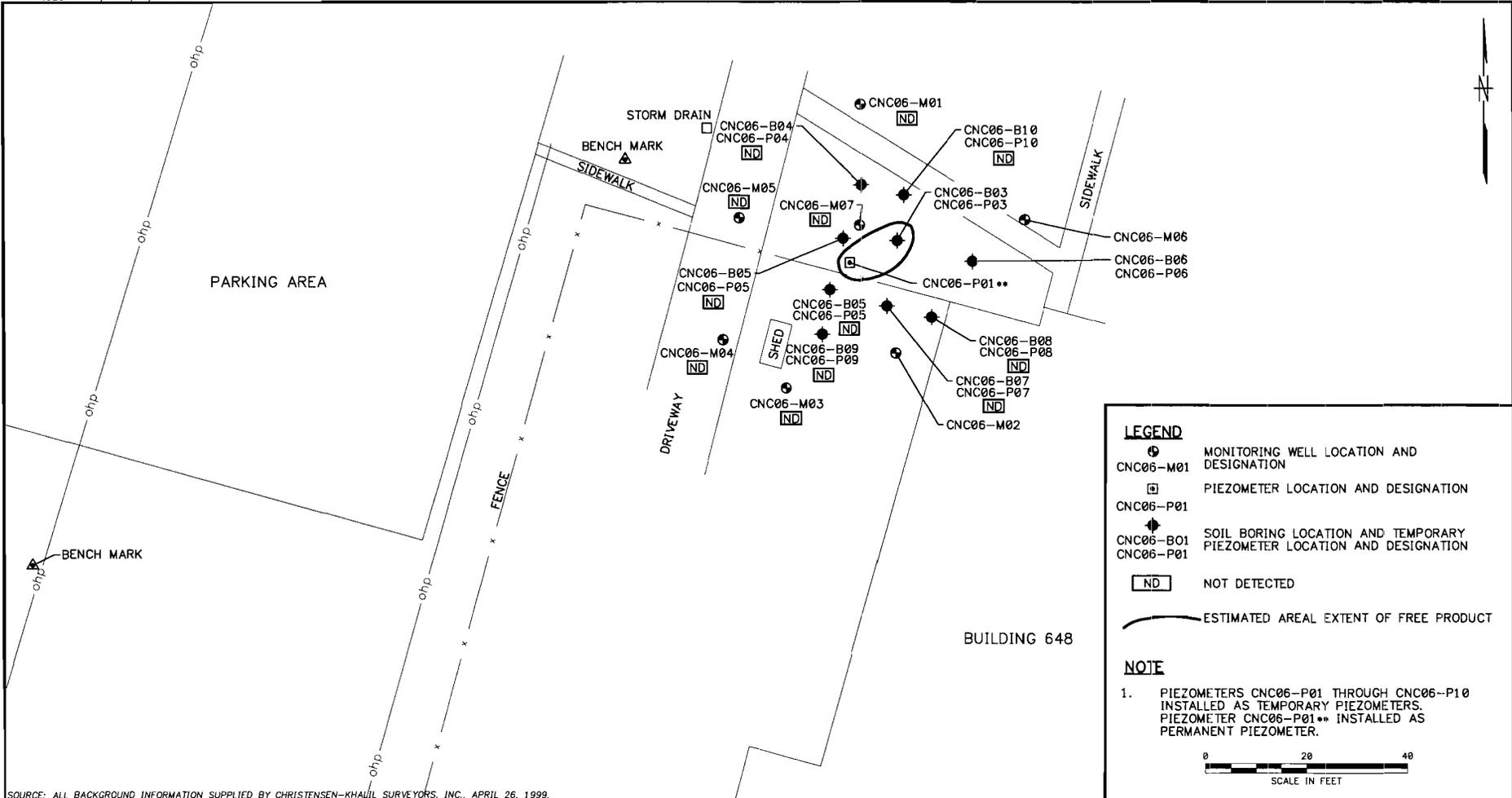
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
MF	7/16/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



GROUNDWATER POTENTIOMETRIC MAP
(MARCH 7, 1999)
SITE 8 BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA

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



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

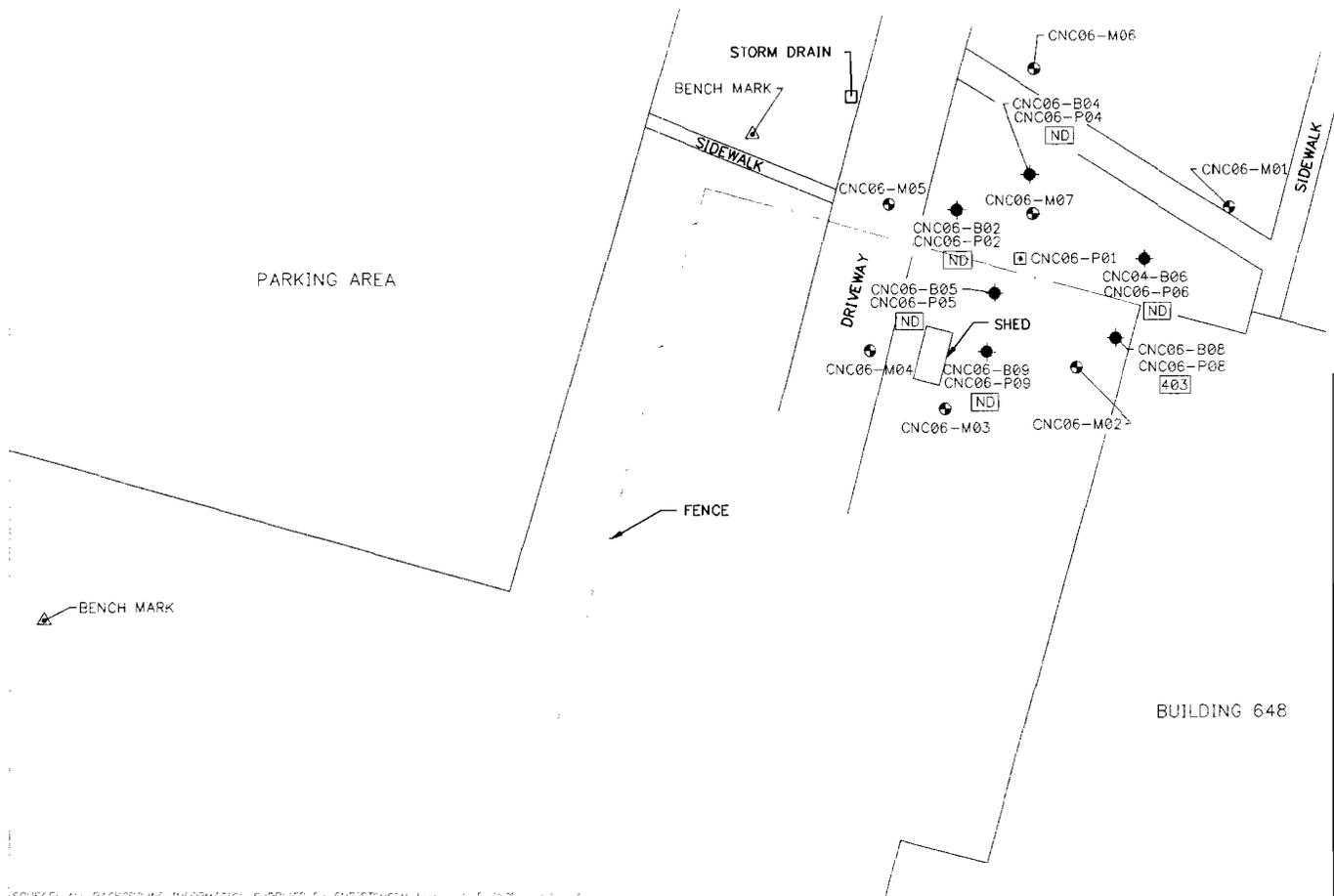
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY	DATE
MF	7/16/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



AREAL EXTENT OF FREE PRODUCT
 SITE 6 BUILDING 648
 ZONE H, CHARLESTON NAVAL COMPLEX
 CHARLESTON, SOUTH CAROLINA

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



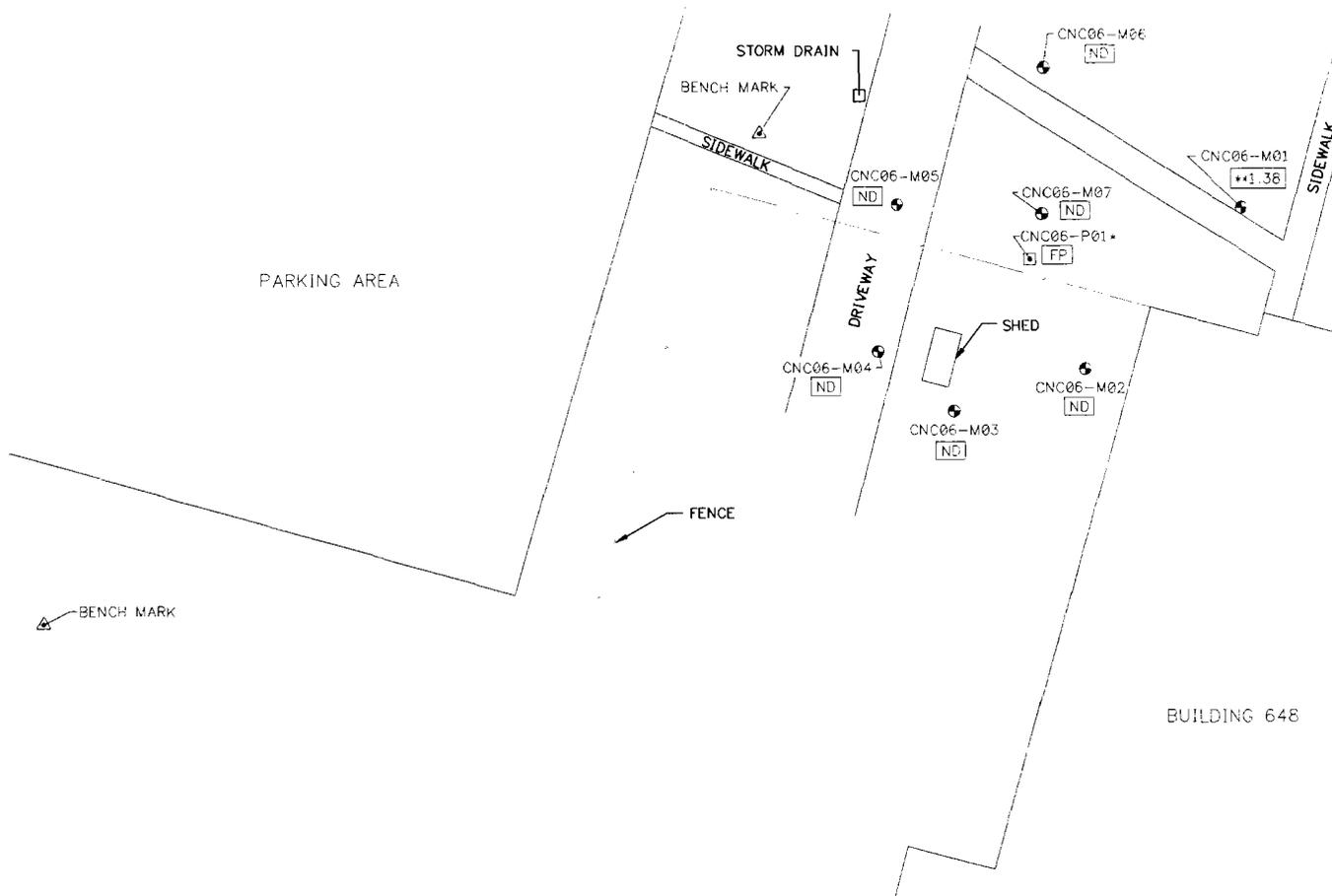
- LEGEND**
- MONITORING WELL LOCATION AND DESIGNATION
CNC06-M01
 - PIEZOMETER LOCATION AND DESIGNATION
CNC06-P01
 - SOIL BORING LOCATION AND TEMPORARY
PIEZOMETER LOCATION AND DESIGNATION
CNC06-B01
CNC06-P06

- NOT DETECTED
- BENZO(b)FLUORANTHENE CONCENTRATION (ug/L)

NOTE:
 PIEZOMETERS CNC06-P01 THROUGH CNC06-P10
 INSTALLED AS TEMPORARY PIEZOMETERS.
 PIEZOMETER CNC06-P01 INSTALLED AS PERMANENT
 PIEZOMETER.

SOURCE: ALL BACKGROUND INFORMATION SUPPLIED BY CHRISTENSEN-PA...

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SOIL BENZO(b)FLUORANTHENE CONCENTRATION MAP JANUARY 1999 SITE 6, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO	
							HJP	7/1/99			7912	
											APPROVED BY	DATE
											APPROVED BY	DATE
											DRAWING NO	
											FIGURE 9	
											REV	
											0	

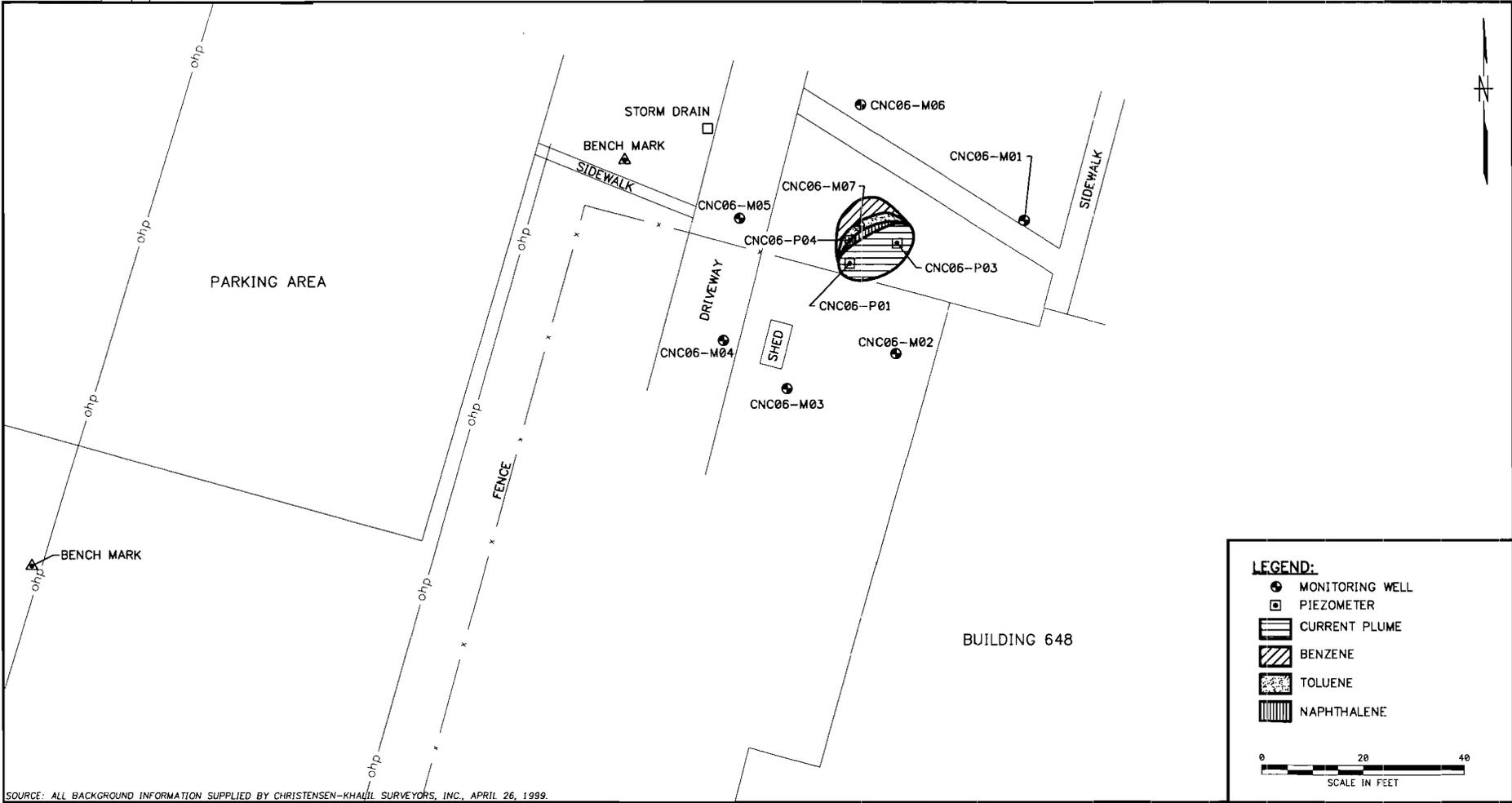


LEGEND

- MONITORING WELL LOCATION AND DESIGNATION
CNC06-M01
- PIEZOMETER LOCATION AND DESIGNATION
CNC06-P01
- 1.38 NAPHTHALENE CONCENTRATION (µg/L)
- ND NOT DETECTED
- FP FREE PRODUCT
- * ANALYZE AT CONCENTRATIONS LESS THAN THE REPORTING LIMIT AND GREATER THAN THE DETECTION LIMIT.

NOTE:
PIEZOMETERS CNC06-P01 THROUGH CNC06-P10 INSTALLED AS TEMPORARY PIEZOMETERS.
PIEZOMETER CNC06-P01 INSTALLED AS PERMANENT PIEZOMETER.

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		CONTRACT NO.		
							HJP	7/1/99		GROUNDWATER NAPHTHALENE CONCENTRATION MAP	7912	
										MARCH 7, 1999	APPROVED BY	DATE
										SITE 6, BUILDING 648	APPROVED BY	DATE
									ZONE H, CHARLESTON NAVAL COMPLEX	DRAWING NO.	REV	
									NORTH CHARLINGTON, SOUTH CAROLINA	FIGURE 10	0	



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

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY
MF 7/15/99

CHECKED BY DATE

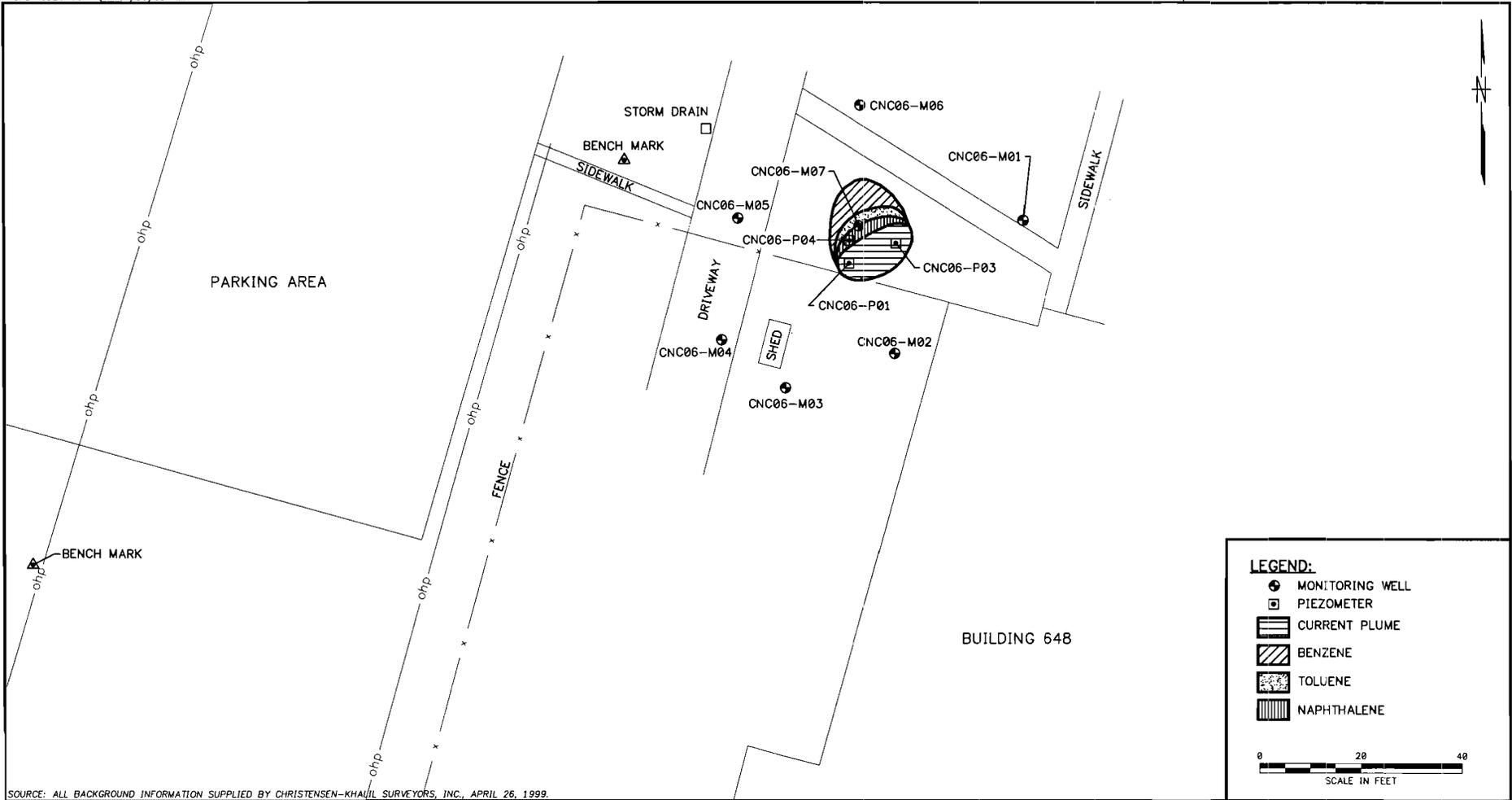
COST/SCHED-AREA

SCALE
AS NOTED



PREDICTED 10 YEAR MIGRATION
SITE 6 BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA

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



LEGEND:

- ⊕ MONITORING WELL
- ⊞ PIEZOMETER
- [Horizontal Lines] CURRENT PLUME
- [Diagonal Lines] BENZENE
- [Cross-hatch] TOLUENE
- [Vertical Lines] NAPHTHALENE

0 20 40
SCALE IN FEET

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

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DATE
MF 7/15/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE
AS NOTED



PREDICTED 20 YEAR MIGRATION
SITE 6 BUILDING 648
ZONE H, CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 7912	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 12	REV. 0

APPENDIX A

**UNDERGROUND STORAGE TANK ASSESSMENT REPORT
UST 648 & AST 648**

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, Bldg 648

Street Address: Dyess Avenue

City: North Charleston, 29405-2413 County: Charleston

III CLOSURE INFORMATION

Closure Started: 9 Sept 1996

Closure Completed: 7 Oct 1996

Number of USTs Closed: 1, and 1 AST

N/A

SPORTENVDETCASN

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

- A. Product.....
- B. Capacity.....
- C. Age.....
- D. Construction Material.....
- E. Month/Year of Last Use.....
- F. Depth (ft.) To Base of Tank.....
- G. Spill Prevention Equipment Y/N.....
- H. Overfill Prevention Equipment Y/N.....
- I. Method of Closure Removed/Filled.....
- J. Visible Corrosion or Pitting Y/N.....
- K. Visible Holes Y/N.....

Tank 1 AST	Tank 2 UST	Tank 3	Tank 4	Tank 5	Tank 6
Diesel	Fuel oil				
1,000 gal.	2,000 gal.				
+20 yrs.	+20 yrs.				
Steel	Steel				
Unk.	Unk.				
N/A	9'				
Y	N				
N	N				
R	R				
N	N				
N	Y				

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

AST 648 and UST 648B were removed, drained, cut open at both ends, and cleaned with a steam cleaner. They were 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 part of the sludge were recycled. Sludge that was too thick to be pumped into our recycling tank was disposed of as non-regulated sludge waste.

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

AST 648 was in good condition and contained no holes or leaks. UST 648B had no significant corrosion, but a 1/4" hole was discovered during steam cleaning. See Attachment I photo.

VI. PIPING INFORMATION

- A. Construction Material.....
- B. Distance from UST to Dispenser.....
- C. Number of Dispensers.....
- D. Type of System P/S.....
- E. Was Piping Removed from the Ground? Y/N....
- F. Visible Corrosion or Pitting Y/N.....
- G. Visible Holes Y/N.....
- H. Age.....

Tank 1 AST	Tank 2 UST	Tank 3	Tank 4	Tank 5	Tank 6
copper	copper & steel				
20'	112' See note 1				
1	1				
S	S				
Y	Y				
N	Y				
N	Y				
+ 20 yrs	+ 20 yrs				

Note 1: The UST provided fuel oil for heating Bldg 648.

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

Both AST 648 and UST 648B used 5/8" copper piping for supply and return lines. This piping was in good condition. The steel vent line was severely corroded and contained numerous holes. When the UST's four copper (supply and return) lines were being removed, four abandoned 1/2" steel lines were discovered beneath them. The steel lines were severely corroded and contained numerous holes. See Attachment I photos.

VII. BRIEF SITE DESCRIPTION AND HISTORY

Building 648 is the former Naval Base brig. The 2000 gallon UST was used for heating the building, while the 1,000 gallon AST was used to fuel an emergency generator. Product was found throughout the UST excavation, probably from holes in the vent line.

VIII. SITE CONDITIONS

Yes No Unk

	Yes	No	Unk
<p>A. Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? <small>[*Throughout UST excavation, 3' below GSL]</small> If yes, indicate depth and location on the site map.</p>	*X		
<p>B. Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? <small>[*strong]</small> If yes, indicate location on site map and describe the odor (strong, mild, etc.)</p>	*X		
<p>C. Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)? <small>7.5' below GSL, 1-2 feet deep</small></p>	X		
<p>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: _____</p>			**X
<p>E. Was a petroleum sheen or free product detected on any excavation or boring waters? <small>[*in excavation, < 1/4" thick]</small> If yes, indicate location and thickness on the site map.</p>	*X		

** 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.

GABE,
 This is the
 Change Page
 for UST 648

X. SAMPLING METHODOLOGY

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

After the removal of AST 648 and UST 648B soil and ground water Sampling was performed in accordance with SC DHEC R.61-92 Part 280 Assessment Guidelines.

The samples are identified as follows:

	Detachment Charleston		General Engineering Lab
Soil Sample	AST648-1	=	SPORT -0157-1
Soil Sample	AST648-1	=	SPORT -0157-2
Soil Sample	UST648-1	=	SPORT -0171-1
Soil Sample	UST648-2	=	SPORT -0171-2
Ground Water Sample	UST648-3	=	SPORT -0171-3
Soil Sample	UST648-4	=	SPORT -0212-1
Soil Sample	UST648-5	=	SPORT -0212-2
Soil Sample	UST648-6	=	SPORT -0212-3
Soil Sample	UST648-7	=	SPORT -0212-4
Soil Sample	UST648-8	=	SPORT -0212-5
Soil Sample	UST648-9	=	SPORT -0212-6
Soil Sample	UST648-10	=	SPORT -0212-7

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. Piping soil samples were taken under the piping at the mechanical connections. Ground water samples were taken from the 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 SPORTEENVDETHASN until they were transferred to General Engineering Laboratories for analysis as documented in the attached Chain-of-Custody Record.

XI. RECEPTORS

Yes No

A.	<p>Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system?</p> <p style="text-align: right;">[*Cooper R. 891]</p> <p>If yes, indicate type of receptor, distance, and direction on site map.</p>	*X	
B.	<p>Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system?</p> <p>If yes, indicate type of well, distance, and direction on site map.</p>		X
C.	<p>Are there any underground structures (e.g., basements) located within 100 feet of the UST system?</p> <p>If yes, indicate the type of structure, distance, and direction on site map.</p>		X
D.	<p>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?</p> <p style="text-align: right;">[*phone, storm drain]</p> <p>If yes, indicate the type of utility, distance, and direction on the site map.</p>	*X	
E.	<p>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?</p> <p style="text-align: right;">[*Pipe run, at SPORT 0212-2]</p> <p>If yes, indicate the area of contaminated soil on the site map.</p>	*X	

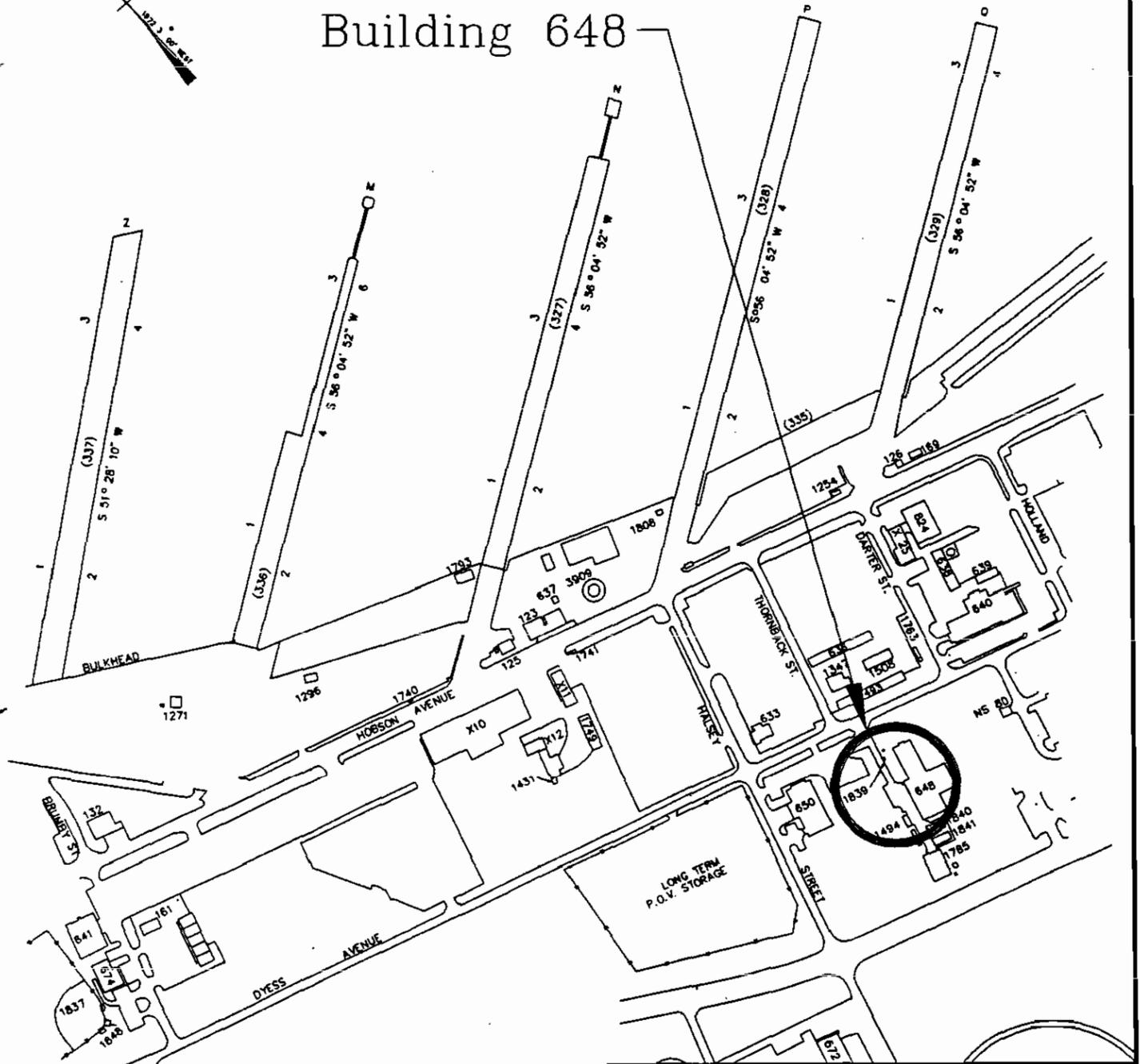
SITE MAP

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.

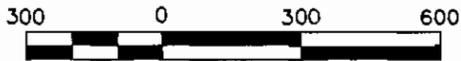
Site Maps 1 through 5
Photographs 1 through 6

Cooper River

Building 648



CHARLESTON NAVAL BASE
CHARLESTON, SC



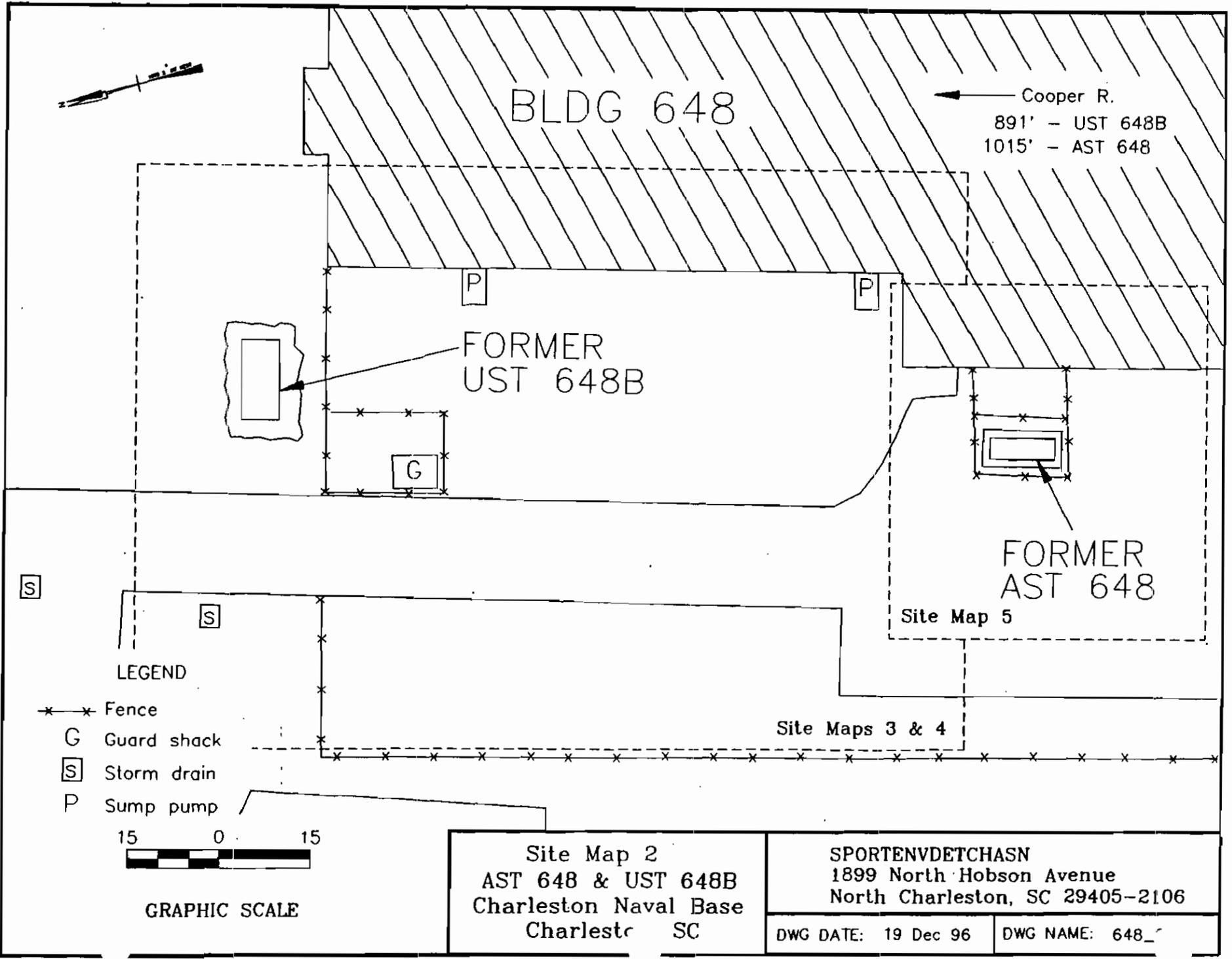
GRAPHIC SCALE

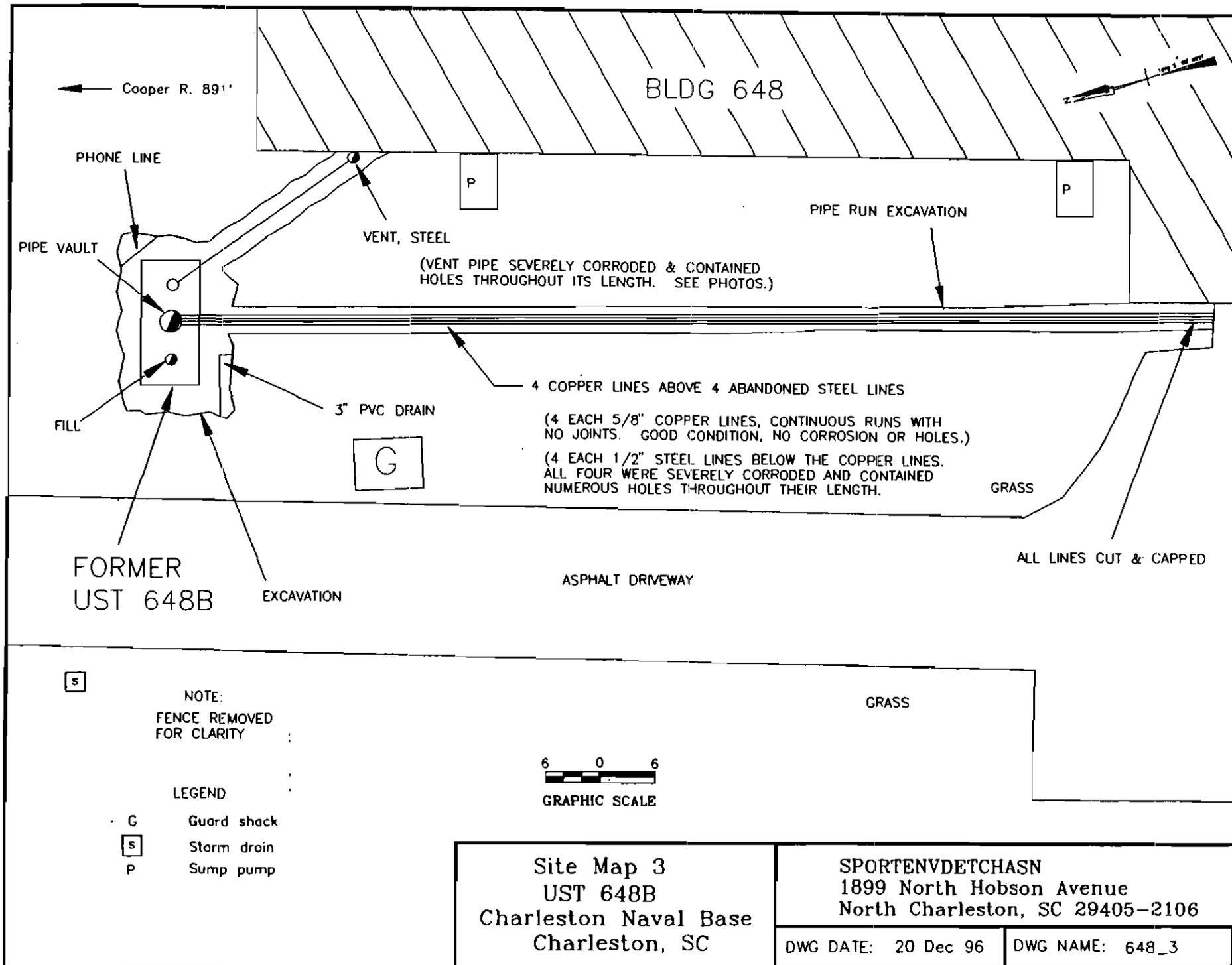
Site Map 1
 BUILDING 648
 Charleston Naval Base
 Charleston, SC

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

DWG NAME: 648_1

DWG DATE: 18 Dec 96

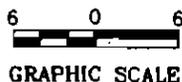




NOTE:
FENCE REMOVED
FOR CLARITY

LEGEND

- G Guard shack
- S Storm drain
- P Sump pump

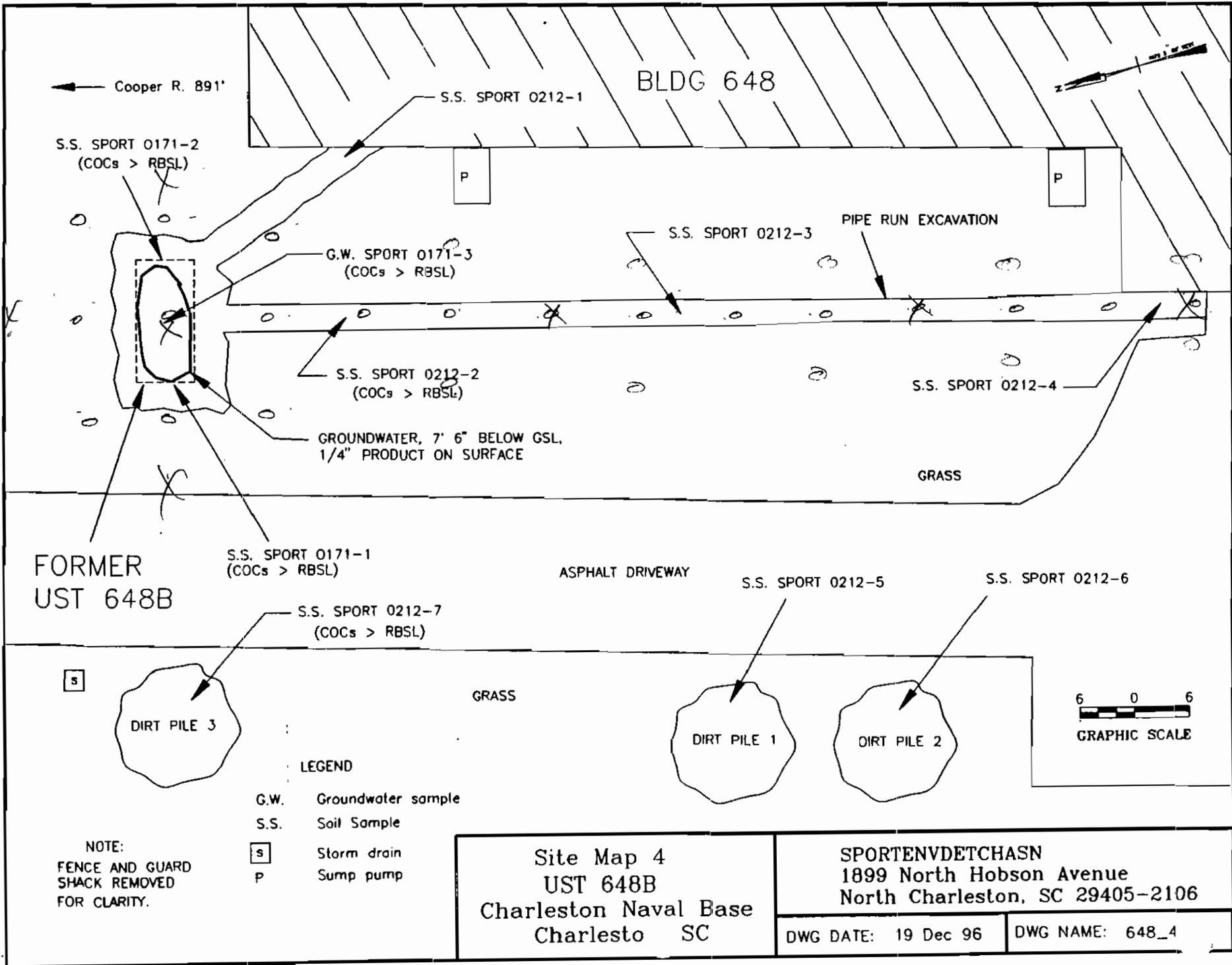


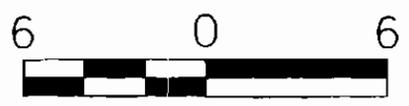
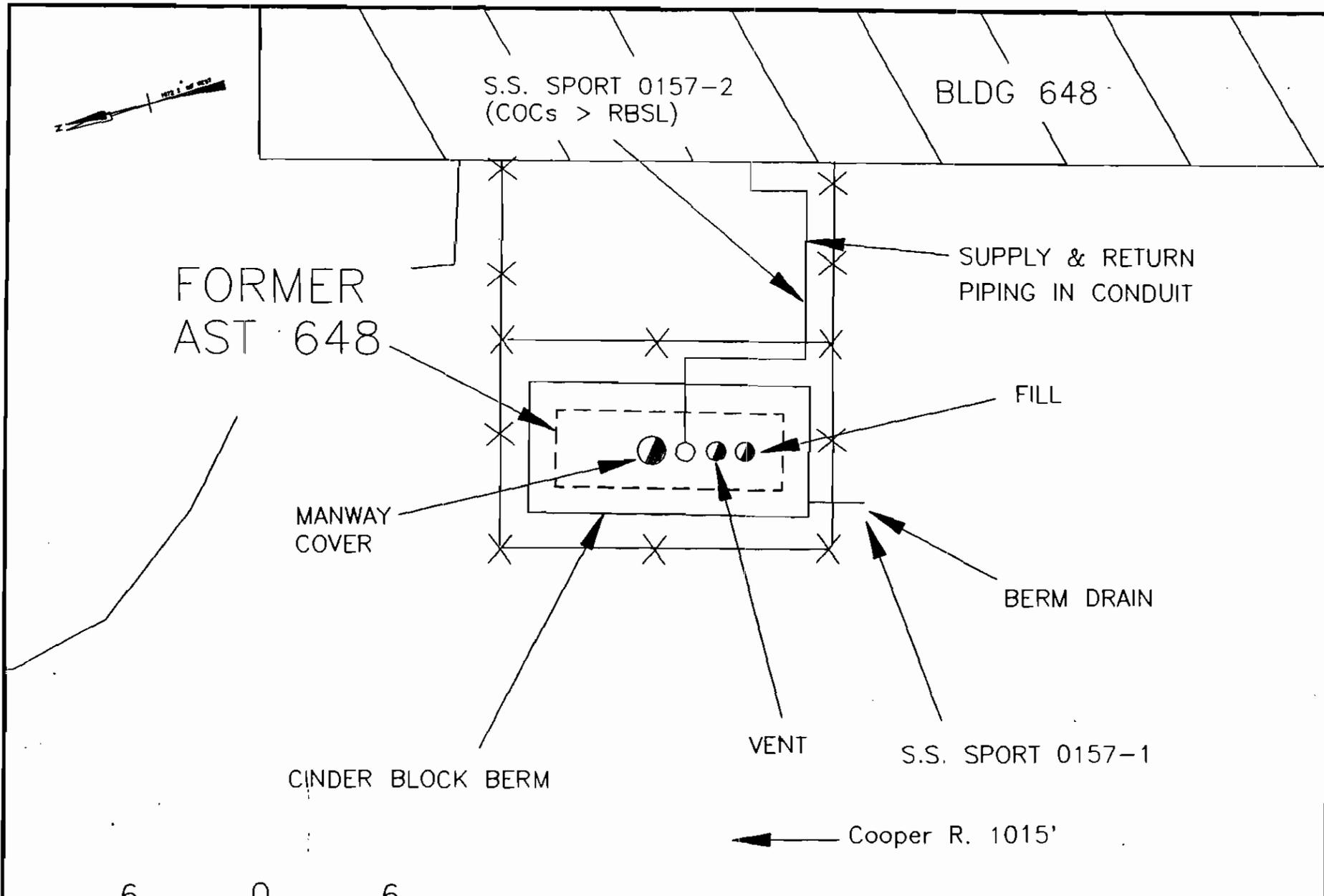
Site Map 3
UST 648B
Charleston Naval Base
Charleston, SC

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

DWG DATE: 20 Dec 96

DWG NAME: 648_3





GRAPHIC SCALE

Site Map 5 AST 648 Charleston Naval Base Charleston, SC	SPORTEENVDETHASN 1899 North Hobson Avenue North Charleston, SC 29405-2106	
	DWG DATE: 20 Dec 96	DWG NAME: 648_5

AST 648 & UST 648B



Photo 1: UST 648B being removed from the excavation.

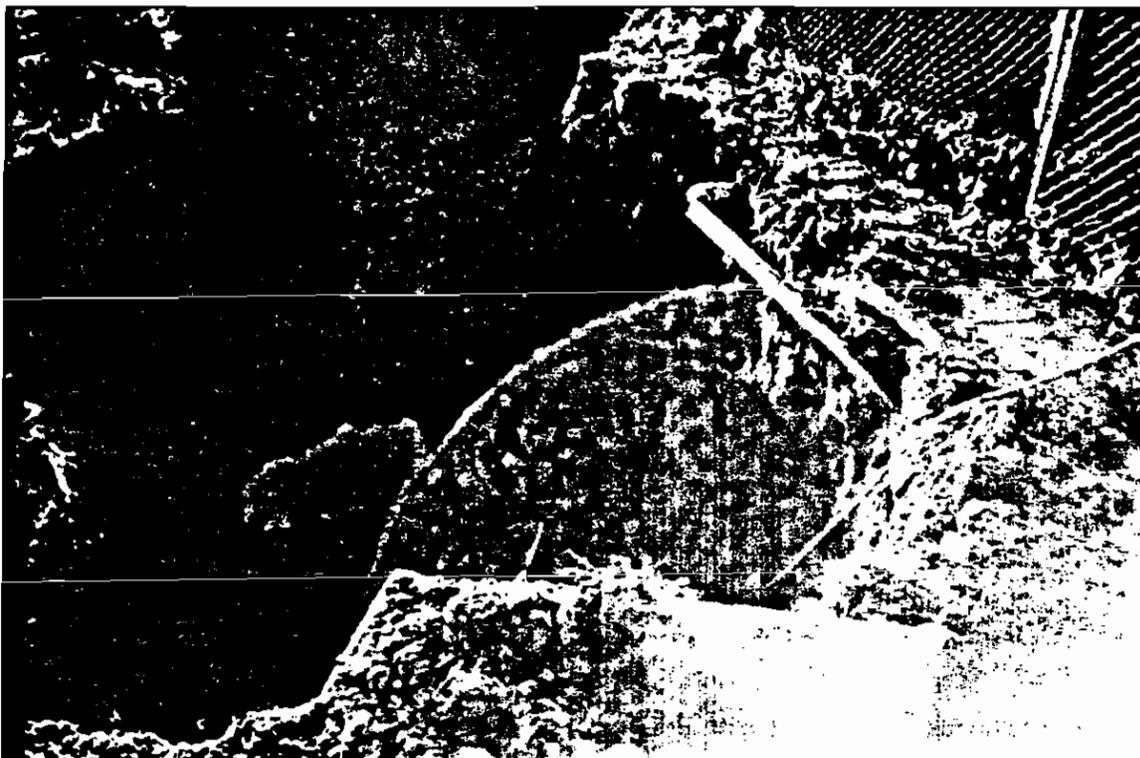


Photo 2: UST 648B excavation. Note black film on water.

AST 648 & UST 648B



Photo 3: UST 648B during cleaning. This is when the indicated hole was found.



Photo 4: UST 648B during cleaning and cutting.

AST 648 & UST 648B



Photo 5: UST 648B vent line holes are being indicated. This is a portion of the pipe.

AST 648 & UST 648B



Photo 6: UST 648B abandoned corroded steel piping.

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	DEL	EP
FL	837194/7284	837473/7481
NC	233	
SC	10125	10563
TN	02094	02094

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Srv.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-3106

Contact: Mr. Bill Hiss

Project Description: SUPSHIP-Portsmouth Detachment

no: NPWC00196

Report Date: September 19, 1996

Page 1 of 3

Sample ID : SP0RTO157-1
 Lab ID : 9609147-01
 Matrix : Soil
 Date Collected : 09/08/96
 Date Received : 09/10/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	SHJ	09/17/96	1520	90689	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.000	1.00	2.00	ug/kg	1.0					
Xylene (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											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	16500	33000	ug/kg	100	WAM	09/18/96	0121	90436	2
Acenaphthylene	U	0.00	16500	33000	ug/kg	100					
Anthracene	U	0.00	16500	33000	ug/kg	100					
Benzo(a)anthracene	U	0.00	16500	33000	ug/kg	100					
Benzo(a)pyrene	U	0.00	16500	33000	ug/kg	100					
Benzo(b)fluoranthene	U	0.00	16500	33000	ug/kg	100					
Benzo(ghi)perylene	U	0.00	16500	33000	ug/kg	100					
Benzo(k)fluoranthene	U	0.00	16500	33000	ug/kg	100					
Chrysene	U	0.00	16500	33000	ug/kg	100					
Dibenz(a,h)anthracene	U	0.00	16500	33000	ug/kg	100					
Fluoranthene	U	0.00	16500	33000	ug/kg	100					
Fluorene	U	0.00	16500	33000	ug/kg	100					
Indeno(1,2,3-c,d)pyrene	U	0.00	16500	33000	ug/kg	100					
Naphthalene	U	0.00	16500	33000	ug/kg	100					
Phenanthrene	U	0.00	16500	33000	ug/kg	100					
Pyrene	U	0.00	16500	33000	ug/kg	100					

The following prep procedures were performed:
 OCMS Base/Neutral Compounds

TNP 09/13/96 1100 90436 3

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29414

(803) 556-8171 • Fax (803) 766-1178

Printed on recycled paper.



9609147-01



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	CEL	EPI
FL	007126/07204	007472/07400
NC	230	
SC	10120	10203
TN	00704	00704

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: September 19, 1996

Page 2 of 3

Sample ID : SPOKT0157-1

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

Comments:

A dilution was required for Extractable Organics due to matrix interference. As a result, the detection limits are elevated.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzenes	BTEX-8260	159.	(59.7 - 159.)
Dibromofluoromethanes	BTEX-8260	93.5	(74.0 - 128.)
Toluenes-d8	BTEX-8260	111.	(33.4 - 163.)
Bromofluorobenzenes	NAP-8260	159.	(59.7 - 159.)
Dibromofluoromethanes	NAP-8260	93.5	(74.0 - 128.)
Toluenes-d8	NAP-8260	111.	(33.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3350

Notes:

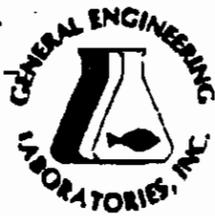
- The qualifiers in this report are defined as follows:
- ND indicates that the analyte was not detected at a concentration greater than the detection limit.
- J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
- U indicates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

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9609147-01*



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	CEL	SEI
FL	8771547284	87747287438
NC	283	
SC	10120	10883
TX	00024	00024

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

Contact: Mr. Bill Hines

Project Description: SUPSHIP-Portsmouth Detachment

no: NPWC00196

Report Date: September 19, 1996

Page 3 of 3

Sample ID : SPORT0157-1

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 Blakney at (803) 765-7366.

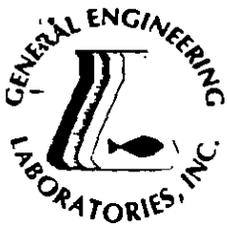
Karen Blakney
 Reviewed By

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9609147-01





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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: September 19, 1996

Page 1 of 2

Sample ID : SPORT0157-2
 Lab ID : 9609147-02
 Matrix : Soil
 Date Collected : 09/09/96
 Date Received : 09/10/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>TEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JLS	09/17/96	1657	90685	1
Benzylbenzene	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	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	82.5	165	330	ug/kg	1.0	WAM	09/18/96	0253	90456	2
Acenaphthylene	U	0.00	165	330	ug/kg	1.0					
Anthracene	J	185	165	330	ug/kg	1.0					
Benzo(a)anthracene		578	165	330	ug/kg	1.0					
Benzo(a)pyrene		426	165	330	ug/kg	1.0					
Benzo(b)fluoranthene		812	165	330	ug/kg	1.0					
Benzo(ghi)perylene	J	215	165	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Chrysene		690	165	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	165	330	ug/kg	1.0					
Fluoranthene		970	165	330	ug/kg	1.0					
Fluorene	U	62.7	165	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	J	221	165	330	ug/kg	1.0					
Naphthalene	U	0.00	165	330	ug/kg	1.0					
Phenanthrene		581	165	330	ug/kg	1.0					
Pyrene		766	165	330	ug/kg	1.0					

Following prep procedures were performed:
 MS Base/Neutral Compounds

TNF 09/13/96 1100 90456 3

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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: September 19, 1996

Page 2 of 2

Sample ID : SPORT0157-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	65.7	(30.0 - 115.)
Nitrobenzene-d5	M610	53.7	(23.0 - 120.)
p-Terphenyl-d14	M610	92.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	123.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	109.	(74.0 - 128.)
Toluene-d8	BTEX-8260	89.7	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	123.	(59.7 - 159.)
Bromofluoromethane	NAP-8260	109.	(74.0 - 128.)
Toluene-d8	NAP-8260	89.7	(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



GENERAL ENGINEERING LABORATORIES

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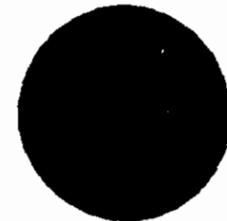
Laboratory Certifications

STATE	GEL	EPI
FL	EE7156/87294	EE7477
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: September 30, 1996

Page 1 of 3

Sample ID : SPORT0171-1
 Lab ID : 9609409-01
 Matrix : Soil
 Date Collected : 09/20/96
 Date Received : 09/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	100	200	ug/kg	100	JLS	09/26/96	2244	91223	
Ethylbenzene	U	0.00	100	200	ug/kg	100					
Toluene	U	58.0	100	200	ug/kg	100					
Xylenes (TOTAL)	U	0.00	100	200	ug/kg	100					
Naphthalene		1200	100	200	ug/kg	100					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	1650	3300	ug/kg	10.	JPA	09/25/96	2115	91051	2
Acenaphthylene	U	0.00	1650	3300	ug/kg	10.					
Anthracene	U	0.00	1650	3300	ug/kg	10.					
Benzo(a)anthracene	U	0.00	1650	3300	ug/kg	10.					
Benzo(a)pyrene	U	0.00	1650	3300	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	1650	3300	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1650	3300	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	1650	3300	ug/kg	10.					
Chrysene	U	0.00	1650	3300	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1650	3300	ug/kg	10.					
Fluoranthene	U	792	1650	3300	ug/kg	10.					
Fluorene	U	0.00	1650	3300	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1650	3300	ug/kg	10.					
Naphthalene	U	0.00	1650	3300	ug/kg	10.					
Phenanthrene	U	0.00	1650	3300	ug/kg	10.					
Pyrene	U	528	1650	3300	ug/kg	10.					

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

TNF 09/24/96 1300 91051 2

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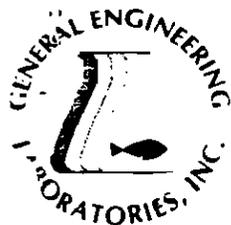
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STATE	GEL	EPI
FL	E87156/87294	E87472/87458
NC	233	
SC	10120	10582
TN	02934	02934

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: September 30, 1996

Page 2 of 3

Sample ID : SPORT0171-1

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

A dilution was required for Volatile Organics and Extractable Organics due to matrix interferences. As a result, the detection limits are elevated.

Surrogate Recovery	Test	Percent%	Acceptable Limits
Fluorobiphenyl	M610	74.0	(30.0 - 115.)
Nitrobenzene-d5	M610	56.0	(23.0 - 120.)
p-Terphenyl-d14	M610	82.0	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	111.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	94.2	(74.0 - 128.)
Toluene-d8	BTEX-8260	90.6	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	111.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	94.2	(74.0 - 128.)
Toluene-d8	NAP-8260	90.6	(53.4 - 163.)

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

Notes:

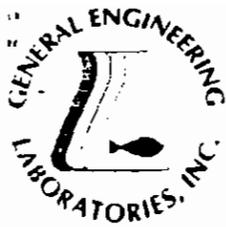
The qualifiers in this report are defined as follows:

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	EPI
FL	E87156/87294	E87472A
NC	233	
SC	10120	10382
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: September 30, 1996

Page 3 of 3

Sample ID : SPORT0171-1

M = Method

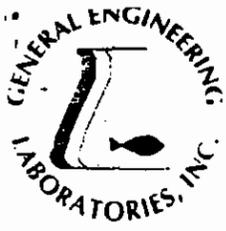
Method-Description

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

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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: September 30, 1996

Page 1 of 3

Sample ID : SPORT0171-2
 Lab ID : 9609409-02
 Matrix : Soil
 Date Collected : 09/20/96
 Date Received : 09/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	100	200	ug/kg	100	JLS	09/25/96	2307	91223	1
Ethylbenzene	U	96.0	100	200	ug/kg	100					
Toluene	U	0.00	100	200	ug/kg	100					
Xylenes (TOTAL)	U	66.0	100	200	ug/kg	100					
Naphthalene		3540	100	200	ug/kg	100					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	J	2590	1660	3320	ug/kg	10.	JPA	09/25/96	2148	91051	2
Acenaphthylene	U	0.00	1660	3320	ug/kg	10.					
Anthracene	U	598	1660	3320	ug/kg	10.					
Benzo(a)anthracene	J	1830	1660	3320	ug/kg	10.					
Benzo(a)pyrene	U	1060	1660	3320	ug/kg	10.					
Benzo(b)fluoranthene	U	1530	1660	3320	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1660	3320	ug/kg	10.					
Benzo(k)fluoranthene	U	830	1660	3320	ug/kg	10.					
Chrysene	J	1990	1660	3320	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1660	3320	ug/kg	10.					
Fluoranthene		8130	1660	3320	ug/kg	10.					
Fluorene	J	2090	1660	3320	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1660	3320	ug/kg	10.					
Naphthalene	U	764	1660	3320	ug/kg	10.					
Phenanthrene		12400	1660	3320	ug/kg	10.					
Pyrene		4480	1660	3320	ug/kg	10.					

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

TNF 09/24/96 1300 91051 3

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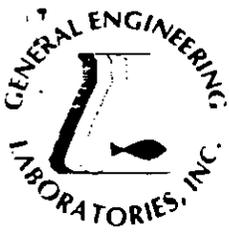
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STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
SC	10120	10582
TN	02934	02934

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: September 30, 1996

Page 2 of 3

Sample ID : SPORT0171-2

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

A dilution was required for Volatile Organics and Extractable Organics due to matrix interferences. As a result, the detection limits are elevated.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	96.1	(30.0 - 115.)
Nitrobenzene-d5	M610	84.1	(23.0 - 120.)
p-Terphenyl-d14	M610	98.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	131.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	88.1	(74.0 - 128.)
Toluene-d8	BTEX-8260	96.5	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	131.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	88.1	(74.0 - 128.)
Toluene-d8	NAP-8260	96.5	(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	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: September 30, 1996

Page 3 of 3

Sample ID : SPORT0171-2

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	EPI
FL	E87156/87294	E87472/874
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 01, 1996

Page 1 of 3

Sample ID : SPORT0171-3
 Lab ID : 9609409-03
 Matrix : GroundH2O
 Date Collected : 09/20/96
 Date Received : 09/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	10000	20000	ug/l	10000	JAC	09/26/96	1546	91205	1
Ethylbenzene	U	0.00	10000	20000	ug/l	10000					
Toluene	U	0.00	10000	20000	ug/l	10000					
Xylenes (TOTAL)	U	0.00	10000	20000	ug/l	10000					
Methyl Tert Butyl Ether	U	0.00	20000	20000	ug/l	10000					
Naphthalene		43600	10000	20000	ug/l	10000					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene		1210000	500000	1000000	ug/l	100	BDG	09/24/96	0409	90989	2
Acenaphthylene	U	0.00	500000	1000000	ug/l	100					
Anthracene		1680000	500000	1000000	ug/l	100					
Benzo(a)anthracene		1730000	500000	1000000	ug/l	100					
Benzo(a)pyrene	J	990000	500000	1000000	ug/l	100					
Benzo(b)fluoranthene		1260000	500000	1000000	ug/l	100					
Benzo(ghi)perylene	U	0.00	500000	1000000	ug/l	100					
Benzo(k)fluoranthene	U	0.00	500000	1000000	ug/l	100					
Chrysene		1780000	500000	1000000	ug/l	100					
Dibenzo(a,h)anthracene	U	0.00	500000	1000000	ug/l	100					
Fluoranthene		5760000	500000	1000000	ug/l	100					
Fluorene		1790000	500000	1000000	ug/l	100					
Indeno(1,2,3-c,d)pyrene	U	0.00	500000	1000000	ug/l	100					
Naphthalene		1330000	500000	1000000	ug/l	100					
Phenanthrene		7110000	500000	1000000	ug/l	100					
Pyrene		3500000	500000	1000000	ug/l	100					





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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 01, 1996

Page 2 of 3

Sample ID : SPORT0171-3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

GC/MS Base/Neutral Compounds

JWF 09/23/96 1300 90989 3

Comments:

This sample consisted of two layers. The oil layer was analyzed for the requested tests, therefore the results reflect the concentrations found in the oil layer only.

A dilution was required for Volatile Organics and Extractable Organics due to matrix interferences. As a result, the detection limits are elevated.

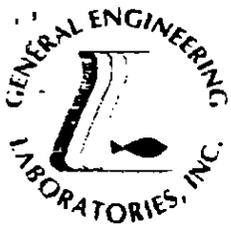
Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(43.0 - 108.)
Nitrobenzene-d5	M610	0.00*	(35.0 - 111.)
p-Terphenyl-d14	M610	0.00*	(33.0 - 125.)
Bromofluorobenzene	BTEX-8260	96.4	(80.0 - 128.)
Dibromofluoromethane	BTEX-8260	107.	(67.7 - 135.)
Toluene-d8	BTEX-8260	98.5	(76.8 - 122.)
Bromofluorobenzene	MTBE-8260	96.4	(80.0 - 128.)
Dibromofluoromethane	MTBE-8260	107.	(67.7 - 135.)
Toluene-d8	MTBE-8260	98.5	(76.8 - 122.)
Bromofluorobenzene	NAP-8260	96.4	(80.0 - 128.)
Dibromofluoromethane	NAP-8260	107.	(67.7 - 135.)
Toluene-d8	NAP-8260	98.5	(76.8 - 122.)

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

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NC	233	
SC	10120	10582
TN	02934	02934

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 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 01, 1996

Page 3 of 3

Sample ID : SPORT0171-3

M = Method	Method-Description
------------	--------------------

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.

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NC	233	
SC	10120	10582
TN	02934	02934



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 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

Page 1 of 2

Sample ID : SPORT0212-1
 Lab ID : 9610416-01
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/22/96	1535	92667	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	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	164	330	ug/kg	1.0	BDG	10/23/96	0022	92556	2
Acenaphthylene	U	0.00	164	330	ug/kg	1.0					
Anthracene	U	0.00	164	330	ug/kg	1.0					
Benzo(a)anthracene	U	144	164	330	ug/kg	1.0					
Benzo(a)pyrene	U	157	164	330	ug/kg	1.0					
Benzo(b)fluoranthene	J	269	164	330	ug/kg	1.0					
Benzo(ghi)perylene	U	118	164	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Chrysene	J	174	164	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	164	330	ug/kg	1.0					
Fluoranthene	J	315	164	330	ug/kg	1.0					
Fluorene	U	0.00	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	121	164	330	ug/kg	1.0					
Naphthalene	U	0.00	164	330	ug/kg	1.0					
Phenanthrene	U	0.00	164	330	ug/kg	1.0					
Pyrene	J	246	164	330	ug/kg	1.0					

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

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FL	EF7156/87294	EF7472/
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 29, 1996

Page 2 of 2

Sample ID : SPORT0212-1

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	59.4	(30.0 - 115.)
Nitrobenzene-d5	M610	46.6	(23.0 - 120.)
p-Terphenyl-d14	M610	86.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	103.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	79.2	(74.0 - 128.)
Toluene-d8	BTEX-8260	93.2	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	103.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	79.2	(74.0 - 128.)
Toluene-d8	NAP-8260	93.2	(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).

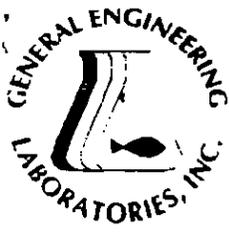
U indicates that the analyte was not detected at a concentration greater than the detection limit.

* 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
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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

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Report Date: October 29, 1996

Page 1 of 2

Sample ID : SPORT0212-2
 Lab ID : 9610416-02
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/22/96	1606	92667	
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	J	1.28	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	163	330	ug/kg	1.0	BDG	10/23/96	0056	92556	2
Acenaphthylene	U	0.00	163	330	ug/kg	1.0					
Anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)anthracene		367	163	330	ug/kg	1.0					
Benzo(a)pyrene		575	163	330	ug/kg	1.0					
Benzo(b)fluoranthene		1100	163	330	ug/kg	1.0					
Benzo(ghi)perylene		429	163	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Chrysene		611	163	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	117	163	330	ug/kg	1.0					
Fluoranthene		543	163	330	ug/kg	1.0					
Fluorene	U	0.00	163	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene		452	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		465	163	330	ug/kg	1.0					

The following prep procedures were performed:
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

Page 2 of 2

Sample ID : SPORT0212-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	69.3	(30.0 - 115.)
Nitrobenzene-d5	M610	55.9	(23.0 - 120.)
p-Terphenyl-d14	M610	96.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	109.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	82.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	97.5	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	109.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	82.4	(74.0 - 128.)
Toluene-d8	NAP-8260	97.5	(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:

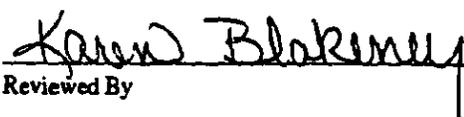
ND indicates that the analyte was not detected at a concentration greater than the detection limit.

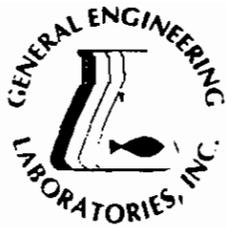
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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.


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SC	10120	10582
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Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

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Report Date: October 29, 1996

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Sample ID : SPORT0212-3
 Lab ID : 9610416-03
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatle Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/22/96	1637	92667	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	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	162	330	ug/kg	1.0	BDG	10/23/96	0129	92556	2
Acenaphthylene	U	0.00	162	330	ug/kg	1.0					
Anthracene	U	0.00	162	330	ug/kg	1.0					
Benzo(a)anthracene	U	67.8	162	330	ug/kg	1.0					
Benzo(a)pyrene	U	90.4	162	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	162	162	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	162	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	162	330	ug/kg	1.0					
Chrysene	U	103	162	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	162	330	ug/kg	1.0					
Fluoranthene	J	181	162	330	ug/kg	1.0					
Fluorene	U	0.00	162	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	162	330	ug/kg	1.0					
Naphthalene	U	0.00	162	330	ug/kg	1.0					
Phenanthrene	U	0.00	162	330	ug/kg	1.0					
Pyrene	U	162	162	330	ug/kg	1.0					

The following prep procedures were performed:
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SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

Page 2 of 2

Sample ID : SPORT0212-3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	73.4	(30.0 - 115.)
Nitrobenzene-d5	M610	61.6	(23.0 - 120.)
p-Terphenyl-d14	M610	95.5	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	119.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	90.5	(74.0 - 128.)
Toluene-d8	BTEX-8260	106.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	119.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	90.5	(74.0 - 128.)
Toluene-d8	NAP-8260	106.	(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 Blakency at (803) 769-7386.


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SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

Page 1 of 2

Sample ID : SPORT0212-4
 Lab ID : 9610416-04
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/22/96	1708	92667	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	U	0.660	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene		530	246	491	ug/kg	1.0	JCB	10/23/96	1118	92556	2
Acenaphthylene	U	0.00	246	491	ug/kg	1.0					
Anthracene	J	255	246	491	ug/kg	1.0					
Benzo(a)anthracene	J	427	246	491	ug/kg	1.0					
Benzo(a)pyrene	J	285	246	491	ug/kg	1.0					
Benzo(b)fluoranthene		516	246	491	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	246	491	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	246	491	ug/kg	1.0					
Chrysene	J	447	246	491	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	246	491	ug/kg	1.0					
Fluoranthene		1930	246	491	ug/kg	1.0					
Fluorene	J	442	246	491	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	246	491	ug/kg	1.0					
Naphthalene	U	0.00	246	491	ug/kg	1.0					
Phenanthrene		1270	246	491	ug/kg	1.0					
Pyrene		1220	246	491	ug/kg	1.0					

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

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SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

Page 2 of 2

Sample ID : SPORT0212-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	85.0	(30.0 - 115.)
Nitrobenzene-d5	M610	63.4	(23.0 - 120.)
p-Terphenyl-d14	M610	90.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	122.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	82.6	(74.0 - 128.)
Toluene-d8	BTEX-8260	104.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	122.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	82.6	(74.0 - 128.)
Toluene-d8	NAP-8260	104.	(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.

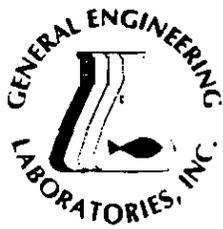
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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	EPI
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NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: October 29, 1996

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Sample ID : SPORT0212-5
 Lab ID : 9610416-05
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatle Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS2	10/22/96	1738	92667	.
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	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	244	487	ug/kg	1.0	JCB	10/23/96	1229	92556	2
Acenaphthylene	U	0.00	244	487	ug/kg	1.0					
Anthracene	U	0.00	244	487	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	244	487	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	244	487	ug/kg	1.0					
Benzo(b)fluoranthene	U	248	244	487	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	244	487	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	244	487	ug/kg	1.0					
Chrysene	U	0.00	244	487	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	244	487	ug/kg	1.0					
Fluoranthene	U	0.00	244	487	ug/kg	1.0					
Fluorene	U	0.00	244	487	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	244	487	ug/kg	1.0					
Naphthalene	U	0.00	244	487	ug/kg	1.0					
Phenanthrene	U	0.00	244	487	ug/kg	1.0					
Pyrene	U	0.00	244	487	ug/kg	1.0					

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

TNF 10/21/96 1530 92556 3

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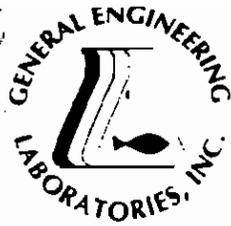
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9610416-05



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Laboratory Certifications

STATE	GEL	EPI
FL	E17156/87294	E17477
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 29, 1996

Page 2 of 3

Sample ID : SPORT0212-5

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

Volatile Organics contained matrix interferences.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	97.4	(30.0 - 115.)
Nitrobenzene-d5	M610	84.8	(23.0 - 120.)
p-Terphenyl-d14	M610	111.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	134.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	88.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	117.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	134.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	88.4	(74.0 - 128.)
Toluene-d8	NAP-8260	117.	(53.4 - 163.)

M = Method

Method-Description

M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

Notes:

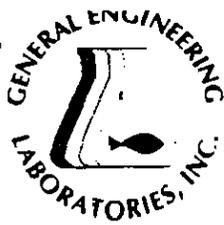
The qualifiers in this report are defined as follows:

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.



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	EE7156/87294	EE71472/87294
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 29, 1996

Page 2 of 2

Sample ID : SPORT0212-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	85.0	(30.0 - 115.)
Nitrobenzene-d5	M610	63.4	(23.0 - 120.)
p-Terphenyl-d14	M610	90.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	122.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	82.6	(74.0 - 128.)
Toluene-d8	BTEX-8260	104.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	122.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	82.6	(74.0 - 128.)
Toluene-d8	NAP-8260	104.	(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



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEI	EPI
FL	EF7156/87294	EF7472/874
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

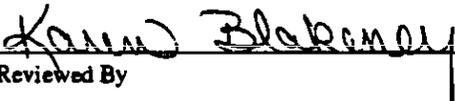
Report Date: October 29, 1996

Page 3 of 3

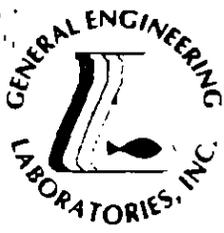
Sample ID : SPORT0212-5

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.


Reviewed By





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Laboratory Certifications

STATE	GEL	EPI
FL	ES7156/87294	ES7472/874
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 29, 1996

Page 1 of 3

Sample ID : SPORT0212-6
 Lab ID : 9610416-06
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	10/24/96	1215	92798	
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	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	162	330	ug/kg	1.0	JCB	10/23/96	1302	92556	2
Acenaphthylene	U	0.00	162	330	ug/kg	1.0					
Anthracene	U	0.00	162	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	162	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	162	330	ug/kg	1.0					
Benzo(b)fluoranthene	J	.269	162	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	162	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	162	330	ug/kg	1.0					
Chrysene	J	165	162	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	162	330	ug/kg	1.0					
Fluoranthene	J	272	162	330	ug/kg	1.0					
Fluorene	U	0.00	162	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	162	330	ug/kg	1.0					
Naphthalene	U	0.00	162	330	ug/kg	1.0					
Phenanthrene	U	0.00	162	330	ug/kg	1.0					
Pyrene	J	227	162	330	ug/kg	1.0					

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

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GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/
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 29, 1996

Page 2 of 3

Sample ID : SPORT0212-6

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

Volatlic Organics contained matrix interferences.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	67.9	(30.0 - 115.)
Nitrobenzene-d5	M610	62.7	(23.0 - 120.)
p-Terphenyl-d14	M610	80.3	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	118.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	79.2	(74.0 - 128.)
Toluene-d8	BTEX-8260	118.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	118.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	79.2	(74.0 - 128.)
Toluene-d8	NAP-8260	118.	(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	OEL	EPI
FL	ES7156/87294	ES7472/87456
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 29, 1996

Page 3 of 3

Sample ID : SPORT0212-6

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.



Reviewed By





GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	EE7156/87294	EE7472/8
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 29, 1996

Page 1 of 3

Sample ID : SPORT0212-7
 Lab ID : 9610416-07
 Matrix : Soil
 Date Collected : 10/17/96
 Date Received : 10/18/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	40.0	80.0	ug/kg	40.	JAC	10/25/96	1235	92798	
Ethylbenzene	U	0.00	40.0	80.0	ug/kg	40.					
Toluene	U	0.00	40.0	80.0	ug/kg	40.					
Xylenes (TOTAL)	U	0.00	40.0	80.0	ug/kg	40.					
Naphthalene	U	0.00	40.0	80.0	ug/kg	40.					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	24700	49400	ug/kg	100	JCB	10/23/96	1334	92556	2
Acenaphthylene	U	0.00	24700	49400	ug/kg	100					
Anthracene	U	0.00	24700	49400	ug/kg	100					
Benzo(a)anthracene	U	0.00	24700	49400	ug/kg	100					
Benzo(a)pyrene	U	0.00	24700	49400	ug/kg	100					
Benzo(b)fluoranthene	U	0.00	24700	49400	ug/kg	100					
Benzo(ghi)perylene	U	0.00	24700	49400	ug/kg	100					
Benzo(k)fluoranthene	U	0.00	24700	49400	ug/kg	100					
Chrysene	U	0.00	24700	49400	ug/kg	100					
Dibenzo(a,h)anthracene	U	0.00	24700	49400	ug/kg	100					
Fluoranthene		49400	24700	49400	ug/kg	100					
Fluorene	U	0.00	24700	49400	ug/kg	100					
Indeno(1,2,3-c,d)pyrene	U	0.00	24700	49400	ug/kg	100					
Naphthalene	U	0.00	24700	49400	ug/kg	100					
Phenanthrene	U	0.00	24700	49400	ug/kg	100					
Pyrene	J	36100	24700	49400	ug/kg	100					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

TNF 10/21/96 1530 92556 3

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Laboratory Certifications

STATE	GEL	EPI
FL	EE7156/ET294	EE7472/ETAL
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 29, 1996

Page 2 of 3

Sample ID : SPORT0212-7

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

A dilution was required for Volatile Organics due to a high concentration of hydrocarbons. A dilution was required for Extractable Organics due to matrix interference.

As a result, the detection limits are elevated.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	111.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	80.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	108.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	111.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	80.4	(74.0 - 128.)
Toluene-d8	NAP-8260	108.	(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.

CHAIN OF CUSTODY RECORD

Page 1 of 1 9609409

Client Name/Facility Name <u>SPORTENYDETCHASN</u>				SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods															Remarks			
Collected by/Company <u>SPORTENYDETCHASN</u>				# OF CONTAINERS	PHL conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PAH	Cyanide		California - specify type	BTEX PLUS NAPTHA KET	BTEX + NAPTHA KET + MTBL
SAMPLE ID	DATE	TIME	WELL SOIL COMP GRAB																			
-01	SPORT0171-1	9/20/96	1015	X	X	2											X			X		UST NS 648-2 Soil -1 well
-02	SPORT0171-2	9/20/96	1037	X	X	2											X			X		UST NS 648-2 Soil
-03	SPORT0171-3	9/20/96	0959			5											X			X		UST NS 648-3 GW
-04	SPORT0171-4	9/20/96	0730			3														X		UST NS 648 VON TRIP BLINK
Relinquished by: <u>William J. Hines</u>				Date: <u>9/20/96</u>	Time: <u>1257</u>	Received by: <u>W.R. Hines, Jr.</u>				Date: <u>9/20/96</u>	Time: <u>1705</u>	Relinquished by: <u>W.R. Hines, Jr.</u>				Date: <u>9/20/96</u>	Time: <u>1705</u>	Received by: <u>Debbie Moore</u>				
Relinquished by:				Date:	Time:	Received by lab by: <u>R. Demaree</u>				Date:	Time:	Remarks:				Date:	Time:					

White = sample collector Yellow = file Pink = with report

NY 000196

General Engineering Laboratories, Inc.
 2040 Savage Road
 Charleston, South Carolina 29414
 P.O. Box 30712
 Charleston, South Carolina 29417
 (803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 1

KBB **9/6/04/6**

Client Name/Facility Name		Collected by/Company		SAMPLE ANALYSIS REQUIRED (X) - use remarks area to specify specific components or methods														Use P or F in the boxes to indicate whether sample was filtered and/or preserved				
SPORTS ENV DET CHASN		SPORTS ENV DET CHASN		<input type="checkbox"/> pH conductivity <input type="checkbox"/> TOC/DOC <input type="checkbox"/> TOX <input type="checkbox"/> Chloride, Fluoride, Sulfide <input type="checkbox"/> Nitrite/Nitrate <input type="checkbox"/> VOC - Specify Method required <input type="checkbox"/> METALS - specify <input type="checkbox"/> Pesticide <input type="checkbox"/> Herbicide <input type="checkbox"/> Total Phosphorus <input type="checkbox"/> Acid Extractables <input type="checkbox"/> B/N Extractables <input type="checkbox"/> PCB's <input type="checkbox"/> Cyanide <input type="checkbox"/> Cellform - specify type <input type="checkbox"/> WATER PH TEMP														CCL 23803				
SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS															Remarks
-01 SPORT 212-1	10/17/96	1300	X	X			2															UST NS-648-4 Soil
-02 SPORT 212-2	10/17/96	1330	X	X			2															UST NS-648-5 Soil
-03 SPORT 212-3	10/17/96	1356	X	X			2															UST NS-648-6 Soil
-04 SPORT 212-4	10/17/96	1418	X	X			2															UST NS-648-7 Soil
-05 SPORT 212-5	10/17/96	1433	X	X			2															UST NS-648-8 Soil
-06 SPORT 212-6	10/17/96	1458	X	X			2															UST NS-648-9 Soil
-07 SPORT 212-7	10/17/96	1516	X	X			2															UST NS-648-10 Soil
-08 SPORT 212-8	10/17/96	1055	X	X			1															UST NS-648 VOA SOIL TRIP BLANK
-09 SPORT 212-9	10/17/96	1055					3															UST NS-648 TRIP BLANK
Relinquished by:			Date:	Time:	Received by:			Relinquished by:			Date:	Time:	Received by:									
[Signature]			10/18/96	1042	W.R. Hiersy			W.R. Hiersy			10/18/96	1438	Kee R. McCall									
Relinquished by:			Date:	Time:	Received by lab by:			Date:	Time:	Remarks:												
Kee R. McCall			10/18/96	15:05	Dwayne France			10/18/96		Temp 7°C												

White = sample collector Yellow = file Pink = with report

000000
000000

Attachment III

Certificate of Disposal (tanks)

AST Certificate of Disposal

CONTRACTOR

Supervisor of Shipbuilding, Conversion and Repair, USN
Portsmouth, VA
Environmental Detachment Charleston
1899 North Hobson Avenue
North Charleston 29405-2106

Telephone (803) 743-6482

TANK ID & LOCATION

AST 648; Charleston Naval Base, Bldg 648, Dyess Ave., N. Charleston, SC

DISPOSAL LOCATION

Bldg. 1601 Tank Cleaning
& Disposal Area
Charleston Naval Complex

TYPE OF TANK

Fuel oil

SIZE (GAL)

1,000 gal.

CLEANING/DISPOSAL METHOD

The tank was cut open on both ends, cleaned with a steam cleaner, cut into sections, and disposed of as recyclable scrap metal.

DISPOSAL CERTIFICATION

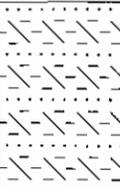
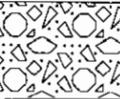
I certify that the above tank has been properly cleaned and disposed of as recyclable scrap metal.

O. S. Utheim 1/12/16/196
O. S. Utheim (Name) (Date)

APPENDIX B

GEOLOGIC BORING LOGS

BASE: Charleston Naval Complex, Zone H	SITE ID: CNC06	PROJECT NO.: N7912
BORING ID: CNC06-B01	WELL ID: N/A	PIEZOMETER ID: N/A
CONTRACTOR: Catlin	COMPLETION DATE: 12/2/99	LOGGED BY: Pam Jackson
METHOD: Power Probe DPT	BORING DIAMETER (in): 3	TOTAL DEPTH (ft bls): 4
TOC ELEVATION (ft msl): N/A	SCREEN INTERVAL (ft bls): N/A	DEPTH TO GW (ft bls): 3

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	06SFB0102	0	SAND: fine-grained, well sorted, trace clay, dry, light brown.		SP		
200		200	CLAYEY SAND: ~30% clay, fine to coarse-grained, some gravel, dry, olive and black.		SC		
45		45	GRAVEL: fill material, saturated.				
			End of boring - met refusal.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B02	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/02/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" OD	TOTAL DEPTH: 12ft bls
TOC ELEVATION: ft MSL	SCREEN INTERVAL: ft bls	DEPTH TO ∇ 6 ft bls

DEPTH F.T.	LAB SAMPLE ID.	SAMPLE RECOVERY	CORRECTED HEADSPACE (ppm)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
			2	CLAYEY SAND: ~15% clay, sand, trace gravel, soft dry, light brown.		SC		
			35	SAND: some clay, very fine- to fine-grained, soft, damp, very dark gray.		CL		
	06SFBO203		1,500	SILTY, SANDY CLAY: an almost even mix with very fine-grained, slightly cohesive, damp, light brown.		OL		
5			40	CLAY: some fine sand and silt, non-plastic, "mucky", sticky, black.		SP		
10				SAND WITH INTERBEDDED CLAYS: very fine- to fine grained sand with up to 1" thick soft clay layers, shell fragments, olive gray to dark gray.				
15				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B03	WELL ID:	PIEZOMETER ID: CNC06-P03
CONTRACTOR: Catlin	COMPLETION DATE: 12/02/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
2				SAND: ~15% clay and silt, very fine- to medium-grained, dry, slightly cohesive, soft, light brown.		SP		
200				SAND: same as above with trace coarse, brown.				
4,250	06SFB0303			CLAYEY SAND: ~35% clay, fine- to medium-grained sand, soft, moderately cohesive, dry to damp, mottled brown and dark grey.		SC		
2,750				CLAYEY SAND: ~20% clay, very fine- to fine-sand, slightly cohesive, damp, brown.				
3,500				SANDY CLAY: ~25% very fine- to fine-grained sand, non-plastic, mucky, light brown with black in bottom 2", free product in bottom 2".		CL		
10				CLAY WITH INTERBEDDED SANDS: very mucky, wet, soft clay with frequent 1 to 2" layers of fine- to medium-grained sand, saturated with free product from 8' to 9' bls.		OL		

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B04	WELL ID:	PIEZOMETER ID: CNC06-P04
CONTRACTOR: Catlin	COMPLETION DATE: 12/02/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
10				SILTY, CLAYEY SAND: ~40% clay and silt, very fine- to fine-grained, trace medium-grained, some shell fragments, dry, light brown.		ML		
14						SP		
9				SAND: some silt, very fine- to medium-grained, damp, soft, light gray to very dark gray.		SP		
38	06SFB0405			CLAYEY SAND: ~30% clay, fine sand, cohesive, damp, light brown (4-7') to black (8-9') with shell fragments.		SC		
30						SC		
10				INTERBEDDED SANDS AND CLAYS: layers from 1" to 2" thick, fine well- sorted sands with mucky soft clay layers, brown sand, black clay, wet.		CL		
				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 08	PROJECT NO. 7921
BORING ID: CNC08-B05	WELL ID:	PIEZOMETER ID: CNC08-P05
CONTRACTOR: Catlin	COMPLETION DATE: 12/02/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
			3	CLAYEY SAND: ~20% clay, silt, fine- to medium-grained sand, slightly cohesive, dry, brown.		SC		
			2	CLAYEY SAND: ~30 clay, same as above.		CL		
			2			SC		
			18	SILTY, CLAYEY SAND: ~50% clay and silt, very fine- to fine-grained sand, damp, moderately cohesive, light brown and dark gray.		SC		
5	08SFB0506		22	SILTY, CLAYEY SAND: even mixture of silt, clay, and fine-grained sand, damp, light brown.		SC		
				CLAY: sticky, mucky, wet, non-plastic, dense, lots of shells, dark gray.		OL		
10				SAND: some clay, mostly fine-grained, soft, saturated, light brown.		SP		
				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B06	WELL ID:	PIEZOMETER ID: CNC06-P06
CONTRACTOR: Catlin	COMPLETION DATE: 12/03/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" OD	TOTAL DEPTH: 16ft 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
1				SILTY, CLAYEY SAND: ~30% clay, 20% silt, very fine- to medium-grained slightly cohesive, dry, grayish brown.	[Symbol]	SC		
1				CLAYEY SAND: ~35% clay, some silt, fine-grained sand, some shell fragments, dry, grayish brown.	[Symbol]	CL		
2								
7								
5				SANDY CLAY: ~40% very fine- to fine-grained sand, soft, non-plastic clay, damp, grayish brown to medium gray.	[Symbol]			
15	06SFB0607							
60						OL		
12				CLAY: soft, mucky, sticky, lots of shells, damp, very dark gray.	[Symbol]			
10				CLAYEY SAND: 1 mm thick clay layers, fine- to medium-grained, soft, damp to wet, shell fragments, light brown.	[Symbol]	SC		
15				INTERBEDDED CLAYS AND SANDS: fine-grained, well sorted sands, with 1" layers of clay muck, dark gray.	[Symbol]	SC		
20				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B07	WELL ID:	PIEZOMETER ID: CNC06-P07
CONTRACTOR: Catlin	COMPLETION DATE: 12/03/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
1				CLAYEY, SILTY SAND: even mixture, very fine- to medium grained, slightly cohesive, dry, grayish brown, increasing clay content.		SM		
2				CLAYEY SAND: ~40% clay, some silt, very fine-grained, moderately cohesive, damp, brown.		SM		
4						CL		
6				SILTY, SANDY CLAY: very fine-grained sand, cohesive, damp, non-plastic, light brown.		CL		
50	06SFB0707			CLAY: mucky, damp, shells, very dark gray.		OL		
				INTERBEDDED SILTY SANDS AND CLAYS: layers range from 1/2" to 1", sand is fine- to very fine-grained, silty, soft; clay is very dark gray, mucky, shell material, damp to wet.		OL		
				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B08	WELL ID:	PIEZOMETER ID: CNC06-P08
CONTRACTOR: Catlin	COMPLETION DATE: 12/03/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
0	06SFB0801			SILTY, SANDY CLAY: ~40% fine-grained sand and silt, soft, non-plastic, moderately cohesive, dry, dark brownish gray.		CL		
4				SILTY, SANDY CLAY: as above, damp.		CL		
2				SILTY CLAY: some very fine-grained sand, ~30% silt, soft, non-plastic, wet.		CL		
7				SILTY SAND: ~30% silty, some clay, very fine-grained sand with trace coarse, shell fragments, wet, light brown.		SM		
10				CLAY: sticky, mucky, wet, non-plastic, lots of shells, silt, organics, very dark gray.		OL		
12				SILTY SAND: ~20% silt, very fine- to medium-grained, wet, soft, shell fragments, light brown.		SM		
12				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BRING ID: CNC06-B09	WELL ID:	PIEZOMETER ID: CNC06-P09
CONTRACTOR: Catlin	COMPLETION DATE: 12/03/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				3 CLAYEY SAND: silty, ~25% clay, very fine- to fine-grained, non-cohesive, dry, brown.		CL		
				3 SANDY CLAY: ~40% very fine- to fine-grained sand, silty, moderately cohesive, dry, brown.				
				3 SILTY CLAY: ~20%-30% silt, some very fine-grained sand, non-cohesive, damp, grayish brown.		SM		
5	06SFB0904		6	4 SILTY SAND: ~30% silty, some clay, very fine-grained sand, non-cohesive, soft, damp, light brown.				
10				CLAY: sticky, mucky, wet, non-plastic, lots of shells, very fine-grained sands, very soft, organic, very dark gray.		OL		
				SILTY SAND: ~30% silt, some clay, very fine- to fine-grained, wet, light brown.		SM		
15				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B10	WELL ID:	PIEZOMETER ID: CNC06-P10
CONTRACTOR: Catlin	COMPLETION DATE: 12/03/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
4				SILTY SAND: some clay, ~30% silt, fine- to medium-grained sand, shell fragments, non-cohesive, soft, dry, brown.		SM		
3				CLAYEY SAND: ~40-45% clay, very fine- to fine-grained, cohesive, soft, dry, mottled light gray, reddish brown, and brown.		SC		
4				SILTY, CLAYEY SAND: even mix, moderately cohesive, soft, damp, grayish brown.		ML		
20						SM		
5	06SFB1006		35	SILTY SAND: ~30% silty, some clay, very fine-grained sand, shell fragments, dry to damp, light brown.		SM		
				CLAY: organic, mucky, wet, shells, very dark gray.		OL		
10				SILTY SAND: ~40% silt, very fine-grained, non-plastic, wet, light brown.		SM		
				CLAY: organic, mucky, wet, shells, very dark gray.		OL		
				SAND: well sorted, fine, saturated, trace clays and silts, light gray.		SP		
				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B11	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" OD	TOTAL DEPTH: 16ft 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
1						SM		
0				SILTY SAND: some clay, ~20-30% silt, very fine-grained, loose, dry, dark grayish brown.				
0				SILTY, SANDY CLAY: ~20-25% silty, very fine-grained, non-plastic, soft, dry, greenish gray.		CJ		
15								
15								
220				SILTY SAND: ~25% silt, ~25% very fine- to fine-grained sand, dry to damp, non-plastic, medium stiff, light brown.				
300	06SFB1109					OL		
				CLAY: mucky, sticky, soft, non-plastic, numerous layers of very fine- to fine-grained sand, shells, plant debris, very dark gray.				
				SILTY SAND: ~40% silty, some clay, very fine- to fine-grained, shells, soft, saturated, grayish brown.		SM		
				CLAY: mucky clay as above.		OL		
15				SAND: fine, some very fine, numerous clay muck layers, silty, dark gray.		SM/OL		
				End of Boring				

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B12	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	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 F.T.	LAB SAMPLE ID.	SAMPLE RECOVERY	CORRECTED HEADSPACE (ppm)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
1				SANDY, SILTY CLAY: very fine- to fine-grained sand, decreasing with depth, ~20% silty, medium stiff, non-plastic, dry, brown.		CL		
1								
35				SILTY CLAY: ~30% silt, very fine-grained sand, non-plastic, dry to damp, medium stiff, grayish brown.				
5	06SFB1204		220	SANDY CLAY: ~35-40% very fine- to fine-grained sand, silty, medium stiff, non-plastic, damp to wet.		OL		
10				CLAY: mucky, very soft, lots of shells, silt, saturated, very dark gray.				
15				SILTY SAND: ~20-40% silty, some clay, very fine- to fine-grained, trace medium-grained, shells, saturated, gray to dark gray.		SM		
				End of Boring				

SE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B13	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				SILTY SAND: trace clay increasing with depth, ~30-35% silt, fine-grained with some very fine-, trace medium-, loose, dry, brown.		SM		
				SILTY, CLAYEY SAND: ~30% silt, ~20-25% clay, very fine-, to fine-grained, some large gravel, dry, loose, brown to dark gray.		ML		
				SILTY, SANDY CLAY: ~30% silt, ~20% fine-grained sand, soft, non-plastic, damp, brown.		CL		
5	06SFB1304	X		SILTY, SANDY CLAY: as above, very poor recovery.		OL		
				INTERBEDDED CLAYS, SILTY SANDS, AND SANDS: clays: mucky, very soft, shells, non-plastic, very dark, gray; sands: fine-grained, trace very fine-grained and silt, loose, saturated, gray; silty sands: ~30-40% silt, some clay, very fine- to fine-grained, loose, saturated, light brown, thicknesses vary from 1" to 6".		SP		
10						SM		
				End of Boring				
15								

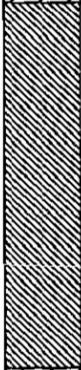
BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B14	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" OD	TOTAL DEPTH: 12ft bls
TOC ELEVATION: ft MSL	SCREEN INTERVAL: ft bls	DEPTH TO ∇ ft bls

DEPTH FT.	LAB SAMPLE ID.	SAMPLE RECOVERY	CORRECTED HEADSPACE (ppm)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				ASPHALT		FILL		
				ASPHALT AND GRADING MATERIAL-GRAVEL.		ML		
				CLAYEY, SILTY, SAND: nearly even mix, very fine-grained, dense, dry, brown.		SM		
5	06SFB1404			SILTY SAND: fine-grained, trace medium- and very fine-, ~20-30% silt, dry to damp, loose, dark gray.		OL		
				CLAY: mucky, very soft, saturated, non-plastic, lots of shells, some very fine-grained sand and silt, very dark gray.				
10				CLAY: as above, with some layers of silt and silty sand.				
				End of Boring				
15								

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B15	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" 00	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
				ASPHALT		FILL		
				GRADING FILL: gravel, sand, silt.				
			50	SILTY SAND: ~30%-40% silty, some clay, very fine-grained, dense, dry, light brown.		SM		
				SAND: fine-grained, trace very fine-grained and silt, moderately sorted, dry, loose, gray.		SP		
	06SFB1504		3500	SILTY SAND: ~30-40% silt, some clay, very fine- to fine-grained, saturated, loose, light brown.		SM		
5			80	CLAY: mucky, saturated, non-plastic, silty, trace fine-grained sand, lots of shells, very dark gray.		OL		
				SILTY SAND: ~20-30% silty, some clay, very fine- to fine-grained, saturated, loose, light brown.		SM		
10				End of Boring				
15								

BASE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B16	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	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)	LITHOLOGIC DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOW COUNTS	WELL DATA
				ASPHALT		FILL		
				GRADING FILL: gravel.		SP		
			13					
				SAND: fine, some very fine-grained, silty, damp, loose, moderately sorted, pale grayish brown.		SM		
	06SFB1604		700					
5				SILTY SAND: ~30% silt, very fine- to medium-grained, dense, wet, light brown.		OL		
				CLAY: mucky, non-plastic, very soft, saturated, lots of shells, some silt, very dark gray.		SM		
10				SAND: fine-grained, well sorted, with 2-3" layers of silty very fine- grained sand, loose, saturated, gray to light brown		SP		
				End of Boring				
15								

SE: Charleston Naval Complex, Zone H	SITE ID: 06	PROJECT NO. 7921
BORING ID: CNC06-B17	WELL ID:	PIEZOMETER ID:
CONTRACTOR: Catlin	COMPLETION DATE: 12/07/98	LOGGED BY: P.J. Jackson
METHOD: Powerprobe	DIAMETER: 3" 00	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: some clay (increases with depth), ~25% silt, very fine- to fine-grained, dry, loose, brown.		SM		
			4	CLAYEY SAND: silty, ~30% clay, very fine- to fine-grained, cohesive, soft, dry, brown.		SC		
			4			CL		
			6	SILTY, SANDY CLAY: ~20% silt, ~20% very fine-grained sand, non- plastic, soft, damp, brown.				
	06SFB1704		50			SM		
5			25	SILTY SAND: ~30-40% silt, very fine- to fine-grained, dense, dry to wet, light brown, poor recovery.				
				CLAY: mucky, very soft, saturated, silty, lots of shells, very dark gray.		OL		
				SAND: fine-grained, trace silt and very fine-grained, soft, loose, saturated, gravy.		SP		
				SILTY SAND: ~30% silt, very fine- to fine-grained, medium dense, saturated, light brown.		SM		
				End of Boring				

APPENDIX C

FIELD SAMPLING DATA SHEETS

SAMPLE SCREENING DATA

<u>SAMPLE ID</u>	<u>QVA</u>	<u>Comments</u>
06SSB0501	3	none
06SSB0502	2	none
06SSB0503	2	none
06SSB0504	18	none
06SSB0506	22	collected @ 0.5F B0506

WATER LEVEL DATA

<u>LOCATION</u>	<u>DTW</u>	<u>DTP</u>	<u>TOC</u>	<u>▼</u>
CNC06-P01	4.55	none	98.26	93.71
CNC06-P02	5.62	none	97.27	91.65
CNC06-P03	9.82	7.05	100.00	90.18
CNC06-P04	6.86	none	99.11	92.25
CNC06-P05	7.10	none	98.98	91.88

PIEZOMETER SAMPLING TABLE

<u>Time</u>	<u>LOCATION</u>	<u>Sample ID</u>
1625	CNC06-P01	06GF P0101
1630	CNC06-P02	06GF P0201
N/A	CNC06-P03	not sampled due to product
1622	CNC06-P04	06GF P0401
1633	CNC06-P05	06GF P0501

1635 taking cleaning up the day. Thus i Zepher setting up to survey piezometers. Will use arbitrary bench mark of 100 feet

fine s-
e fanner
fine to med.
fine
above
ft, cohesive
silt, v. fine
ly cohesive,
e. of silt,
y at brown
y non-plastic,
y fine sand,
win
CNC06-B05
data see
samples

(17)

Site 6

12-3-98

0630 Calibrated Samsodyne OVA w/ 100 ppm methane. It is working fine.

0655 P. Jackson arrives at Site 6. Waiting for other to arrive. Will collect a round of water levels.

WATER LEVEL DATA

<u>Time</u>	<u>LOCATION</u>	<u>DTW</u>	<u>DTP</u>	<u>TOC</u>	<u>▼</u>
0702	CNCO6-P04	6.90	N/A	99.11	92.21
0703	CNCO6-P01	4.63	N/A	98.26	93.63
0704	CNCO6-P02	4.83	N/A	97.27	92.44
0705	CNCO6-P05	6.54	N/A	98.98	92.44
0706	CNCO6-P03	12.40	6.61	100.00	87.60 (57.1R)

0710 Caterer crew arrives. Setting up at CNCO6-B06. It is located 10' feet east of CNCO6-B03 and about 3 feet west of the corner of Bldg 698.

LOG OF CNCO6-B06

- 0-1' Silty, Clayey SAND: ~30% clay, 20% silt, v. fine to medium sand, slightly cohesive, dry, grayish brown.
- 1-2' Silty, Clayey SAND: AS above
- 2-3' Clayey Sand: ~35% clay, some silt, fine sand, some shell fragments, dry, grayish brown.
- 3-4' SANDY CLAY: ~40% v. fine to fine sand, silt, non-plastic clay, damp, grayish brown to med gray.

Pit # W. Jackson

100.00

2.24

97.76

TOC*

97.66

97.28

98.94

97.18

100.00

WEATHER: cloudy, warm

PERSONNEL: P. Jackson

EQUIPMENT: Beck water level indicator

PURPOSE: collect water levels

0715 Arrived at Site 6

TIME	LOCATION	DTW	TOC*	▼
0725	CNC06-P01	stream	not measured	
0730	CNC06-M02	1.23	98.94	97.71
0728	CNC06-M05	2.17	97.28	95.11
0724	CNC06-M06	2.46	97.18	94.72

TIME	LOCATION	DTW	DTW	TOC*	▼
1435	CNC06-P03	2.99	10.22	100.00	89.78
1439	CNC06-P01	—	0.75	97.66	96.91
1438	CNC06-P06	—	3.79	100.82	97.03
1440	CNC06-P10	—	2.96	99.93	96.97

TIME	LOCATION	DTW	TOC*	▼
1705	CNC06-M02	3.02	98.94	95.92
1700	CNC06-M05	2.10	97.28	95.18
1702	CNC06-M06	2.33	97.18	94.85
1703	CNC06-P01	0.87	97.66	96.79

* Volatile, not MSL.

Site 6

3-7-99

(204)

WEATHER: sunny, 50°s, v. Windy

PERSONNEL & EQUIPMENT: see p. 100

PURPOSE: Purge and sample Site 6 wells
and permanent piezometer for PAH
and VOC.

0715 Arrive onsite. Setting up to take
water level and product thickness
measurements.

<u>TIME</u>	<u>LOCATION</u>	<u>DTW</u>	<u>DTP</u>	<u>TD</u>
0730	CNC06-M01	4.85	—	12.0
0742	CNC06-M02	5.15	—	11.7
0740	CNC06-M03	4.20	—	12.0
0738	CNC06-M04	3.79	—	11.9
0735	CNC06-M05	3.83	—	11.8
0733	CNC06-M06	4.18	—	11.9
0736	CNC06-M07	2.52	—	32.5
0744	CNC06-P01	3.92	3.28	NM
0	CNC06-P03	11.69	5.61	NM
0746	CNC06-P06	6.47 7.31	—	NM
0747	CNC06-P10	6.47	—	NM
0750	CNC06-P07	6.62	—	NM

Completed water level survey. Will
calculate purge volumes. See table
next page.

RLHWA

105

Site 6

3-7-99

PURGE VOLUME TABLE

<u>LOCATION</u>	<u>1 Vol</u>	<u>3 Vol</u>	<u>5 Vol</u>
CNC06-M01	1.2	3.6	6.0
CNC06-M02	1.1	3.3	5.5
CNC06-M03	1.3	3.9	6.5
CNC06-M04	1.3	3.9	6.5
CNC06-M05	1.3	3.9	6.5
CNC06-M06	1.3	3.9	6.5
CNC06-M07	4.9	14.7	24.5
CNC06-P01	free product - no samples		

PURGE PROGRESS TABLE

<u>LOCATION</u>	<u>START</u>	<u>STOP</u>	<u>RATE</u>	<u>Total Vol</u>
CNC06-M01	0832	0930	.54/min	6.0 gal
CNC06-M02	0905	0940	.54/min	5.5 gal
CNC06-M03	0830	0902	.54/min	6.5 gal
CNC06-M04	0830	0915	.54/min	6.5 gal
CNC06-M05	0922	1005	.54/min	6.5 gal
CNC06-M06	0832	1010	.54/min	6.5 gal
CNC06-M07	0830	0930	.54/min	5.0
CNC06-P01	free product - no samples			

0835 pumps set up. began purging;
 opening down, etc.

0930 Because there is free product at the site
 we will not collect material afterward
 here. PL/W

Site 6

3-7-99

(106)

PURGE PARAMETER TABLE

TIME	LOCATION	Temp.	Cond	pH	Vol	
0837	CNC06-M03	16.9°	6.41	6.64	2	
0839	CNC06-M04	17.6°	6.63	7.18	1	
0841	CNC06-M07	18.9°	29.2	6.54	1	
0844	CNC06-M06	tubing screwed up - fixing				
0845	CNC06-M01	16.9	4.85	6.63	1	
0848	CNC06-M03	17.8	7.88	6.69	4	
0850	CNC06-M04	18.0	7.68	6.73	3	
0853	CNC06-M07	19.2	27.7	7.22	2	
0855	CNC06-M06	17.8	4.44	7.05	1	
0900	CNC06-M01	17.3	5.63	7.08	3	
0902	CNC06-M03	18.2	8.61	6.87	6.5	
0904	CNC06-M04	17.9	3.40	6.94	5	
0906	CNC06-M07	18.2	22.3	7.46	4	
0908	CNC06-M01	17.5	6.84	7.10	4	
0910	CNC06-M02	16.2	2.13	7.05	1	
0915	CNC06-M04	18.2	3.86	6.85	6.5	
0917	CNC06-M07	18.7	22.8	7.41	4.5	
0920	CNC06-M06	17.4	4.15	6.99	2	
0922	CNC06-M01	17.6	6.50	7.06	5	
0925	CNC06-M02	17.0	3.21	6.96	3.5	
0927	CNC06-M05	17.8	5.09	6.98	1	
0930	CNC06-M07	purged dry				5
0930	CNC06-M01	17.9	6.72	7.06	6	
0935	CNC06-M06	18.0	4.04	6.94	3	

TL 1 W 2

1 Vol

4.0 gal

1.5 gal

5 gal

5 gal

5 gal

5 gal

5.0

5

5

5

to site

minutes

(103)

Site 6 3-7-99

PURGE DATA TABLE

Time	Well	Temp	pH	Cond	Vol
0937	CNC06-M05	18.2	6.96	5.93	3
0940	CNC06-M02	17.3	6.98	3.61	5.5
0944	CNC06-M06	18.3	6.92	4.01	4
0945	CNC06-M05	18.5	6.97	6.61	4
1010	CNC06-M06	18.7	7.05	3.91	6.5
1005	CNC06-M05	18.9	7.00	7.48	6.5

1015 Completed purging wells. Leaving site to get lunch and permit regulations regarding natural attenuation.

1145 Returned to site. Confirmed that there is no reason to collect natural attenuation here at Site 6 (yet). Setting up to sample. We will be using peristaltic pumps w/ teflon/silicone tubing to collect PAH. Will use teflon and our thimbles to collect VOC.

1330 Cleaning up and leaving site.

7/25

Site 6 3-7-99

198

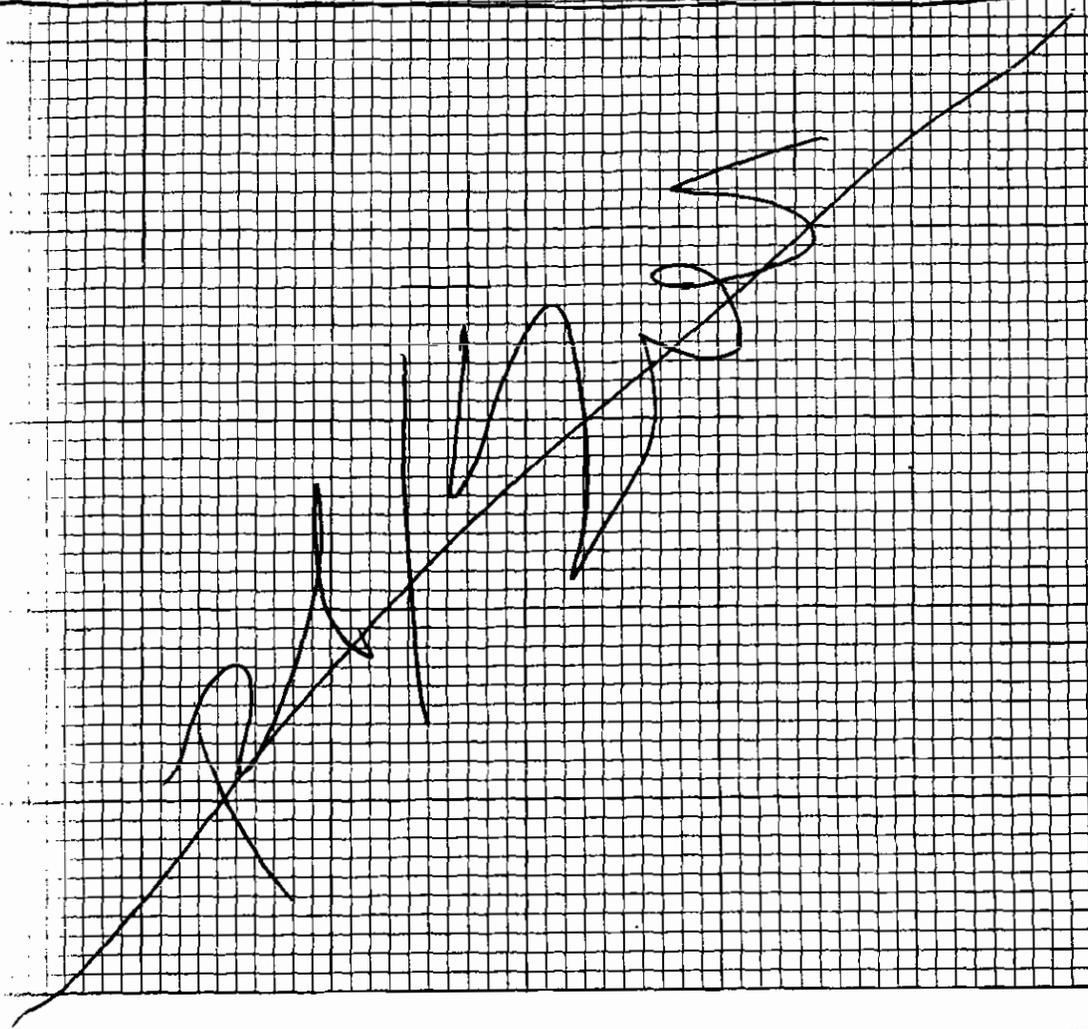
SAMPLE DATA TABLE

<u>TIME</u>	<u>LOCATION</u>	<u>SAMPLE ID</u>
1215	CNC06-M01	06GLM0101 (+dup.)
1225	CNC06-M02	06GLM0201
1235	CNC06-M03	06GLM0301
1245	CNC06-M04	06GLM0401
1255	CNC06-M05	06GLM0501
1305	CNC06-M06	06GLM0601
1315	CNC06-M07	06GLM0701

d vol
 73 3
 01 5.5
 01 4
 01 4
 71 6.5
 48 6.5

site
times

that
 not
 (yes)
 will
 25 w/
 affect
 201 photos



APPENDIX D

SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA



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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 26, 1999

Page 1 of 3

Sample ID : 06GLM0101
 Lab ID : 9903287-08
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/17/99	1140	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1140	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1140	144599	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		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		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 26, 1999

Page 2 of 3

Sample ID : 06GLM0101

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	MAP	03/17/99	1140	144599	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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE		50.6	2.33	10.6	ug/l	1.0	TSD	03/16/99	1858	144118	3
ACENAPHTHYLENE	U	ND	1.38	10.6	ug/l	1.0					
ANTHRACENE	U	ND	2.44	10.6	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.97	10.6	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.12	10.6	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.98	10.6	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.65	10.6	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.76	10.6	ug/l	1.0					
CHRYSENE	U	ND	2.33	10.6	ug/l	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	2.33	10.6	ug/l	1.0					
FLUORANTHENE	U	ND	3.29	10.6	ug/l	1.0					
FLUORENE		16.2	2.23	10.6	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.60	10.6	ug/l	1.0					
PHENANTHRENE	J	9.82	1.91	10.6	ug/l	1.0					
PYRENE	U	ND	2.65	10.6	ug/l	1.0					

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

ES 03/09/99 1630 144118 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	66.2	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	66.9	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	85.4	(36.6 - 110.)



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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 26, 1999

Page 3 of 3

Sample ID : 06GLM0101

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	74.7	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	78.7	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.1	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	74.7	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	78.7	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.1	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	74.7	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	78.7	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.1	(73.0 - 122.)

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
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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 26, 1999

Page 1 of 3

Sample ID : 06GLM0101D
 Lab ID : 9903287-09
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/15/99	1720	144599	1
NAPHTHALENE	J	1.38	0.600	5.00	ug/l	1.0	MAP	03/15/99	1720	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/15/99	1720	144599	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		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		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 26, 1999

Page 2 of 3

Sample ID : 06GLM0101D

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	MAP	03/15/99	1720	144599	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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE		55.1	2.27	10.3	ug/l	1.0	TSD	03/16/99	1928	144118	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		18.0	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		11.5	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

ES 03/09/99 1630 144118 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	70.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	71.4	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	96.7	(36.6 - 110.)

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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 26, 1999

Page 3 of 3

Sample ID : 06GLM0101D

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	75.4	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	80.1	(66.0 - 117.)
Toluene-d8	MTBE-8260B	73.8	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	75.4	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	80.1	(66.0 - 117.)
Toluene-d8	NAP-8260B	73.8	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	75.4	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	80.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	73.8	(73.0 - 122.)

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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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 26, 1999

Page 1 of 3

Sample ID : 06GLM0201
 Lab ID : 9903287-10
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/15/99	1751	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/15/99	1751	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/15/99	1751	144599	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		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		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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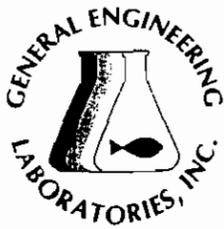
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SC	10120	10582
TN	02934	02934

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 26, 1999

Page 2 of 3

Sample ID : 06GLM0201

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	MAP	03/15/99	1751	144599	1
TRICHLOROFUOROMETHANE		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	2.38	10.8	ug/l	1.0	TSD	03/17/99	1743	144118	3
ACENAPHTHYLENE	U	ND	1.40	10.8	ug/l	1.0					
ANTHRACENE	U	ND	2.48	10.8	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.02	10.8	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.16	10.8	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.08	10.8	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.70	10.8	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.81	10.8	ug/l	1.0					
CHRYSENE	U	ND	2.38	10.8	ug/l	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	2.38	10.8	ug/l	1.0					
FLUORANTHENE	U	ND	3.35	10.8	ug/l	1.0					
FLUORENE	U	ND	2.27	10.8	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.67	10.8	ug/l	1.0					
PHENANTHRENE	U	ND	1.94	10.8	ug/l	1.0					
PYRENE	U	ND	2.70	10.8	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

ES 03/09/99 1630 144118 4

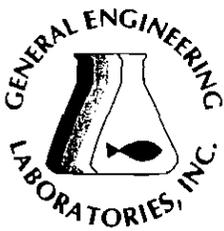
Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	55.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	45.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	78.7	(36.6 - 110.)

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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 26, 1999

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Sample ID : 06GLM0201

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	79.0	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	79.4	(66.0 - 117.)
Toluene-d8	MTBE-8260B	77.1	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	79.0	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	79.4	(66.0 - 117.)
Toluene-d8	NAP-8260B	77.1	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	79.0	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	79.4	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	77.1	(73.0 - 122.)

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

Notes:

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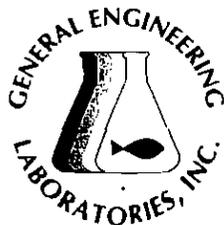
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TN	02934	02934

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: March 26, 1999

Page 1 of 3

Sample ID : 06GLM0301
 Lab ID : 9903287-11
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/17/99	1211	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1211	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1211	144599	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		ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROPROPANE	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE		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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SC	10120	10582
TN	02934	02934

Client: Tetra Tech NUS, Inc.
 794 South Military Trail
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Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Report Date: March 26, 1999

Page 2 of 3

Sample ID : 06GLM0301

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCB)		ND	0.600	1.00	ug/l	1.0	MAP	03/17/99	1211	144599	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	5.96	2.46	11.2	ug/l	1.0	TSD	03/17/99	1813	144118	3
ACENAPHTHYLENE	U	ND	1.46	11.2	ug/l	1.0					
ANTHRACENE	U	ND	2.58	11.2	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.14	11.2	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.24	11.2	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.26	11.2	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.80	11.2	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.91	11.2	ug/l	1.0					
CHRYSENE	U	ND	2.46	11.2	ug/l	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	2.46	11.2	ug/l	1.0					
FLUORANTHENE	U	ND	3.47	11.2	ug/l	1.0					
FLUORENE	U	ND	2.35	11.2	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.81	11.2	ug/l	1.0					
PHENANTHRENE	U	ND	2.02	11.2	ug/l	1.0					
PYRENE	U	ND	2.80	11.2	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

ES 03/09/99 1630 144118 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	48.2	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	45.3	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	75.6	(36.6 - 110.)

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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 26, 1999

Page 3 of 3

Sample ID : 06GLM0301

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	76.6	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	77.5	(66.0 - 117.)
Toluene-d8	MTBE-8260B	78.7	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	76.6	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	77.5	(66.0 - 117.)
Toluene-d8	NAP-8260B	78.7	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	76.6	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	77.5	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	78.7	(73.0 - 122.)

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:

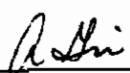
ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

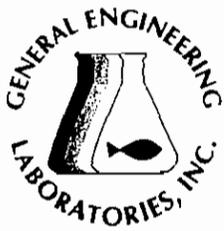
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TN	02934	02934

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: March 26, 1999

Page 1 of 3

Sample ID : 06GLM0401
 Lab ID : 9903287-12
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/17/99	1241	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1241	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1241	144599	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		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		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 26, 1999

Page 2 of 3

Sample ID : 06GLM0401

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	MAP	03/17/99	1241	144599	1
TRICHLOROFUOROMETHANE		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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	TSD	03/15/99	2309	144459	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

BMC 03/12/99 1430 144459 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	67.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	64.3	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	69.3	(36.6 - 110.)

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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: TETRO0498

Report Date: March 26, 1999

Page 3 of 3

Sample ID : 06GLM0401

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	74.8	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	77.8	(66.0 - 117.)
Toluene-d8	MTBE-8260B	83.0	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	74.8	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	77.8	(66.0 - 117.)
Toluene-d8	NAP-8260B	83.0	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	74.8	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	77.8	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	83.0	(73.0 - 122.)

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.

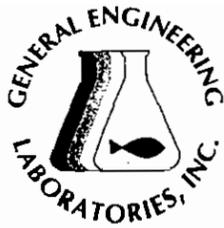
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

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
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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

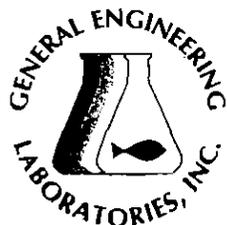
Report Date: March 26, 1999

Page 1 of 3

Sample ID : 06GLM0501
 Lab ID : 9903287-13
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 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	MAP	03/17/99	1312	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1312	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1312	144599	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		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		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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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 26, 1999

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Sample ID : 06GLM0501

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	MAP	03/17/99	1312	144599	1
TRICHLOROFUOROMETHANE		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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	2.44	11.1	ug/l	1.0	TSD	03/17/99	1843	144118	3
ACENAPHTHYLENE	U	ND	1.44	11.1	ug/l	1.0					
ANTHRACENE	U	ND	2.55	11.1	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.11	11.1	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.22	11.1	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.22	11.1	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.78	11.1	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.89	11.1	ug/l	1.0					
CHRYSENE	U	ND	2.44	11.1	ug/l	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	2.44	11.1	ug/l	1.0					
FLUORANTHENE	U	ND	3.44	11.1	ug/l	1.0					
FLUORENE	U	ND	2.33	11.1	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.77	11.1	ug/l	1.0					
PHENANTHRENE	U	ND	2.00	11.1	ug/l	1.0					
PYRENE	U	ND	2.78	11.1	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

ES 03/09/99 1630 144118 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	54.0	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	54.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	69.2	(36.6 - 110.)

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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 26, 1999

Page 3 of 3

Sample ID : 06GLM0501

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	73.6	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	77.6	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.4	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	73.6	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	77.6	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.4	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	73.6	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	77.6	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.4	(73.0 - 122.)

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, Valeric Davis at (843) 769-7391.

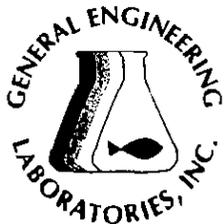
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NC	233	
SC	10120	10582
TN	02934	02934

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 26, 1999

Page 1 of 3

Sample ID : 06GLM0601
 Lab ID : 9903287-14
 Matrix : Water
 Date Collected : 03/07/99
 Date Received : 03/08/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatle Organics											
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0	MAP	03/17/99	1343	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1343	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1343	144599	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-DICHLOROETHANE	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-DICHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROETHANE	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					
CHLOROETHANE	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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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 26, 1999

Page 2 of 3

Sample ID : 06GLM0601

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	MAP	03/17/99	1343	144599	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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	2.29	10.4	ug/l	1.0	TSD	03/16/99	2129	144118	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

ES 03/09/99 1630 144118 4

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	56.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	54.4	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	109.	(36.6 - 110.)

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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 26, 1999

Page 3 of 3

Sample ID : 06GLM0601

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	75.5	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	79.0	(66.0 - 117.)
Toluene-d8	MTBE-8260B	81.9	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	75.5	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	79.0	(66.0 - 117.)
Toluene-d8	NAP-8260B	81.9	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	75.5	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	79.0	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	81.9	(73.0 - 122.)

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

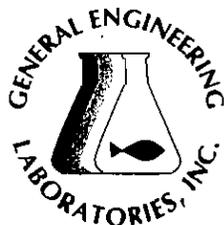
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GENERAL ENGINEERING LABORATORIES

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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

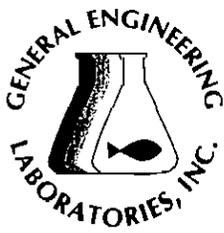
Report Date: March 26, 1999

Page 1 of 3

Sample ID : 06GLM0701
Lab ID : 9903287-15
Matrix : Water
Date Collected : 03/07/99
Date Received : 03/08/99
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	MAP	03/17/99	2337	144599	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	2337	144599	2
<i>Priority Pollutant Volatiles - 32 items</i>											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	2337	144599	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					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE		ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM		1.15	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE		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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Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Report Date: March 26, 1999

Page 2 of 3

Sample ID : 06GLM0701

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCB)		ND	0.600	1.00	ug/l	1.0	MAP	03/17/99	2337	144599	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											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	2.64	12.0	ug/l	1.0	TSD	03/16/99	2159	144118	3
ACENAPHTHYLENE	U	ND	1.56	12.0	ug/l	1.0					
ANTHRACENE	U	ND	2.76	12.0	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.36	12.0	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.40	12.0	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.64	12.0	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	3.00	12.0	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	3.12	12.0	ug/l	1.0					
CHRYSENE	U	ND	2.64	12.0	ug/l	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	2.64	12.0	ug/l	1.0					
FLUORANTHENE	U	ND	3.72	12.0	ug/l	1.0					
FLUORENE	U	ND	2.52	12.0	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	4.08	12.0	ug/l	1.0					
PHENANTHRENE	U	ND	2.16	12.0	ug/l	1.0					
PYRENE	U	ND	3.00	12.0	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds

ES 03/09/99 1630 144118 4

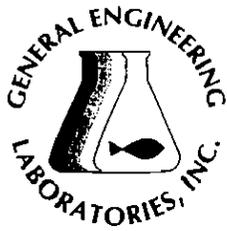
Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	49.1	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	48.3	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	71.8	(36.6 - 110.)

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cc: TETR00498

Report Date: March 26, 1999

Page 3 of 3

Sample ID : 06GLM0701

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	73.7	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	78.5	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.5	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	73.7	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	78.5	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.5	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	73.7	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	78.5	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.5	(73.0 - 122.)

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

Notes:

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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

QC
SUMMARY
REPORT

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 1 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Volatile Organics													
QC593912	BLANK	144599											
1,1-Dichloroethylene						0.00	ug/l					MAP 03/15/99	0853
Benzene						0.00	ug/l						
Chlorobenzene						0.00	ug/l						
Toluene						0.00	ug/l						
Trichloroethylene						0.00	ug/l						
*Bromofluorobenzene							ug/l		78.3	(73.0 - 129.)			
*Dibromofluoromethane							ug/l		78.8	(66.0 - 117.)			
*Toluene-d8							ug/l		84.0	(73.0 - 122.)			
1,1,1-Trichloroethane						0.00	ug/l						
1,1,2,2-Tetrachloroethane						0.00	ug/l						
1,1,2-Trichloroethane						0.00	ug/l						
1,1-Dichloroethane						0.00	ug/l						
1,2-Dichlorobenzene						0.00	ug/l						
1,2-Dichloroethane						0.00	ug/l						
1,2-Dichloropropane						0.00	ug/l						
1,2-trans-Dichloroethylene						0.00	ug/l						
1,3-Dichlorobenzene						0.00	ug/l						
1,4-Dichlorobenzene						0.00	ug/l						
Bromoform						0.00	ug/l						
Carbon Tetrachloride						0.00	ug/l						
Chlorobromomethane						0.00	ug/l						
Chloroethane						0.00	ug/l						
Chloroform						0.00	ug/l						
Dichlorobromomethane						0.00	ug/l						
Dichlorodifluoromethane						0.00	ug/l						
Ethylbenzene						0.00	ug/l						
Methyl Bromide						0.00	ug/l						
Methyl Chloride						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Methylene Chloride						0.00	ug/l						
Naphthalene						0.00	ug/l						
Tetrachloroethylene						0.00	ug/l						
Trichlorofluoromethane						0.00	ug/l						
Vinyl chloride						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
cis-1,3-Dichloropropylene						0.00	ug/l						
trans-1,3-Dichloropropylene						0.00	ug/l						
QC593990	BLANK	144599											

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 2 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
1,1-Dichloroethylene						0.00	ug/l					MAP 03/17/99	1025
Benzene						0.00	ug/l					MAP 03/17/99	1025
Chlorobenzene						0.00	ug/l						
Toluene						0.00	ug/l						
Trichloroethylene						0.00	ug/l						
*Bromofluorobenzene							ug/l		76.4	(73.0 - 129.)			
*Dibromofluoromethane							ug/l		78.4	(66.0 - 117.)			
*Toluene-d8							ug/l		81.9	(73.0 - 122.)			
1,1,1-Trichloroethane						0.00	ug/l						
1,1,2,2-Tetrachloroethane						0.00	ug/l						
1,1,2-Trichloroethane						0.00	ug/l						
1,1-Dichloroethane						0.00	ug/l						
1,2-Dichlorobenzene						0.00	ug/l						
1,2-Dichloroethane						0.00	ug/l						
1,2-Dichloropropane						0.00	ug/l						
1,2-trans-Dichloroethylene						0.00	ug/l						
1,3-Dichlorobenzene						0.00	ug/l						
1,4-Dichlorobenzene						0.00	ug/l						
Bromoform						0.00	ug/l						
Carbon Tetrachloride						0.00	ug/l						
Chlorodibromomethane						0.00	ug/l						
Chloroethane						0.00	ug/l						
Chloroform						0.00	ug/l						
Dichlorobromomethane						0.00	ug/l						
Dichlorodifluoromethane						0.00	ug/l						
Ethylbenzene						0.00	ug/l						
Methyl Bromide						0.00	ug/l						
Methyl Chloride						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Methylene Chloride						0.00	ug/l						
Naphthalene						0.00	ug/l						
Tetrachloroethylene						0.00	ug/l						
Trichlorofluoromethane						0.00	ug/l						
Vinyl chloride						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
cis-1,3-Dichloropropylene						0.00	ug/l						
trans-1,3-Dichloropropylene						0.00	ug/l						
QC594721	BLANK	144599											
1,1-Dichloroethylene						0.00	ug/l					MAP 03/17/99	2307
Benzene						0.00	ug/l						

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 3 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Chlorobenzene						0.00	ug/l					MAP 03/17/99	2307
Toluene						0.00	ug/l						
Trichloroethylene						0.00	ug/l						
*Bromofluorobenzene							ug/l		75.2	(73.0 - 129.)			
*Dibromofluoromethane							ug/l		76.5	(66.0 - 117.)			
*Toluene-d8							ug/l		83.8	(73.0 - 122.)			
1,1,1-Trichloroethane						0.00	ug/l						
1,1,2,2-Tetrachloroethane						0.00	ug/l						
1,1,2-Trichloroethane						0.00	ug/l						
1,1-Dichloroethane						0.00	ug/l						
1,2-Dichlorobenzene						0.00	ug/l						
1,2-Dichloroethane						0.00	ug/l						
1,2-Dichloropropane						0.00	ug/l						
1,2-trans-Dichloroethylene						0.00	ug/l						
1,3-Dichlorobenzene						0.00	ug/l						
1,4-Dichlorobenzene						0.00	ug/l						
Bromoform						0.00	ug/l						
Carbon Tetrachloride						0.00	ug/l						
Chlorodibromomethane						0.00	ug/l						
Chloroethane						0.00	ug/l						
Chloroform						0.00	ug/l						
Dichlorobromomethane						0.00	ug/l						
Dichlorodifluoromethane						0.00	ug/l						
Ethylbenzene						0.00	ug/l						
Methyl Bromide						0.00	ug/l						
Methyl Chloride						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Methylene Chloride						0.00	ug/l						
Naphthalene						0.00	ug/l						
Tetrachloroethylene						0.00	ug/l						
Trichlorofluoromethane						0.00	ug/l						
Vinyl chloride						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
cis-1,3-Dichloropropylene						0.00	ug/l						
trans-1,3-Dichloropropylene						0.00	ug/l						
QC593913	LCS	144599											
1,1-Dichloroethylene			50			52.6	ug/l		105	(70.0 - 144.)		MAP 03/15/99	0733
Benzene			50			48.4	ug/l		96.8	(74.0 - 133.)			
Chlorobenzene			50			48.7	ug/l		97.4	(78.0 - 118.)			
Toluene			50			49.9	ug/l		99.9	(79.0 - 129.)			

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 4 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Trichloroethylene			50			44.3	ug/l		88.5	(69.0 - 127.)	MAP	03/15/99	0733
*Bromofluorobenzene			50			41.5	ug/l		82.9	(73.0 - 129.)			
*Dibromofluoromethane			50			38.8	ug/l		77.5	(66.0 - 117.)			
*Toluene-d8			50			42.0	ug/l		84.0	(73.0 - 122.)			
QC593991	LCS	144599											
1,1-Dichloroethylene			50			45.0	ug/l		90.0	(70.0 - 144.)	MAP	03/17/99	0840
Benzene			50			49.8	ug/l		99.6	(74.0 - 133.)			
Chlorobenzene			50			49.6	ug/l		99.2	(78.0 - 118.)			
Toluene			50			49.8	ug/l		99.6	(79.0 - 129.)			
Trichloroethylene			50			49.2	ug/l		98.4	(69.0 - 127.)			
*Bromofluorobenzene			50			40.9	ug/l		81.8	(73.0 - 129.)			
*Dibromofluoromethane			50			41.3	ug/l		82.6	(66.0 - 117.)			
*Toluene-d8			50			43.0	ug/l		85.9	(73.0 - 122.)			
C594722	LCS	144599											
1,1-Dichloroethylene			50			50.7	ug/l		101	(70.0 - 144.)	MAP	03/17/99	2103
Benzene			50			49.5	ug/l		99.0	(74.0 - 133.)			
Chlorobenzene			50			49.1	ug/l		98.2	(78.0 - 118.)			
Toluene			50			49.8	ug/l		99.6	(79.0 - 129.)			
Trichloroethylene			50			49.1	ug/l		98.2	(69.0 - 127.)			
*Bromofluorobenzene			50			40.4	ug/l		80.8	(73.0 - 129.)			
*Dibromofluoromethane			50			38.7	ug/l		77.5	(66.0 - 117.)			
*Toluene-d8			50			41.2	ug/l		82.4	(73.0 - 122.)			
QC593914	9903287-02PS	144599											
1,1-Dichloroethylene			50	0.00		47.5	ug/l		95.1	(59.2 - 141.)	MAP	03/17/99	1719
Benzene			50	0.00		47.6	ug/l		95.3	(63.3 - 134.)			
Chlorobenzene			50	0.00		43.7	ug/l		87.4	(77.8 - 125.)			
Toluene			50	0.00		44.4	ug/l		88.8	(71.6 - 125.)			
Trichloroethylene			50	0.00		42.6	ug/l		85.1	(65.5 - 130.)			
*Bromofluorobenzene			50			39.5	ug/l		79.1	(73.0 - 129.)			
*Dibromofluoromethane			50			39.7	ug/l		79.4	(66.0 - 117.)			
*Toluene-d8			50			40.6	ug/l		81.1	(73.0 - 122.)			
QC593915	9903287-02PSD	144599											
1,1-Dichloroethylene			50	0.00		47.7	ug/l	0.244	95.3	(0.00 - 25.1)	MAP	03/17/99	1750
Benzene			50	0.00		46.3	ug/l	2.84	92.6	(0.00 - 31.1)			
Chlorobenzene			50	0.00		41.7	ug/l	4.82	83.3	(0.00 - 22.7)			
Toluene			50	0.00		43.0	ug/l	3.34	85.9	(0.00 - 22.8)			
Trichloroethylene			50	0.00		41.2	ug/l	3.19	82.4	(0.00 - 36.9)			
*Bromofluorobenzene			50			41.4	ug/l		82.7	(73.0 - 129.)			
*Dibromofluoromethane			50			39.4	ug/l		78.8	(66.0 - 117.)			
*Toluene-d8			50			40.7	ug/l		81.5	(73.0 - 122.)			

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 5 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
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* represent a surrogate.

QC Summary Report

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Page 6 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Extractable Organics													
QC592045	BLANK	144118											
Acenaphthene						0.00	ug/l				TSD	03/16/99	1329
Pyrene						0.00	ug/l						
*2-Fluorobiphenyl							ug/l		54.8	(41.2 - 107.)			
*Nitrobenzene-d5							ug/l		52.6	(35.3 - 108.)			
*p-Terphenyl-d14							ug/l		87.0	(36.6 - 110.)			
Acenaphthylene						0.00	ug/l						
Anthracene						0.00	ug/l						
Benzo(a)anthracene						0.00	ug/l						
Benzo(a)pyrene						0.00	ug/l						
Benzo(b)fluoranthene						0.00	ug/l						
Benzo(ghi)perylene						0.00	ug/l						
Benzo(k)fluoranthene						0.00	ug/l						
Chrysene						0.00	ug/l						
Dibenzo(a,h)anthracene						0.00	ug/l						
Fluoranthene						0.00	ug/l						
Fluorene						0.00	ug/l						
Indeno(1,2,3-c,d)pyrene						0.00	ug/l						
Phenanthrene						0.00	ug/l						
QC593328	BLANK	144459											
Acenaphthene						0.00	ug/l				TSD	03/15/99	2035
Pyrene						0.00	ug/l						
*2-Fluorobiphenyl							ug/l		77.2	(41.2 - 107.)			
*Nitrobenzene-d5							ug/l		71.7	(35.3 - 108.)			
*p-Terphenyl-d14							ug/l		94.3	(36.6 - 110.)			
Acenaphthylene						0.00	ug/l						
Anthracene						0.00	ug/l						
Benzo(a)anthracene						0.00	ug/l						
Benzo(a)pyrene						0.00	ug/l						
Benzo(b)fluoranthene						0.00	ug/l						
Benzo(ghi)perylene						0.00	ug/l						
Benzo(k)fluoranthene						0.00	ug/l						
Chrysene						0.00	ug/l						
Dibenzo(a,h)anthracene						0.00	ug/l						
Fluoranthene						0.00	ug/l						
Fluorene						0.00	ug/l						
Indeno(1,2,3-c,d)pyrene						0.00	ug/l						
Phenanthrene						0.00	ug/l						
QC592046	LCS	144118											

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 7 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Acenaphthene			50			35.0	ug/l		69.9	(53.0 - 100.)	TSD	03/16/99	1358
Pyrene			50			42.1	ug/l		84.2	(45.4 - 109.)	TSD	03/16/99	1358
*2-Fluorobiphenyl			50			31.3	ug/l		62.7	(41.2 - 107.)			
*Nitrobenzene-d5			50			32.0	ug/l		63.9	(35.3 - 108.)			
*p-Terphenyl-d14			50			42.2	ug/l		84.4	(36.6 - 110.)			
QC593329	LCS	144459											
1,2,4-Trichlorobenzene			50			37.7	ug/l		75.4	(45.7 - 97.7)	TSD	03/15/99	2106
1,4-Dichlorobenzene			50			38.0	ug/l		75.9	(34.6 - 96.9)			
2,4-Dinitrotoluene			50			45.1	ug/l		90.1	(58.5 - 111.)			
2-Chlorophenol			100			79.1	ug/l		79.1	(36.9 - 94.1)			
4-Nitrophenol			100			21.3	ug/l		21.3	(2.66 - 55.6)			
4-chloro-3-methyl phenol			100			94.5	ug/l		94.5	(17.3 - 126.)			
Acenaphthene			50			41.0	ug/l		82.0	(53.0 - 100.)			
N-Nitrosodipropylamine			50			46.1	ug/l		92.1	(52.1 - 104.)			
Pentachlorophenol			100			86.3	ug/l		86.2	(49.8 - 120.)			
Phenol			100			34.2	ug/l		34.2	(1.30 - 70.1)			
Pyrene			50			46.3	ug/l		92.5	(45.4 - 109.)			
*2,4,6-Tribromophenol			100			93.8	ug/l		93.8	(41.0 - 122.)			
*2-Fluorobiphenyl			50			40.2	ug/l		80.4	(41.2 - 107.)			
*2-Fluorophenol			100			45.2	ug/l		45.2	(23.6 - 75.9)			
*Nitrobenzene-d5			50			39.3	ug/l		78.6	(35.3 - 108.)			
*Phenol-d6			100			32.2	ug/l		32.2	(10.9 - 54.6)			
*p-Terphenyl-d14			50			46.7	ug/l		93.5	(36.6 - 110.)			
QC592047	LCS DUP	144118											
Acenaphthene			50			37.2	ug/l	6.29	74.4	(0.00 - 30.0)	TSD	03/16/99	1428
Pyrene			50			48.3	ug/l	13.6	96.5	(0.00 - 30.0)			
*2-Fluorobiphenyl			50			32.6	ug/l		65.1	(41.2 - 107.)			
*Nitrobenzene-d5			50			33.2	ug/l		66.5	(35.3 - 108.)			
*p-Terphenyl-d14			50			47.2	ug/l		94.5	(36.6 - 110.)			
QC593330	LCS DUP	144459											
1,2,4-Trichlorobenzene			50			38.0	ug/l	0.688	75.9	(0.00 - 30.0)	TSD	03/15/99	2136
1,4-Dichlorobenzene			50			37.6	ug/l	0.979	75.2	(0.00 - 30.0)			
2,4-Dinitrotoluene			50			45.8	ug/l	1.70	91.6	(0.00 - 30.0)			
2-Chlorophenol			100			78.0	ug/l	1.42	78.0	(0.00 - 30.0)			
4-Nitrophenol			100			53.3	ug/l	85.7**	53.3	(0.00 - 30.0)			
4-chloro-3-methyl phenol			100			94.2	ug/l	0.373	94.1	(0.00 - 30.0)			
Acenaphthene			50			41.4	ug/l	1.06	82.8	(0.00 - 30.0)			
N-Nitrosodipropylamine			50			46.4	ug/l	0.666	92.7	(0.00 - 30.0)			
Pentachlorophenol			100			95.3	ug/l	9.92	95.2	(0.00 - 30.0)			
Phenol			100			34.0	ug/l	0.662	33.9	(0.00 - 30.0)			



QC Summary Report

Project Description: CNC- Zone H UST (CT068)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 8 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Pyrene			50			42.6	ug/l	8.31	85.1	(0.00 - 30.0)	TSD	03/15/99	2136
*2,4,6-Tribromophenol			100			97.7	ug/l		97.7	(41.0 - 122.)			
*2-Fluorobiphenyl			50			39.9	ug/l		79.8	(41.2 - 107.)			
*2-Fluorophenol			100			44.3	ug/l		44.3	(23.6 - 75.9)			
*Nitrobenzene-d5			50			38.8	ug/l		77.7	(35.3 - 108.)			
*Phenol-d6			100			31.6	ug/l		31.6	(10.9 - 54.6)			
*p-Terphenyl-d14			50			42.8	ug/l		85.5	(36.6 - 110.)			
QC592048	9903287-02MS	144118											
Acenaphthene			50	16.3		40.2	ug/l		47.8**	(56.4 - 106.)	TSD	03/16/99	1458
Pyrene			50	0.00		37.8	ug/l		75.6	(52.6 - 125.)			
*2-Fluorobiphenyl			50			25.8	ug/l		51.6	(41.2 - 107.)			
*Nitrobenzene-d5			50			27.3	ug/l		54.7	(35.3 - 108.)			
*p-Terphenyl-d14			50			37.1	ug/l		74.1	(36.6 - 110.)			
QC593331	9903287-12MS	144459											
Acenaphthene			100	1.57		73.3	ug/l		73.3	(56.4 - 106.)	TSD	03/15/99	2207
Pyrene			100	0.00		83.1	ug/l		83.1	(52.6 - 125.)			
*2-Fluorobiphenyl			50			36.0	ug/l		72.0	(41.2 - 107.)			
*Nitrobenzene-d5			50			34.7	ug/l		69.4	(35.3 - 108.)			
*p-Terphenyl-d14			50			38.3	ug/l		76.6	(36.6 - 110.)			
QC592049	9903287-02MSD	144118											
Acenaphthene			50	16.3		36.5	ug/l	16.8	40.4	(0.00 - 19.2)	TSD	03/16/99	1527
Pyrene			50	0.00		39.6	ug/l	4.52	79.1	(0.00 - 21.9)			
*2-Fluorobiphenyl			50			22.2	ug/l		44.4	(41.2 - 107.)			
*Nitrobenzene-d5			50			22.4	ug/l		44.8	(35.3 - 108.)			
*p-Terphenyl-d14			50			38.4	ug/l		76.7	(36.6 - 110.)			
QC593332	9903287-12MSD	144459											
Acenaphthene			50	1.57		40.2	ug/l	9.16	80.4	(0.00 - 19.2)	TSD	03/15/99	2238
Pyrene			50	0.00		43.9	ug/l	5.44	87.8	(0.00 - 21.9)			
*2-Fluorobiphenyl			50			38.2	ug/l		76.4	(41.2 - 107.)			
*Nitrobenzene-d5			50			35.9	ug/l		71.8	(35.3 - 108.)			
*p-Terphenyl-d14			50			33.1	ug/l		66.2	(36.6 - 110.)			

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)

n/a indicates that spike recovery limits do not apply when sample concentration exceeds spike conc by a factor of 4 or more

QC Summary Report

Project Description: CNC- Zone H UST (CT068)

cc: TETR00498

Lab. Sample ID: 9903287%

Report Date: March 26, 1999

Page 8 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Pyrene			50			42.6	ug/l	8.31	85.1	(0.00 - 30.0)	TSD	03/15/99	2136
*2,4,6-Tribromophenol			100			97.7	ug/l		97.7	(41.0 - 122.)			
*2-Fluorobiphenyl			50			39.9	ug/l		79.8	(41.2 - 107.)			
*2-Fluorophenol			100			44.3	ug/l		44.3	(23.6 - 75.9)			
*Nitrobenzene-d5			50			38.8	ug/l		77.7	(35.3 - 108.)			
*Phenol-d6			100			31.6	ug/l		31.6	(10.9 - 54.6)			
*p-Terphenyl-d14			50			42.8	ug/l		85.5	(36.6 - 110.)			
QC592048	9903287-02MS	144118											
Acenaphthene			50	16.3		40.2	ug/l		47.8**	(56.4 - 106.)	TSD	03/16/99	1458
Pyrene			50	0.00		37.8	ug/l		75.6	(52.6 - 125.)			
*2-Fluorobiphenyl			50			25.8	ug/l		51.6	(41.2 - 107.)			
*Nitrobenzene-d5			50			27.3	ug/l		54.7	(35.3 - 108.)			
*p-Terphenyl-d14			50			37.1	ug/l		74.1	(36.6 - 110.)			
QC593331	9903287-12MS	144459											
Acenaphthene			100	1.57		73.3	ug/l		73.3	(56.4 - 106.)	TSD	03/15/99	2207
Pyrene			100	0.00		83.1	ug/l		83.1	(52.6 - 125.)			
*2-Fluorobiphenyl			50			36.0	ug/l		72.0	(41.2 - 107.)			
*Nitrobenzene-d5			50			34.7	ug/l		69.4	(35.3 - 108.)			
*p-Terphenyl-d14			50			38.3	ug/l		76.6	(36.6 - 110.)			
QC592049	9903287-02MSD	144118											
Acenaphthene			50	16.3		36.5	ug/l	16.8	40.4	(0.00 - 19.2)	TSD	03/16/99	1527
Pyrene			50	0.00		39.6	ug/l	4.52	79.1	(0.00 - 21.9)			
*2-Fluorobiphenyl			50			22.2	ug/l		44.4	(41.2 - 107.)			
*Nitrobenzene-d5			50			22.4	ug/l		44.8	(35.3 - 108.)			
*p-Terphenyl-d14			50			38.4	ug/l		76.7	(36.6 - 110.)			
QC593332	9903287-12MSD	144459											
Acenaphthene			50	1.57		40.2	ug/l	9.16	80.4	(0.00 - 19.2)	TSD	03/15/99	2238
Pyrene			50	0.00		43.9	ug/l	5.44	87.8	(0.00 - 21.9)			
*2-Fluorobiphenyl			50			38.2	ug/l		76.4	(41.2 - 107.)			
*Nitrobenzene-d5			50			35.9	ug/l		71.8	(35.3 - 108.)			
*p-Terphenyl-d14			50			33.1	ug/l		66.2	(36.6 - 110.)			

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)

n/a indicates that spike recovery limits do not apply when
sample concentration exceeds spike conc by a factor of 4 or more

**CHAIN
OF
CUSTODY**

CHAIN OF CUSTODY RECORD

Page 1 of 2

9903287%

Client Name/Facility Name CNC Zone H		SAMPLE ANALYSIS REQUIRED (X) - use remarks area to specify specific compounds or methods														Remarks							
Collected by/Company TENS/PL/WJS		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	Coliforms - specify type	
SAMPLE ID	DATE															TIME							
-01	ZHT01401	3-6	-	✓	✓	3			0			3											TRIP BLANK
-02	04GLM0501		1100	✓		5			2			3											
-03	04GLM0601		1110	✓		5			2			3											
-04	04GLM0801		1120	✓		5			2			3											
-05	04GLM0901		1130	✓		5			2			3											
-06	04GLM1101		1145	✓		5			2			3											
-07	04GLP0401	✓	1140	✓		5			2			3											
-08	06GLM0101	3-7	1215	✓		5			2			3											
-09	06GLM0101D		1215	✓		5			2			3											
-10	06GLM0201		1225	✓		5			2			3											
-11	06GLM0301		1235	✓		5			2			3											
-12	06GLM0401		1245	✓		5			2			3											
-13	06GLM0501	✓	1255	✓		5			2			3											
Relinquished by: TENS/PL/WJS		Date: 3/8/99	Time: 1000	Received by:		Relinquished by:		Date:	Time:	Received by:													
Relinquished by: Houston Chandler		Date: 3/8/99	Time: 1000	Received by lab by:		Remarks: VOC = 8260, MIBZ, NAPHTH PAH = 8270		Date:	Time:	Received by:													

White = sample collector Yellow = file Pink = with report

**COOLER
RECEIPT
CHECKLIST**

FEDERAL SAMPLE RECEIPT REVIEW

Client FEIRA

Received by [Signature]

Date 3/8/99

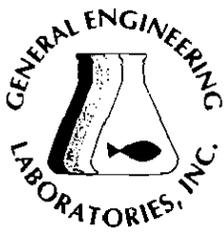
GEL COOLER GEL POLY COOLER CLIENT COOLER OTHER

SAMPLE REVIEW CRITERIA	YES	NO	COMMENTS/QUALIFIERS
1. Were shipping containers received intact and sealed? Call Project Manager if No	✓		
2. Was the Shipment screened following the radiochemistry survey procedure (EPI SOP S-007)?	✓		
Were the survey results negative? Call Project Manager if No	✓		
Are any of the samples identified by the client as radioactive? If yes, did client provide RAD activity?		✓	
3. Were chain of custody documents included?	✓		
4. Were chain of custody documents completed properly? (Ink, signed, match containers)	✓		
5. Did all samples container arrive intact? (sealed, unbroken)? Call Project Manager if No	✓		
6. Were all sample containers properly labeled?	✓		
7. Were proper sample containers received?	✓		
8. Preserved samples checked for proper pH?	—		
9. Were samples preserved properly? If no, list samples & tests	—		
10. Shipping container temperature checked?	✓		
11. Was shipping container temperature within specifications (4±2C)? If no, Call Project Manager	✓		
12. Were samples received within holding time? if No, Call Project Manager	✓		
13. Were VOA vials free of headspace?	✓		
14. ARCO# IF REQUIRED	—		
15. SDG# IF REQUIRED	✓		CT068WCC

REVIEW [Signature]

DATE 3/8/99

SA - SEALS ATTACHED NSA - NO SEALS ATTACHED



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: February 08, 1999

Page 1 of 3

Sample ID : 06SLB0506
 Lab ID : 9901565-05
 Matrix : Soil
 Date Collected : 01/19/99
 Date Received : 01/20/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.770	5.00	ug/kg	1.0	SLG	01/22/99	1311	140472	1
ETHYLBENZENE	U	ND	0.462	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.274	8.55	ug/kg	1.0					
NAPHTHALENE	U	ND	1.04	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.61	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.428	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		31.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	232	483	ug/kg	1.0	JCB	01/22/99	2308	140222	3
ACENAPHTHYLENE	U	ND	213	483	ug/kg	1.0					
ANTHRACENE	U	ND	127	483	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	99.0	483	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	104	483	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	206	483	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	118	483	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	191	483	ug/kg	1.0					
CHRYSENE	U	ND	79.2	483	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	120	483	ug/kg	1.0					
FLUORANTHENE	U	ND	94.7	483	ug/kg	1.0					
FLUORENE	U	ND	166	483	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	116	483	ug/kg	1.0					
PHENANTHRENE	U	ND	86.9	483	ug/kg	1.0					
PYRENE	U	ND	104	483	ug/kg	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: February 08, 1999

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Sample ID : 06SLB0506

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 4
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	58.5	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	55.3	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	84.4	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	143.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	107.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	126.	(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'.



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

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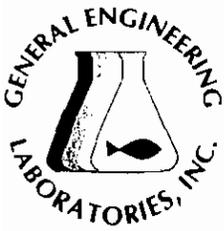
Sample ID : 06SLB0506

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



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: February 08, 1999

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Sample ID : 06SLB0904
Lab ID : 9901565-06
Matrix : Soil
Date Collected : 01/19/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.563	5.00	ug/kg	1.0	SLG	01/22/99	1339	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		27.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	219	457	ug/kg	1.0	JCB	01/22/99	2341	140222	3
ACENAPHTHYLENE	U	ND	202	457	ug/kg	1.0					
ANTHRACENE	U	ND	120	457	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	93.7	457	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	98.3	457	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	195	457	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	112	457	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	181	457	ug/kg	1.0					
CHRYSENE	U	ND	74.9	457	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	114	457	ug/kg	1.0					
FLUORANTHENE	U	ND	89.6	457	ug/kg	1.0					
FLUORENE	U	ND	157	457	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	110	457	ug/kg	1.0					
PHENANTHRENE	U	ND	82.3	457	ug/kg	1.0					
PYRENE	U	ND	98.7	457	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

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Sample ID : 06SLB0904

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 4
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	59.3	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	54.5	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	92.9	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	125.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	106.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	121.	(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:

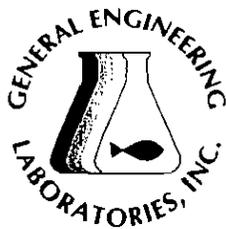
ND indicates that the analyte was not detected at a concentration greater than the detection limit.

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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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: February 08, 1999

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Sample ID : 06SLB0904

M = Method

Method-Description

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Valerie S. 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

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Sample ID : 06SLB0801
 Lab ID : 9901565-07
 Matrix : Soil
 Date Collected : 01/19/99
 Date Received : 01/20/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.585	5.00	ug/kg	1.0	SLG	01/22/99	1407	140472	1
ETHYLBENZENE	U	ND	0.351	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.208	6.50	ug/kg	1.0					
NAPHTHALENE	U	ND	0.793	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.22	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.325	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		25.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	213	444	ug/kg	1.0	JCB	01/23/99	0015	140222	3
ACENAPHTHYLENE	U	ND	196	444	ug/kg	1.0					
ANTHRACENE	U	ND	117	444	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	91.0	444	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	95.5	444	ug/kg	1.0					
BENZO(B)FLUORANTHENE	J	403	189	444	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	108	444	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	176	444	ug/kg	1.0					
CHRYSENE	U	ND	72.8	444	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	111	444	ug/kg	1.0					
FLUORANTHENE	U	ND	87.0	444	ug/kg	1.0					
FLUORENE	U	ND	152	444	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	J	342	107	444	ug/kg	1.0					
PHENANTHRENE	U	ND	79.9	444	ug/kg	1.0					
PYRENE	J	97.4	95.9	444	ug/kg	1.0					





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NC	233	
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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

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Sample ID : 06SLB0801

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 4
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	60.9	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	56.8	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	90.6	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	138.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	106.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	124.	(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:

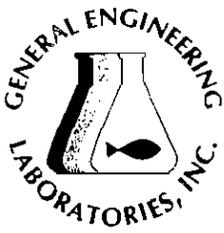
ND indicates that the analyte was not detected at a concentration greater than the detection limit.

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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NC	233	
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794 South Military Trail
Deerfield Beach, Florida 33442
Contact: Mr. Arnold Lamb
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Sample ID : 06SLB0801

M = Method

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Client: Tetra Tech NUS, Inc.
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 Deerfield Beach, Florida 33442

Contact: Mr. Arnold Lamb

Project Description: CNC- Zone H UST (CTO68)

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Report Date: February 08, 1999

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Sample ID : 06SLB0203
 Lab ID : 9901565-08
 Matrix : Soil
 Date Collected : 01/19/99
 Date Received : 01/20/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.531	5.00	ug/kg	1.0	SLG	01/26/99	1320	140472	1
ETHYLBENZENE	U	ND	0.319	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.189	5.90	ug/kg	1.0					
NAPHTHALENE	U	ND	0.720	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.11	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.295	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		21.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	203	422	ug/kg	1.0	TSD	01/26/99	1551	140222	3
ACENAPHTHYLENE	U	ND	186	422	ug/kg	1.0					
ANTHRACENE	U	ND	111	422	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	86.5	422	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	90.7	422	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	180	422	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	103	422	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	167	422	ug/kg	1.0					
CHRYSENE	U	ND	69.2	422	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	105	422	ug/kg	1.0					
FLUORANTHENE	J	270	82.7	422	ug/kg	1.0					
FLUORENE	U	ND	145	422	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	102	422	ug/kg	1.0					
PHENANTHRENE	J	87.8	76.0	422	ug/kg	1.0					
PYRENE	J	217	91.2	422	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

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Sample ID : 06SLB0203

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 4
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	66.1	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	61.0	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	93.2	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	132.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	111.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	118.	(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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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)

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Sample ID : 06SLB0203

M = Method

Method-Description

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Valerie Davis

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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

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Sample ID : 06SLB0405
Lab ID : 9901565-09
Matrix : Soil
Date Collected : 01/19/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.635	5.00	ug/kg	1.0	SLG	01/22/99	1504	140472	1
ETHYLBENZENE	U	ND	0.381	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.226	7.05	ug/kg	1.0					
NAPHTHALENE	U	ND	0.860	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.33	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.353	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		31.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	232	483	ug/kg	1.0	JCB	01/23/99	0121	140222	3
ACENAPHTHYLENE	U	ND	213	483	ug/kg	1.0					
ANTHRACENE	U	ND	127	483	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	99.0	483	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	104	483	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	206	483	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	118	483	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	191	483	ug/kg	1.0					
CHRYSENE	U	ND	79.2	483	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	120	483	ug/kg	1.0					
FLUORANTHENE	U	ND	94.7	483	ug/kg	1.0					
FLUORENE	U	ND	166	483	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	116	483	ug/kg	1.0					
PHENANTHRENE	U	ND	86.9	483	ug/kg	1.0					
PYRENE	U	ND	104	483	ug/kg	1.0					





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FL	E87156/87294	E87472/87458
NC	233	
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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

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Sample ID : 06SLB0405

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 4
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	59.1	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	54.3	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	82.0	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	122.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	111.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	123.	(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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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

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Sample ID : 06SLB0405

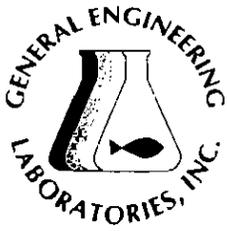
M = Method

Method-Description

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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

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Sample ID : 06SLB1804
Lab ID : 9901565-10
Matrix : Soil
Date Collected : 01/19/99
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		27.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	1
General Chemistry											
Total Organic Carbon		103000	341	791	mg/kg	1.0	LS	02/02/99	1323	141188	2

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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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)

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Sample ID : 06SLB1804

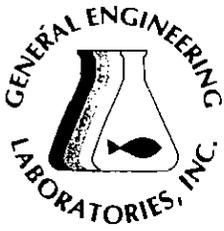
M = Method

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





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

Page 1 of 3

Sample ID : 06SLB0607
Lab ID : 9901565-11
Matrix : Soil
Date Collected : 01/19/99
Date Received : 01/20/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX/NAP/MTBE - 6 items</i>											
BENZENE	U	ND	0.666	5.00	ug/kg	1.0	SLG	01/22/99	1532	140472	1
ETHYLBENZENE	U	ND	0.400	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.237	7.40	ug/kg	1.0					
NAPHTHALENE	U	ND	0.903	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.39	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.370	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		31.0	1.00	1.00	wt%	1.0	GJ	01/20/99	1550	140228	2
Extractable Organics											
<i>Polyaromatic Hydrocarbon Compounds - 15 items</i>											
ACENAPHTHENE	U	ND	232	483	ug/kg	1.0	JCB	01/23/99	0155	140222	3
ACENAPHTHYLENE	U	ND	213	483	ug/kg	1.0					
ANTHRACENE	U	ND	127	483	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	99.0	483	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	104	483	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	206	483	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	118	483	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	191	483	ug/kg	1.0					
CHRYSENE	U	ND	79.2	483	ug/kg	1.0					
DIBENZ(A,H)ANTHRACENE	U	ND	120	483	ug/kg	1.0					
FLUORANTHENE	U	ND	94.7	483	ug/kg	1.0					
FLUORENE	U	ND	166	483	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	116	483	ug/kg	1.0					
PHENANTHRENE	U	ND	86.9	483	ug/kg	1.0					
PYRENE	U	ND	104	483	ug/kg	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons		1030	72.5	145	mg/kg	1.0	AAT	02/02/99	1500	141289	





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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

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Sample ID : 06SLB0607

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

The following prep procedures were performed:

Volatiles 8260 High Level
 GC/MS Base/Neutral Compounds

SLG 01/27/99 1505 140472 5
 CPU 01/21/99 2400 140222 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	62.4	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	57.7	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	96.0	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	117.	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	105.	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	119.	(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'.



GENERAL ENGINEERING LABORATORIES

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Sample ID : 06SLB0607

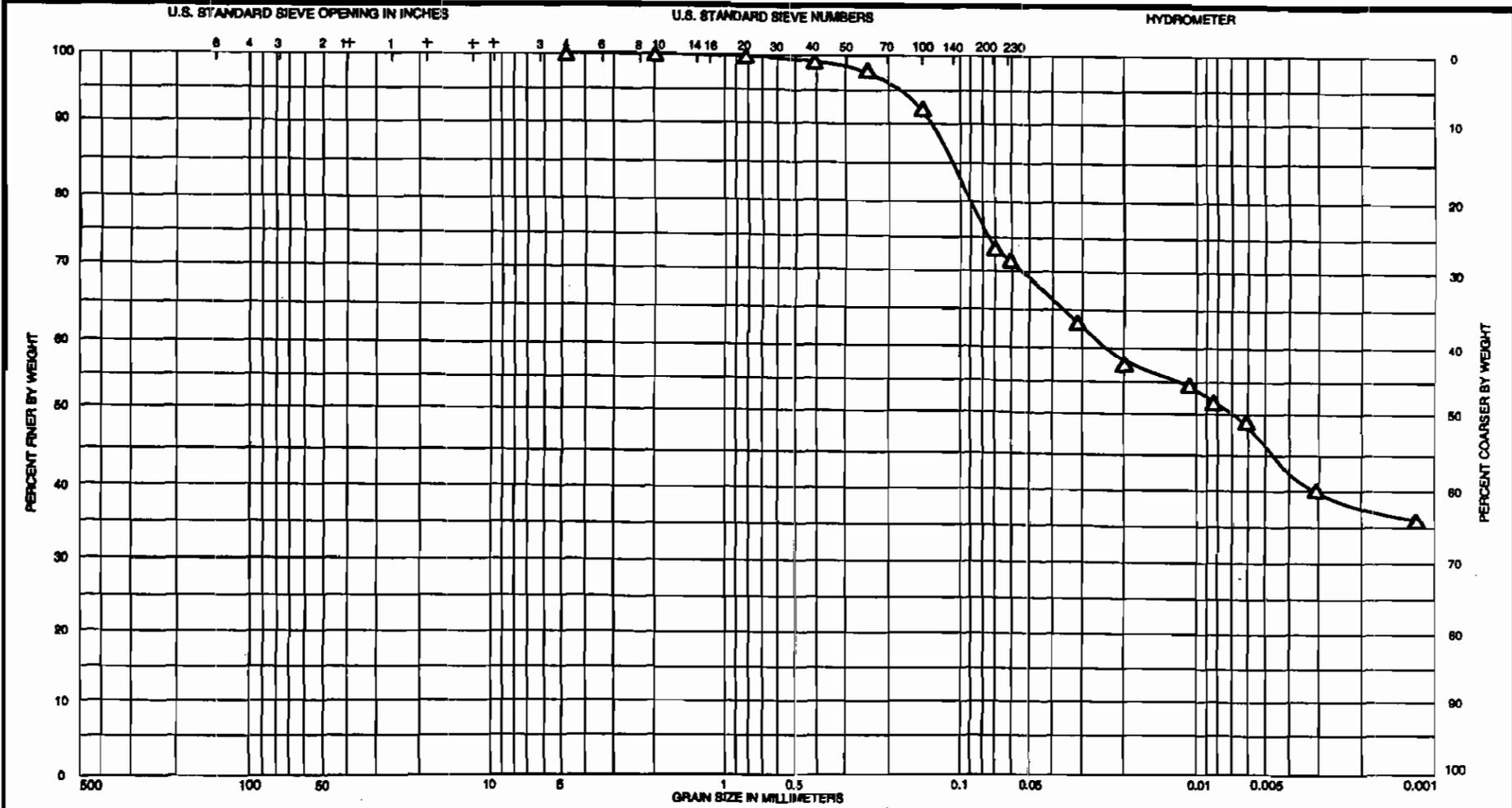
M = Method

Method-Description

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Reviewed By

GEOTECHNICAL ANALYSIS



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Specific Gravity	Classification	Nat w %	LL	PL	PI
9901565-11	---	CL	---			
		% GRAVEL = 0.0				
		% SAND = 26.3				
		% SILT = 27.7				
		% CLAY = 46.0				

GENERAL ENGINEERING <i>A Division of General Engineering Laboratories, Inc.</i>	
Project	tetr00498
Area	Tetra Tech NUS, Inc.
Boring No.	
Date	January 30, 1999

GRADATION CURVES

GEOTECHNICAL SPREADSHEET

Project Number:	tetr00498	Depth:	UNKNOWN
Sample Number:	9901565-11	Tested By:	M. Yates
Boring Number:	NA	Date:	1/30/99
Location:	NA		

GRAIN-SIZE ANALYSIS**HYGROSCOPIC MOISTURE CONTENT DETERMINATION**

weight of total air dried sample=	88.94
weight of container + air-dried soil=	33.85
weight of container + oven-dried soil=	24.67
weight of container=	7.33

weight of water=	9.18
weight of oven-dried soil=	17.34
weight of air-dried soil=	26.52
hygroscopic moisture correction factor=	0.65
weight of oven-dried sample for hydro. anal.=	57.81

SIEVE ANALYSIS

weight of oven-dried sample=	57.81
------------------------------	-------

Sieve #	Weight Ret.	Weight Passed	% Passing
4	0	57.81	100.0
10	0	57.81	100.0
20	0.11	57.70	99.8
40	0.29	57.41	99.3
60	0.85	56.56	97.8
100	3.21	53.35	92.3
200	10.76	42.59	73.7
230	1.22	41.37	71.6
pan	0	41.37	71.6

HYDROMETER ANALYSIS

weight	57.81
SG	2.45

TIME	ACTUAL READING	TEMP.	COMPOSITE CORRECTION	R	LENGTH	K	DIAMETER	P
2	1.025	22	0.00325	1.02175	9.7	0.01421	.03126	63.6
5	1.023	22	0.00325	1.01975	10.2	0.01421	.02030	57.7
15	1.022	22	0.00325	1.01875	10.5	0.01421	.01187	54.8
30	1.021	22	0.00325	1.01775	10.7	0.01421	.00850	51.9
60	1.02	22	0.00325	1.01675	11.0	0.01421	.00609	49.0
250	1.017	22	0.00325	1.01375	11.8	0.01421	.00309	40.2
1440	1.016	20	0.00375	1.01225	12.1	0.01456	.00133	35.8

QC SUMMARY REPORT

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9901565%

Report Date: February 09, 1999

Page 1 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Volatile Organics													
QC578039	BLANK	140472											
Benzene						0.00	ug/kg					SLG	01/22/99 1224
Ethylbenzene						0.00	ug/kg						
Naphthalene						0.00	ug/kg						
Toluene						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
*Bromofluorobenzene							ug/kg		113	(53.5 - 154.)			
*Dibromofluoromethane							ug/kg		110	(63.4 - 136.)			
*Toluene-d8							ug/kg		116	(72.1 - 137.)			
Ethylbenzene						0.00	ug/kg						
Methyl Tert Butyl Ether						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
QC579095	BLANK	140472											
Benzene						0.00	ug/kg					SLG	01/26/99 1140
Ethylbenzene						0.00	ug/kg						
Naphthalene						0.00	ug/kg						
Toluene						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
*Bromofluorobenzene							ug/kg		109	(53.5 - 154.)			
*Dibromofluoromethane							ug/kg		115	(63.4 - 136.)			
*Toluene-d8							ug/kg		112	(72.1 - 137.)			
Ethylbenzene						0.00	ug/kg						
Methyl Tert Butyl Ether						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
QC579825	BLANK	140472											
Benzene						0.00	ug/kg					SLG	01/27/99 1143
Ethylbenzene						0.00	ug/kg						
Naphthalene						0.00	ug/kg						
Toluene						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
*Bromofluorobenzene							ug/kg		112	(53.5 - 154.)			
*Dibromofluoromethane							ug/kg		106	(63.4 - 136.)			
*Toluene-d8							ug/kg		119	(72.1 - 137.)			
Ethylbenzene						0.00	ug/kg						
Methyl Tert Butyl Ether						0.00	ug/kg						
Xylenes (TOTAL)						0.00	ug/kg						
QC580966	BLANK	141220											
Benzene						0.00	ug/l					RMB	02/01/99 1141
Ethylbenzene						0.00	ug/l						

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9901565%

Report Date: February 09, 1999

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Naphthalene						0.00	ug/l				RMB	02/01/99	1141
Toluene						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
*Bromofluorobenzene							ug/l		85.7	(60.2 - 139.)			
*Dibromofluoromethane							ug/l		104	(70.6 - 152.)			
*Toluene-d8							ug/l		89.0	(68.4 - 135.)			
Ethylbenzene						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
QC581205	BLANK	141220											
Benzene						0.00	ug/l				RMB	02/02/99	1111
Ethylbenzene						0.00	ug/l						
Naphthalene						0.00	ug/l						
Toluene						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
*Bromofluorobenzene							ug/l		85.6	(60.2 - 139.)			
*Dibromofluoromethane							ug/l		102	(70.6 - 152.)			
*Toluene-d8							ug/l		88.8	(68.4 - 135.)			
Ethylbenzene						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
QC581597	BLANK	141220											
Benzene						0.00	ug/l				RMB	02/03/99	1234
Ethylbenzene						0.00	ug/l						
Naphthalene						0.00	ug/l						
Toluene						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
*Bromofluorobenzene							ug/l		88.3	(60.2 - 139.)			
*Dibromofluoromethane							ug/l		103	(70.6 - 152.)			
*Toluene-d8							ug/l		88.6	(68.4 - 135.)			
Ethylbenzene						0.00	ug/l						
Methyl Tert Butyl Ether						0.00	ug/l						
Xylenes (TOTAL)						0.00	ug/l						
QC578040	LCS	140472											
Benzene			50			47.6	ug/kg		95.2	(64.0 - 126.)	SLG	01/22/99	1155
Ethylbenzene			50			44.5	ug/kg		89.1	(-)			
Naphthalene			50			49.0	ug/kg		98.0	(-)			
Toluene			50			45.4	ug/kg		90.7	(70.4 - 130.)			
Xylenes (TOTAL)			150			140	ug/kg		93.4	(-)			
*Bromofluorobenzene			50			55.1	ug/kg		110	(53.5 - 154.)			

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9901565%

Report Date: February 09, 1999

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
*Dibromofluoromethane			50			57.8	ug/kg		116	(63.4 - 136.)	SLG	01/22/99	1155
*Toluene-d8			50			56.0	ug/kg		112	(72.1 - 137.)			
QCS79096	LCS	140472											
Benzene			50			53.6	ug/kg		107	(64.0 - 126.)	SLG	01/26/99	1110
Ethylbenzene			50			47.4	ug/kg		94.8	(-)			
Naphthalene			50			53.9	ug/kg		108	(-)			
Toluene			50			48.1	ug/kg		96.1	(70.4 - 130.)			
Xylenes (TOTAL)			150			151	ug/kg		100	(-)			
*Bromofluorobenzene			50			52.8	ug/kg		106	(53.5 - 154.)			
*Dibromofluoromethane			50			61.3	ug/kg		123	(63.4 - 136.)			
*Toluene-d8			50			55.1	ug/kg		110	(72.1 - 137.)			
QCS79826	LCS	140472											
Benzene			50			43.6	ug/kg		87.1	(64.0 - 126.)	SLG	01/27/99	1115
Ethylbenzene			50			43.7	ug/kg		87.3	(-)			
Naphthalene			50			47.6	ug/kg		95.3	(-)			
Toluene			50			44.0	ug/kg		87.9	(70.4 - 130.)			
Xylenes (TOTAL)			150			136	ug/kg		90.5	(-)			
*Bromofluorobenzene			50			54.3	ug/kg		109	(53.5 - 154.)			
*Dibromofluoromethane			50			56.2	ug/kg		113	(63.4 - 136.)			
*Toluene-d8			50			58.7	ug/kg		117	(72.1 - 137.)			
QCS80967	LCS	141220											
Benzene			50			54.9	ug/l		110	(74.0 - 129.)	RMB	02/01/99	0958
Ethylbenzene			50			47.5	ug/l		94.9	(83.4 - 114.)			
Naphthalene			50			45.8	ug/l		91.6	(76.4 - 120.)			
Toluene			50			48.2	ug/l		96.4	(76.8 - 119.)			
Xylenes (TOTAL)			150			147	ug/l		97.8	(-)			
*Bromofluorobenzene			50			41.8	ug/l		83.5	(60.2 - 139.)			
*Dibromofluoromethane			50			51.1	ug/l		102	(70.6 - 152.)			
*Toluene-d8			50			43.5	ug/l		86.9	(68.4 - 135.)			
QCS81206	LCS	141220											
Benzene			50			55.5	ug/l		111	(74.0 - 129.)	RMB	02/02/99	1021
Ethylbenzene			50			46.8	ug/l		93.5	(83.4 - 114.)			
Naphthalene		(nom_conc = 0)				0.00	ug/l						
Toluene			50			48.4	ug/l		96.8	(76.8 - 119.)			
Xylenes (TOTAL)			150			145	ug/l		96.9	(-)			
*Bromofluorobenzene			50			43.0	ug/l		85.9	(60.2 - 139.)			
*Dibromofluoromethane			50			51.3	ug/l		103	(70.6 - 152.)			
*Toluene-d8			50			44.4	ug/l		88.8	(68.4 - 135.)			
QCS81598	LCS	141220											
Benzene			50			56.2	ug/l		112	(74.0 - 129.)	RMB	02/03/99	1054

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

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Lab. Sample ID: 9901565%

Report Date: February 09, 1999

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Ethylbenzene			50			47.3	ug/l		94.7	(83.4 - 114.)	RMB	02/03/99	1054
Naphthalene		(nom_conc = 0)				0.00	ug/l						
Toluene			50			49.2	ug/l		98.3	(76.8 - 119.)			
Xylenes (TOTAL)			150			145	ug/l		96.9	(-)			
*Bromofluorobenzene			50			42.7	ug/l		85.4	(60.2 - 139.)			
*Dibromofluoromethane			50			50.6	ug/l		101	(70.6 - 152.)			
*Toluene-d8			50			44.3	ug/l		88.6	(68.4 - 135.)			

* represent a surrogate.

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Organic Prep													
QC577113	BLANK	140228											
Evaporative Loss @ 105 C						0.00	wt%				GJ	01/20/99	1550
QC577112	9901565-11DUP	140228											
Evaporative Loss @ 105 C				31.0		30.0	wt%	3.28					

* represent a surrogate.

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Extractable Organics													
QC577084	BLANK	140222											
Acenaphthene						0.00	ug/kg				JCB	01/22/99	1838
Pyrene						0.00	ug/kg						
*2-Fluorobiphenyl							ug/kg		66.9	(30.0 - 115.)			
*Nitrobenzene-d5							ug/kg		60.3	(23.0 - 120.)			
*p-Terphenyl-d14							ug/kg		98.2	(37.3 - 128.)			
Acenaphthylene						0.00	ug/kg						
Anthracene						0.00	ug/kg						
Benzo(a)anthracene						0.00	ug/kg						
Benzo(a)pyrene						0.00	ug/kg						
Benzo(b)fluoranthene						0.00	ug/kg						
Benzo(ghi)perylene						0.00	ug/kg						
Benzo(k)fluoranthene						0.00	ug/kg						
Chrysene						0.00	ug/kg						
Dibenzo(a,h)anthracene						0.00	ug/kg						
Fluoranthene						0.00	ug/kg						
Fluorene						0.00	ug/kg						
Indeno(1,2,3-c,d)pyrene						0.00	ug/kg						
Phenanthrene						0.00	ug/kg						
QC577085	LCS	140222											
Acenaphthene			1670			1330	ug/kg		79.7	(-)	JCB	01/22/99	1912
Pyrene			1670			1640	ug/kg		97.9	(-)			
*2-Fluorobiphenyl			1670			1170	ug/kg		70.1	(30.0 - 115.)			
*Nitrobenzene-d5			1670			1040	ug/kg		62.0	(23.0 - 120.)			
*p-Terphenyl-d14			1670			1640	ug/kg		98.4	(37.3 - 128.)			
QC577086	LCS DUP	140222											
Acenaphthene			1670			1300	ug/kg	2.48	77.8	(0.00 - 23.2)	JCB	01/22/99	1946
Pyrene			1670			1610	ug/kg	1.65	96.3	(0.00 - 20.6)			
*2-Fluorobiphenyl			1670			1180	ug/kg		70.8	(30.0 - 115.)			
*Nitrobenzene-d5			1670			1050	ug/kg		62.6	(23.0 - 120.)			
*p-Terphenyl-d14			1670			1560	ug/kg		93.5	(37.3 - 128.)			
QC577087	9901565-02MS	140222											
Acenaphthene			1670	0.00		1760	ug/kg		73.6	(47.0 - 139.)	JCB	01/22/99	2019
Pyrene			1670	0.00		2200	ug/kg		92.4	(52.0 - 115.)			
*2-Fluorobiphenyl			1670			1530	ug/kg		64.2	(30.0 - 115.)			
*Nitrobenzene-d5			1670			1440	ug/kg		60.3	(23.0 - 120.)			
*p-Terphenyl-d14			1670			2230	ug/kg		93.6	(37.3 - 128.)			
QC577088	9901565-02MSD	140222											
Acenaphthene			1670	0.00		1730	ug/kg	1.25	72.7	(0.00 - 19.0)	JCB	01/22/99	205.

QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9901565%

Report Date: February 09, 1999

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Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Pyrene			1670	0.00		2220	ug/kg	0.677	93.0	(0.00 - 36.0)	JCB	01/22/99	2053
*2-Fluorobiphenyl			1670			1480	ug/kg		62.0	(30.0 - 115.)			
*Nitrobenzene-d5			1670			1380	ug/kg		58.0	(23.0 - 120.)			
*p-Terphenyl-d14			1670			2100	ug/kg		87.9	(37.3 - 128.)			

* represent a surrogate.



QC Summary Report

Project Description: CNC- Zone H UST (CTO68)

cc: TETR00498

Lab. Sample ID: 9901565%

Report Date: February 09, 1999

Page 8 of 8

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC581209	BLANK	141289											
Total Rec. Petro. Hydrocarbons							0.00	mg/kg				AAT	02/02/99 1500
QC581210	LCS	141289											
Total Rec. Petro. Hydrocarbons			25200			26000	mg/kg		103	(70.0 - 116.)			
QC581211	9901565-11MS	141289											
Total Rec. Petro. Hydrocarbons			73700	1030		72600	mg/kg		97.1	(70.0 - 130.)			
QC581212	9901565-11MSD	141289											
Total Rec. Petro. Hydrocarbons			74700	1030		71100	mg/kg	3.39	93.8	(0.00 - 30.0)			
QC580819	BLANK	141188											
Total Organic Carbon							6.25	mg/kg				LS	02/02/99 1342
QC580824	LCS	141188											
Total Organic Carbon			3750			4160	mg/kg		111	(88.0 - 130.)	LS	02/02/99 1240	
QC580820	9901565-10PS	141188											
Total Organic Carbon			7270	103000		155000	mg/kg		89.9	(73.0 - 129.)	LS	02/02/99 133.	
QC580821	9901565-10PSD	141188											
Total Organic Carbon			6960	103000		151000	mg/kg	2.52	87.7	(0.00 - 30.0)	LS	02/02/99 1338	

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)

n/a indicates that spike recovery limits do not apply when
sample concentration exceeds spike conc by a factor of 4 or more

CHAIN OF CUSTODY

CHAIN OF CUSTODY RECORD

Page 1 of 1

9901565/

Client Name/Facility Name: Tetra Tech NUS/ CNC				SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods														Remarks						
Collected by/Company: James R. Hill / TTNUS				# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	PAH	Herbicide	TPH	Total Phosol	Acid Extractables	B/N Extractables		PCB's	Cyanide	Coliform - specify type	Grain Size		
SAMPLE ID	DATE	TIME	WELL		SOIL	COMP	GRAB																	
-01	ZHTL00501	1/19/99	0730	✓						3													Trip Blank	
02	04SLB1704	"	0825	✓								1												
03	04SLB0404	"	0840	✓								1												
04	04SLB0403 04SLB0403	"	0912	✓								1												
05	06SLB0506	"	1010	✓						3		1												
06	06SLB0904	"	1100	✓						3		1												
07	06SLB0801	"	1130	✓						3		1												
08	06SLB0203	"	1230	✓						3		1												
09	06SLB0405	"	1425	✓						3		1												
1011	06SLB0607	"	1515	✓						3		1	1									3		
-10	06SLB1804	"	1545	✓																				
Relinquished by:				Date:	Time:	Received by:				Relinquished by:				Date:	Time:	Received by:								
Relinquished by: James R Hill				Date: 1-19-99	Time: 1:00	Received by lab by: Tabrice A. Joubert				Date: 1/19/99	Time: 17:00	Remarks:												

White = sample collector Yellow = file Pink = with report

37781
2
3
4
5

COOLER RECEIPT CHECKLIST

FEDERAL SAMPLE RECEIPT REVIEW

Client TEIR

Received by [Signature]

Date 1/19/99

GEL COOLER GEL POLY COOLER CLIENT COOLER OTHER

SAMPLE REVIEW CRITERIA	YES	NO	COMMENTS/QUALIFIERS
1. Were shipping containers received intact and sealed? Call project Manager if No	✓		
2. Was the Shipment screened following the radiochemistry survey procedure (EPI SOP S-007)?	✓		
Were the survey results negative? Call Project Manager if No	✓		
Are any of the samples identified by the client as radioactive? If yes, did client provide RAD activity?		✓	
3. Were chain of custody documents included?	✓		
4. Were chain of custody documents completed properly? (Ink, signed, match containers)	✓		
5. Did all samples container arrive intact? (sealed, unbroken)? Call Project Manager if No	✓		
6. Were all sample containers properly labeled?	✓		
7. Were proper sample containers received?	✓		
8. Preserved samples checked for proper pH?	-		
9. Were samples preserved properly? If no, list samples & tests	-		Soil
10. Shipping container temperature checked?	✓		
11. Was shipping container temperature within specifications (+/-2C)? If no, Call Project Manager	✓		4°C
12. Were samples received within holding time? if No, Call Project Manager	✓		
13. Were VOA vials free of headspace?	-		
14. ARCO# IF REQUIRED	-		
15. SDG# IF REQUIRED	✓		CT068CW

REVIEW [Signature] DATE 1/19/99

SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

APPENDIX E

AQUIFER CHARACTERIZATION GRAPHS

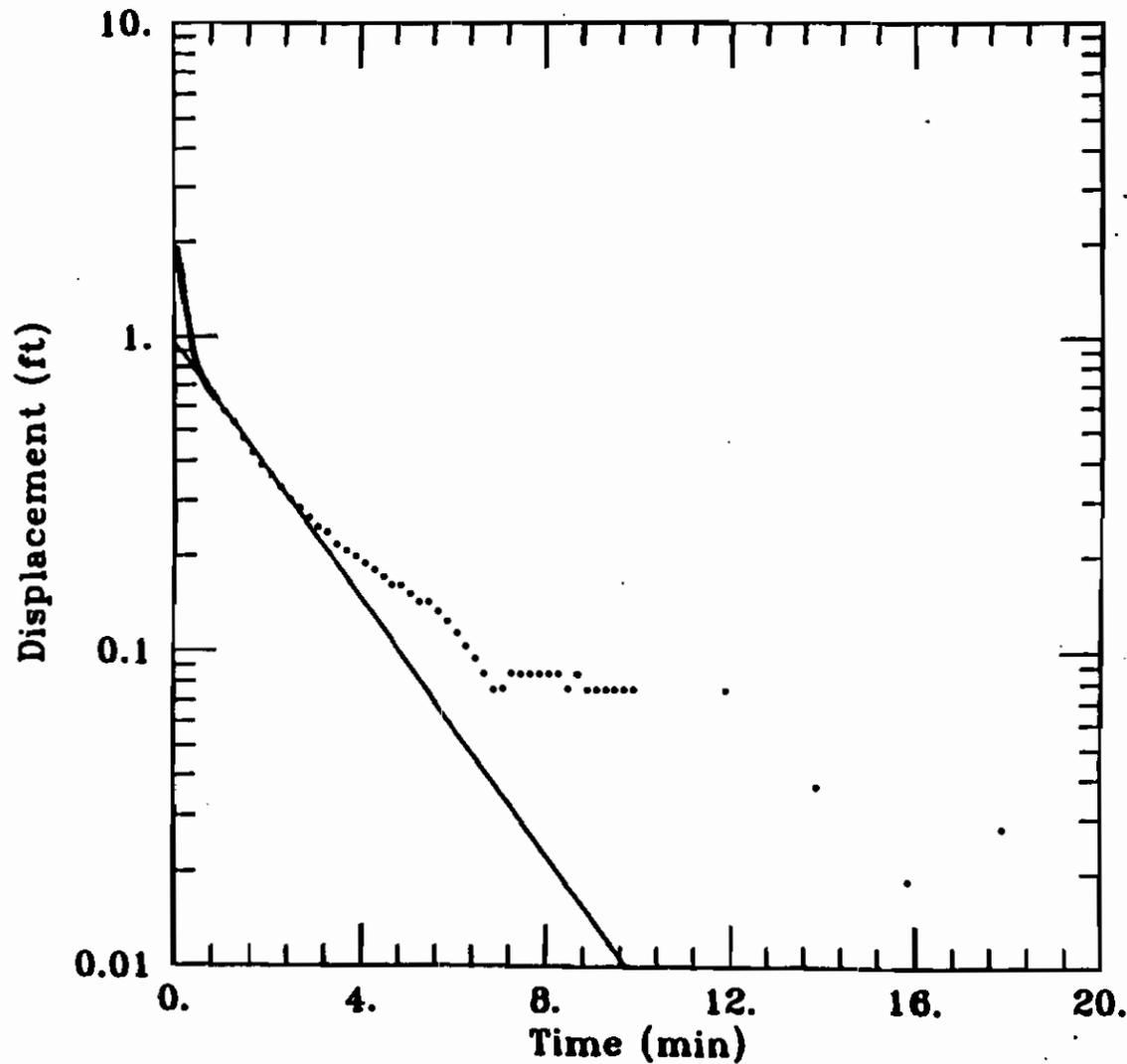
Client: CLEAN

Company: E/A&H

Location: NAS CHARLESTON

Project: 2908-08450

NBCH653001 Rising Head Slug Test



DATA SET:
65301RIS.AQT
01/16/95

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 = 0.0003881 ft/min
y0 = 0.9621 ft

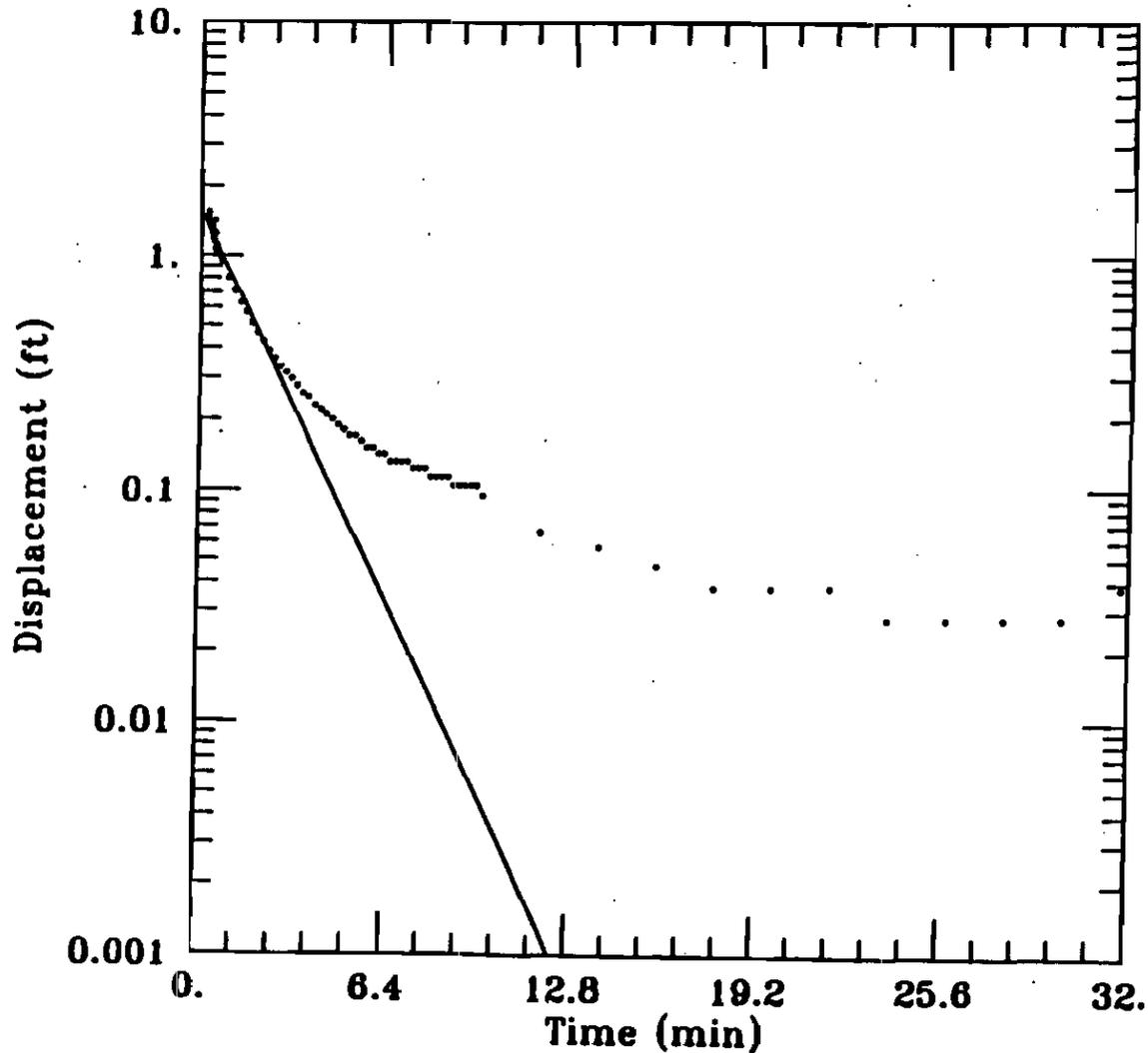
Client: CLEAN

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:
Bauer-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

APPENDIX F

RECEPTOR SURVEY DATA SPREADSHEETS AND CALCULATIONS

**ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Predicted 10-year Migration of Constituents in Groundwater

Parameter Descriptions:	Units	Parameter Descriptions:	Units
POE = Point of Exposure		ρ_s = Soil Bulk Density	g/cm ³
SSTL = Site-Specific Target Level	mg/L	f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
SSTL _{SOURCE} = Hydrocarbon Concentration in Plume Source Area protective of RBLS at POE	mg/L	α_x = Longitudinal Dispersivity = $x/10$	m
SSTL _{COMP} = Hydrocarbon Concentration at Compliance Point protective of RBLS at POE	mg/L	α_y = Transverse Dispersivity = $\alpha_x/3$	m
X _{POE} = x = Distance from Plume Source to POE (along Centerline)	m	α_z = Vertical Dispersivity = $\alpha_x/20$	m
X _{COMP} = x = Distance from POE to Compliance Point (along Centerline)	m	k_{oc} = Organic Carbon Partition Coefficient	cm ³ -H ₂ O/g-C
Y = Source Width (Perpendicular to Flow Direction)	m	k_D = Soil-Water Sorption Coefficient	cm ³ -H ₂ O/g-soil
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m	V = Pore Water Velocity	m/sec
K _s = Saturated Hydraulic Conductivity	m/sec	R _c = Constituent Retardation Factor	
I = Groundwater Gradient	cm/cm	V/R _c = Maximum Transport Rate of Dissolved Constituent = (K _s I)/R _c	m/sec
θ = Porosity in Saturated Zone	cm ³ /cm ³	RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X _{POE} ft	X _{POE} m	Y m	Z m	t sec	K _s m/sec	I m/m	θ cm ³ /cm ³	ρ _s g/cm ³	α _x m	α _y m	α _z m	f _{oc} g-C/g-soil	k _{oc} cm ³ -H ₂ O/g-C	k _D cm ³ -H ₂ O/g-soil	V m/sec	R _c	C _{POE} /C _{SOURCE}
Benzene	7.1	2.16411	15	2	3.15E+08	2.23E-05	0.0144	0.48	1.35	0.22	0.07	0.01	1.03E-01	81	8.343	6.69E-08	24.465	1.656E-02
Toluene	2.487	0.75805	15	2	3.15E+08	2.23E-05	0.0144	0.48	1.35	0.08	0.03	0.00	1.03E-01	133	13.699	6.69E-08	39.528	2.152E-01
Naphthalene	0.615	0.18745	15	2	3.15E+08	2.23E-05	0.0144	0.48	1.35	0.02	0.01	0.00	1.03E-01	1543	158.929	6.69E-08	447.988	4.183E-04

Source: South Carolina Department of Health and Environmental Control (SCDHEC) 1998. Risk-Based Corrective Action for Petroleum Releases, Bureau of Underground Storage Tank Management.

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

$$\frac{C_x}{C_{SOURCE}} = \frac{1}{2} \operatorname{erfc} \left[\frac{\left(x - \frac{vt}{R_c}\right)}{2\sqrt{\alpha_x \frac{vt}{R_c}}} \right] \times \operatorname{erf} \left[\frac{Y}{4\sqrt{\alpha_y x}} \right] \times \operatorname{erf} \left[\frac{Z}{2\sqrt{\alpha_z x}} \right]$$

Constituent	C _{SOURCE} mg/L	C _x mg/L
Benzene	0.313	0.005
Toluene	4.648	1.000
Naphthalene	23.346	0.010

Prepared By: J. Hofer/B. Sparks

Reviewed By: Renata D. Ojeda

**ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Predicted 20-year Migration of Constituents in Groundwater

Parameter Descriptions:	Units	Parameter Descriptions:	Units
POE = Point of Exposure		ρ_s = Soil Bulk Density	g/cm ³
SSTL = Site-Specific Target Level	mg/L	f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
SSTL _{SOURCE} = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L	α_x = Longitudinal Dispersionity = $x/10$	m
SSTL _{COMP} = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L	α_y = Transverse Dispersionity = $\alpha_x/3$	m
$X_{POE} = x$ = Distance from Plume Source to POE (along Centerline)	m	α_z = Vertical Dispersionity = $\alpha_x/20$	m
$X_{COMP} = x$ = Distance from POE to Compliance Point (along Centerline)	m	k_{oc} = Organic Carbon Partition Coefficient	cm ³ -H ₂ O/g-C
Y = Source Width (Perpendicular to Flow Direction)	m	k_D = Soil-Water Sorption Coefficient	cm ³ -H ₂ O/g-soil
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m	V = Pore Water Velocity	m/sec
K_s = Saturated Hydraulic Conductivity	m/sec	R_C = Constituent Retardation Factor	
I = Groundwater Gradient	cm/cm	V/R_C = Maximum Transport Rate of Dissolved Constituent = $(K_s I) / (R_C)$	m/aec
θ = Porosity in Saturated Zone	cm ³ /cm ³	RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE} ft	X_{POE} m	Y m	Z m	t sec	K_s m/sec	I m/m	θ :m ³ /cm ³	ρ_s g/cm ³	α_x m	α_y m	α_z m	f_{oc} g-C/g-soil	k_{oc} cm ³ -H ₂ O/g-C	k_D cm ³ -H ₂ O/g-soil	V m/sec	R_C	C_{POE}/C_{SOURCE}
Benzene	14.5	4.41965	15	2	6.31E+08	2.23E-06	0.0144	0.48	1.35	0.44	0.15	0.02	1.03E-01	81	8.343	6.69E-08	24.465	1.453E-02
Toluene	4.974	1.51609	15	2	6.31E+08	2.23E-06	0.0144	0.48	1.35	0.15	0.05	0.01	1.03E-01	133	13.899	6.69E-08	39.528	2.152E-01
Naphthalene	1.23	0.37491	15	2	6.31E+08	2.23E-06	0.0144	0.48	1.35	0.04	0.01	0.00	1.03E-01	1543	158.929	6.69E-08	447.988	4.183E-04

Source: South Carolina Department of Health and Environmental Control (SCDHEC) 1998. *Risk-Based Corrective Action for Petroleum Releases*. Bureau of Underground Storage Tank Management.

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

$$\frac{C_x}{C_{SOURCE}} = \frac{1}{2} \operatorname{erfc} \left[\frac{\left(x - \frac{vt}{R_C} \right)}{2\sqrt{\alpha_x \frac{vt}{R_C}}} \right] \times \operatorname{erf} \left[\frac{Y}{4\sqrt{\alpha_y x}} \right] \times \operatorname{erf} \left[\frac{Z}{2\sqrt{\alpha_z x}} \right]$$

Constituent	C_{SOURCE} mg/L	C_x mg/L
Benzene	0.313	0.005
Toluene	4.646	1.000
Naphthalene	23.346	0.010

Prepared By: J. Hoyer / B. Sparks

Reviewed By: Russ O'Leary

SITE 4, BUILDING 640
 ZONE H, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA
 SCDHEC UST ID No. 09868

HYDROCARBON CONSTITUENT CONCENTRATIONS IN WATER BASED ON RAOULT'S LAW

Parameter Descriptions:	Units
C_W = Aqueous Solubility of Organic Constituents Dissolved from Product	mg/L
C_F = Concentration of the Constituent in the Fuel Oil	mg/L
K_{FW} = Fuel/Water Partition Coefficient	
P_F = Density of Fuel Oil	g/mL
MW_F = Molecular Weight of Fuel Oil	g/mol
C_{SAT} = Aqueous Solubility of the Pure Phase Constituent	mol/L
MW_C = Molecular Weight of the Constituent	g/mol
$K_{FW} = (10^3 \text{ (mL/L)} p_F) / (MW_F * C_{SAT} / (1000 * MW_C))$	
$C_W = C_F / K_{FW}$	mg/L

Source: "Solubility, Sorption, and Transport of Hydrophobic Organic Chemicals in Complex Mixtures," EPA Environmental Research Brief, EPA/600/M-91/009, Robert S. Kerr Environmental Research Laboratory, ADA, Oklahoma.

Source: "CONCAWE 1996 Diesel Fuel/Kerosene" Conoco, Inc., Houston Texas

Key Assumptions:

MW_F : Molecular Weight of Kerosene, Source: "CONCAWE 1996 Diesel Fuel/Kerosene" Conoco Inc., Houston Texas. 170 g/mol

P_F : Density of the Product, Source: Conoco Material Safety Data Sheet for Diesel fuel/ Kerosene 0.88 g/mL

Concentration of Chemical Constituents in Water Based on Molar Solubility

Constituent	MW_F g/mol	C_{SAT} mg/L	MW_C g/mol	P_F g/mL	K_{FW}	C_F mg/L	C_W mg/L
Benzene	170.00	1,750	78	0.88	230.72	72.16	0.31
Toluene	170.00	535	92	0.88	890.16	4,136.00	4.65
Ethylbenzene	170.00	152	106	0.88	3609.91	378.40	0.10
Xylene	170.00	198	106	0.88	2771.24	2,200.00	0.79
Naphthalene	170.00	40	128.16	0.88	16585.41	387,200.00	23.35

Prepared By:

J. Hofer / B. Sparks

Reviewed By:

Renard O...

Construction Worker Dermal RBSLs

	Kow	MW	Kp	B	τ_{event}	c	b	t*	t_{event}	DAevent
			cm/hr	unitless	hr/event			hr	hr/event	
Benzene	199.5262315	78.1	0.11551543	0.392637855	2.87E-01	6.32E-01	6.03E-01	6.90E-01	1	eq 3.3
Toluene	537.0317964	92.1	0.259561335	0.958068292	3.44E-01	1.13E+00	1.31E+00	1.33E+00	1	eq 3.2
Ethylbenzene	1412.537545	106.2	0.569219802	2.256154884	4.13E-01	2.36E+00	4.39E+00	1.70E+00	1	eq 3.2
Xylene*	1584.893192	106.2	0.638675123	2.531447415	4.13E-01	2.63E+00	5.31E+00	1.72E+00	1	eq 3.2
Naphthalene	1995.262315	128.2	0.605452393	2.636638957	5.48E-01	2.73E+00	5.69E+00	2.29E+00	1	eq 3.2

	BW	AT	EV	ED	EF	SA	CSF derm	Rfd derm	Target	RBSL	RBSL
	kg	day	events/day	yrs	days/yr	cm ²	(mg/kg-day) ⁻¹	mg/kg-day	Risk or HQ	mg/L	mg/L
Benzene	70	25550	1	1	90	4500	2.99E-02	NA	1.00E-06		8.52E-01
Toluene	70	365	1	1	90	4500	NA	1.60E-01	1.0	2.40E+01	
Ethylbenzene	70	365	1	1	90	4500	NA	9.70E-02	1.0	6.05E+00	
Xylene*	70	365	1	1	90	4500	NA	1.84E+00	1.0	1.02E+02	
Naphthalene	70	365	1	1	90	4500	NA	3.20E-02	1.0	1.63E+00	

* Kow and MW values for xylene, m-

Prepared By: Barbara Sparks

Reviewed By: Ronald O'Connell

Construction Worker Incidental Ingestion RBSLs

	BW	AT	IR	ED	EF	Target	CSF oral	Rfd oral	RBSL
	kg	day	L/day	yrs	days/yr	Risk or HQ			mg/L
Benzene	70	25550	0.01	1	90	1.00E-06	2.90E-02		6.85E+01
Toluene	70	365	0.01	1	90	1.0	NA	2.00E-01	5677.778
Ethylbenzene	70	365	0.01	1	90	1.0	NA	1.00E-01	2838.889
Xylene	70	365	0.01	1	90	1.0	NA	2.00E+00	56777.78
Naphthalene	70	365	0.01	1	90	1.0	NA	4.00E-02	1135.556

Prepared By: Barbara Sparks

Reviewed By: Remo D'Agos

Construction Worker Inhalation RBSLs

Chemical	TR (carc)	HI (nonc)	BWadult	AT	Sfi (carc)	RfD (nonc)	IR air	EF	ED	RBSLair	H	RBSLwater
			kg	yr	[mg/kg-day] ⁻¹	[mg/kg-day]	m ³ /day	day/yr	yr	mg/m ³	cm ³ /cm ³	mg/L
Benzene	1.00E-06	NA	70	70	2.90E-02	NA	20	90	1	3.43E-02	2.26E-01	0.15
Toluene	NA	1	70	1	NA	1.14E-01	20	90	1	1.62E+00	3.01E-01	5.38
Ethylbenzene	NA	1	70	1	NA	2.86E-01	20	90	1	4.06E+00	2.80E-01	14.50
Xylenes	NA	1	70	1	NA	NA*	20	90	1	NA*	2.78E-01	NA*
Naphthalene	NA	1	70	1	NA	3.71E-04	20	90	1	5.27E-03	2.00E-03	2.63

*No inhalation reference dose is available for xylenes; therefore, no RBSL can be calculated for xylene.

Prepared By: Barbara Sparks

Reviewed By: Robert D. Ayres

Minimum Construction Worker RBSLs

	Dermal	Incidental Ingestion	Inhalation	Minimum
	RBSL	RBSL	RBSL	RBSL
	mg/L	mg/L	mg/L	mg/L
Benzene	0.85	68.52	0.15	0.15
Toluene	23.98	5677.78	5.38	5.38
Ethylbenzene	6.05	2838.89	14.50	6.05
Xylene	102.33	56777.78	NA*	102.33
Naphthalene	1.63	1135.56	2.63	1.63

*No inhalation reference dose is available for xylenes; therefore, no inhalation RBSL can be calculated.

Prepared By: Barbara Sparks

Reviewed By: P. D. O'Connell

ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
SCDHEC UST ID No. 09868

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Site-Specific Target Level Calculations for Groundwater: Potential Future Off-Site Ingestion

Parameter Descriptions:	Units	Parameter Descriptions:	Units
POE = Point of Exposure		ρ_s = Soil Bulk Density	g/cm ³
SSTL = Site-Specific Target Level	mg/L	f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
SSTL _{source} = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L	α_x = Longitudinal Dispersivity = 0.1x	m
SSTL _{comp} = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L	α_y = Transverse Dispersivity = $\alpha_x/3$	m
X _{POE} = x = Distance from Plume Source to POE (along Centerline)	m	α_z = Vertical Dispersivity = $\alpha_x/20$	m
X _{COMP} = x = Distance from POE to Compliance Point (along Centerline)	m	k _{oc} = Organic Carbon Partition Coefficient	cm ³ -H ₂ O/g-C
Y = Source Width (Perpendicular to Flow Direction)	m	k _o = Soil-Water Sorption Coefficient	cm ³ -H ₂ O/g-soil
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m	V = Pore Water Velocity	m/sec
K _s = Saturated Hydraulic Conductivity	m/sec	R _c = Constituent Retardation Factor	m/sec
i = Groundwater Gradient	cm/cm	V/R _c = Maximum Transport Rate of Dissolved Constituent = (K _s i)/θR _c	m/sec
θ = Porosity in Saturated Zone	cm ³ /cm ³	RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X _{POE} ft	X _{COMP} m	Y m	Z m	t sec	K _s m/sec	i m/m	θ cm ³ /cm ³	ρ _s g/cm ³	α _x m	α _y m	α _z m	f _{oc} g-C/g-soil	k _{oc} cm ³ -H ₂ O/g-C	k _o cm ³ -H ₂ O/g-soil	V m/sec	R _c	C _{POE} /C _{SOURCE}
Benzene	890	271.275	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	27.13	9.04	1.36	1.03E-01	81	8.343	6.69E-08	24.465	6.012E-03
Toluene	890	271.275	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	27.13	9.04	1.36	1.03E-01	133	13.699	6.69E-08	39.528	6.012E-03
Ethylbenzene	890	271.275	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	27.13	9.04	1.36	1.03E-01	176	18.128	6.69E-08	51.985	6.012E-03
Xylenes	890	271.275	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	27.13	9.04	1.36	1.03E-01	639	65.817	6.69E-08	186.110	6.012E-03
Naphthalene	890	271.275	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	27.13	9.04	1.36	1.03E-01	1543	158.929	6.69E-08	447.988	6.012E-03

Constituent	X _{COMP} ft	X _{COMP} m	Y m	Z m	t sec	K _s m/sec	i m/m	θ cm ³ /cm ³	ρ _s g/cm ³	α _x m	α _y m	α _z m	f _{oc} g-C/g-soil	k _{oc} cm ³ -H ₂ O/g-C	k _o cm ³ -H ₂ O/g-soil	V m/sec	R _c	C _{POE} /C _{COMP}
Benzene	865	263.655	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	26.37	8.79	1.32	1.03E-01	81	8.343	6.69E-08	24.465	5.305E-03
Toluene	865	263.655	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	26.37	8.79	1.32	1.03E-01	133	13.699	6.69E-08	39.528	5.305E-03
Ethylbenzene	865	263.655	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	26.37	8.79	1.32	1.03E-01	176	18.128	6.69E-08	51.985	5.305E-03
Xylenes	865	263.655	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	26.37	8.79	1.32	1.03E-01	639	65.817	6.69E-08	186.110	5.305E-03
Naphthalene	865	263.655	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.35	26.37	8.79	1.32	1.03E-01	1543	158.929	6.69E-08	447.988	6.305E-03

Source: South Carolina Department of Health and Environmental Control (SCDHEC) 1998. Risk-Based Corrective Action for Petroleum Releases, Bureau of Underground Storage Tank Management.

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

Constituent	POE RBSL mg/L	SSTL _{SOURCE} mg/L	SSTL _{COMP} mg/L
Benzene	0.005	0.998	0.943
Toluene	1.000	199.538	188.517
Ethylbenzene	0.700	139.877	131.962
Xylenes	10.000	1995.382	1885.167
Naphthalene	0.010	1.995	1.885

$$\frac{C_x}{C_{SOURCE}} = \frac{1}{2} \operatorname{erfc} \left[\frac{\left(x - \frac{vt}{R_c} \right)}{2\sqrt{\alpha_x \frac{vt}{R_c}}} \right] \times \operatorname{erf} \left[\frac{Y}{4\sqrt{\alpha_y x}} \right] \times \operatorname{erf} \left[\frac{Z}{2\sqrt{\alpha_z x}} \right]$$

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**ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
SCDHEC UST ID No. 09868**

Groundwater SSTLs Summary

Constituent	SSTLs Protective of Surface Water (Cooper River)			SSTLs Protective of Construction Workers		Minimum On-Site SSTLs ^(a)	Theoretical Aqueous Solubility of Organic Constituent In Product
	RBSL [mg/L]	SSTL _{SOURCE} [mg/L]	SSTL _{COMP} [mg/L]	RBSL [mg/L]	SSTL _{SOURCE} [mg/L]	[mg/L]	[mg/L]
Benzene	0.005	0.998	0.943	0.15	0.15	0.15	0.313
Toluene	1	199.5	188.5	5.38	5.38	5.38	4.646
Ethylbenzene	0.7	139.7	132	6.05	6.05	6.05	0.105
Xylenes	10	1995	1885	102.33	102.33	102.33	0.794
Naphthalene	0.01	2	1.89	1.63	1.63	1.63	23.346

RBSLs - Groundwater RBSLs which are protective of exposure at the receptor point

SSTL_{SOURCE} - Groundwater SSTLs in the source area protective of RBSLs at the POE

SSTL_{COMP} - Groundwater SSTLs at the compliance well that are protective of RBSLs at the off-site POE.

There are no compliance well SSTLs for the construction worker, because the construction worker is onsite.

(a) The minimum on-site SSTLs are chosen as those SSTLs protective of both surface water (the Cooper River) and the on-site construction worker.

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