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RAPID ASSESSMENT REPORT FOR SITE 11 BUILDING 851 ZONE H WITH TRANSMITTAL

CNC CHARLESTON SC

12/22/1999

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Rev.1
11/05/99

Rapid Assessment Report
for
Site 11, Structure 851

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

November 1999

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

22 December 1999

Department of the Navy
Southern Division NFEC
P.O. Box 190010
North Charleston, SC 29419-9010
Attention: Mr. Gabriel Magwood

Re: Final Assessment Report dated 5 November 1999
Zone H/Site 11-Building 851 (Site Identification # 17685)
Charleston Naval Complex/Charleston Naval Base
Charleston, SC
Charleston County

Dear Mr. Magwood:

The author has completed technical review of the referenced document. As submitted, the AR (Assessment Report) provides a narrative and summary of site closure and environmental assessment activities conducted to investigate media (including soil and groundwater) contaminated with petroleum hydrocarbons at the subject site. The analytical results presented and applied interpretations appear to indicate that a reasonable delineation and characterization of the extent and severity of soil and groundwater contamination have been developed for the Zone H/Site 11 area. This information and data were then utilized in evidential discussion(s) for consideration of employing monitored intrinsic remediation (natural attenuation/biodegradation) as the rehabilitation strategy for the referenced site.

Although the author concurs with the proposed remedial strategy, proposals that incorporate monitored natural attenuation must provide sufficient data to demonstrate the groundwater environment's assimilative capacity to provide for intrinsic biodegradation/natural attenuation for the known contaminants through time. Appropriate and reasonable data must be available/developed to demonstrate contaminant plume stability, contaminant stoichiometry and provide site specific information/data on attenuation (retardation and degradation) rates to verify predictive modeling applied to the site. Associated routine monitoring (groundwater and soil, as necessary) should be sufficient to demonstrate the rate and effectiveness (if any) of predicted degradation processes in effect and able to distinguish the effects of nondestructive processes (advection, dispersion, sorption, etc.) and destructive attenuation processes.

Based on the above review and comments, the facility should develop an appropriate CAP

(corrective action plan) which incorporates the above concerns. Please submit a schedule to the author's attention for development of the requested CAP by 31 January 2000. Should you have any questions please contact me at (803) 898-3559.

Sincerely,

Paul L. Bristol, Hydrogeologist
Groundwater Quality Section
Bureau of Water

cc: Trident District EQC

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Paul L. Bristol, Hydrogeologist
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Bureau of Water

cc: Trident District EQC

Rev. 1
11/05/99

RAPID ASSESSMENT REPORT
FOR
SITE 11, STRUCTURE 851

ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

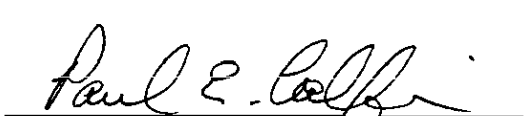
Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

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

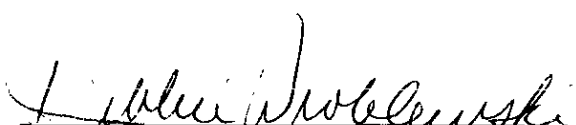
NOVEMBER 1999

PREPARED UNDER THE SUPERVISION OF:



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

APPROVED FOR SUBMITTAL BY:



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

CERTIFICATION PAGE

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

Approved By: 11/4/99

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

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EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 11 (Structure 851) which includes two underground storage tanks (USTs) which supplied fuel to Structure 851 a fuel pump island at Charleston Naval Complex (CNC) Zone H, in North Charleston, South Carolina. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan approval letter dated November 4, 1998.

TtNUS performed the following actions during the RA:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, evaluate public and private potable wells, locate utilities, locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed the previously prepared Underground Storage Tank Assessment Report for USTs 851A and 851B to determine soil boring locations and monitoring well placements;
- Conducted a site survey to identify utilities and to construct a site plan;
- Performed a direct push investigation to collect soil samples for field screening using an organic vapor analyzer and collect soil and groundwater samples for mobile lab screening analysis for benzene, toluene, ethyl benzene, total xylenes (BTEX), and diesel range organics;
- Installed shallow permanent monitoring wells;
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260 and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270;
- Performed groundwater natural attenuation sampling;
- Collected soil samples for laboratory analysis 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 top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

Conclusion

None of the Chemical of Concern (CoC) analyzed for in the onsite soils were detected at concentrations that exceed the SCDHEC Risk Based Screening Levels (RBSLs

Naphthalene was the only CoC detected in the onsite groundwater samples at concentrations that exceed the SCDHEC RBSLs. The detected concentrations of 0.114 mg/L and 0.0299 mg/L from source wells CNC11-M04 and NBCH663-001, respectively, are below the site SSTL (1.63 mg/L) calculated in Section 3.5. No compounds of interest were detected in the compliance well CNC11-M05.

Recommendation

The downgradient extent of hydrocarbon impact to groundwater has been delineated. Because the naphthalene concentrations in the source wells are below the SSTL but above the RBSL, natural attenuation monitoring is required according to SCDHEC guidelines. A Corrective Action Plan proposing short-term monitoring should be prepared and submitted in accordance with the SCDHEC Risk Based Corrective Action Guidelines.

1.0 INTRODUCTION

Site 11 includes closed underground storage tank (UST) systems 851A and 851B located adjacent to Structure NS 851 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) 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 in accordance with the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan and approval letter dated November 4, 1998. Fieldwork necessary to complete the RA was initiated during December 1998 and completed in March 1999, by TtNUS.

1.1 SITE DESCRIPTION

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

The areas surrounding CNC are "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, and vicinity surface drainage, is included as Figure 2.

UST 851A and UST 851B provided gasoline and diesel fuel, respectively, to NS 851, a fuel dispenser island. The fuel dispenser island was located inside the fenced-in lot behind Building NS 53 at the CNC. Each UST was installed in 1977 and was constructed of carbon steel with a storage capacity of 500 gallons. As part of the base environmental cleanup process, USTs NS 851A and NS 851B were closed in June 1996. An Underground Storage Tank Assessment Report was completed by the Supervisor of Ship

Building, Conversion and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston (SPORTENDETCHASN) in 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 combat ships and submarines of the U.S. Atlantic Fleet [Final RCRA Facility Investigation Report for Zone H, EnSafe/Allen & Hoshall (E/A&H), 1996)].

In 1993, major cuts in defense spending, as a result in part to the end of the cold war, caused CNC to be added to the list of bases scheduled for closure under the Defense Base 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 USTs at Structure NS 851 were removed.

Between May 29 and June 5, 1996, the USTs were removed, drained, cut open at both ends, and cleaned, with a steam cleaner. The tanks were then cut up and recycled as scrap metal. At the time of removal, both tanks were reported to be in very good condition without corrosion, pitting, or visible holes. The carbon steel piping for the USTs was removed at the same time as the tanks. The piping was described as being sound, but covered with light surface corrosion. No pitting or holes were observed (SPORTENDETCHASN, 1996).

During the removal of USTs 851A and 851B, no petroleum stained or contaminated soils were observed in the excavation, or trenches. Groundwater was present in the tank excavations, approximately 4 feet

below land surface (bls) and estimated at about 1 foot deep. Soil and groundwater samples were collected as part of the UST closure operations (SPORTENDETCHASN, 1996). The analytical results and the UST Assessment Report are included as 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 vicinity map (Figure 2) depicts the public utilities located within 250 feet of the former UST locations. Specific information concerning the depth of utilities below land surface is currently unavailable. However, according to facility personnel, typically utility lines are located approximately 2 to 6 feet bls (SPORTENVDETCHASN, 1999). The following utility receptors were located:

- Water utility, sanitary sewer utility: Both fresh water and sanitary sewer lines are located on the north side of Dyess Avenue. The lines are located on the north side of the avenue and at the nearest point are approximately 150 feet from the former UST locations. An additional sanitary sewer line originates near the southwest corner of Building NS 46 and flows northeast, then northwest.

- Storm sewer utility: storm sewer utility lines radiate outward from a location immediately west of Building 1816. One line extends to the parking area south of Building NS 53; a second line extends in a southeast direction and crosses Dyess Avenue. Additional lines located within 250 feet of the site but further from the UST locations are shown on Figure 2. The nearest storm sewer line to former USTs 851A and 851B location, is the line from the parking area west of Building 1816, which is approximately 50 feet east of the former UST location in a down gradient direction.

- Electrical utility lines in the site are overhead and are located along the northern edge of Dyess Avenue and traverse from Dyess Avenue to Hobson Avenue in a southwest to northeast direction.

Potable wells and irrigation wells, which utilize the shallow aquifer, were not identified within 1,000 feet of the site (E/A&H, 1996). Numerous monitoring wells are located within 1,000 feet of the site (E/A&H, 1996). Building basements are not present on CNC. The nearest surface water body to the site the Cooper River located approximately 1,100 feet Northwest (downgradient) from the site.

There are no city, county or state zoning ordinances as the property (CNC) is currently owned by the federal government. Information concerning zoning ordinances can be 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. Hydraulic conductivity 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

Thirty-three direct push soil borings were advanced at Site 11 under the supervision of a TtNUS geologist between December 21, 1998, and February 2, 1999 (Figure 3). These borings ranged in depth from 4 to 12 feet bls and provided soil samples to characterize the subsurface lithology. On February 17 through February 21, 1999, eight monitoring wells were installed on-site. Lithologic samples were collected and recorded during the drilling process to allow a description of the soils from land surface to a depth of 27 feet bls.

Based on lithologic descriptions from the above soil borings and monitoring wells, it appears that the subsurface soil consists of silty and clayey sands to a depth of approximately 15 feet bls, and silty clay to the maximum exploration depth. A generalized view of the subsurface lithology is presented in Figures 4 and 5. Lithologic descriptions of the soil borings are presented in Appendix B.

2.1.2 Site Hydrogeology

Two piezometers were installed on-site at the locations shown on Figure 3. Both piezometers (CNC11-P01 and CNC11-P02) were installed as temporary piezometers that were screened to bracket water table. The piezometers were surveyed to a local reference point.

Eight monitoring wells, CNC11-M01 through CNC11-M08, were installed as part of this RA investigation. Three additional monitoring wells, NBCH663-001, NBCH663-002, and NBCH136-001 were previously installed during the RFI (E/A&H, 1996). The monitoring well locations are shown in Figure 3. Ten of the monitoring wells, CNC11-M01 through CNC11-07, NBCH663-001, NBCH663-002, and NBCH136-001, were completed as shallow wells to an approximate depth of 12 feet bls. The monitoring wells were completed using 10 feet of polyvinyl chloride (PVC) well screen that bracketed the water table. Monitoring well CNC11-M08 was completed as a Type III monitoring well with 6-inch-diameter PVC surface casing grouted to a depth of 20 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to 27 feet and a 2-inch-diameter PVC monitoring well was installed with a 5 foot, 0.01-inch machine-slotted monitoring well screen. Well construction logs for the RA monitoring wells are presented in Appendix B.

In the site area, groundwater generally occurs under unconfined conditions at depths of 3 to 6 feet bls. Groundwater elevation measurements were recorded in the piezometers and monitoring wells on March 9, 1999. The recorded water-level measurement data and groundwater elevations are presented in Table 1. Figure 6 presents the groundwater potentiometric surface during the March 9, 1999 field event. Based on the potentiometric map, it appears groundwater flow is toward the northwest.

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 a period of 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

Thirty-three soil borings were completed as part of the screening portion of the soil investigation at Site 11. 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 concentrations (via a mobile laboratory), and groundwater contaminant concentrations (via a mobile laboratory). The soil and groundwater samples were collected from maximum depths of 4 and 8 feet bls, respectively, and were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), and diesel range organics.

The soil samples analyzed for Chemicals of Concern (CoCs) at an off-site laboratory were collected from a maximum depth of 4 feet bls. Soil samples collected for fixed base laboratory analysis were analyzed for BTEX and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260; and polynuclear aromatic hydrocarbons (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). The soil boring locations are shown on Figure 3 and the assessment results are presented in Section 2.4.1.

The groundwater assessment for CoCs included groundwater samples collected from monitoring wells in March 1999. Groundwater sampling was conducted using a peristaltic pump and low flow, quiescent techniques. The groundwater sampling was conducted 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 five 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 USEPA Method 8260 and PAHs using USEPA Method 8270. Three of the groundwater samples were also analyzed for the following natural attenuation parameters: dissolved oxygen, alkalinity, carbon dioxide, sulfide, ferrous iron, nitrite, manganese, nitrogen/nitrate, sulfate, and methane. The natural attenuation parameters are summarized in Table 3.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Thirty-three soil borings were completed and evaluated for soil vapors as part of the soil screening assessment at Site 11. Organic Vapor Analyzer (OVA) headspace measurements were recorded at 1-foot intervals to the top of the water table. All of the soil borings encountered the water table at 4 feet bls or less. Table 4 summarizes the soil vapor screening results. Figure 3 presents the soil boring locations.

Soil vapor concentrations ranged from not detected to greater than 5,000 parts per million (ppm). However, only two of the samples (recovered from one soil boring) were reported to contain soil vapor concentrations exceeding 500 ppm. The two samples and their corresponding soil vapor concentration are as follows: CNC11-B2202 – 4,800 ppm and CNC11-2203 – > 5,000 ppm.

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 Laboratory Results

One soil sample from each soil boring was analyzed in a mobile laboratory 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 criterion that the samples originate in the vadose zone above the water table. Table 5 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 5, four of the five mobile laboratory screening compounds (benzene, toluene, total xylene, and diesel range organics) were detected in the soil boring samples. Benzene was detected in a single sample at a concentration of 3.01 parts per billion (ppb). Toluene was detected at concentrations ranging from 0.57 to 6.64 ppb; total xylene was detected at concentrations ranging from 0.93 to 5.95 ppb; and diesel range organics were detected at concentrations ranging from 80 to 29,213.42 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 locations were determined in part based on these data.

2.3.3. Groundwater Mobile Laboratory Results

A total of 29 groundwater samples were collected from the 33 soil borings and two temporary piezometers completed at the site. The samples were analyzed in a mobile laboratory for BTEX and diesel range organics using USEPA Method 8260. The groundwater screening samples from soil borings were typically collected across the water table at depths ranging from 3 to 8 feet bls. Table 6 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 6, all of the analytes analyzed for were detected in one or more of the groundwater samples. Benzene was detected at concentrations ranging from 2.5 to 13.26 ppb; toluene was detected at concentrations ranging from 0.58 to 80.79 ppb; ethylbenzene was detected at concentrations ranging from 0.85 to 10.2 ppb; total xylene was detected at concentrations ranging from 13.7 to 45.7 ppb; and diesel range organics were detected at concentrations ranging from 17.9 to 11,005.73 ppb.

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

Eight subsurface soil samples (plus one duplicate sample) were collected from the Site 11 area for determination of CoCs. The soil boring locations are shown on Figure 3; Table 7 summarizes the CoCs detected in the soil samples. Five CoCs, including benzene, ethylbenzene, naphthalene, toluene, and total xylenes, were detected in the subsurface soil samples at concentrations above method detection limits. However, all of the detected concentrations were below the SCDHEC Risk Based Screening Levels (RBSLs).

2.4.2 Chemicals of Concern in Groundwater

The groundwater assessment for CoCs included collection of groundwater samples from the on-site monitoring wells. Table 8 presents the analytical results for CoCs detected in the groundwater samples. As indicated on the table, six of the CoC analytes [benzene, ethylbenzene, total xylene, naphthalene, benz(a)anthracene, and MTBE] were detected above method detection limits in the samples. However, only naphthalene (29.9 µg/L and 114 µg/L) exceeded the RBSL values. The RBSL for Naphthalene is 10 µg/L. The naphthalene concentrations detected in groundwater samples are presented in Figure 7. The groundwater analytical data sheets for the groundwater sampling event are presented in Appendix D.

2.5 ANALYTICAL DATA

Historical soil analytical data from the June 1996 UST removal are presented in Appendix A. All soil analytical data from this site assessment are summarized in Table 7 and included in Appendix D. Current groundwater analytical data are summarized in Table 8 and included in Appendix D.

2.6 AQUIFER CHARACTERISTICS AND EVALUATION

Groundwater levels were measured on March 9, 1999. Water level contours plotted on Figure 6 indicate that the groundwater flows to the northwest. The hydraulic gradient ranged from 00.009 to 0.0122 feet per foot between monitoring wells CNC11-M01 and to CNC11-M06 and between NBCH663-001 and CNC11-M04, 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 11. To make this determination the screened interval, lithology, and proximity to the site were evaluated. Based on this evaluation, monitoring well NBCH178001 was selected as the most representative well. NBCH178001 is located approximately 200 feet northeast of Site 11 and is completed to a depth of approximately 12 feet with a 10-foot screened interval. The geometric mean of the rising and falling head conductivity for well NBCH178001 was 0.1531 feet per day.

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

Darcy's Law may be expressed as:

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

where:

V = average velocity

K = hydraulic conductivity = 0.1531 ft/day

n = porosity = 0.43 (from sieve results of 69.7% sand and 23.0% clay and Figure C1 in SCDHEC, 1998)

i = average hydraulic gradient = 0.0104 ft/ft

therefore:

$$V = \left(\frac{0.1531\ ft/day}{0.43}\right) x\ 0.0104\ ft/ft$$

$$V = 0.0037\ ft/day$$

In summary, the velocity of the surficial aquifer was calculated to be approximately 1.3 feet per year based on a hydraulic conductivity of 0.1531 feet per day, an average hydraulic gradient of 0.0104 feet per foot, and a porosity of 43% for sandy clay. Aquifer characterization graphs are provided in Appendix E.

2.7 FATE AND TRANSPORT MODEL DESCRIPTION

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 meters) wide and 6.56 feet (2 meters) deep; these values are conservative defaults suggested by the American Society for Testing and 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.

Site-specific data were used for saturated hydraulic conductivity, hydraulic gradient, and fraction of organic carbon in soil. The soil porosity and soil bulk density were determined using SCDHEC (1998) Figures C1 and C3, respectively, and site-specific sand and clay percentages.

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 9 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 (March 9, 1999) showed that groundwater flow is primarily flowing toward the northwest. Figure 7 shows the current extent of the dissolved CoCs in groundwater.

The Domenico model was used to predict the distance at which the tip of the plume is attenuated to 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 distance was changed for naphthalene until the required distance that is necessary for the concentration to attenuate to the RBSLs was determined. Only naphthalene was present at the source at concentrations greater than the respective RBSLs; therefore, this was the only chemical for which a plume distance was calculated. The model estimates that after 10 years, the concentration of naphthalene is 0.01 mg/L (RBSL) at a distance of 0.44 foot. Furthermore, after 20 years, the concentration of naphthalene is 0.01 mg/L (RBSL) at a distance of 0.88 foot. 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

One groundwater sampling event was conducted on March 9, 1999. Naphthalene was detected at concentrations of 29.9 µg/L in NBCH663-001 and 114 µg/L in CNC11-04. These concentrations exceed the RBSL for naphthalene of 10 µg/L. Other constituents detected in the groundwater at the site included benzene, ethylbenzene, xylenes, benzo(a)anthracene, and MTBE, none of which exceeded their respective RBSLs. No COCs were detected in the deep well, CNC11-M08.

Soil samples from 27 locations were collected in January 1999. 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 CNC11-B15 at 3.01 µg/kg, toluene at concentrations ranging from 0.57 µg/kg at CNC11-B15 to 6.64 µg/kg at CNC11-B11, and xylenes at CNC11-B15 and CNC11-B21 (0.93 µg/kg and 5.95 µg/kg, respectively). Diesel range organic results ranged from non-detect to 29,213 µg/kg at soil sample location CNC11-B15. Six soil samples collected in January and February 1999 were analyzed for BTEX and PAHs including naphthalene by a fixed-base laboratory. Soil concentrations were below RBSLs for all samples analyzed. Table 10 presents a comparison of RBSLs to the maximum soil and groundwater concentrations.

3.2 EXPOSURE SETTING EVALUATION

This section focuses on the current and future land use issues concerning the site. The site was formerly used as a refueling island. 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 northwest toward the Cooper River, which discharges into Charleston Harbor. The Cooper River is located approximately 1100 feet northwest of the site. Surface water drains into the storm sewer drainage system located to the northwest of the site. The nearest storm drain is located approximately 20 feet west of the former tank pit for USTs 851A and 851B. 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 11 and 12 present the exposure pathway assessments for current and future use scenarios, respectively.

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. Area building foundations are assumed to be sufficient to prevent volatilization from both soil and groundwater into the buildings, and there is no history of vapors in area buildings. 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 storm sewer within 10 feet of the area of impacted groundwater; 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 1100 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

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 the procedures in *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 one event per day and the event duration was assumed to be 1 hour/event. The skin surface area available for contact was 4500 cm^2, 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/540/1-89/002 (EPA 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 (CNC11-M04) is approximately 5 feet below top of casing. 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 storm sewer extends between the two monitoring wells in which naphthalene was detected above the RBSL. 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)
Naphthalene	1.63	1135.56	2.63	[redacted]

Appendix G 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 naphthalene under steady state conditions. Table 9 provides fate and transport parameters used in the model. The groundwater flow is primarily toward the northwest toward the Cooper River, 1100 feet from USTs 851A and 851B. (Figure 6). CNC11-M04 and NBCH663-001 contained naphthalene above the RBSL therefore; the area surrounding these monitoring wells was used as the source for predicted migration. No other CoCs were detected at concentrations exceeding their respective RBSLs.

The dissolved naphthalene concentration in NBCH663-001 was used in the Domenico model as the source concentration. The distance from NBCH663-001 to the Cooper River (Figure 1), which is the nearest point of exposure other than construction worker, was estimated to be 1100 feet. Using the values of RBSL (0.01 mg/L for naphthalene) at the point of exposure, the SSTL at NBCH663-001 was calculated and compared with the source concentrations in NBCH663-001. The SSTLs at the compliance well (CNC11-M05) 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 1,004 feet.

The dissolved naphthalene concentration in CNC11-M04 was used in the Domenico model as the source concentration. The distance from CNC11-M04 to the Cooper River (Figure 1), which is the nearest point of exposure other than construction worker, was estimated to be 1000 feet. Using the values of RBSL (0.01 mg/L for naphthalene) at the point of exposure, the SSTL at CNC11-M04 was calculated and compared with the source concentrations in CNC11-M04.

Groundwater SSTLs in mg/L were determined to be:

Chemical of Concern	Source SSTL CNC11-M04	Source SSTL NBCH663-001	Compliance Point SSTL CNC11-M05
Naphthalene	2.518	3.045	2.538

Appendix G provides the Domenico model calculations generating SSTLs.

3.5.3 Selected SSTLs

The SSTL for naphthalene 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	Source Concentration
	(mg/L)	(mg/L)
Naphthalene	1.63	0.114

Comparisons of the construction worker RBSLs and groundwater SSTLs to the dissolved constituents in groundwater are presented in Table 13.

3.6 RECOMMENDATIONS

The downgradient extent of hydrocarbon impact to groundwater has been delineated. The concentrations of naphthalene (0.114 mg/L and 0.0299 mg/L) in groundwater at source wells CNC11-M04 and NBCH663-001, respectively, are below the site SSTL (1.63 mg/L) calculated in Section 3.5. No compounds of interest were detected in the compliance well CNC11-M05.

Since the naphthalene concentrations in the source wells are below the SSTL but above the RBSL, natural attenuation monitoring is required according to SCDHEC guidelines. A Corrective Action Plan proposing short-term monitoring should be prepared and submitted in accordance with the SCDHEC Risk Based Corrective Action Guidelines.

4.0 REFERENCES

ASTM (American Society for Testing and Materials), 1970. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites.

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

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

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SPORTENDETCHASN (Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston), 1996. Underground Storage Tank (UST) Assessment Report for USTs 851A and 851B, Charleston Naval Base Complex, North Charleston, South Carolina, June 5, 1996.

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USEPA (U.S. Environmental Protection Agency), 1989. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (interim Final), EPA/540/1-89/002.

USEPA (U.S. Environmental Protection Agency), 1995. Supplemental Guidance to RAGS: Region 4 Biulletins, Human Health Risk Assessment, Region 4.

USEPA (U.S. Environmental Protection Agency), 1998. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual, Supplimental Guidance, Dermal Risk Assessment, Interim Guidance.

TABLE 1

GROUNDWATER ELEVATIONS
SITE11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
SOUTH CHARLESTON, SOUTH CAROLINA

Monitoring Well No.	Total Depth of Well (ft)	Top of Casing Elevation (ft MSL)	Date Measured	Depth to Water (BTOC)	Groundwater Elevation (MSL)
CNC011-M01	12	8.21	3/9/99	3.25	4.96
CNC11-M02	12	8.17	3/9/99	3.31	4.86
CNC11-M03	12	8.63	3/9/99	3.90	4.73
CNC11-M04	12	9.16	3/9/99	4.99	4.17
CNC11-M05	12	8.16	3/9/99	3.75	4.41
CNC11-M06	12	7.99	3/9/99	3.50	4.49
CNC11-M07	12	7.85	3/9/99	2.65	5.20
CNC11-M08	26	8.32	3/9/99	5.70	2.62
NBCH663-001	12	11.31	3/9/99	5.94	5.37
NBCH663-002	12	7.92	3/9/99	2.96	4.96
NBCH136-001	12	9.12	3/9/99	4.36	4.76

Notes:
ft = Feet
MSL - Mean Sea Level
BTOC - Below Top of Casing
NM - Not Measured

TABLE 2

GROUNDWATER FIELD MEASUREMENTS
SITE 11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Purge method	Volume (Gallons)	Temperature (°C)	Ph	Specific Conductance (uMHOS/cm)	Turbidity (NTU)
CNC11-M01	3/9/99	PP	7.0	16.6	7.02	0.830	< 1
CNC11-M02	3/10/99	PP	8.0	17.4	7.58	0.557	3
CNC11-M03	3/10/99	PP	7.5	17.5	7.17	1.20	NR
CNC11-M04	3/10/99	PP	6.5	18.6	6.95	5.42	1
CNC11-M05	3/10/99	PP	10.0	20.1	7.28	0.516	0
CNC11-M06	3/9/99	PP	5.0	19.6	7.23	0.34	25
CNC11-M07	3/9/99	PP	6.0	16.5	7.12	2.13	2
CNC11-M08	3/9/99	PP	3.0	20.7	7.21	31.40	261
NBCH663-001	3/9/99	PP	8.0	16.0	7.13	1.52	1
NBCH663-002	3/9/99	PP	5.0	18.4	7.08	1.92	9
NBCH663-003	3/10/99	PP	4.0	18.2	7.05	2.02	<1

PP - Peristaltic pump, low flow technique
(°C) - Degrees Celcius
uMHOS/cm - Micro HOS per centimeter
NTU - Nephelometric turbidity units
* - Well purged dry using low flow purging method
NR - Not recorded

TABLE 3

GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
SITE 11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Dissolved Oxygen (mg/l)	Akalinity (mg/l)	Carbon Dioxide (mg/l)	Sulfide (mg/l)	Ferrous Iron (mg/l)	Nitrite (mg/l)	Manganese (mg/l)	Nitrogen/ Nitrate (mg/l)*	Sulfate (mg/l)*	Methane (ug/l)*
NBCH663 001	3/16/99	0.71	280	250	0.01	3.25	0.056	0.9	0.0580	267	49 (B)
CNC11-M02	3/16/99	0.71	190	97	0.01	0.61	0.049	0.9	ND	53	230 (B,D)
CNC11-M05	3/16/99	1.16	280	45	0.02	0.08	0.104	0.2	ND	49.8	86 (B,D)

mg/l - milligrams per liter
* - Fixed base laboratory analysis
ND - not detected
(B) - compound aslo detected in the method blank
(D) - diluted sample

TABLE 4

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 11, STRUCTURE 851
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (PPM)
CNC11-B01	11SSB0101	1	ND
	11SSB0102	2	ND
CNC11-B02	11SSB0201	1	ND
	11SSB0202	2	ND
CNC11-B03	11SSB0301	1	ND
	11SSB0302	2	ND
CNC11-B04	11SSB0401	1	ND
	11SSB0402	2	ND
CNC11-B05	11SSB0501	1	ND
	11SSB0502	2	ND
CNC11-B06	11SSB0601	1	ND
	11SSB0602	2	ND
CNC11-B07	11SSB0701	1	ND
CNC11-B08	11SSB0801	1	ND
CNC11-B09	11SSB0901	1	ND
CNC11-B10	11SSB1001	1	ND
CNC11-B11	11SSB1101	1	ND
	11SSB1102	2	ND
CNC11-B12	11SSB1202	2	ND
CNC11-B13	11SSB1302	2	40
CNC11-B14	11SSB1402	2	15
CNC11-B15	11SSB1502	2	NS
CNC11-B16	11SSB1602	2	120
CNC11-B17	11SSB1702	2	ND
CNC11-B18	11SSB1802	2	17
CNC11-B19	11SSB1901	1	1
CNC11-B20	11SSB2002	1	1
	11SSB2003	2	4
	11SSB2004	3	40
	11SSB2004	4	100
CNC11-B21	11SSB2101	1	400
	11SSB2102	2	NS
CNC11-B22	11SSB2201	1	NS
	11SSB2202	2	4800
	11SSB2203	3	>5000
CNC11-B23	11SSB2301	1	47
	11SSB2302	2	27
	11SSB2303	3	40
CNC11-B24	11SSB2401	1	3
	11SSB2402	2	8
	11SSB2403	3	4
CNC11-B25	11SSB2501	1	NS
CNC11-B26	11SSB2601	1	NS
CNC11-B27	11SSB2703	3	40
	11SFB2704	4	210

TABLE 4

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 11, STRUCTURE 851
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CNC11-B28	11SSB2802	2	95
	11SSB2803	3	150
	11SFB2804	4	180
CNC11-B29	11SSB2902	2	120
	11SSB2903	3	350
	11SFB2904	4	270
CNC11-B30	11SSB3002	2	NS
CNC11-B31	11SSB3102	2	NS
CNC11-B32	11SSB3201	1	8
	11SSB3202	2	16
	11SSB3203	3	250
	11SSB3204	4	15
CNC11-B33	11SSB3003	3	ND

NOTES:
OVA -organic vapor analyzer equipped with a flame ionization detector.
PPM - parts per million.
ND - not detected.
NS – not sampled.

TABLE 5

SUMMARY OF MOBILE LABORATORY SOIL SCREENING RESULTS
JANUARY 1999
SITE 11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Mobile Laboratory Screening Data (PPB) (1)				
			Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel Range Organics
CNC11-B01	11SFB0102	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B02	11SFB0202	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B03	11SFB0302	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B04	11SFB0402	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B05	11SFB0502	2	<0.5	1.75	<0.5	<1.0	<100
CNC11-B06	11SFB0602	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B07	11SFB0701	1	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B08	11SFB0801	1	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B09	11SFB0901	1	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B10	11SFB1001	1	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B11	11SFB1101	1	<0.5	6.64	<0.5	<1.0	<100
CNC11-B12	11SFB1202	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B13	11SFB1302	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B14	11SFB1402	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B15	11SFB1502	2	3.01	0.57	<0.5	0.93	29,213.42
CNC11-B16	11SFB1602	2	<0.5	<0.5	<0.5	<1.0	126.15
CNC11-B17	11SFB1702	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B18	11SFB1802	2	<0.5	2.61	<0.5	<1.0	<100
CNC11-B19	11SFB1902	2	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B20	11SFB2003	3	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B21	11SFB2102	2	<5	<5	<5	5.95	80
CNC11-B23	11SFB2303	3	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B24	11SFB2403	3	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B27	11SFB2704	4	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B28	11SFB2804	4	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B29	11SFB2903	3	<1.0	<1.0	<1.0	<1.0	<50
CNC11-B32	11SFB3203	3	<1.0	<1.0	<1.0	<1.0	<50

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 6

SUMMARY OF MOBILE LABORATORY GROUNDWATER SCREENING RESULTS
SITE 11, BUILDING 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Mobile Laboratory Screening Data (PPB)[1]				
		Benzene	Toluene	Ethylbenzene	Total Xylenes	Diesel Range Organics
CNC11-B01	11GFB01	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B02	11GFB02	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B03	11GFB03	<0.5	0.76	<0.5	<1.0	<100
CNC11-B04	11GFB04	<0.5	3.85	<0.5	<1.0	<100
CNC11-B05	11GFB05	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B06	11GFB06	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B07	11GFB07	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B08	11GFB08	<0.5	<0.5	<0.5	<1.0	11,005.73
CNC11-B10	11GFB10	<0.5	6.04	0.85	13.7	6,151.53
CNC11-B11	11GFB11	<0.5	80.79	<0.5	<1.0	337.55
CNC11-B12	11GFB12	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B13	11GFB13	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B14	11GFB14	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B15	11GFB15	13.26	0.58	<0.5	<1.0	147.75
CNC11-B16	11GFB16	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B17	11GFB17	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B18	11GFB18	<0.5	<0.5	<0.5	<1.0	<100
CNC11-B20	11GFB20	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B23	11GFB23	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B26	11GFB26	2.5	<1.0	<1.0	<1.0	<10
CNC11-B28	11GFB28	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B29	11GFB29	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B30	11GFB30	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B31	11GFB31	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B32	11GFB32	<1.0	<1.0	<1.0	<1.0	<10
CNC11-B33	11GFB33	<1.0	<1.0	<1.0	<1.0	<10
CNC11-P01*	11GFP01	<5.0	<5.0	10.2	45.7	17.9
CNC11-P02*	11GFP02	<1.0	<1.0	<1.0	<1.0	<10

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
* - groundwater sample from temporary piezometer

TABLE 7

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
SITE 11, BUILDING 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Soil Boring / Sample No.	Sample Date	Benzene	Ethyl-benzene	Naphthalene	Toluene	Xylenes (total)	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Dibenzo(a,h) anthracene	Chrysene	Total Organic Carbon*
RBSL[1]		5	1260	210	1622	42471	73084	29097	231109	87866	12998	
CNC11-M02/ 11SLM0202	18-Feb-99	1.07 (J)	1.05 (J)	24.8	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-M03/ 11SLM0302	17-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-M04/ 11SLM0402	17-Feb-99	2.28 (J)	ND	0.866 (J)	1.73 (J)	ND	ND	ND	ND	ND	ND	NA
CNC11-M05/ 11SLM0502	17-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-M06/ 11SLM0602	18-Feb-99	ND	0.682 (J)	ND	ND	4.23 (J)	ND	ND	ND	ND	ND	NA
CNC11-M07/ 11SLM0702	17-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-B05/ 11SLB0502	18-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-B05/ 11SLB0502D[1]	18-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
CNC11-B06/ 11SLB0602	18-Feb-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9420
ZHTL01101[2]	26-Jan-99	ND	ND	ND	ND	ND	NA	NA	NA	ND	NA	NA
ZHRL00201[3]	20-Jan-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

All concentrations are in micrograms per kilograms (ug/kg). J = Estimated concentration. ND = Compound not detected. NA = Compound not analyzed
Sample 11SLM0202 was also analyzed for total recoverable petroleum hydrocarbons and contained 405 milligrams/kilograms.
[1] South Carolina Department of Health and Environmental Control Risk Based Screening Levels for sandy soils; depth to groundwater less than 5 feet.
[2] Duplicate blank sample [3] trip blank sample [4] equipment rinsate blank sample

TABLE 8

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 1 of 2

Monitoring Well/Sample No.	Sample Date	Benzene	Ethyl-benzene	Toluene	Xylenes (total)	Naphthalene	Benzo(a) anthracene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	MTBE
RBSL[1]		5	700	1000	10000	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	40
CHC11-M01 / 11GLM0101	09-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHC11-M01 / 11GLM0101D	09-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHC11-M02 / 11GLM0201	16-Mar-99	0.787 [J]	ND	ND	ND	ND	0.642 [J]	ND	ND	ND	ND	ND
CHC11-M03 / 11GLM0301	10-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.19
CHC11-M03 / 11GLM0301D	17-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
CHC11-M04 / 11GLM0401	10-Mar-99	1.14 [J]	0.889 [J]	ND	4.29 [J]	114	ND	ND	ND	ND	ND	4.57
CHC11-M05 / 11GLM0501	16-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHC11-M06 / 11GLM0601	09-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHC11-M07 / 11GLM0701	09-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHC11-M08 / 11GLM0801	16-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NBCH663-001/ NBCH663-001	17-Mar-99	ND	ND	ND	ND	29.9	ND	ND	ND	ND	ND	ND
NBCH663-002/ NBCH663-002	09-Mar-99	ND	8.55	ND	ND	2.61 [J]	ND	ND	ND	ND	ND	6.04

TABLE 8

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 11, STRUCTURE 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 2 of 2

NBCH136-001 / NBCH663-003	16-Mar-99	ND	ND	ND	ND	1.33 (J)	ND	ND	ND	ND	ND	ND
ZHTL01501[3]	09-Mar-99	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
ZHTL01701[3]	16-Mar-99	ND	ND	ND	ND	0.726 (J)	NA	NA	NA	NA	NA	NA
ZHTL02201[3]	22-Mar-99	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
ZHRL00601[4]	10-Mar-99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

All concentrations are in ug/l. ND = Compound not detected. NA = Compound not analyzed.

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

(1) South Carolina Department of Health and Environmental Control Risk Based Screening Levels for groundwater.

(2) The Risk based screening level for individual PAH CoC is 10 ug/l or 25 ug/l for total PAHs.

(3) trip blank sample.

(4) equipment blank sample.

Bold value indicates concentration exceeded RBSLs.

TABLE 9

FATE AND TRANSPORT INPUT PARAMETERS
SITE 11, STRUCTURE 851
ZONE H
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Parameter	Domenico Dilution/Attenuation Model[1]
Hydraulic Conductivity [m/sec]	5.4 E-7
Hydraulic Gradient	0.0104
Porosity	0.43
Soil Bulk Density [kg/L]	1.65
Partition Coefficient (k_{oc}) [L/kg]	1543[a]
Fractional Organic Carbon	9.23 E-3
First Order Decay Rate[b] [sec^{-1}]	0
Source Width[b] [m]	15
Source Thickness[b] [m]	2
Soluble Mass [kg]	Infinite[c]

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

(a) - Value for naphthalene

(b) - Stated values are default values.

(c) - Assumption of the Domenico Model

TABLE 10

COMPARISON OF MAXIMUM CONCENTRATIONS TO RBSLs
SITE 11, STRUCTURE 851
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)	RBSLs (GW) (mg/L)[b]
Benzene	0.00228[J]	0.005	0.00114[J]	0.005
Toluene	0.00173[J]	1.622	ND	1
Ethybenzene	0.00105[J]	1	0.00855	0.7
Xylenes	0.00423[J]	42.471	0.00429[J]	10
MTBE	NA	NA	0.00604	0.04
Naphthalene	0.0248	0.21	0.114	0.010

(a) - From Risk-Based Corrective Action for Petroleum Releases, Table 3, Depth to GW - less than 5 ft, SCDHEC RBCA Guidelines, 1998.
(b) - From Risk-Based Corrective Action for Petroleum Releases, Table B1, SCDHEC RBCA Guidelines, 1998.
GW - Groundwater
RBSLs - Risk Based Screening Levels
(J) - Estimated concentration
Shaded cell indicates the concentration exceeded the RBSL.

TABLE 11

EXPOSURE PATHWAY ASSESSMENT - CURRENT USE
SITE 11, BUILDING 851
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.	
	Explosion Hazard	No	No explosion hazard.	
Groundwater	Ingestion	No	No water supply well downgradient or residential basements.	
	Dermal contact	No		
	Inhalation	No		
Surface Water	Ingestion	No	Cooper River 1100 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

EXPOSURE PATHWAY ASSESSMENT - FUTURE USE
SITE 11, BUILDING 851
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.	
	Explosion Hazard	No	No explosion hazard.	
Groundwater	Ingestion	Yes	Future use of property expected to be industrial or commercial. Storm sewer line within w/in plume therefore construction worker exposure possible.	
	Dermal contact	Yes		
	Inhalation	Yes		
Surface Water	Ingestion	Yes	Cooper River 1100 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		

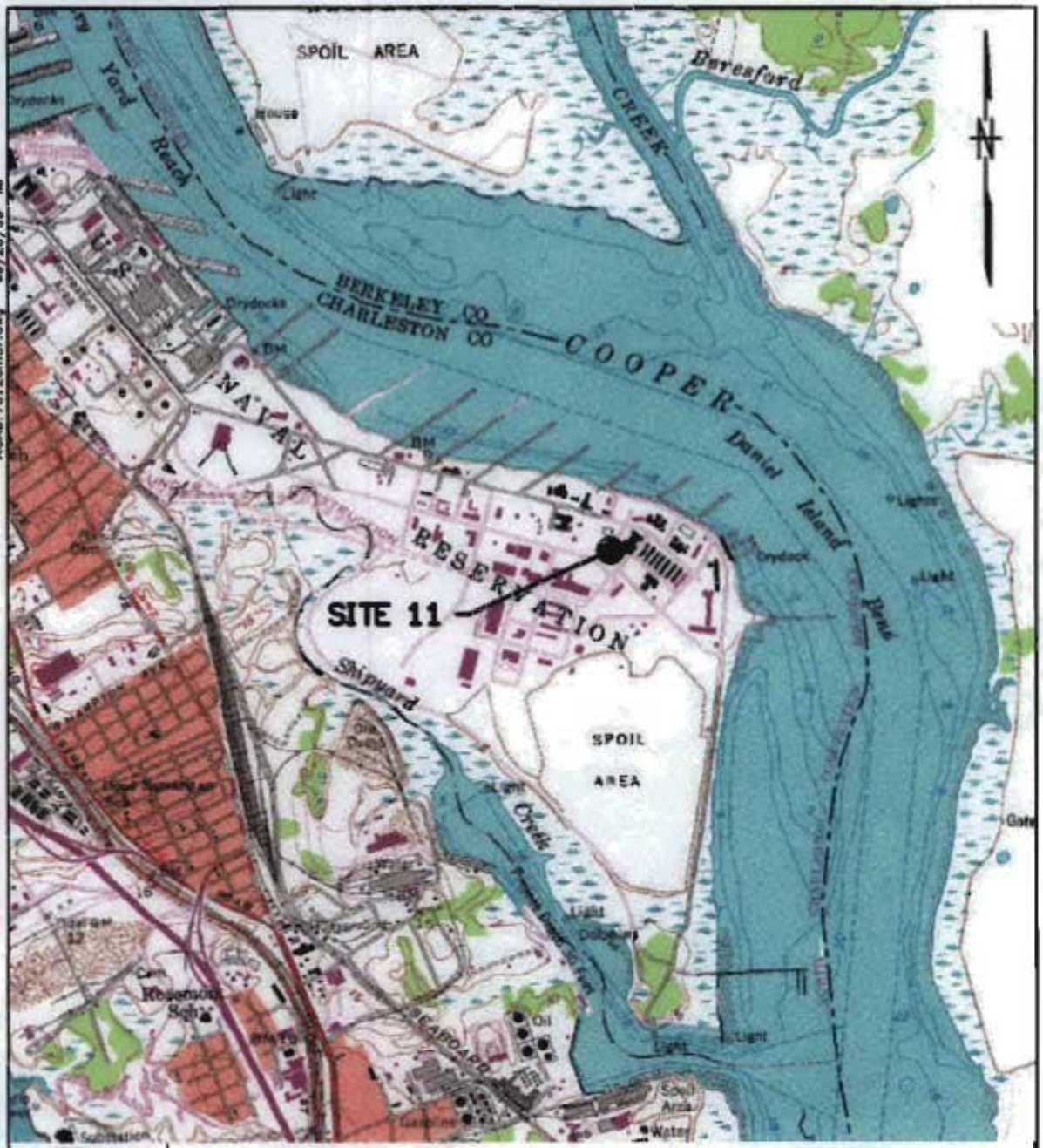
TABLE 13

COMPARISON OF MAXIMUM GROUNDWATER CONCENTRATIONS TO SSTLs
SITE 11, BUILDING 851
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]
Naphthalene	0.114	3.045	2.538	1.63	1.63

mg/L - milligrams per liter
GW - Groundwater
Shaded cell indicates the concentration exceed the SSTL.

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



ACAD: 7912em37.dwg 09/28/99 MF

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

0 2000 4000
SCALE IN FEET

DRAWN BY HJP DATE 5/18/99		SITE LOCATION MAP SITE 11, BUILDING 851 ZONE H, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO. 7912
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED--AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV. 0

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

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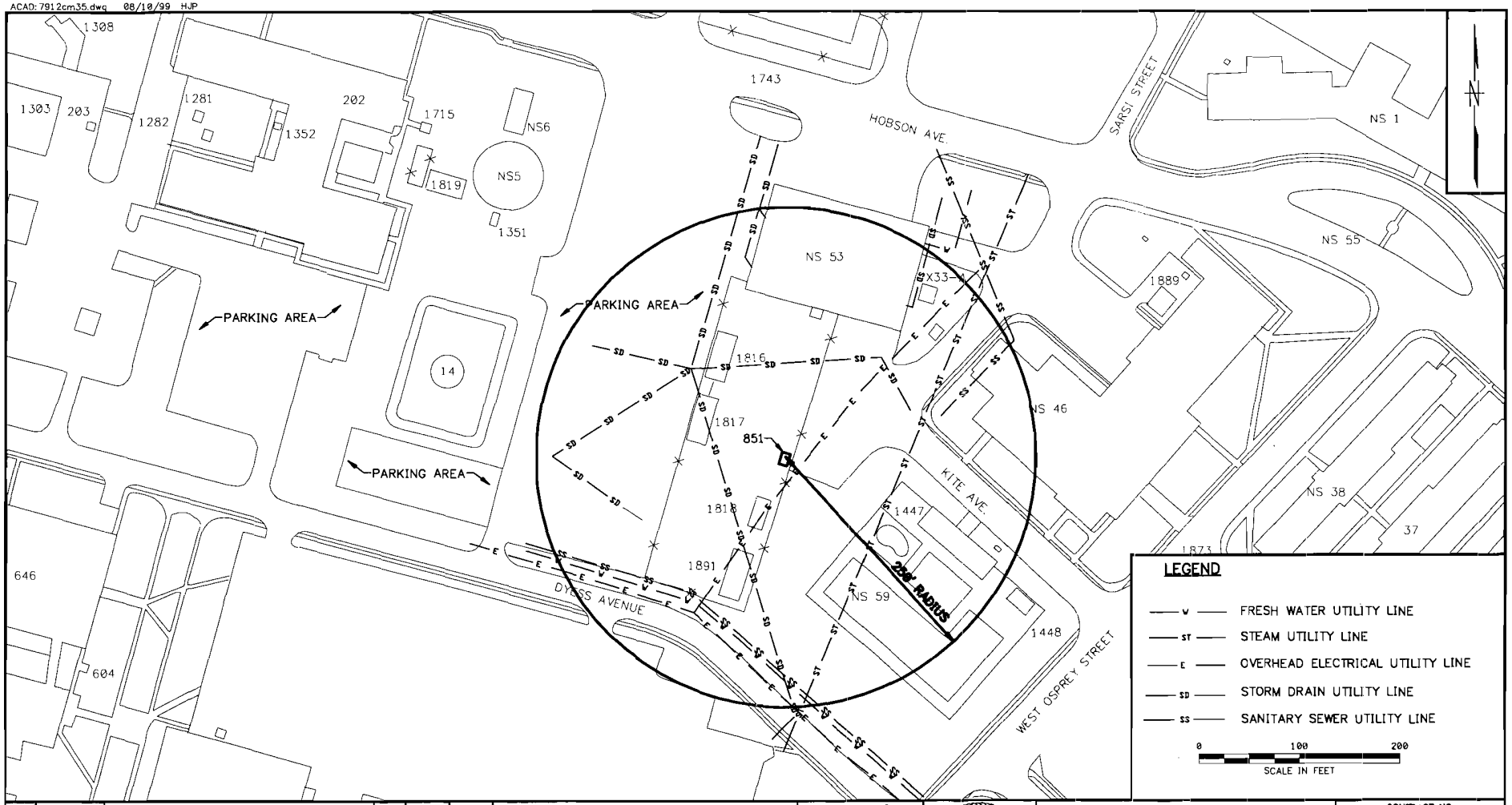


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

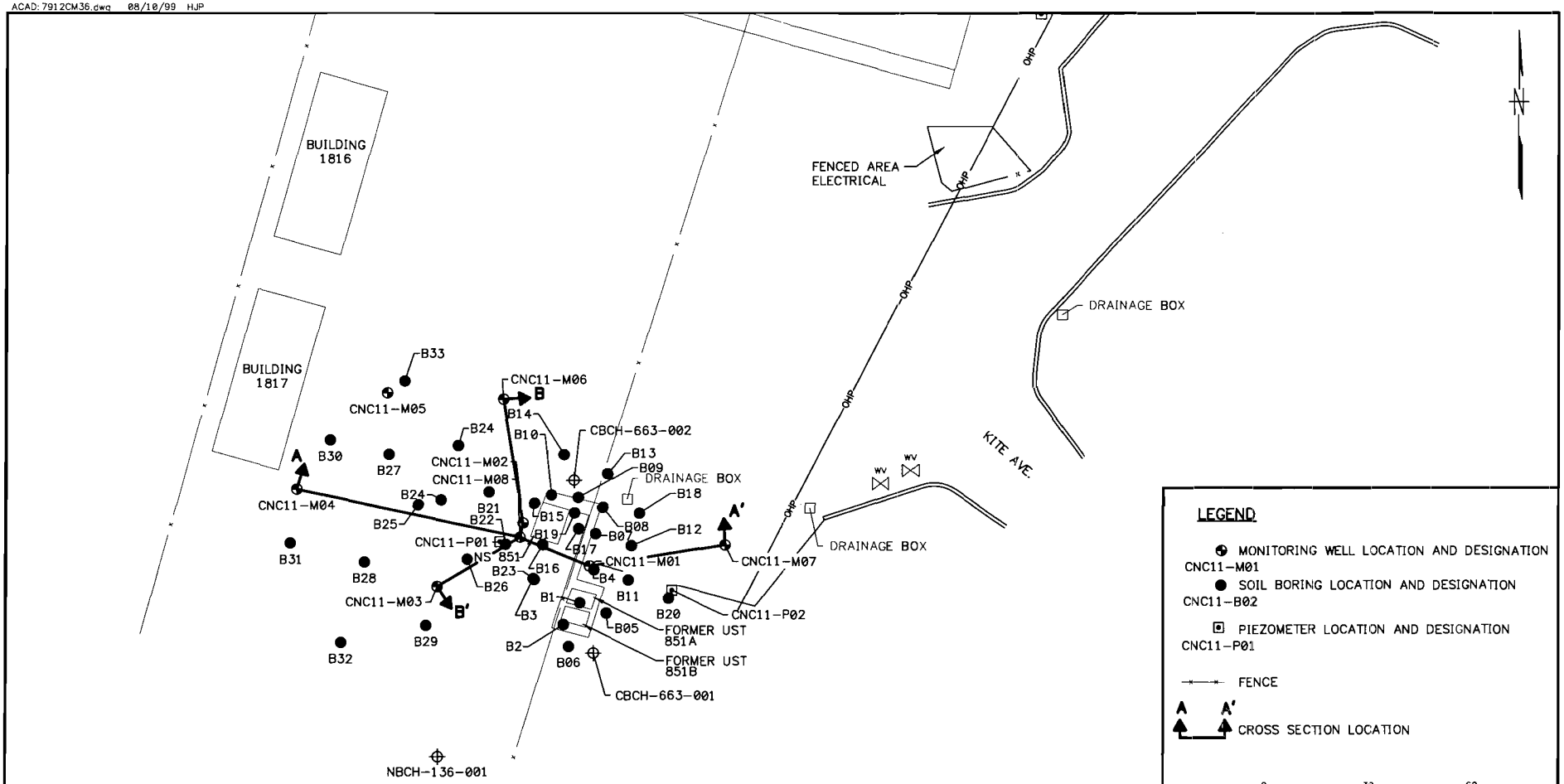
DRAWN BY HJP DATE 8/4/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE VICINITY MAP
SITE 11, BUILDING 851
ZONE H, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

ACAD: 7912CM36.dwg 08/10/99 HJP



LEGEND

- MONITORING WELL LOCATION AND DESIGNATION CNC11-M01
- SOIL BORING LOCATION AND DESIGNATION CNC11-B02
- PIEZOMETER LOCATION AND DESIGNATION CNC11-P01
- FENCE
- A A' CROSS SECTION LOCATION

0 30 60
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: HJP 8/4/99
CHECKED BY DATE:
COST/SCHED-AREA:
SCALE: AS NOTED

SITE AREA SAMPLING LOCATION
SITE 11, BUILDING 851
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

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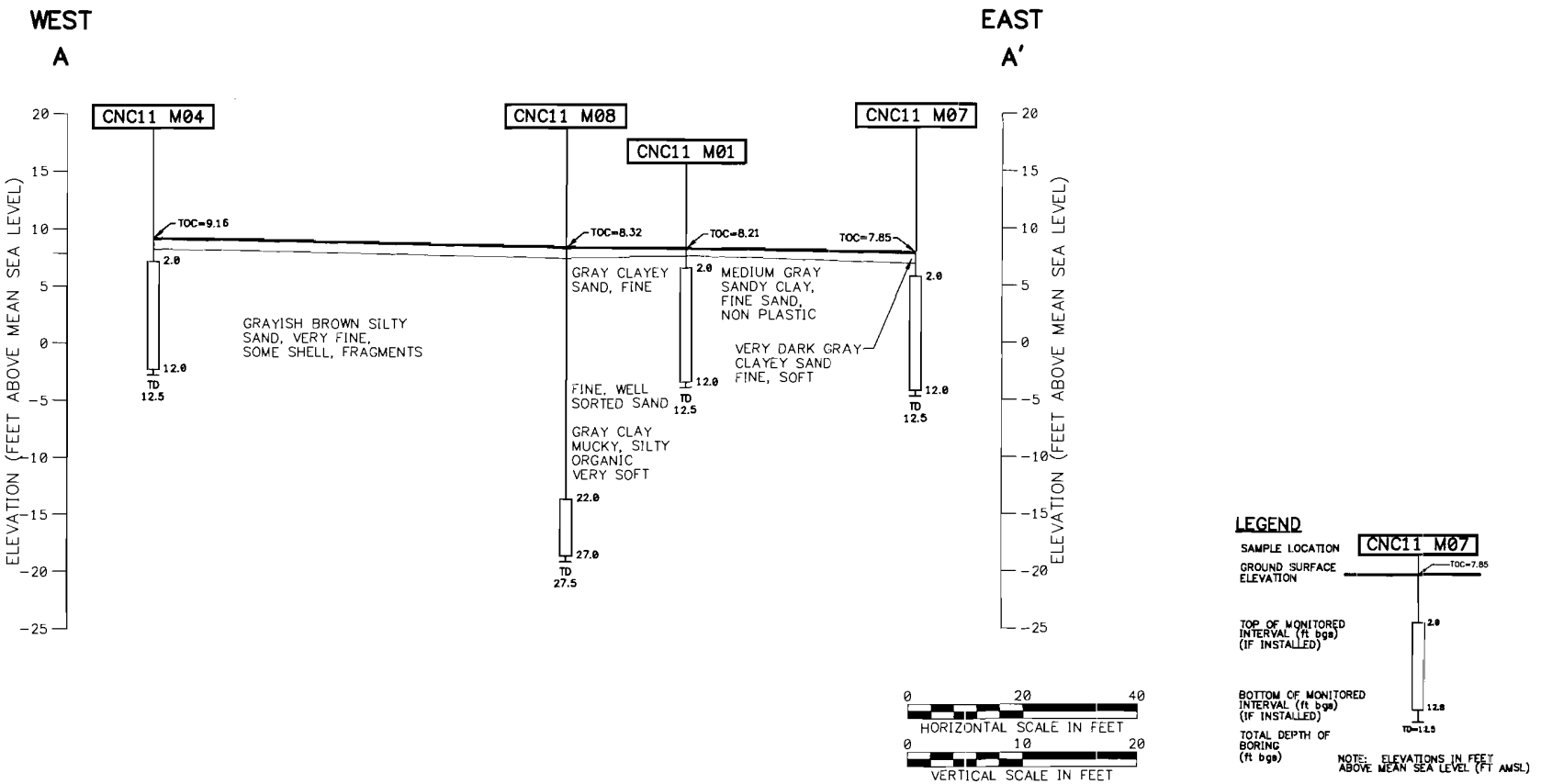

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY NS DATE 8/4/99
CHECKED BY DATE
COST/SCHED--AREA
SCALE AS NOTED

GEOLOGIC CROSS SECTION
A-A'
SITE 11 BUILDING NS-851
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

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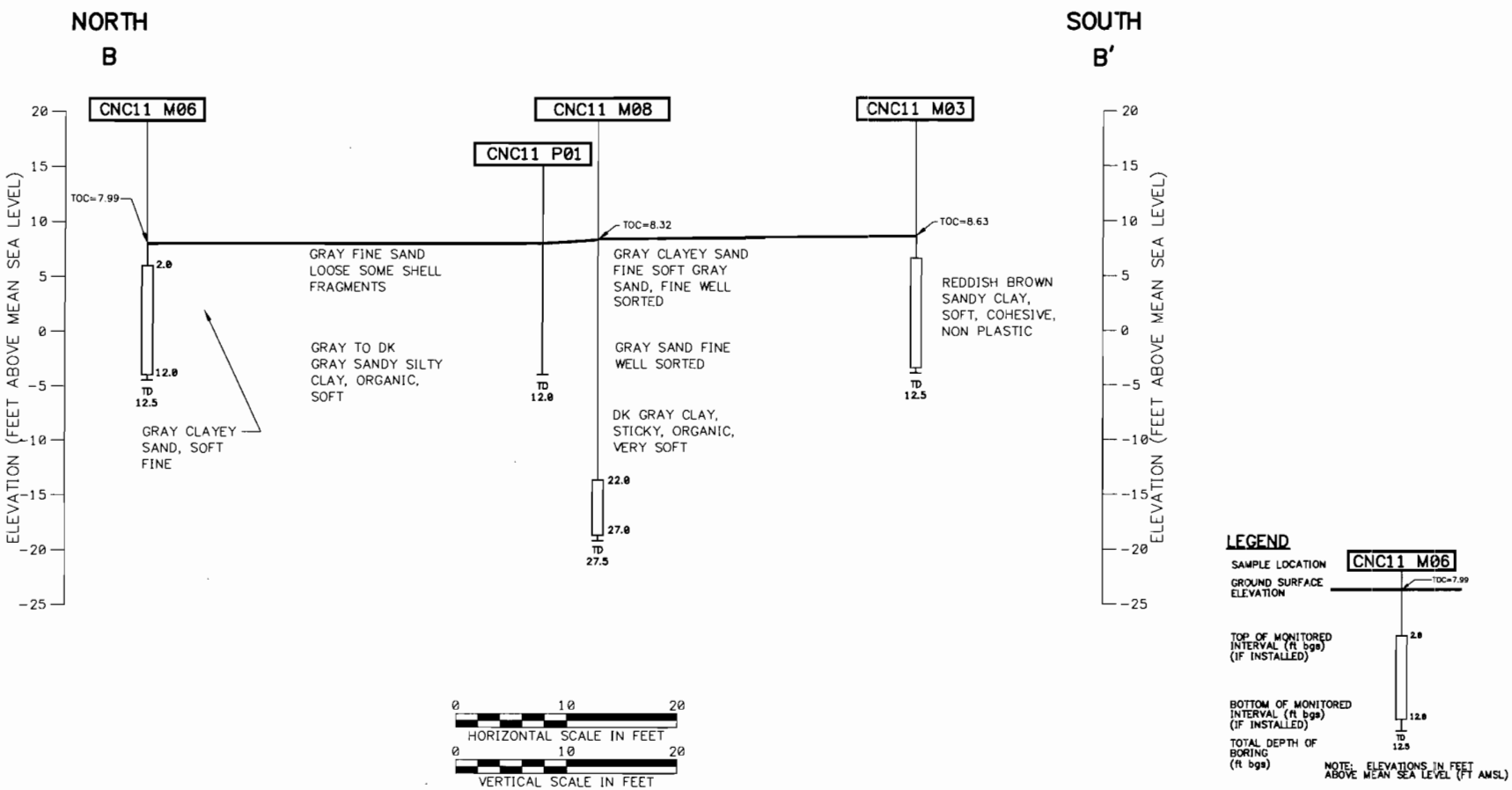

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 8/4/99
CHECKED BY DATE
COST/SCHED--AREA
SCALE AS NOTED

GEOLOGIC CROSS SECTION
B-B'
SITE 11 BUILDING NS-851
ZONE H CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

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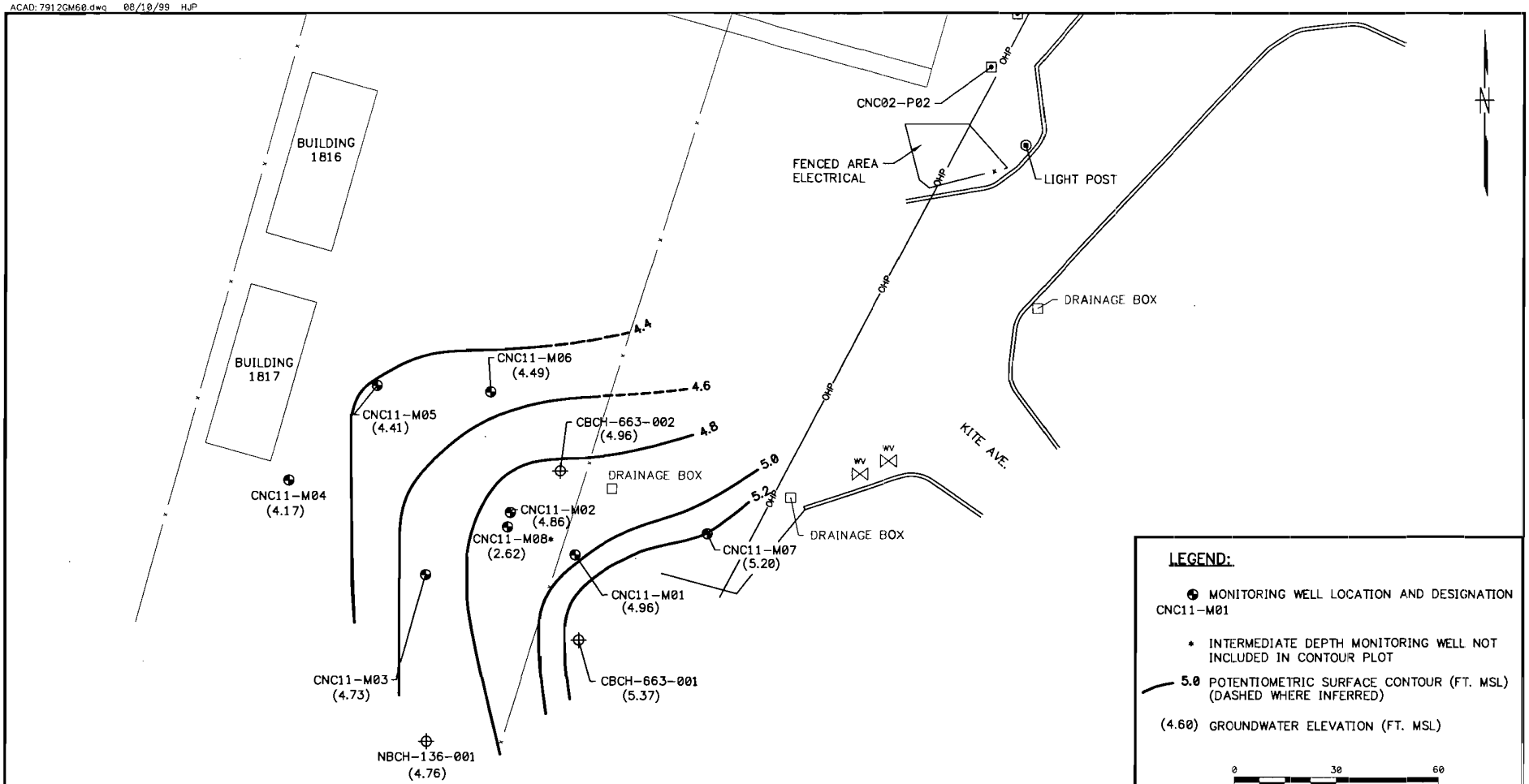

LEGEND:

- MONITORING WELL LOCATION AND DESIGNATION CNC11-M01
- * INTERMEDIATE DEPTH MONITORING WELL NOT INCLUDED IN CONTOUR PLOT
- 5.0 POTENTIOMETRIC SURFACE CONTOUR (FT. MSL) (DASHED WHERE INFERRED)
- (4.60) GROUNDWATER ELEVATION (FT. MSL)

0 30 60
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 HJP DATE 8/4/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY * NAVAL FACILITIES ENGINEERING COMMAND *

GROUNDWATER POTENTIMETRIC MAP
MARCH 9, 1999
SITE 11, BUILDING 851
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

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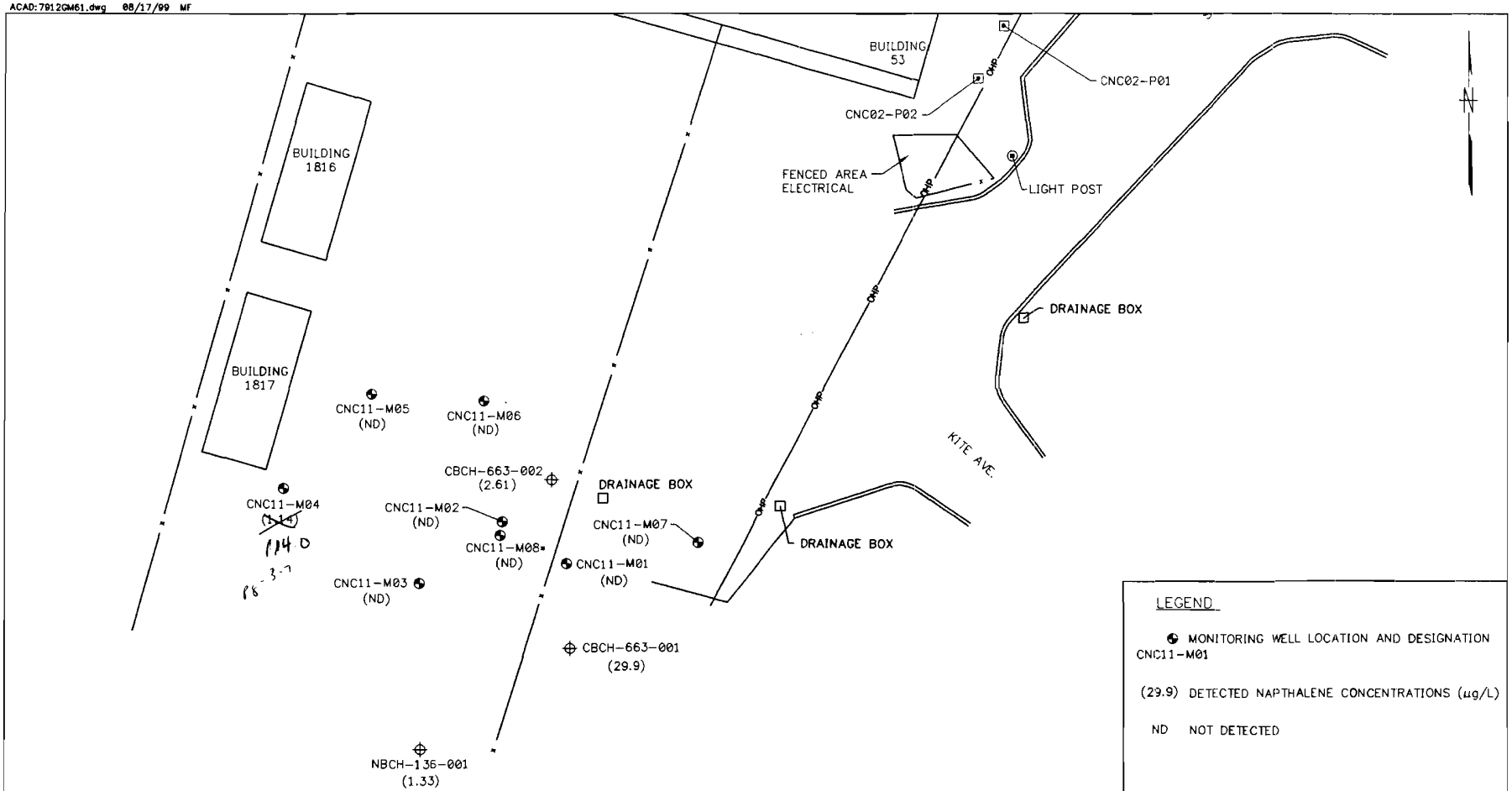


LEGEND

● MONITORING WELL LOCATION AND DESIGNATION CNC11-M01

(29.9) DETECTED NAPTHALENE CONCENTRATIONS (µg/L)

ND NOT DETECTED

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

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY MF DATE 8/17/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

NAPTHALENE CONCENTRATIONS DETECTED IN GROUNDWATER SAMPLES
SITE 11, BUILDING 851
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

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

APPENDIX A

UNDERGROUND STORAGE TANK ASSESSMENT REPORT- UST 851A AND 851B

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. #: Not regulated

Facility Name: Charleston Naval Base Complex, NS 851

Street Address: South Hobson Avenue

City: North Charleston, 29405-2413 County: Charleston

III CLOSURE INFORMATION

Closure Started: 29 May 1996 Closure Completed: 5 June 1996

Number of USTs Closed: 2

N/A — Consultant

SPORTENVDETCHASN — 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 the information, I believe that the submitted information is true, accurate and complete.

LCDR Paul Rose, CEC, USN
Name (Type or Print)

Signature

V. UST INFORMATION

		Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
A.	Product.....	851A Gasoline	851B Diesel fuel				
B.	Capacity.....	500 gal.	500 gal				
C.	Age.....	1977	1977				
D.	Construction Material.....	Fiberglass	Fiberglass				
E.	Month/Year of Last Use.....	4/96	4/96				
F.	Depth (ft.) To Base of Tank.....	4'11"	4'11"				
G.	Spill Prevention Equipment Y/N.....	N	N				
H.	Overfill Prevention Equipment Y/N.....	N	N				
I.	Method of Closure Removed/Filled.....	R	R				
J.	Visible Corrosion or Pitting Y/N.....	N	N				
K.	Visible Holes Y/N.....	N	N				

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

USTs 851A and 851B were cut open at both ends, cleaned with a steam cleaner, and disposed of at the local municipal landfill. (See Attachment III.)

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

Residual product was absorbed by rags during cleaning. The rags were placed in a five gallon overpack and disposed of as hazardous waste (due to flammability) by Tri-State Steel Drum, Inc.; P. O. Box 9; Graysville, GA. 30726 (See Attachment III, manifest number 13108, page 2, paragraph 28c.)

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

No corrosion, pitting, or holes were observed. Both tanks were in good condition.

VI. PIPING INFORMATION

	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
A. Construction Material.....	851A Carbon steel	851B Carbon steel				
B. Distance from UST to Dispenser.....	40'	45'				
C. Number of Dispensers.....	1	1				
D. Type of System P/S.....	S	S				
E. Was Piping Removed from the Ground? Y/N....	Y	Y				
F. Visible Corrosion or Pitting Y/N.....	N	N				
G. Visible Holes Y/N.....	N	N				
H. Age.....	1977	1977				

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

The piping was sound, but covered with light surface corrosion. No pitting or holes were observed, although two of the four samples from the pipe trench had contamination levels above the RBCA RBSLs.

VII. BRIEF SITE DESCRIPTION AND HISTORY

USTs 851A and 851B provided gasoline and diesel fuel to NS 851, a dispenser island. NS 851 is located inside the fenced-in lot behind NS 53 on the Charleston Naval Base. The tanks were situated under a concrete pad in a grassy field adjacent to NS 53's concrete covered parking lot. They had been installed in a sandpack. Piping from the USTs ran under a corner of the parking lot to NS 851.

VIII. SITE CONDITIONS

		Yes	No	Unk
A.	Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? If yes, indicate depth and location on the site map.		X	
B.	Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? If yes, indicate location on site map and describe the odor (strong, mild, etc.)		X	
C.	Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)? ≈ 4 ' below GSL; center of UST excavation, ≈ 1 foot deep.	X		
D.	Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map. Name of DHEC representative authorizing soil removal: _____		X	
E.	Was a petroleum sheen or free product detected on any excavation or boring waters? If yes, indicate location and thickness.		X	

IX. SAMPLE INFORMATION

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

Sample #	Location	Sample Type (Soil/Water)	Depth*	Date/Time of Collection	Collected By	OVA#
SPORT 0066-1	West end of 851B	Soil	3'	6/4/96 1415	R. Atkins	Not Taken
SPORT 0066-2	East end of 851B	Soil	3'	6/4/96 1415	R. Atkins	Not Taken
SPORT 0066-3	Center of excavation	Water	≈4'	6/4/96 1415	R. Atkins	Not Taken
SPORT 0066-4	Center of excavation. (40ml vials)	Water	≈4'	6/4/96 1415	R. Atkins	Not Taken
SPORT 0070-1	West end of 851A	Soil	3'	6/5/96 0930	R. Atkins	Not Taken
SPORT 0070-2	East end of 851A	Soil	3'	6/5/96 0930	R. Atkins	Not Taken
SPORT 0070-3	Pipe run mechanical joint, 10' from tanks.	Soil	2'	6/5/96 0930	R. Atkins	Not Taken
SPORT 0070-4	Pipe run mechanical joint, 15' from tanks.	Soil	2'	6/5/96 0930	R. Atkins	Not Taken
SPORT 0070-5	Pipe run mechanical joint at elbow.	Soil	2'	6/5/96 0930	R. Atkins	Not Taken
SPORT 0070-6	End of pipe run.	Soil	2'	6/5/96 0930	R. Atkins	Not Taken

* = Depth Below the Surrounding Land Surface

X. SAMPLING METHODOLOGY

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

After the removal of UST 851A and UST 851B soil and ground water samples were taken. Sampling was performed in accordance with SC DHEC R.61-92 Part 280 and SC DHEC UST Assessment Guidelines.

The samples are identified as follows:

	Detachment Charleston		General Engineering Labs
Soil Sample	UST851-1	=	SPORT -0066-1
Soil Sample	UST851-2	=	SPORT -0066-2
Ground Water Sample	UST851-3	=	SPORT -0066-3
Ground Water Sample	UST851-3D	=	SPORT -0066-4
Soil Sample	UST851-5	=	SPORT -0070-1
Soil Sample	UST851-6	=	SPORT -0070-2
Soil Sample	UST851-7	=	SPORT -0070-3
Soil Sample	UST851-8	=	SPORT -0070-4
Soil Sample	UST851-9	=	SPORT -0070-5
Soil Sample	UST851-10	=	SPORT -0070-6

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

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

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

XI. RECEPTORS

		Yes	No
A.	Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system? [*Cooper R. 790'] If yes, indicate type of receptor, distance, and direction on site map.	X*	
B.	Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system? If yes, indicate type of well, distance, and direction on site map.		X
C.	Are there any underground structures (e.g., basements) located within 100 feet of the UST system? [*Abandoned & filled swimming pools, see Site Map 4] If yes, indicate the type of structure, distance, and direction on site map.	X*	
D.	Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination? [*Storm drain & water, see Site Map 2] If yes, indicate the type of utility, distance, and direction on the site map.	X*	
E.	Has contaminated soil been identified at a depth of less than 3 feet below land surface in an area that is not capped by asphalt or concrete? [*See Site Map 3] If yes, indicate the area of contaminated soil on the site map.	X*	

Attachment I

SITE MAP

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

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

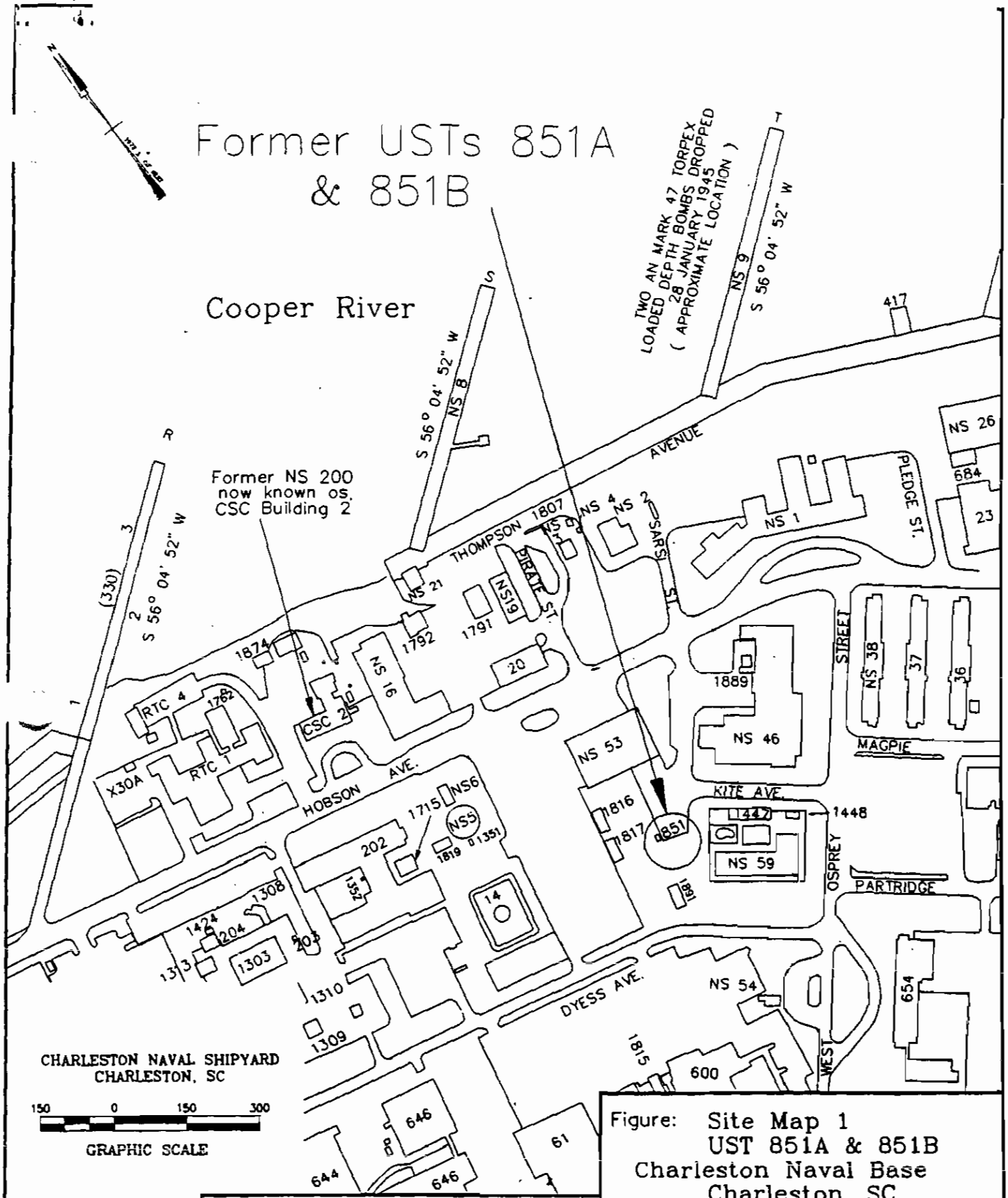
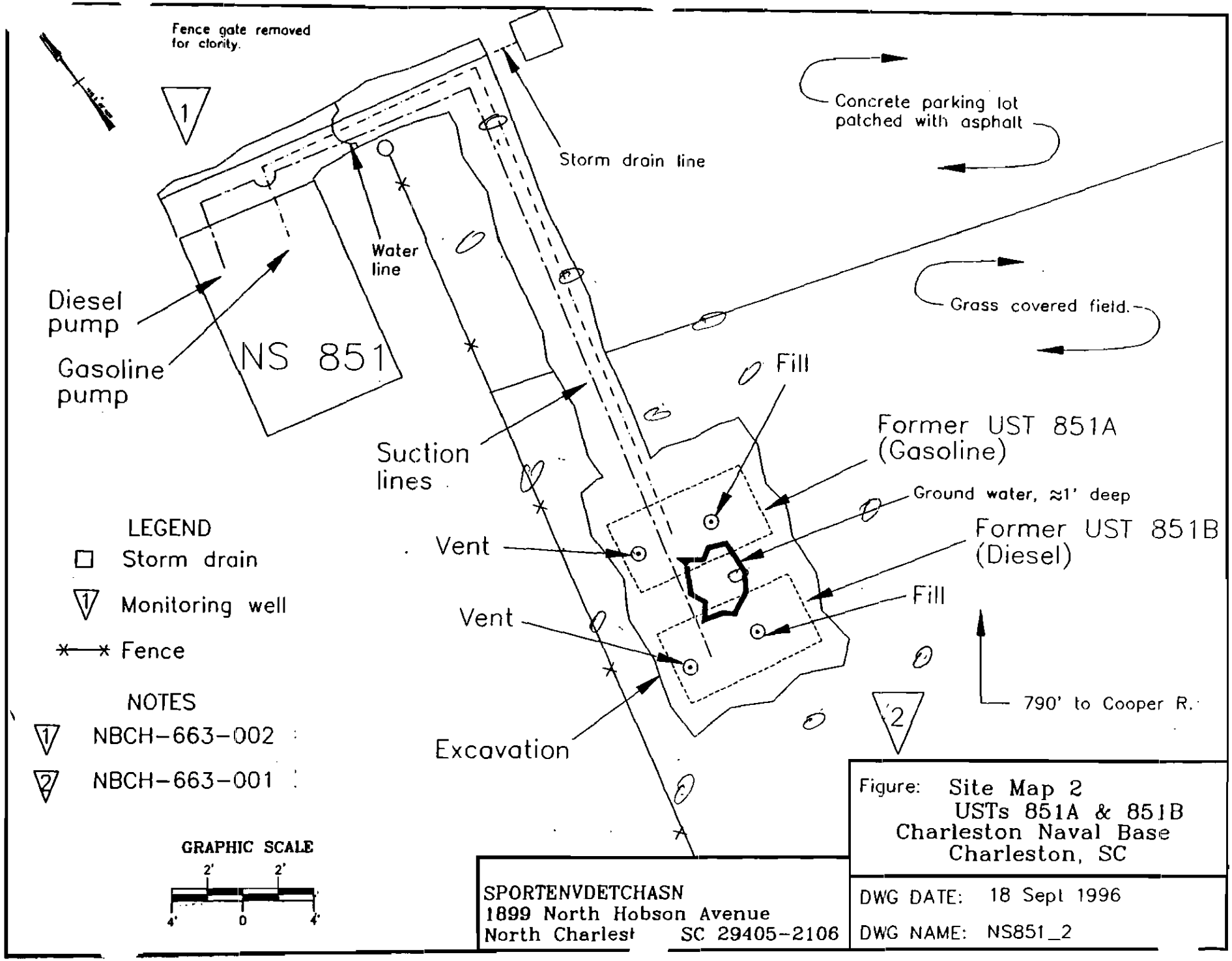


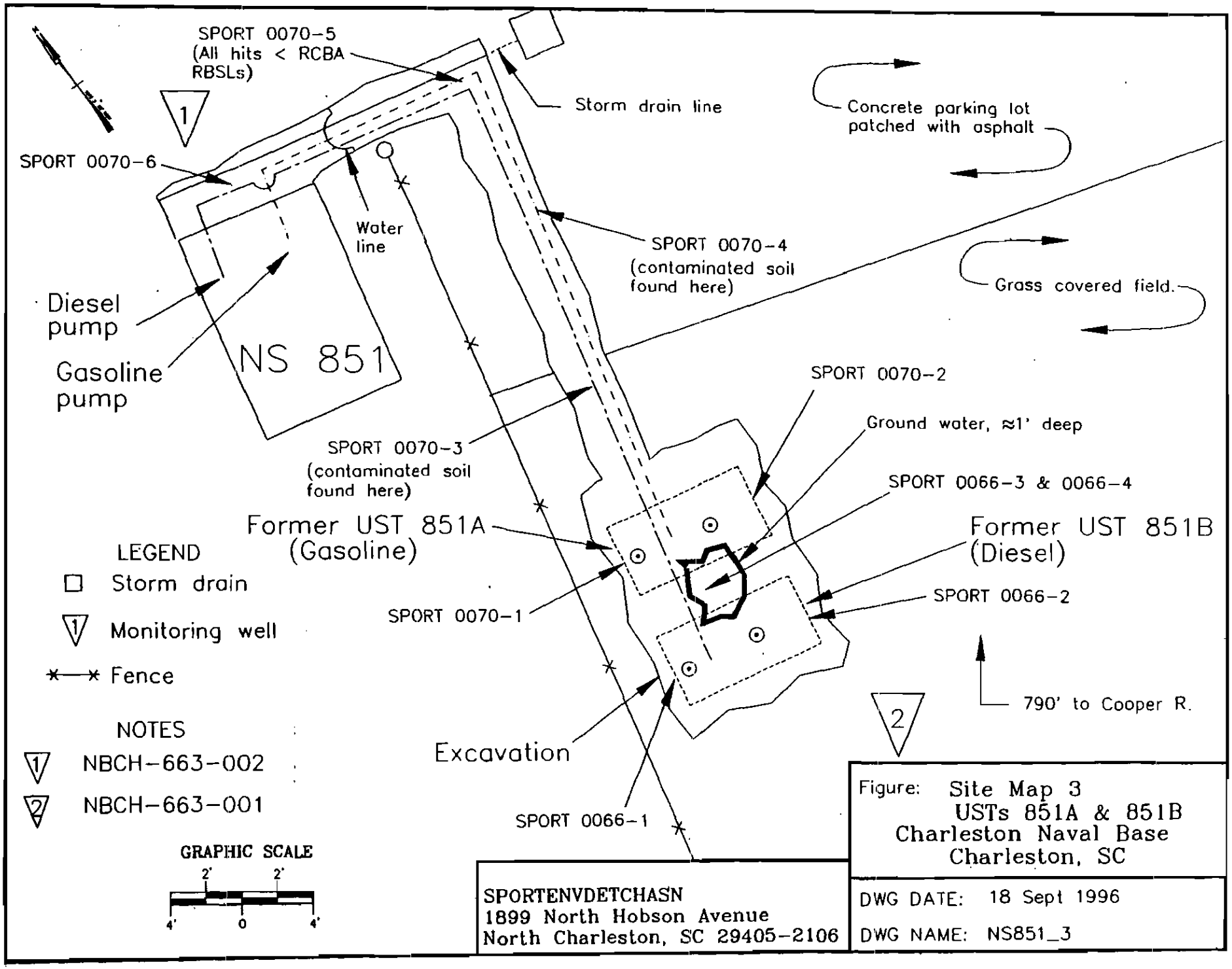
Figure: Site Map 1
UST 851A & 851B
Charleston Naval Base
Charleston, SC

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

DWG DATE: 10 Sept 1996

DWG NAME: NS851_1


Fence gate removed for clarity.
1
Concrete parking lot patched with asphalt
Storm drain line
Water line
Diesel pump
Gasoline pump
NS 851
Grass covered field.
Fill
Former UST 851A (Gasoline)
Suction lines
Ground water, ≈1' deep
Former UST 851B (Diesel)
Vent
Fill
Vent
790' to Cooper R.
2
Excavation
LEGEND
Storm drain
Monitoring well
Fence
NOTES
1 NBCH-663-002
2 NBCH-663-001
GRAPHIC SCALE
2' 2'
4' 0 4'
SPORTENVDETCHASN
1899 North Hobson Avenue
North Charlest SC 29405-2106
Figure: Site Map 2
USTs 851A & 851B
Charleston Naval Base
Charleston, SC
DWG DATE: 18 Sept 1996
DWG NAME: NS851_2

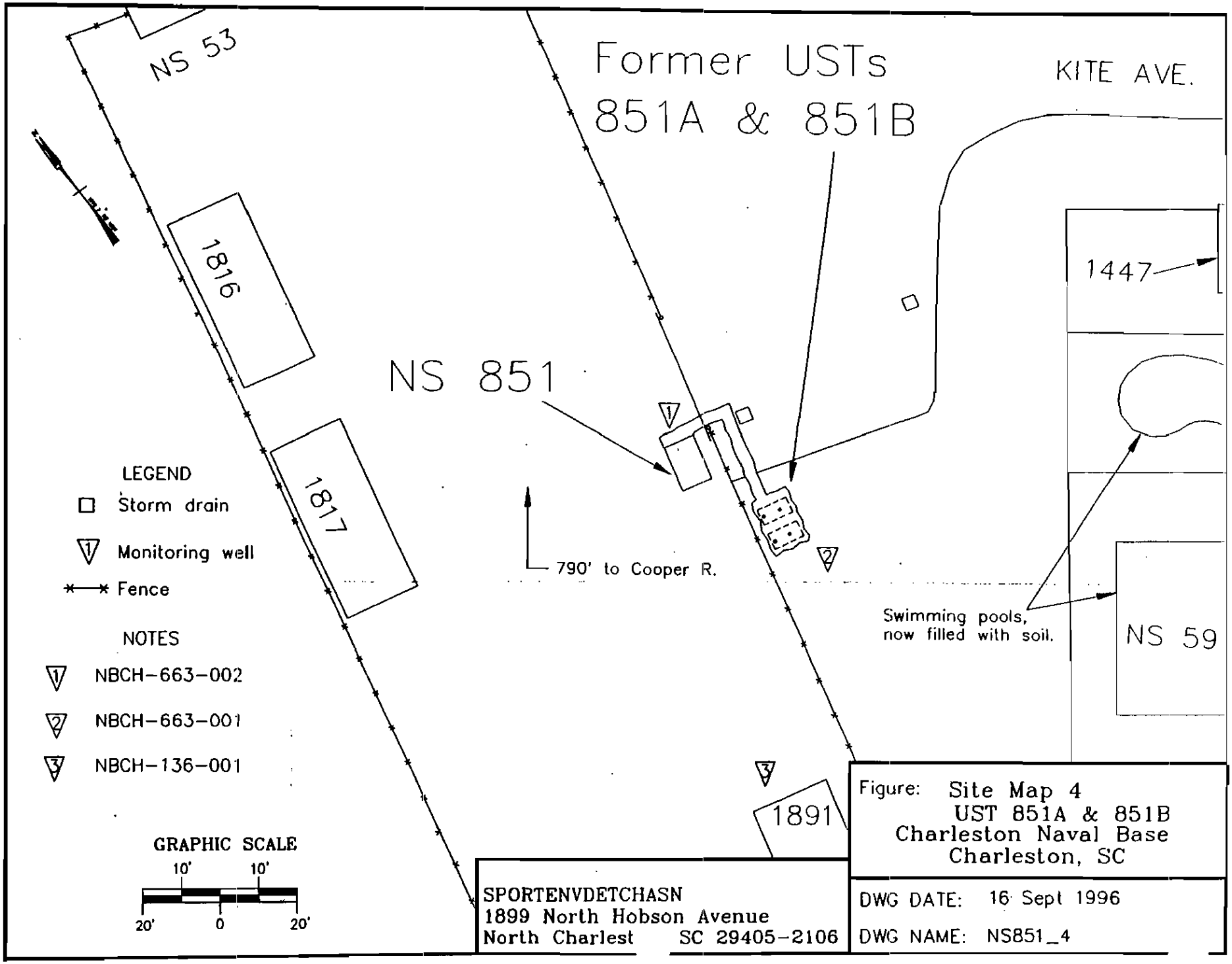


SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, SC 29405-2106

Figure: Site Map 3
USTs 851A & 851B
Charleston Naval Base
Charleston, SC

DWG DATE: 18 Sept 1996

DWG NAME: NS851_3


NS 53
Former USTs
851A & 851B
KITE AVE.
1816
1817
NS 851
1447
LEGEND
Storm drain
Monitoring well
Fence
NOTES
1 NBCH-663-002
2 NBCH-663-001
3 NBCH-136-001
790' to Cooper R.
Swimming pools,
now filled with soil.
NS 59
1891
GRAPHIC SCALE
10' 10'
20' 0 20'
SPORTENVDETCHASN
1899 North Hobson Avenue
North Charlest SC 29405-2106
Figure: Site Map 4
UST 851A & 851B
Charleston Naval Base
Charleston, SC
DWG DATE: 16 Sept 1996
DWG NAME: NS851_4

UST 851A & UST 851B

UST 851A removed from the ground. Holes were caused by backhoe during removal.

UST 851A and 851B and associated piping.

Attachment II

ANALYTICAL RESULTS

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

Certified Analytical Results
Chain-of-Custody

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-1
Lab ID : 9606085-01
Matrix : Soil
Date Collected : 06/04/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	1434	85622	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											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	BDG	06/10/96	1239	85701	2
Acenaphthylene	U	0.00	167	333	ug/kg	1.0					
Anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	167	333	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	167	333	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	167	333	ug/kg	1.0					
Chrysene	U	0.00	167	333	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	167	333	ug/kg	1.0					
Fluoranthene	U	0.00	167	333	ug/kg	1.0					
Fluorene	U	0.00	167	333	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	167	333	ug/kg	1.0					
Naphthalene	U	0.00	167	333	ug/kg	1.0					
Phenanthrene	U	0.00	167	333	ug/kg	1.0					
Pyrene	U	0.00	167	333	ug/kg	1.0					

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

GWL 06/07/96 2345 85701 3

CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-1

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	92.8	(30.0 - 115.)
Nitrobenzene-d5	M610	84.8	(23.0 - 120.)
p-Terphenyl-d14	M610	83.0	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	94.0	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	111.	(74.0 - 128.)
Toluene-d8	BTEX-8260	89.2	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	94.0	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	111.	(74.0 - 128.)
Toluene-d8	NAP-8260	89.2	(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:
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.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-1

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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.

Analytical Report Specialist

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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: June 12, 1996

Sample ID : SPORT0066-2
Lab ID : 9606085-02
Matrix : Soil
Date Collected : 06/04/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	1806	85622	
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	0.980	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	163	330	ug/kg	1.0	BDG	06/10/96	1312	85701	2
Acenaphthylene	U	0.00	163	330	ug/kg	1.0					
Anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	163	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	163	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Chrysene	U	0.00	163	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	163	330	ug/kg	1.0					
Fluoranthene	U	0.00	163	330	ug/kg	1.0					
Fluorene	U	0.00	163	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	163	330	ug/kg	1.0					
Naphthalene	U	0.00	163	330	ug/kg	1.0					
Phenanthrene	U	0.00	163	330	ug/kg	1.0					
Pyrene	U	0.00	163	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701

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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: June 12, 1996

Sample ID : SPORT0066-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	90.8	(30.0 - 115.)
Nitrobenzene-d5	M610	83.4	(23.0 - 120.)
p-Terphenyl-d14	M610	80.6	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	94.5	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	112.	(74.0 - 128.)
Toluene-d8	BTEX-8260	90.4	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	94.5	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	112.	(74.0 - 128.)
Toluene-d8	NAP-8260	90.4	(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:
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.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0066-2

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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.

Analytical Report Specialist

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-3
Lab ID : 9606085-03
Matrix : GroundH2O
Date Collected : 06/04/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/l	1.0	RMB	06/07/96	1058	85623	1
Ethylbenzene	U	0.00	1.00	2.00	ug/l	1.0					
Toluene	U	0.00	1.00	2.00	ug/l	1.0					
Xylenes (TOTAL)	U	0.260	1.00	4.00	ug/l	1.0					
Methyl Tert Butyl Ether	U	0.160	1.00	2.00	ug/l	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/l	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	5.00	10.0	ug/l	1.0	WAM	06/08/96	0019	85661	2
Acenaphthylene	U	0.00	5.00	10.0	ug/l	1.0					
Anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(a)anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(a)pyrene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(b)fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(ghi)perylene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(k)fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Chrysene	U	0.00	5.00	10.0	ug/l	1.0					
Dibenzo(a,h)anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Fluorene	U	0.00	5.00	10.0	ug/l	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	5.00	10.0	ug/l	1.0					
Naphthalene	U	0.00	5.00	10.0	ug/l	1.0					
Phenanthrene	U	0.00	5.00	10.0	ug/l	1.0					
Pyrene	U	0.00	5.00	10.0	ug/l	1.0					

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
The following prep procedures were performed:											
GC/MS Base/Neutral Compounds							TNF	06/07/96	1245	85661	3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	86.6	(43.0 - 108.)
Nitrobenzene-d5	M610	81.4	(35.0 - 111.)
p-Terphenyl-d14	M610	71.0	(33.0 - 125.)
Bromofluorobenzene	BTEX-8260	86.4	(80.0 - 128.)
Dibromofluoromethane	BTEX-8260	87.2	(67.7 - 135.)
Toluene-d8	BTEX-8260	94.8	(76.8 - 122.)
Bromofluorobenzene	MTBE-8260	86.4	(80.0 - 128.)
Dibromofluoromethane	MTBE-8260	87.2	(67.7 - 135.)
Toluene-d8	MTBE-8260	94.8	(76.8 - 122.)
Bromofluorobenzene	NAP-8260	86.4	(80.0 - 128.)
Dibromofluoromethane	NAP-8260	87.2	(67.7 - 135.)
Toluene-d8	NAP-8260	94.8	(76.8 - 122.)

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

Notes:
The qualifiers in this report are defined as follows:
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.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0066-3

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
- 00151	WA - C223	PA - 68-485	WV - 235
- 999887790			

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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: June 12, 1996

Sample ID	: SPORT0066-4
Lab ID	: 9606085-04
Matrix	: GroundH2O
Date Collected	: 06/04/96
Date Received	: 06/05/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	5.00	10.0	ug/l	1.0	WAM	06/08/96	0052	85661	
Acenaphthylene	U	0.00	5.00	10.0	ug/l	1.0					
Anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(a)anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(a)pyrene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(b)fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(ghi)perylene	U	0.00	5.00	10.0	ug/l	1.0					
Benzo(k)fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Chrysene	U	0.00	5.00	10.0	ug/l	1.0					
Dibenzo(a,h)anthracene	U	0.00	5.00	10.0	ug/l	1.0					
Fluoranthene	U	0.00	5.00	10.0	ug/l	1.0					
Fluorene	U	0.00	5.00	10.0	ug/l	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	5.00	10.0	ug/l	1.0					
Naphthalene	U	0.00	5.00	10.0	ug/l	1.0					
Phenanthrene	U	0.00	5.00	10.0	ug/l	1.0					
Pyrene	U	0.00	5.00	10.0	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds TNF 06/07/96 1245 85661 2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	56.6	(43.0 - 108.)
Nitrobenzene-d5	M610	54.0	(35.0 - 111.)
p-Terphenyl-d14	M610	47.6	(33.0 - 125.)

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

Sample ID : SPORT0066-4

Surrogate Recovery	Test	Percent%	Acceptable Limits

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

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

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002

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

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0066-4

GEL Laboratory Certifications		EPI Laboratory Certifications	
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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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: June 12, 1996

Sample ID : SPORT0070-1
Lab ID : 9606089-01
Matrix : Soil
Date Collected : 06/05/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	1952	85622	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											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	163	330	ug/kg	1.0	BDG	06/10/96	1452	85701	:
Acenaphthylene	U	0.00	163	330	ug/kg	1.0					
Anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	163	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	163	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Chrysene	U	0.00	163	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	163	330	ug/kg	1.0					
Fluoranthene	U	0.00	163	330	ug/kg	1.0					
Fluorene	U	0.00	163	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	163	330	ug/kg	1.0					
Naphthalene	U	0.00	163	330	ug/kg	1.0					
Phenanthrene	U	0.00	163	330	ug/kg	1.0					
Pyrene	U	0.00	163	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701

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North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0070-1

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	85.9	(30.0 - 115.)
Nitrobenzene-d5	M610	83.3	(23.0 - 120.)
p-Terphenyl-d14	M610	79.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	96.5	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	112.	(74.0 - 128.)
Toluene-d8	BTEX-8260	88.7	(53.4 - 163.)
mofluorobenzene	NAP-8260	96.5	(59.7 - 159.)
promofluoromethane	NAP-8260	112.	(74.0 - 128.)
Toluene-d8	NAP-8260	88.7	(53.4 - 163.)

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

Notes:
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* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175

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

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0070-1

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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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: June 12, 1996

Sample ID : SPORT0070-2
Lab ID : 9606089-02
Matrix : Soil
Date Collected : 06/05/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	2022	85622	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											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	BDG	06/10/96	1525	85701	2
Acenaphthylene	U	0.00	166	332	ug/kg	1.0					
Anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	332	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	332	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Chrysene	U	0.00	166	332	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	332	ug/kg	1.0					
Fluoranthene	U	0.00	166	332	ug/kg	1.0					
Fluorene	U	0.00	166	332	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	332	ug/kg	1.0					
Naphthalene	U	0.00	166	332	ug/kg	1.0					
Phenanthrene	U	0.00	166	332	ug/kg	1.0					
Pyrene	U	0.00	166	332	ug/kg	1.0					

e following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701 3

CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	95.5	(30.0 - 115.)
Nitrobenzene-d5	M610	87.7	(23.0 - 120.)
p-Terphenyl-d14	M610	83.7	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	96.6	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	108.	(74.0 - 128.)
Toluene-d8	BTEX-8260	88.2	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	96.6	(59.7 - 159.)
bromofluoromethane	NAP-8260	108.	(74.0 - 128.)
oluene-d8	NAP-8260	88.2	(53.4 - 163.)

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

Notes:
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* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175

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

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0070-2

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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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: June 12, 1996

Sample ID : SPORT0070-3
Lab ID : 9606089-03
Matrix : Soil
Date Collected : 06/05/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TEX - 4 items											
Benzene	U	0.00	20.0	40.0	ug/kg	20.	THL	06/06/96	2052	85622	1
Ethylbenzene	U	0.00	20.0	40.0	ug/kg	20.					
Toluene	U	10.0	20.0	40.0	ug/kg	20.					
Xylenes (TOTAL)		78.6	20.0	40.0	ug/kg	20.					
Naphthalene		188	20.0	40.0	ug/kg	20.					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	1660	3310	ug/kg	10.	BDG	06/10/96	1559	85701	2
Acenaphthylene	U	0.00	1660	3310	ug/kg	10.					
Anthracene	U	0.00	1660	3310	ug/kg	10.					
Benzo(a)anthracene	U	0.00	1660	3310	ug/kg	10.					
Benzo(a)pyrene	U	1660	1660	3310	ug/kg	10.					
Benzo(b)fluoranthene	J	2150	1660	3310	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1660	3310	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	1660	3310	ug/kg	10.					
Chrysene	J	1720	1660	3310	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1660	3310	ug/kg	10.					
Fluoranthene		3310	1660	3310	ug/kg	10.					
Fluorene	U	0.00	1660	3310	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1660	3310	ug/kg	10.					
Naphthalene		4170	1660	3310	ug/kg	10.					
Phenanthrene		6690	1660	3310	ug/kg	10.					
Pyrene	J	2090	1660	3310	ug/kg	10.					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701 3

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North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0070-3

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	112.	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	95.0	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	109.	(74.0 - 128.)
Toluene-d8	BTEX-8260	89.3	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	95.0	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	109.	(74.0 - 128.)
Toluene-d8	NAP-8260	89.3	(53.4 - 163.)

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

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

cc: NPWC00196 Report Date: June 12, 1996

Sample ID : SPORT0070-3

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
MD - SC012	MS - 10120	NY - 11502	RI - 138
[illegible]3	NY - 11501	SC - 10582	TN - 02934
[illegible]5	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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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: June 12, 1996

Sample ID : SPORT0070-4
Lab ID : 9606089-04
Matrix : Soil
Date Collected : 06/05/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	2123	85622	1
Ethylbenzene	U	0.720	1.00	2.00	ug/kg	1.0					
Toluene	U	0.580	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)		4.36	1.00	4.00	ug/kg	1.0					
Naphthalene		6.91	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	165	330	ug/kg	1.0	BDG	06/10/96	1632	85701	2
Acenaphthylene	U	0.00	165	330	ug/kg	1.0					
Anthracene	U	0.00	165	330	ug/kg	1.0					
Benzo(a)anthracene		510	165	330	ug/kg	1.0					
Benzo(a)pyrene		648	165	330	ug/kg	1.0					
Benzo(b)fluoranthene		1220	165	330	ug/kg	1.0					
Benzo(ghi)perylene		487	165	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	165	330	ug/kg	1.0					
Chrysene		536	165	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	165	330	ug/kg	1.0					
Fluoranthene		1150	165	330	ug/kg	1.0					
Fluorene	U	0.00	165	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene		507	165	330	ug/kg	1.0					
Naphthalene	U	0.00	165	330	ug/kg	1.0					
Phenanthrene		401	165	330	ug/kg	1.0					
Pyrene		832	165	330	ug/kg	1.0					

e following prep procedures were performed:

GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701 3

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	92.3	(30.0 - 115.)
Nitrobenzene-d5	M610	80.3	(23.0 - 120.)
p-Terphenyl-d14	M610	71.5	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	90.6	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	106.	(74.0 - 128.)
Toluene-d8	BTEX-8260	92.4	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	90.6	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	106.	(74.0 - 128.)
Toluene-d8	NAP-8260	92.4	(53.4 - 163.)

M = Method	Method-Description
M1	EPA 8260
M2	EPA 8270
M3	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
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.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-4

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
VI - 999887790			

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.

Analytical Report Specialist

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-5
Lab ID : 9606089-05
Matrix : Soil
Date Collected : 06/05/96
Date Received : 06/05/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
olatile Organics											
TEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/07/96	1455	85622	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	0.600	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	164	330	ug/kg	1.0	BDG	06/10/96	1711	85701	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	164	164	330	ug/kg	1.0					
Benzo(a)pyrene	J	235	164	330	ug/kg	1.0					
Benzo(b)fluoranthene		337	164	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	164	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Chrysene	J	206	164	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	164	330	ug/kg	1.0					
Fluoranthene		376	164	330	ug/kg	1.0					
Fluorene	U	0.00	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	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	281	164	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701 3

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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: June 12, 1996

Sample ID : SPORT0070-5

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	88.2	(30.0 - 115.)
Nitrobenzene-d5	M610	83.0	(23.0 - 120.)
p-Terphenyl-d14	M610	71.6	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	104.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	105.	(74.0 - 128.)
Toluene-d8	BTEX-8260	89.0	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	104.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	105.	(74.0 - 128.)
Toluene-d8	NAP-8260	89.0	(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:
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.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - 1-1023/2056	CT - PH-0175

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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: June 12, 1996

Sample ID : SPORT0070-5

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
VI - 999887790			

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Analytical Report Specialist

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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: June 12, 1996

Sample ID	: SPORT0070-6
Lab ID	: 9606089-06
Matrix	: Soil
Date Collected	: 06/05/96
Date Received	: 06/05/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	THL	06/06/96	2223	85622	
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											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	164	330	ug/kg	1.0	BDG	06/10/96	1953	85701	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	0.00	164	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	164	330	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	164	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Chrysene	U	0.00	164	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	164	330	ug/kg	1.0					
Fluoranthene	U	0.00	164	330	ug/kg	1.0					
Fluorene	U	0.00	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	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	180	164	330	ug/kg	1.0					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds GWL 06/07/96 2345 85701

GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-6

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	102.	(30.0 - 115.)
Nitrobenzene-d5	M610	80.4	(23.0 - 120.)
p-Terphenyl-d14	M610	64.8	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	124.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	101.	(74.0 - 128.)
Toluene-d8	BTEX-8260	82.6	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	124.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	101.	(74.0 - 128.)
Toluene-d8	NAP-8260	82.6	(53.4 - 163.)

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

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

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - 1-1023/2056	CT - PH-0175

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CERTIFICATE OF ANALYSIS

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: June 12, 1996

Sample ID : SPORT0070-6

GEL Laboratory Certifications		EPI Laboratory Certifications	
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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Analytical Report Specialist

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CHAIN OF CUSTODY RECORD

2040 Savage Road
Charleston, South Ca 414
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1

Client Name/Facility Name: SPORTENVDETCHASN
Collected by/Company: SPORTENVDETCHASN

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

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

CCL 21700

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrate/Nitrite	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	BTEX & NAPTH	Cyanide	Coliform - specify type	PAH	BTEX & NAPTH	Remarks
-01	SPORT0066-1	6/4/96	1415		X			2																X	X	UST851-1 soil .1
-02	SPORT0066-2	6/4/96	1415		X			2																X	X	UST851-2 soil .1
-03	SPORT0066-3	6/4/96	1415				X	5													X			X		UST851-3 GW .2
-04	SPORT0066-4	6/4/96	1415				X	2																X		UST851-3D GW .3
-05	SPORT0066-5	6/4/96	1415				X	3													X			~~X~~		UST851-4 VOA TRIP BLANK .4

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
Randy Stokes	6/5/96	0800	[illegible]	[illegible]	6/5/96	1117	[illegible]
Michael Potts	6/5/96	1515	Michael Potts		6/5/96	1659	

Remarks:

White = sample collector Yellow = file Pink = with report

NAVSTC 001496

960608

CHAIN OF CUSTODY RECORD

General Engineering Laboratories, Inc.
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Charleston, South Car 114
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1

Client Name/Facility Name: SPORTENVDETCHASN

Collected by/Company: R. ADKINS SPORTENVDETCHASN

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrate/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTEX & TPH	PAH	Remarks
-01 SPORT0070-1	6/5/96	0930		X		X	2																X	X	UST 851-5 SOIL .1
-02 SPORT0070-2	6/5/96	0930		X		X	2																X	X	UST 851-6 SOIL .1
-03 SPORT0070-3	6/5/96	0930		X		X	2																X	X	UST 851-7 SOIL .1
-04 SPORT0070-4	6/5/96	0930		X		X	2																X	X	UST 851-8 SOIL .1
-05 SPORT0070-5	6/5/96	0930		X		X	2																X	X	UST 851-9 SOIL .1
-06 SPORT0070-6	6/5/96	0930		X		X	2																X	X	UST 851-10 SOIL .1
-07 SPORT0070-7	6/5/96	0930				X	3																X		UST 851-VOA TRIP BLANK .2

CCL 21704

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

Remarks

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
Randy Adkins	6/5/96	1400			6/6/96	1145	
Michael Rader	6/5/96	1515	Received by Lab by: Tracy Kinard	Date: 6/6/96	Time: 1515	Remarks:	

White = sample collector Yellow = file Pink = with report

Attachment III

Certificate of Disposal (tanks)
Disposal Manifest (hazardous waste)

UST 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

UST 851B, NS851, NavBase Charleston, N. Charleston, SC

DISPOSAL LOCATION

Bldg. 1601 Tank Cleaning
& Disposal Area
Charleston Naval Complex

TYPE OF TANK	SIZE (GAL)
Diesel fuel	500 gal.

CLEANING/DISPOSAL METHOD

The tank was cut open on both ends, cleaned with a steam cleaner, and disposed of at the local municipal landfill.

DISPOSAL CERTIFICATION

I certify that the above tank has been properly cleaned and disposed of.

[signature] / 9/16/96
(Name) (Date)

South Carolina Department of Health and Environmental Control

Bureau of Solid & Hazardous Waste Mgt
2600 Bull Street, Columbia, SC 29201
Phone: (803) 734-5200
Emergency & Holidays: (803)253-6488

PLEASE PRINT or TYPE (Form designed for use on elite (12-pitch) typewriter) Form Approved. OMB No. 2050-0039 Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's U.S. EPA ID No. SC0170022560 Manifest Document No. 13108
2. Page 1 of 3
Information in the shaded areas is not required by Federal law, but is by State law.

3. Generator's Name and Mailing Address
SOUTHDIVNAVFACENGCOM
Caretaker Site Office P.O.Box 190010,N.Charleston,SC. 29419-9010
4. Generator's Phone (803) 743-~~6444~~ 9983 Rick Nielson

A. State Manifest Document Number 96114
B. State Generator's ID

5. Transporter 1 Company Name: Environmental Transp. Services
6. U.S. EPA ID Number: OKD981605363
C. State Transporter's ID
D. Transporter's Phone 1-800-677-1772

7. Transporter 2 Company Name
8. U.S. EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
Tri-State Steel Drum,Inc.
P.O.Box 9
Graysville,GA. 30726
10. U.S. EPA ID Number: GAD033842543
G. State Facility's ID
H. Facility's Phone 706-891-9726

11. U.S. DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. Waste Combustible liquids,n.o.s.,combustible liquid, NA1993,PG III (F003)	001	DM	00010	P	F003
b. Hazardous waste,liquid,n.o.s.,9,NA3082,PG III (D008) (Grease w/ Lead)	001	DM	00034	P	D008
c. Waste Combustible liquids,n.o.s.,combustible liquid, NA1993,PG III (D035) (Paint w/ Methyl Ethyl Ketone)	001	DM	00206	P	D035
d. Waste Combustible liquids,n.o.s.,combustible liquid, NA1993,PG III (D035) (Solvent w/ Methyl Ethyl Ketone)	001	DM	00026	P	D035

J. Additional Descriptions for Materials Listed Above
a) ERG# 27 Items# 34 1/55
b) ERG# 31 Items# 35
c) ERG#27 Items# 36 1/55
d) ERG#27 Items# 37

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Forward all invoices and CD to Tri State Government Services,
24 Hour Emergency # 1-800-673-6604
P.O.C. Michael Johnson
SP4400-95-D-0059,Delivery Order# 104
copy to: DRMO Jackson
BLDG 1902,Ewell RD
FT. Jackson,SC.29207-6065
ATTN:Linda Clerk

Public reporting burden for this collection of information is estimated to average 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate, including suggestions for reducing this burden, to: Chief, Information Policy Branch PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. [signature] 8/6/96

Printed/Typed Name: RICHARD G. NIELSON | Signature: [signature] | Month Day Year: 08 06 96

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Larry Corona | Signature: Larry Corona | Month Day Year: 08 06 96

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space
a lbs. c lbs.
b lbs. d lbs.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year

EPA Form 8700 (Rev. 9/88) Previous Editions are Obsolete DHEC 1988 (Rev. 5/88)

South Carolina Department of Health and Environmental Control

Please print or type. (Form designed for use on elite [12-pitch] typewriter) Form approved OMB No. 2050-0039, Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator's U.S. EPA ID No.	Manifest Document No.	22. Page 2 of 3	Information in the shaded areas is not required by Federal Law, but is required by State Law.
	S C 0 1 7 0 0 2 2 5 6 0	1 3 1 0 8		

23. Generator's Name
SOUTHDIVNAVFACENGCOM
Caretaker Site Office P.O.Box 190010,N.Charleston,SC,29419-9010

L. State Manifest Document Number 96114
M. State Generator's ID

24. Transporter _____ Company Name — 25. U.S. EPA ID Number — N. State Transporter's ID — O. Transporter's Phone

26. Transporter _____ Company Name — 27. U.S. EPA ID Number — P. State Transporter's ID — Q. Transporter's Phone

GENERATOR

28. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a. Waste Batteries,wet,filled with alkali,8,UN2795,PG III (D002,D006) (Nickel Cadmium Batteries)	001	DF	00004	P	D002 D006
b. Waste Oxidizing liquid,n.o.s.,5.1,UN3139,PG II (D001) (Everite Formula w/	001	DF	00040	P	D001
c. Waste Flammable liquids,n.o.s.,3,UN1993,PG II (D001) (Rags Soaked With Gasoline)	001	DF	00017	P	D001
d. Waste Paint,3,UN1263,PG III (D001)	004	DF	00151	P	D001
~~e. (RQ) Waste Kerosene,3,UN1223,PG III (D001)~~			~~00391~~	~~P~~	~~D001~~
f. Waste Flammable liquids,n.o.s.,3,UN1993,PG II (D001,D035,U239) (See Lab Pack List # 0104-1)	001	DM	00106	P	D001 D035,U239
g. Combustible liquids,n.o.s.,combustible liquid,NA1993, PG III (pro Chem Solvent)	001	DM	00097	P	Non RCRA
h. Combustible liquids,n.o.s.,combustible liquid,NA1993, PG III (Red gage Oil w/ Petroleum Distillates)	001	DF	00004	P	Non RCRA
i. Non Regulated Material (Water c/w Gasoline)	001	DM	00122	P	Non RCRA

S. Additional Descriptions for Materials Listed Above — T. Handling Codes for Wastes Listed Above

a. d. g.
b. e. h.
c. f. i.

32. Special Handling Instructions and Additional Information

a) ERG# 60 Items# 38 1/5
b) ERG# 35 items# 39 1/5
c) ERG# 27 Items# 40 1/5
d) ERG# 26 Items# 43 4/5
~~e) ERG# 27 Items# 44~~
f) ERG# 27 Items# 33,41,42,45,46,47,48,49,50
g) ERG# 27 Items# 21 1/30
h) ERG# 27 Items# 29 1/5
i) ERG# NA Items# 22 1/55

SP4400-95-D-0059,Delivery Order# 104

TRANSPORTER

33. Transporter _____ Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

34. Transporter _____ Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

FACILITY

35. Discrepancy Indication Space

a. _____ lbs. d. _____ lbs. g. _____ lbs.
b. _____ lbs. e. _____ lbs. h. _____ lbs.

South Carolina Department of Health and Environmental Control

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form approved OMB No. 2050-0039. Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator's U.S. EPA ID No.	Manifest Document No.	22. Page	Information in the shaded areas is not required by Federal Law, but is by State Law
	S C 0 1 7 0 0 2 2 5 6 0	13708	3 of 3	

23. Generator's Name
SOUTHDIVNAVFACENGCOM
Caretaker Site Office P.O.Box 190010,N.Charleston,SC,29419-9010

L. State Manifest Document Number: 9117

M. State Generator's ID:

24. Transporter _____ Company Name — 25. U.S. EPA ID Number

N. State Transporter's ID:

O. Transporter's Phone:

26. Transporter _____ Company Name — 27. U.S. EPA ID Number

P. State Transporter's ID:

Q. Transporter's Phone:

28. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No
a. Non Regulated Material (Trimsol)	001	DM	00065	P	Non RCRA
b. Non Regulated Material (See Lab Pack List # 0104-2)	001	DF	00045	P	Non RCRA
c.					
d.					
e.					
f.					
g.					
h.					
i.					

S. Additional Descriptions for Materials Listed Above

a. d. g.
b. e. h.
c. f. i.

T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information
a. ERG#, NA Items# 23 Y55
b. ERG# NA Items# 24,25,26,27,28,30,31,32 Y36

33. Transporter Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

34. Transporter Acknowledgement of Receipt of Materials — Date

Printed/Typed Name — Signature — Month Day Year

35. Discrepancy Indication Space

GENERATOR

TRANSPORTER

FACILITY

APPENDIX B

GEOLOGIC BORING LOGS

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B01	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/21/98	**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):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB0102	0 0	SAND: fine-grained, trace clay, moderately well sorted, loose, dry becoming wet at ~4 ft bls, yellowish orange.		SP		
			End of boring - met refusal.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B02	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/21/98	**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):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		0	SAND: very fine to coarse-grained, trace clay, trace gravel, loose, dry becoming wet at ~4 ft bls, grayish brown.				
	11SFB0202	0			SW		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B03	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/21/98	**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):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		0	CLAYEY SAND: ~15% clay, very fine to coarse-grained, loose, dry to damp, yellowish orange.		SC		
	11SFB0302	0	SILTY SAND: ~15-20% silt, very fine to coarse-grained, loose, wet, grayish brown.		SM		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B04	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/21/98	**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):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		0	CLAYEY SAND: ~15% clay, fine-grained, loose, dry, yellowish orange.		SC		
	11SFB0402	0	SAND: fine-grained, trace clay, wet, loose, soft, gray.		SP		
▼			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex. Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B05	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/21/98	**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):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		0	CLAYEY SAND: ~20% clay, very fine-grained, soft, cohesive, dry to damp, reddish orange.		SC		
	11SFB0502	0	CLAYEY SAND: ~10-20% clay, fine to medium-grained, clay is in layers, sand is clean, wet, light gray.		SC		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B06	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		0	SANY CLAY: ~30-35% fine-grained sand, non-plastic, soft, cohesive, dark brown.		CL		
▼	11SFB0602	0	SAND: medium to coarse-grained, trace fine-grained, poorly sorted, loose, saturated, gray.		SW		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B07	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB0701	0	SAND: medium to coarse-grained, trace fine-grained, wet at ~2 ft bls, loose, gray.		SW		
			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B08	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0			SAND: some clay, fine-grained, moderately sorted, loose, damp, yellowish orange.		SP		
	11SFB0801	0	SAND: medium to coarse-grained, trace fine-grained, loose, saturated, grayish orange.		SW		
▼							
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B09	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 1.5
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** N/A

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB0901	0	SAND: fine to coarse-grained, poorly sorted, loose, damp, pale grayish brown.		SW		
			End of boring - met refusal.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B10	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 3
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB1001	0	SAND: medium to coarse-grained, some fine-grained, poorly sorted, loose, wet at ~2 ft bls, pale brownish gray.		SW		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B11	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB1101	0	CLAYEY SAND: ~10-15% clay, very fine to fine-grained, cohesive, soft, dry to wet, yellowish orange and brown.		SC		
		0	SAND: fine-grained, trace very fine-grained, trace clay, moderately sorted, loose, wet, gray.		SP		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B12	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 3.5
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		0	CLAY: ~30% fine-grained sand, plastic, damp, soft, red.		CL		
	11SFB1202		SAND: some clay, fine-grained, moderatley sorted, loose, soft, wet, gray.		SP		
			End of boring - met refusal.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B13	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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	11SFB1302	40	CLAYEY SAND: ~20-30% clay, fine-grained, loose, wet at ~3 ft bls, reddish orange.		SC		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B14	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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	11SFB1402	15	SANDY CLAY: ~10-25% clay, fine-grained, loose, cohesive, wet at ~3 ft bls, gray & orange.		SC		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B15	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 5
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	11SFB1502	NS	CLAYEY SAND: ~20-25% clay, very fine to fine-grained, soft, cohesive, wet at ~3 ft bls, gray & orange.		SC		
-5			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B16	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 5
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	11SFB1602	120	CLAYEY SAND: ~20-30% clay, fine-grained, loose, cohesive, wet at ~3 ft bls, gray & orange.		SC		
-5			End of boring.				
-10							
-15							

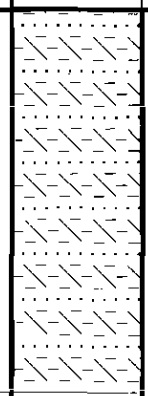
BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B17	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**LOGGED BY:** Pam Jackson
METHOD: Power Probe DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 4
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0			CLAYEY SAND: ~25% clay, very fine to medium-grained, loose, cohesive, wet at ~2 ft bls, orange.		SC		
	11SFB1702	0	SAND: trace clay & silt, fine-grained, moderately sorted, loose, saturated, gray.		SP		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B18	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0			CLAYEY SAND: ~25% clay, fine-grained, trace gravel, loose, wet at ~2 ft bls, orange.		SC		
	11SFB1802	17	SAND: ~20% clay (in layers), fine-grained, loose, wet, gray.		SC		
			CLAY: mucky, sticky, organic, wet, very dark gray.		OL		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B19	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: Catlin	**COMPLETION DATE:** 12/22/98	**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):** 2

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0	11SFB1902	NS	CLAYEY SAND: ~20% clay, fine-grained, loose, wet at ~2 ft bls, orange & gray.		SC		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B20	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/13/99	**LOGGED BY:** Bryan Moeller
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 8
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			CLAYEY SAND: ~15% clay, fine-grained, cohesive, soft, dry, orangeish brown.		SC		
		1	SAND: fine-grained, trace clay, some shell fragments from ~3-4 ft bls, loose, wet at ~3 ft bls, gray.				
		4					
▼	11SFB2003	40			SP		
		100					
-5							
			SANDY SILTY CLAY: ~10% fine-grained sand, ~15-25% silt, organic, soft, mucky, saturated, dark gray.		OL		
			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B21	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/21/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 4.5
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			CLAYEY SAND: light brown, fine-grained, wet, odor.				
		NS					
	11SFB2102	400			SC		
		NS					
		NS					
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B22	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/21/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 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		NS	SAND: fine to medium-grained, petroleum odor, saturate w/ product, black.		SP		
		4800	SANDY CLAY: ~20% sand, saturated w/ product, black.		CL		
▼		>5000	SAND: medium-grained, well sorted, saturated w/ product, black.		SP		
			End of boring. No samples collected due to presence of product.				
-5							
-10							
-15							

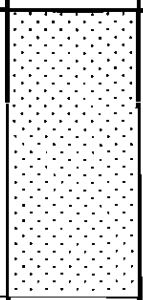
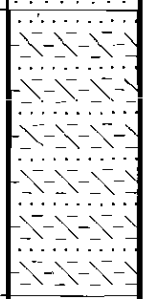
BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B23	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/21/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 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		47	SAND: fine to medium-grained, petroleum odor, damp, black.		SP		
		27					
	11SFB2303	40	CLAY: sandy, saturated, reddish brown.		OL		
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B24	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/25/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 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		·	CLAYEY SAND: ~10-20% clay, medium-grained, damp, orange to brown.		SC		
		3					
		8					
▼	11SFB2403	4	CLAYEY SAND: ~30% clay, fine to medium-grained, wet brown.				
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B27	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/27/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 6
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** 4

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0		NS	SAND: medium grained, trace clay, damp, brown.		SP		
		40					
	11SFB2704	210	CLAYEY SAND: ~40% clay, medium-grained, wet at ~4 ft bls, light brown to brown.		SC		
-5			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B28	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/27/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 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		95	SAND: medium grained, trace clay, damp, brown to black.		SP		
		150					
	11SFB2804	180	CLAYEY SAND: ~40% clay, medium-grained, wet at ~4 ft bls, gray.		SC		
▼			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B29	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 01/27/99	**LOGGED BY:** Jimmy Jordan
METHOD: GeoProbe 5400 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
		120	SAND: medium grained, trace clay, damp, brown to black.		CL		
		350					
	11SFB2903	270	CLAYEY SAND: ~40% clay, medium-grained, wet at ~4 ft bls, gray.		OI		
			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B30	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 2/1/99	**LOGGED BY:** Bryn Howze
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 8
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** 1.5

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0			SILT: clayey, medium brown, wet.				
-5							
			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B31	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 2/2/99	**LOGGED BY:** Bryn Howze
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 8
TOC ELEVATION (ft msl): N/A	**SCREEN INTERVAL (ft bls):** N/A	**DEPTH TO GW (ft bls):** 1.5

DEPTH (FT)	SAMPLE ID	HEADSPACE (PPM)	LITHOLOGIC DESCRIPTION	LITHOLOGIC SYMBOLS	USCS	BLOW COUNTS	WELL CONSTRUCTION
0			SILT: clayey, dark gray, wet.				
			End of boring.				
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B32	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 2/2/99	**LOGGED BY:** Bryn Howze
METHOD: GeoProbe 5400 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		8	SILT: slightly clayey, some rock fragments, medium brown, moist.				
		10	CLAY: silty, slightly sandy, medium brown to medium gray, soft to firm, moist.				
		250	SAND: fine-grained, loose, tan, moist.				
▼	11SFB3203	15	CLAY: sandy to clayey sand, fine-grained, tan to medium gray, soft to firm, wet.				
			End of boring.				
-5							
-10							
-15							

BASE: Charleston Naval Complex, Zone H	**SITE ID:** CNC11	**PROJECT NO.:** N7912
BORING ID: CNC11-B33	**WELL ID:** N/A	**PIEZOMETER ID:** N/A
CONTRACTOR: US Probe	**COMPLETION DATE:** 2/2/99	**LOGGED BY:** Bryn Howze
METHOD: GeoProbe 5400 DPT	**BORING DIAMETER (in):** 3	**TOTAL DEPTH (ft bls):** 8
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		0 0 0	SAND: very fine-grained, silty, yellowish orange, loose, wet.				
			End of boring.				
-10							
-15							

APPENDIX C

FIELD SAMPLING DATA SHEETS

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 11
Project No.: 7912

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

Sample ID No.: NBCH663-001
Sample Location: NBCH663-001
Sampled By: JA / BDH
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3/16/99 Time: 1445	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Method:								

PURGE DATA

Date: 3/16/99	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method: Peristaltic Pump	Initial	6.91	1.63	15.4	38		0.07	
Monitor Reading (ppm):	1	6.90	1.50	15.4	7		0.06	4G
Well Casing Diameter: 2"	2	6.92	1.52	15.9	1		0.07	7G
Well Casing Material: PVC	3	7.13	1.52	16.0			0.06	8G
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0828								
End Purge (hrs): 0935								
Total Purge Time (min): 67								
Total Vol. Purged (gal/L): 8G								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOC, MTBE, Naphthalene	HCl	(3) 40 ml	✓
PAH	—	(2) 1000 ml	✓
TPH	H_2SO_4	(1) 1000 ml	✓
Nitrate, Sulfate	—	(1) 500 ml	✓
Lead	HNO_3	(1) 250 ml	✓
Methane		(3) 40 ml	✓

OBSERVATIONS / NOTES

Circle if Applicable: MS/MSD | Duplicate ID No.:

Signature(s): JA / BDH

Gwsamp

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 11
Project No.: 7912

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

Sample ID No.: 11GLM0201
Sample Location: CNC11M02
Sampled By: JA / BPH
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3/16/99 Time: 1505	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Method:								

PURGE DATA

Date: 3/16/99	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method:	Initial	6.47	0.48	17.3	17		0.01	
Monitor Reading (ppm):	1	7.79	0.48	17.5	19		0.01	46
Well Casing Diameter: 2"	2	7.54	0.538	17.6	6		0.02	66
Well Casing Material: PVC	3	7.58	0.557	17.4	3		0.02	86
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0922								
End Purge (hrs): 0924								
Total Purge Time (min): 62								
Total Vol. Purged (gal/L): 86								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOC, MTBE, Naphthalene	HCl	(3) 40 ml	✓
PAH	—	(2) 1000 ml	✓
TPH	H_2SO_4	(1) 1000 ml	✓
Nitrate, Sulfate	—	(1) 500 ml	✓
Lead	HNO_3	(1) 250 ml	✓
Methane		(3) 40 ml	✓

OBSERVATIONS / NOTES

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

Gwsamp

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 11
Project No.: ~~7912~~ 7912

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

Sample ID No.: 11GLM0501
Sample Location: CNC 11 MW5
Sampled By: JA / BDH
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 3/16/99 Time: 1525	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Method:								

PURGE DATA

Date: 3/16/99	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method: Peristaltic Pump	Initial	7.32	0.59	19.6	2		0.02	4G
Monitor Reading (ppm):	1	7.23	0.63	19.8	<1		0.02	6G
Well Casing Diameter: 2"	2	7.26	0.522	19.9	0		0.02	9G
Well Casing Material: PVC	3	7.28	0.516	20.2	0		0.02	10G
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0920								
End Purge (hrs): 0925								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 10G								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOC, MTBE, Naphthalene	HCl	(3) 40 ml	✓
PAH	—	(2) 1000 ml	✓
TPH	H_2SO_4	(1) 1000 ml	✓
Nitrate, Sulfate	—	(1) 500 ml	✓
Lead	HNO_3	(1) 250 ml	✓
Methane		(3) 40 ml	✓

OBSERVATIONS / NOTES

Circle if Applicable: MS/MSD | Duplicate ID No.:

Signature(s):

owsamp

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Site 11
Project No.: 7912

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

Sample ID No.: 11GLMW01
Sample Location: CNC11MW8
Sampled By: JA / BDA
C.O.C. No.:
Type of Sample:
[ ] Low Concentration
[ ] High Concentration

SAMPLING DATA								
Date: 3/16/99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Eh
Time: 1545			mS/cm	°C	NTU			mV
Method:								

PURGE DATA								
Date: 3/16/99	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method: Peristaltic pump	Initial	7.29	29.8	21.2	241		1.86	
Monitor Reading (ppm):	1	7.21	31.4	20.7	261		1.98	
Well Casing Diameter: 2"	2							dry @ 36
Well Casing Material: PVC	3							
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs): 0823								
End Purge (hrs): 0900								
Total Purge Time (min): 37								
Total Vol. Purged (gal/L): 3 G								

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
VOC, MTBE, Naphthalene	HCl	(3) 40 ml	V
PAH	—	(2) 1000 ml	V
TPH	H_2SO_4	(1) 1000 ml	V
~~Nitrate, Sulfate~~			
Lead	HNO_3	(1) 250 ml	V

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Gwsamp

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Site 11
Project No.: 7912
Sampled By: JA / BDH

Sample ID No.: NBCH663-001
Sample Location: [redacted]
Duplicate: ☐ NBCH663-001

SAMPLING DATA:

Date: 3/16/99	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Time: 1445	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 1024

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

Titration Count	Multiplier	Concentration
71	x 0.01	= 0.71
	x 0.02	=

Notes: Remote blg 0.6

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: 1105

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=
☑	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 28	x 10.0	= 280

Relationship	Hydroxide	Carbonate	Bicarbohate
Concentration	0 mg/L	0 mg/L	280 mg/L

Notes: Remotin - 260

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: 1235

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

Titration Count		Concentration
	x 0.1	=
	x 0.2	=
250	x 1.0	= 250
	x 2.0	=

Notes: Remotin 60

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

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Site 11
Project No.: 7912
Sampled By: JA / BDH

Sample ID No.: NBCH663-001
Sample Location: NBCH663-001
Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter HS-C Color Chart Analysis Time: 1344
Program No.:
Concentration: 0.01 mg/L Filtered: ☑
Notes:

Ferrous Iron:

Equipment: HACH DR-890 Colorimeter IR-18C Color Wheel Analysis Time: 1415
Program No.:
Concentration: 3.25 mg/L Filtered: ☐
Notes:

Nitrite:

Equipment: HACH DR-890 Colorimeter Analysis Time: 1405
Program No.:
Concentration: 0.056 mg/L Filtered ~~Reagent Blank Correction~~: ☑
Standard Solution: ☐ Results:
Notes:

Mn ~~**Nitrate:**~~

Equipment: HACH DR-890 Colorimeter Analysis Time: 1432
~~Program No.:~~
Concentration: 0.9 mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Site 11
Project No.: 7912
Sampled By: JA/BDH

Sample ID No.: 11GLM0201
Sample Location: ENC11M02
Duplicate: ☐

SAMPLING DATA:

Date: 3/16/99	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Time: 1505	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 0952

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

Titration Count	Multiplier	Concentration
71	x 0.01	= 0.71
	x 0.02	=

Notes: Chemetrics ~1.0

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: 1115

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=
☑	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 19	x 10.0	= 190

Relationship	Hydroxide	Carbonate	Bicarbonate
Concentration	0 mg/L	0 mg/L	190 mg/L

Notes: Chemetrics 135

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: _____

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

Titration Count		Concentration
	x 0.1	=
	x 0.2	=
97	x 1.0	= 97
	x 2.0	=

Notes: Chemetrics = <10 ppm (exceeded lower detection limit)

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

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Site 11
Project No.: 7912
Sampled By: JA / BDH

Sample ID No.: 11GLM0201
Sample Location: CNKM02
Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter HS-C Color Chart
Analysis Time: 1344
Program No.:
Concentration: 0.01 mg/L
Filtered: ☑
Notes:

Ferrous Iron:

Equipment: HACH DR-890 Colorimeter IR-18C Color Wheel
Analysis Time: 1415
Program No.:
Concentration: 0.61 mg/L
Filtered: ☐
Notes:

Nitrite:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1406
Program No.:
Concentration: 0.049 mg/L
Filtered Reagent Blank Correction: ☑
Standard Solution: ☐ Results:
Notes:

Nitrate:

Equipment: HACH DR-890 Colorimeter
Analysis Time: 1432
Program No.:
Concentration: 0.9 mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results:
Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Sub 11
Project No.: 7912
Sampled By: JA / BDH

Sample ID No.: 11GLM05D1
Sample Location: CNC11M05
Duplicate: ☐

SAMPLING DATA:

Date: 3/16/99	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	
Time: 1525								
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT

Analysis Time: 1008

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

Titration Count	Multiplier	Concentration
116	x 0.01	= 1.16
	x 0.02	=

Notes: Lower mg 0.18

Alkalinity:

Equipment: HACH Digital Titrator AL-DT

Analysis Time: _____

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	=
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	=
☐	100-400 mg/L	100 ml	1.600 N	1.0	_____ & _____	x 1.0	=
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	=
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	=
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	0 & 28	x 10.0	= 280

Relationship	Hydroxide	Carbonate	Bicarbonate
Concentration	0 mg/L	0 mg/L	280 mg/L

Notes: Chemetrics 135

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT

Analysis Time: _____

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

Titration Count		Concentration
_____	x 0.1	=
225	x 0.2	= 45
_____	x 1.0	=
_____	x 2.0	=

Notes: Chemetrics = <10 ppm (exceed lower detection limit)

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

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUTAION PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: Soto 11 | Sample ID No.: 11GLM0501

Project No.: 7912 | Sample Location: CK11 M05

Sampled By: JA / BDH | Duplicate: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-890 Colorimeter | HS-C Color Chart | Analysis Time: 1344

Program No.:

Concentration: 0.02 mg/L | Filtered: ☑

Notes:

Ferrous Iron:

Equipment: HACH DR-890 Colorimeter | IR-18C Color Wheel | Analysis Time: 1415

Program No.: 0.08

Concentration: ~~0.02~~ PJ mg/L | Filtered: ☐

Notes:

Nitrite:

Equipment: HACH DR-890 Colorimeter | Analysis Time: 1407

Program No.:

Concentration: 0.104 mg/L | Filtered ~~Reagent Blank Correction~~: ☑

Standard Solution: ☐ | Results:

Notes:

Nitrate:

Equipment: HACH DR-890 Colorimeter | Analysis Time: 1432

Program No.:

Concentration: 0.2 mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ | Results: | Reagent Blank Correction: ☐

Standard Additions: ☐ | Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____

Notes:

APPENDIX D

SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 10, 1999

Sample ID : 11SLM0202
Lab ID : 9902776-05
Matrix : Soil
Date Collected : 02/18/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	J	1.07	0.563	5.00	ug/kg	1.0	MAP	03/03/99	1612	143397	1
ETHYLBENZENE	J	1.05	0.338	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.200	6.25	ug/kg	1.0					
NAPHTHALENE		24.8	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		26.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	216	450	ug/kg	1.0	TSD	02/26/99	2322	143119	3
ACENAPHTHYLENE	U	ND	198	450	ug/kg	1.0					
ANTHRACENE	U	ND	118	450	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	92.3	450	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	96.8	450	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	192	450	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	110	450	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	178	450	ug/kg	1.0					
CHRYSENE	U	ND	73.8	450	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	112	450	ug/kg	1.0					
FLUORANTHENE	U	ND	88.2	450	ug/kg	1.0					
FLUORENE	U	ND	154	450	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	108	450	ug/kg	1.0					
PHENANTHRENE	U	ND	81.0	450	ug/kg	1.0					
PYRENE	U	ND	97.2	450	ug/kg	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons		405	67.5	135	mg/kg	1.0	AAT	03/05/99	1500	143727	4

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)

Sample ID : 11SLM0202

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	5
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
Fluorobiphenyl	M610-TETR	69.7	(44.7 - 110.)
Nitrobenzene-d5	M610-TETR	66.3	(42.4 - 107.)
p-Terphenyl-d14	M610-TETR	93.8	(45.5 - 104.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	79.7	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	72.3	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	85.0	(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:
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J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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

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 10, 1999

Sample ID : 11SLM0202

M = Method **Method-Description**

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

Valerie L Davis

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

9902776-05

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 10, 1999

Sample ID : 11SLM0302
Lab ID : 9902776-02
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.554	5.00	ug/kg	1.0	MAP	03/03/99	1510	143397	1
ETHYLBENZENE	U	ND	0.332	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.197	6.15	ug/kg	1.0					
NAPHTHALENE	U	ND	0.750	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.16	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.308	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		14.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	186	388	ug/kg	1.0	TSD	02/26/99	2148	143119	3
ACENAPHTHYLENE	U	ND	171	388	ug/kg	1.0					
ANTHRACENE	U	ND	102	388	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	79.5	388	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	83.4	388	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	165	388	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	94.7	388	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	154	388	ug/kg	1.0					
CHRYSENE	U	ND	63.6	388	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	96.6	388	ug/kg	1.0					
FLUORANTHENE	U	ND	76.0	388	ug/kg	1.0					
FLUORENE	U	ND	133	388	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	93.5	388	ug/kg	1.0					
PHENANTHRENE	U	ND	69.8	388	ug/kg	1.0					
PYRENE	U	ND	83.8	388	ug/kg	1.0					

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)

Sample ID : 11SLM0302

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	63.2	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	54.9	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	91.2	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	81.9	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	77.2	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	85.0	(72.1 - 137.)

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

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

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: March 10, 1999

Sample ID : 11SLM0302

M = Method	Method-Description

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Valerie L Davis

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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 10, 1999

Sample ID : 11SLM0402
Lab ID : 9902776-13
Matrix : Soil
Date Collected : 02/18/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	J	2.28	0.603	5.00	ug/kg	1.0	MAP	03/03/99	1306	143397	1
ETHYLBENZENE	U	ND	0.362	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.214	6.70	ug/kg	1.0					
NAPHTHALENE	J	0.866	0.817	5.00	ug/kg	1.0					
TOLUENE	J	1.73	1.26	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.335	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		27.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	219	457	ug/kg	1.0	TSD	02/27/99	1238	143119	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					

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 10, 1999

Sample ID : 11SLM0402

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	68.3	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	60.8	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	103.	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	82.5	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	76.6	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	91.3	(72.1 - 137.)

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

Notes:
The qualifiers in this report are defined as follows:
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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

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 10, 1999

Sample ID : 11SLM0402

M = Method **Method-Description**

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

Valerie L Davis

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

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GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 10, 1999

Sample ID : 11SLM0502
Lab ID : 9902776-01
Matrix : Soil
Date Collected : 02/17/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.491	5.00	ug/kg	1.0	MAP	03/02/99	1342	143397	1
ETHYLBENZENE	U	ND	0.294	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.174	5.45	ug/kg	1.0					
NAPHTHALENE	U	ND	0.665	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.02	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.273	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		14.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	186	388	ug/kg	1.0	TSD	02/26/99	2116	143119	3
ACENAPHTHYLENE	U	ND	171	388	ug/kg	1.0					
ANTHRACENE	U	ND	102	388	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	79.5	388	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	83.4	388	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	165	388	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	94.7	388	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	154	388	ug/kg	1.0					
CHRYSENE	U	ND	63.6	388	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	96.6	388	ug/kg	1.0					
FLUORANTHENE	U	ND	76.0	388	ug/kg	1.0					
FLUORENE	U	ND	133	388	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	93.5	388	ug/kg	1.0					
PHENANTHRENE	U	ND	69.8	388	ug/kg	1.0					
PYRENE	U	ND	83.8	388	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)

Sample ID : 11SLM0502

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	67.0	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	59.0	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	94.4	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	79.2	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	78.2	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	84.3	(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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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 10, 1999

Sample ID : 11SLM0502

M = Method	Method-Description

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

Valerie L Davis

Reviewed By

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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 10, 1999

Sample ID : 11SLM0602
Lab ID : 9902776-04
Matrix : Soil
Date Collected : 02/18/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.572	5.00	ug/kg	1.0	MAP	03/02/99	1516	143397	1
ETHYLBENZENE	J	0.682	0.343	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.203	6.35	ug/kg	1.0					
NAPHTHALENE	U	ND	0.775	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.19	5.00	ug/kg	1.0					
XYLENES, TOTAL	J	4.23	0.318	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		26.0	1.00	1.00	wt%	1.0	GJ	02/22/99	1605	142970	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	864	1800	ug/kg	4.0	TSD	02/26/99	2251	143119	3
ACENAPHTHYLENE	U	ND	794	1800	ug/kg	4.0					
ANTHRACENE	U	ND	473	1800	ug/kg	4.0					
BENZO(A)ANTHRACENE	U	ND	369	1800	ug/kg	4.0					
BENZO(A)PYRENE	U	ND	387	1800	ug/kg	4.0					
BENZO(B)FLUORANTHENE	U	ND	767	1800	ug/kg	4.0					
BENZO(G,H,I)PERYLENE	U	ND	439	1800	ug/kg	4.0					
BENZO(K)FLUORANTHENE	U	ND	713	1800	ug/kg	4.0					
CHRYSENE	U	ND	295	1800	ug/kg	4.0					
DIBENZ(A,H) ANTHRACENE	U	ND	448	1800	ug/kg	4.0					
FLUORANTHENE	U	ND	353	1800	ug/kg	4.0					
FLUORENE	U	ND	617	1800	ug/kg	4.0					
INDENO(1,2,3-CD)PYRENE	U	ND	434	1800	ug/kg	4.0					
PHENANTHRENE	U	ND	324	1800	ug/kg	4.0					
PYRENE	U	ND	389	1800	ug/kg	4.0					

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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 10, 1999

Sample ID : 11SLM0602

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	61.6	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	48.1	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	81.8	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	75.3	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	77.3	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	84.1	(72.1 - 137.)

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

Notes:
The qualifiers in this report are defined as follows:
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* 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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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 10, 1999

Sample ID : 11SLM0602

M = Method **Method-Description**

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

Valerie L Davis

Reviewed By

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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 10, 1999

Sample ID	: 11SLM0702
Lab ID	: 9902776-03
Matrix	: Soil
Date Collected	: 02/17/99
Date Received	: 02/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.443	5.00	ug/kg	1.0	MAP	03/03/99	1541	143397	1
ETHYLBENZENE	U	ND	0.266	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.157	5.00	ug/kg	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/kg	1.0					
TOLUENE	U	ND	0.925	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.246	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		13.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	184	383	ug/kg	1.0	TSD	02/26/99	2220	143119	3
ACENAPHTHYLENE	U	ND	169	383	ug/kg	1.0					
ANTHRACENE	U	ND	101	383	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	78.5	383	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	82.3	383	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	163	383	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	93.5	383	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	152	383	ug/kg	1.0					
CHRYSENE	U	ND	62.8	383	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	95.4	383	ug/kg	1.0					
FLUORANTHENE	U	ND	75.1	383	ug/kg	1.0					
FLUORENE	U	ND	131	383	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	92.3	383	ug/kg	1.0					
PHENANTHRENE	U	ND	68.9	383	ug/kg	1.0					
PYRENE	U	ND	82.7	383	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: March 10, 1999

Sample ID : 11SLM0702

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	62.5	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	57.0	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	90.5	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	79.3	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	74.0	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	85.4	(72.1 - 137.)

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

Notes:
The qualifiers in this report are defined as follows:
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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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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 10, 1999

Sample ID : 11SLM0702

M = Method	Method-Description

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

Valerie J Davis

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 10, 1999

Sample ID : 11SLB0502
Lab ID : 9902776-10
Matrix : Soil
Date Collected : 02/18/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.464	5.00	ug/kg	1.0	MAP	03/03/99	1132	143397	1
ETHYLBENZENE	U	ND	0.278	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.165	5.15	ug/kg	1.0					
NAPHTHALENE	U	ND	0.628	5.00	ug/kg	1.0					
TOLUENE	U	ND	0.968	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.258	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		12.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	182	379	ug/kg	1.0	TSD	02/27/99	0201	143119	3
ACENAPHTHYLENE	U	ND	167	379	ug/kg	1.0					
ANTHRACENE	U	ND	99.7	379	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	77.7	379	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	81.5	379	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	161	379	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	92.5	379	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	150	379	ug/kg	1.0					
CHRYSENE	U	ND	62.2	379	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	94.4	379	ug/kg	1.0					
FLUORANTHENE	U	ND	74.3	379	ug/kg	1.0					
FLUORENE	U	ND	130	379	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	91.3	379	ug/kg	1.0					
PHENANTHRENE	U	ND	68.2	379	ug/kg	1.0					
PYRENE	U	ND	81.9	379	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)

Sample ID : 11SLB0502

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	66.4	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	58.0	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	93.4	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	84.0	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	77.5	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	85.1	(72.1 - 137.)

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

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

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

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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)

Sample ID : 11SLB0502

M = Method	Method-Description

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

Valerie S Davis

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 10, 1999

Sample ID	: 11SLB0502D
Lab ID	: 9902776-11
Matrix	: Soil
Date Collected	: 02/18/99
Date Received	: 02/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.464	5.00	ug/kg	1.0	MAP	03/03/99	1203	143397	1
ETHYLBENZENE	U	ND	0.278	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER		ND	0.165	5.15	ug/kg	1.0					
NAPHTHALENE	U	ND	0.628	5.00	ug/kg	1.0					
TOLUENE	U	ND	0.968	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.258	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		11.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	180	375	ug/kg	1.0	TSD	02/27/99	0233	143119	3
ACENAPHTHYLENE	U	ND	165	375	ug/kg	1.0					
ANTHRACENE	U	ND	98.6	375	ug/kg	1.0					
BENZO(A)ANTHRACENE	U	ND	76.9	375	ug/kg	1.0					
BENZO(A)PYRENE	U	ND	80.6	375	ug/kg	1.0					
BENZO(B)FLUORANTHENE	U	ND	160	375	ug/kg	1.0					
BENZO(G,H,I)PERYLENE	U	ND	91.5	375	ug/kg	1.0					
BENZO(K)FLUORANTHENE	U	ND	149	375	ug/kg	1.0					
CHRYSENE	U	ND	61.5	375	ug/kg	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	93.4	375	ug/kg	1.0					
FLUORANTHENE	U	ND	73.5	375	ug/kg	1.0					
FLUORENE	U	ND	129	375	ug/kg	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	90.4	375	ug/kg	1.0					
PHENANTHRENE	U	ND	67.5	375	ug/kg	1.0					
PYRENE	U	ND	81.0	375	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: March 10, 1999

Sample ID : 11SLB0502D

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	4
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
.-Fluorobiphenyl	M610-TETR	68.4	(30.0 - 115.)
Nitrobenzene-d5	M610-TETR	61.6	(23.0 - 120.)
p-Terphenyl-d14	M610-TETR	94.2	(37.3 - 128.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	81.8	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	77.2	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	84.9	(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: March 10, 1999

Sample ID : 11SLB0502D

M = Method	Method-Description

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

Valerie J. Davis

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

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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 10, 1999

Sample ID : 11SLB0602
Lab ID : 9902776-12
Matrix : Soil
Date Collected : 02/18/99
Date Received : 02/18/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX/NAP/MTBE - 6 items											
BENZENE	U	ND	0.482	5.00	ug/kg	1.0	MAP	03/03/99	1234	143397	1
ETHYLBENZENE	U	ND	0.289	5.00	ug/kg	1.0					
TERT-BUTYL METHYL ETHER	U	ND	0.171	5.35	ug/kg	1.0					
NAPHTHALENE	U	ND	0.653	5.00	ug/kg	1.0					
TOLUENE	U	ND	1.01	5.00	ug/kg	1.0					
XYLENES, TOTAL	U	ND	0.268	5.00	ug/kg	1.0					
Organic Prep											
EVAPORATIVE LOSS @ 105 C		16.0	1.00	1.00	wt%	1.0	GJ	02/19/99	1640	142874	2
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	762	1590	ug/kg	4.0	TSD	02/27/99	0304	143119	3
ACENAPHTHYLENE	U	ND	700	1590	ug/kg	4.0					
ANTHRACENE	U	ND	418	1590	ug/kg	4.0					
BENZO(A)ANTHRACENE	U	ND	326	1590	ug/kg	4.0					
BENZO(A)PYRENE	U	ND	341	1590	ug/kg	4.0					
BENZO(B)FLUORANTHENE	U	ND	676	1590	ug/kg	4.0					
BENZO(G,H,I)PERYLENE	U	ND	387	1590	ug/kg	4.0					
BENZO(K)FLUORANTHENE	U	ND	629	1590	ug/kg	4.0					
CHRYSENE	U	ND	260	1590	ug/kg	4.0					
DIBENZ(A,H) ANTHRACENE	U	ND	395	1590	ug/kg	4.0					
FLUORANTHENE	U	ND	311	1590	ug/kg	4.0					
FLUORENE	U	ND	545	1590	ug/kg	4.0					
INDENO(1,2,3-CD)PYRENE	U	ND	383	1590	ug/kg	4.0					
PHENANTHRENE	U	ND	286	1590	ug/kg	4.0					
PYRENE	U	ND	343	1590	ug/kg	4.0					
General Chemistry											
Total Organic Carbon		9420	43.1	100	mg/kg	1.0	LS	03/08/99	1321	143839	4

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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 10, 1999

Sample ID : 11SLB0602

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

The following prep procedures were performed:

Volatiles 8260 High Level	MAP	03/04/99	0950	143397	5
GC/MS Base/Neutral Compounds	CPU	02/24/99	1700	143119	2

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	71.2	(44.7 - 110.)
Nitrobenzene-d5	M610-TETR	59.2	(42.4 - 107.)
p-Terphenyl-d14	M610-TETR	99.0	(45.5 - 104.)
Bromofluorobenzene	BTEX/NAP/MTBE-8260B	79.2	(53.5 - 154.)
Dibromofluoromethane	BTEX/NAP/MTBE-8260B	78.5	(63.4 - 136.)
Toluene-d8	BTEX/NAP/MTBE-8260B	84.9	(72.1 - 137.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 3550
M 3	EPA 8270C
M 4	EPA 415.1 Modified
M 5	EPA 5035

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

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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 10, 1999

Sample ID : 11SLB0602

M = Method	Method-Description

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

Valerie A Davis

Reviewed By

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(843) 556-8171 • Fax (843) 766-1178

9902776-12

GEOTECHNICAL SPREADSHEET

Project Number:	tetr00498	Depth:	UNKNOWN
Sample Number:	9902776-05	Tested By:	M. Yates
Boring Number:	NA	Date:	3/2/99
Location:	NA		

GRAIN-SIZE ANALYSIS

HYGROSCOPIC MOISTURE CONTENT DETERMINATION

weight of total air dried sample=	118.36
weight of container + air-dried soil=	35.18
weight of container + oven-dried soil=	30.58
weight of container=	7.21
weight of water=	4.6
weight of oven-dried soil=	23.37
weight of air-dried soil=	27.97
hygroscopic moisture correction factor=	0.84
weight of oven-dried sample for hydro. anal.=	97.74

SIEVE ANALYSIS

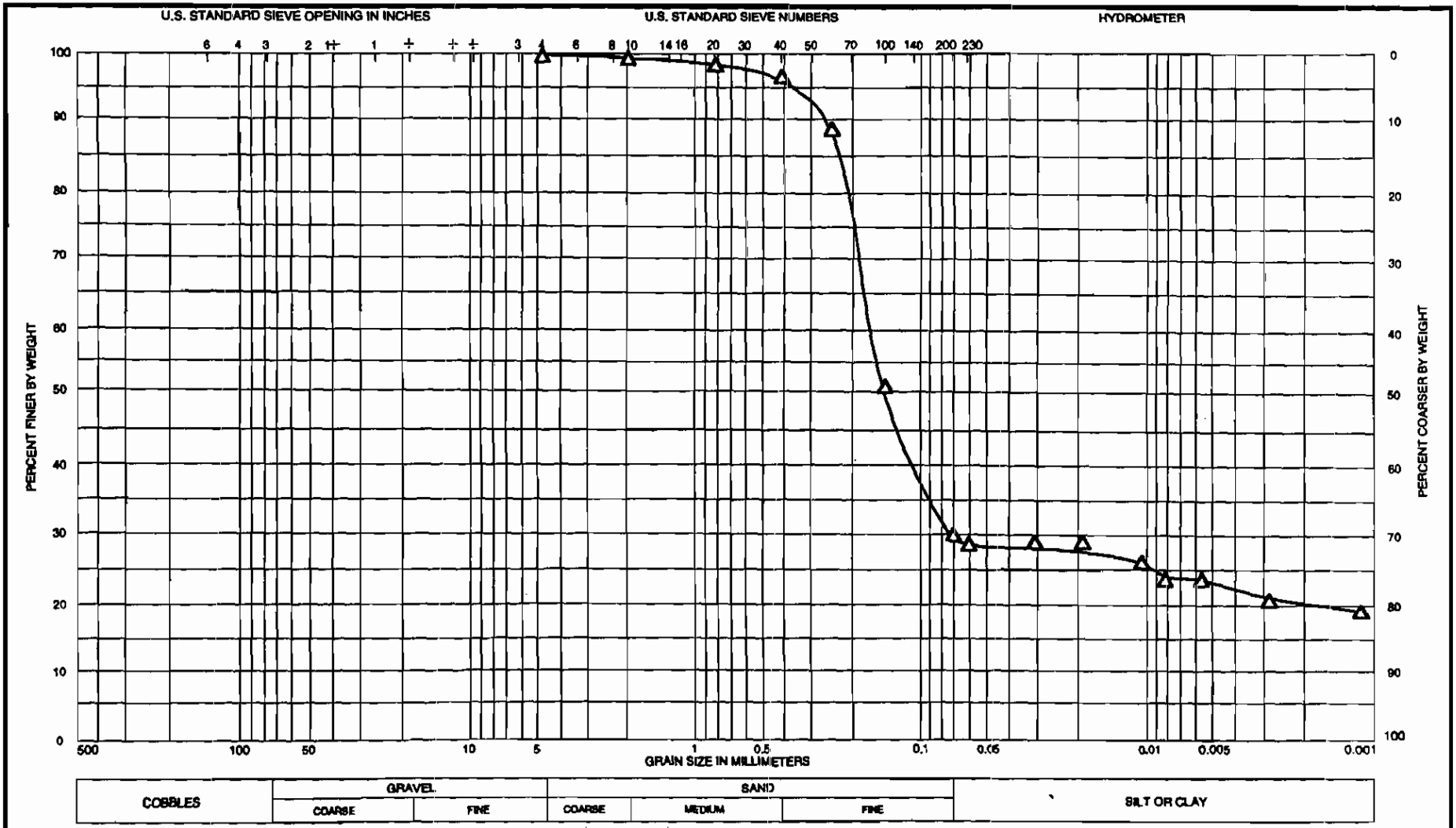
weight of oven-dried sample= 97.74

Sieve #	Weight Ret.	Weight Passed	% Passing
4	0.18	97.56	99.8
10	0.24	97.34	99.8
20	0.86	96.88	98.9
40	2.06	94.82	96.8
60	6.23	88.39	88.4
100	38.68	49.71	50.9
200	20.3	29.41	30.1
230	1.16	28.23	28.9
pan	0.15	28.08	28.7

HYDROMETER ANALYSIS

weight	97.74
SG	2.65

TIME	ACTUAL READING	TEMP.	COMPOSITE CORRECTION	R	LENGTH	K	DIAMETER	P
2	1.021	22	0.00325	1.01775	10.7	0.01332	.03088	29.2
5	1.021	22	0.00325	1.01775	10.7	0.01332	.01952	29.2
15	1.019	22	0.00325	1.01575	11.3	0.01332	.01154	25.9
30	1.018	22	0.00325	1.01475	11.5	0.01332	.00825	24.2
60	1.018	22	0.00325	1.01475	11.5	0.01332	.00584	24.2
250	1.016	22	0.00325	1.01275	12.1	0.01332	.00293	21.0
1440	1.015	22	0.00325	1.01175	12.3	0.01332	.00123	19.3



Sample No.	Specific Gravity	Classification	Nat w %	LL	PL	PI
9902776-05	---	SC	---			
		% GRAVEL = 0.2				
		% SAND = 69.7				
		% SILT = 7.1				
		% CLAY = 23.0				

GRADATION CURVES

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A Division of General Engineering Laboratories, Inc.

Project tetr00498
Area Tetra Tech NUS, Inc.
Boring No.
Date March 2, 1999

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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

Sample ID : 11GLM0101
Lab ID : 9903340-12
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/18/99	0344	144624	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/18/99	0344	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/18/99	0344	144624	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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

Sample ID : 11GLM0101

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	MAP	03/18/99	0344	144624	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	MKP	03/17/99	0758	144250	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					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/25/99	0900	145262	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds							ES	03/10/99	1430	144250	5

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Laboratory Certifications

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

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

Sample ID : 11GLM0101

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	62.0	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	53.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	78.2	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	73.1	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	78.4	(66.0 - 117.)
Toluene-d8	EDB-8260B	82.3	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	73.1	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	78.4	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.3	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	73.1	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	78.4	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.3	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	73.1	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	78.4	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.3	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

Notes:
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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

Sample ID : 11GLM0101

M = Method	Method-Description

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in accordance with General Engineering Laboratories
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Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 09, 1999

Sample ID	: 11GLM0101
Lab ID	: 9903846-03
Matrix	: Water
Date Collected	: 03/23/99
Date Received	: 03/24/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	J	1.02	0.678	5.00	ug/l	1.0	MBL	04/07/99	1251	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

Notes:
The qualifiers in this report are defined as follows:
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9903846-03

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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

Sample ID : 11GLM0101D
Lab ID : 9903340-13
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/18/99	0415	144624	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/18/99	0415	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/18/99	0415	144624	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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)

Sample ID : 11GLM0101D

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	MAP	03/18/99	0415	144624	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	MKP	03/17/99	0828	144250	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					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/25/99	0900	145262	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/10/99	1430	144250	5

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)

Sample ID : 11GLM0101D

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	56.6	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	49.9	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	53.5	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	73.2	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	78.8	(66.0 - 117.)
Toluene-d8	EDB-8260B	82.4	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	73.2	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	78.8	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.4	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	73.2	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	78.8	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.4	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	73.2	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	78.8	(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	SW-846 9070
M 5	EPA 3510

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

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 26, 1999

Sample ID : 11GLM0101D

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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

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: April 05, 1999

Sample ID	: 11GLMO201
Lab ID	: 9903596-02
Matrix	: Water
Date Collected	: 03/16/99
Date Received	: 03/16/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/19/99	0428	144845	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
APHTHALENE	J	0.642	0.600	5.00	ug/l	1.0	JWF	03/19/99	0428	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/19/99	0428	144845	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	J	0.787	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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: April 05, 1999

Sample ID : 11GLMO201

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/19/99	0428	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.27	10.3	ug/l	1.0	TSD	03/27/99	2103	144885	3
ACENAPHTHYLENE	U	ND	1.34	10.3	ug/l	1.0					
ANTHRACENE	U	ND	2.37	10.3	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.88	10.3	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.06	10.3	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.84	10.3	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.58	10.3	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.68	10.3	ug/l	1.0					
CHRYSENE	U	ND	2.27	10.3	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.27	10.3	ug/l	1.0					
FLUORANTHENE	U	ND	3.19	10.3	ug/l	1.0					
FLUORENE	U	ND	2.16	10.3	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.50	10.3	ug/l	1.0					
PHENANTHRENE	U	ND	1.85	10.3	ug/l	1.0					
PYRENE	U	ND	2.58	10.3	ug/l	1.0					
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	03/19/99	2042	144710	4
General Chemistry											
NITROGEN, NITRATE	U	ND	0.0127	0.0500	mg/l	1.0	RWS	03/16/99	2239	144708	5
SULFATE (AS SO4)		53.0	0.0760	0.400	mg/l	2.0	RWS	03/17/99	1407	144708	5
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	6

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/19/99	1445	144885	7

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: April 05, 1999

Sample ID : 11GLMO201

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TRACE							FGD	03/18/99	1200	144710	8

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	80.1	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	80.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	75.9	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	84.1	(73.0 - 129.)
ibromofluoromethane	EDB-8260B	85.1	(66.0 - 117.)
oluene-d8	EDB-8260B	85.0	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	84.1	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	85.1	(66.0 - 117.)
Toluene-d8	MTBE-8260B	85.0	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	84.1	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	85.1	(66.0 - 117.)
Toluene-d8	NAP-8260B	85.0	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	84.1	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	85.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	85.0	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 200.7
M 5	EPA 300.0
M 6	SW-846 9070
M 7	EPA 3510
M 8	EPA 3005

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: April 05, 1999

Sample ID : 11GLMO201

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, Valerie Davis at (843) 769-7391.

Reviewed By

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

(843) 556-8171 • Fax (843) 766-1178

9903596-02

GENERAL ENGINEER LABORATORY

Client Sample ID: 11GLM0201

GC Volatiles

Lot-Sample #...:	I9C170140-001	Work Order #...:	CRNL7101	Matrix.....:	WATER
Date Sampled...:	03/16/99 15:05	Date Received..:	03/17/99		
Prep Date.....:	03/26/99	Analysis Date..:	03/26/99		
Prep Batch #...:	9088303	Analysis Time..:	14:39		
Dilution Factor:	1				
		Method.....:	RSK SOP-175		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methane	250 B,E	0.50	ug/L

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

E Estimated result. Result concentration exceeds the calibration range.

GENERAL ENGINEER LABORATORY

Client Sample ID: 11GLM0201

GC Volatiles

Lot-Sample #...: I9C170140-001	**Work Order #...:** CRNL7201		**Matrix.....:** WATER
Date Sampled...: 03/16/99 15:05	**Date Received..:** 03/17/99		
Prep Date.....: 03/26/99	**Analysis Date..:** 03/26/99		
Prep Batch #...: 9088303	**Analysis Time..:** 15:43		
Dilution Factor: 5			
	Method.....: RSK SOP-175		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methane	**230 B,D**	**2.5**	**ug/L**

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

D Result was obtained from the analysis of a dilution.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 30, 1999

Sample ID : 11GLM0301
Lab ID : 9903379-02
Matrix : Water
Date Collected : 03/10/99
Date Received : 03/10/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/18/99	1403	144845	1
TERT-BUTYL METHYL ETHER		4.19	3.60	5.00	ug/l	1.0	JWF	03/19/99	1403	144845	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/18/99	1403	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1403	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 30, 1999

Sample ID : 11GLM0301

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/18/99	1403	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	TSD	03/18/99	1809	144378	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					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	2.00	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GMS	03/11/99	1400	144378 5

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Laboratory Certifications

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

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

Sample ID : 11GLM0301

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	73.8	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	64.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	82.0	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	84.0	(66.0 - 117.)
Toluene-d8	EDB-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	84.0	(66.0 - 117.)
Toluene-d8	MTBE-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	84.0	(66.0 - 117.)
Toluene-d8	NAP-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	84.4	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	84.0	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	85.2	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

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

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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 30, 1999

Sample ID : 11GLM0301

M = Method	Method-Description

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

Reviewed By

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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: April 09, 1999

Sample ID : 11GLMO301
Lab ID : 9903846-04
Matrix : Water
Date Collected : 03/23/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	04/07/99	1256	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

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 30, 1999

Sample ID	: 11GLMO401
Lab ID	: 9903379-03
Matrix	: Water
Date Collected	: 03/10/99
Date Received	: 03/10/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/18/99	1438	144845	1
TERT-BUTYL METHYL ETHER		4.57	3.60	5.00	ug/l	1.0	JWF	03/18/19	1438	144845	1
NAPHTHALENE		114	1.20	5.00	ug/l	2.0	JWF	03/19/99	0318	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1438	144845	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	J	1.14	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	J	0.889	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					

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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 30, 1999

Sample ID : 11GLMO401

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/18/99	1438	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	J	4.29	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		23.1	2.24	10.2	ug/l	1.0	TSD	03/18/99	2040	144378	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	J	8.58	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	J	3.03	1.84	10.2	ug/l	1.0					
PYRENE	U	ND	2.55	10.2	ug/l	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	2.00	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GMS	03/11/99	1400	144378	5

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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)

Sample ID : 11GLMO401

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	64.7	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	56.0	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	81.9	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	86.7	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	85.4	(66.0 - 117.)
Toluene-d8	EDB-8260B	88.1	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	86.7	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	85.4	(66.0 - 117.)
Toluene-d8	MTBE-8260B	88.1	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	86.7	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	85.4	(66.0 - 117.)
Toluene-d8	NAP-8260B	88.1	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	86.7	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	85.4	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	88.1	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

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

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 30, 1999

Sample ID : 11GLMO401

M = Method	Method-Description

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

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 09, 1999

Sample ID	: 11GLMO401
Lab ID	: 9903846-05
Matrix	: Water
Date Collected	: 03/23/99
Date Received	: 03/24/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	J	0.763	0.678	5.00	ug/l	1.0	MBL	04/07/99	1301	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

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
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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 05, 1999

Sample ID : 11GLMO501
Lab ID : 9903596-03
Matrix : Water
Date Collected : 03/16/99
Date Received : 03/16/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/19/99	0503	144845	1
TERT-BUTYL METHYL ETHER	R	ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/19/99	0503	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/19/99	0503	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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)

Sample ID : 11GLMO501

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/19/99	0503	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.33	10.6	ug/l	1.0	TSD	03/27/99	2134	144885	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	U	ND	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	U	ND	1.91	10.6	ug/l	1.0					
PYRENE	U	ND	2.65	10.6	ug/l	1.0					
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	03/19/99	2048	144710	4
General Chemistry											
NITROGEN, NITRATE	U	ND	0.0127	0.0500	mg/l	1.0	RWS	03/16/99	2253	144708	5
SULFATE (AS SO4)		49.8	0.0380	0.200	mg/l	1.0					
Total Rec. Petro. Hydrocarbons		6.14	1.22	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	6

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/19/99	1445	144885	7

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: April 05, 1999

Sample ID : 11GLMO501

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TRACE							FGD	03/18/99	1200	144710	8

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	79.3	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	70.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	77.5	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	84.5	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	86.0	(66.0 - 117.)
Toluene-d8	EDB-8260B	84.9	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	84.5	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	86.0	(66.0 - 117.)
Toluene-d8	MTBE-8260B	84.9	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	84.5	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	86.0	(66.0 - 117.)
Toluene-d8	NAP-8260B	84.9	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	84.5	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	86.0	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	84.9	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 200.7
M 5	EPA 300.0
M 6	SW-846 9070
M 7	EPA 3510
M 8	EPA 3005

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: April 05, 1999

Sample ID : 11GLMO501

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, Valerie Davis at (843) 769-7391.

Reviewed By

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

(843) 556-8171 • Fax (843) 766-1178

GENERAL ENGINEER LABORATORY

Client Sample ID: 11GLM0501

GC Volatiles

Lot-Sample #...: I9C170140-002	**Work Order #...:** CRNLF101		**Matrix.....:** WATER
Date Sampled...: 03/16/99 15:25	**Date Received..:** 03/17/99		
Prep Date.....: 03/26/99	**Analysis Date..:** 03/26/99		
Prep Batch #...: 9088303	**Analysis Time..:** 14:44		
Dilution Factor: 1			
	Method.....: RSK SOP-175		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methane	**89 B,E**	**0.50**	**ug/L**

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

E Estimated result. Result concentration exceeds the calibration range.

GENERAL ENGINEER LABORATORY

Client Sample ID: 11GLM0501

GC Volatiles

Lot-Sample #...:	I9C170140-002	**Work Order #...:**	CRNLF201	**Matrix.....:**	WATER
Date Sampled...:	03/16/99 15:25	**Date Received..:**	03/17/99		
Prep Date.....:	03/26/99	**Analysis Date..:**	03/26/99		
Prep Batch #...:	9088303	**Analysis Time..:**	15:49		
Dilution Factor:	2				
		Method.....:	RSK SOP-175		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methane	**86 B,D**	**1.0**	**ug/L**

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

D Result was obtained from the analysis of a dilution.

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

Sample ID : 11GLM0601
Lab ID : 9903340-14
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/18/99	0445	144624	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/18/99	0445	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/18/99	0445	144624	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					

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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)

Sample ID : 11GLM0601

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	MAP	03/18/99	0445	144624	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.40	10.9	ug/l	1.0	MKP	03/17/99	0859	144250	3
ACENAPHTHYLENE	U	ND	1.42	10.9	ug/l	1.0					
ANTHRACENE	U	ND	2.51	10.9	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.05	10.9	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.18	10.9	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.12	10.9	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.73	10.9	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.83	10.9	ug/l	1.0					
CHRYSENE	U	ND	2.40	10.9	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.40	10.9	ug/l	1.0					
FLUORANTHENE	U	ND	3.38	10.9	ug/l	1.0					
FLUORENE	U	ND	2.29	10.9	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.71	10.9	ug/l	1.0					
PHENANTHRENE	U	ND	1.96	10.9	ug/l	1.0					
PYRENE	U	ND	2.73	10.9	ug/l	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	2.11	1.22	5.00	mg/l	1.0	AAT	03/25/99	0900	145262	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/10/99	1430	144250	5

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)

Sample ID : 11GLM0601

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	58.0	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	51.6	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	72.3	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	72.9*	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	79.2	(66.0 - 117.)
Toluene-d8	EDB-8260B	82.0	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	72.9*	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	79.2	(66.0 - 117.)
Toluene-d8	MTBE-8260B	82.0	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	72.9*	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	79.2	(66.0 - 117.)
Toluene-d8	NAP-8260B	82.0	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	72.9*	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	79.2	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.0	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

Notes:
The qualifiers in this report are defined as follows:
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* 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	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

Sample ID : 11GLM0601

M = Method	Method-Description

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

Reviewed By

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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: April 09, 1999

Sample ID : 11GLMO601
Lab ID : 9903846-06
Matrix : Water
Date Collected : 03/23/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	J	0.879	0.678	5.00	ug/l	1.0	MBL	04/07/99	1307	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

Notes:
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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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9903846-06

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

Sample ID : 11GLM0701
Lab ID : 9903340-11
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/18/99	0313	144624	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/18/99	0313	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/18/99	0313	144624	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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

Sample ID : 11GLM0701

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	MAP	03/18/99	0313	144624	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.40	10.9	ug/l	1.0	MKP	03/17/99	0725	144250	3
ACENAPHTHYLENE	U	ND	1.42	10.9	ug/l	1.0					
ANTHRACENE	U	ND	2.51	10.9	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.05	10.9	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.18	10.9	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.12	10.9	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.73	10.9	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.83	10.9	ug/l	1.0					
CHRYSENE	U	ND	2.40	10.9	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.40	10.9	ug/l	1.0					
FLUORANTHENE	U	ND	3.38	10.9	ug/l	1.0					
FLUORENE	U	ND	2.29	10.9	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.71	10.9	ug/l	1.0					
PHENANTHRENE	U	ND	1.96	10.9	ug/l	1.0					
PYRENE	U	ND	2.73	10.9	ug/l	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/25/99	0900	145262	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/10/99	1430	144250	5

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)

Sample ID : 11GLM0701

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	61.4	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	53.8	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	77.6	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	72.7*	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	78.1	(66.0 - 117.)
Toluene-d8	EDB-8260B	82.2	(73.0 - 122.)
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Dibromofluoromethane	PP VOA-TETR	78.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	82.2	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

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

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

Sample ID : 11GLM0701

M = Method	Method-Description

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

Reviewed By

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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: April 09, 1999

Sample ID	: 11GLMO701
Lab ID	: 9903846-07
Matrix	: Water
Date Collected	: 03/23/99
Date Received	: 03/24/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	04/07/99	1312	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

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

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 05, 1999

Sample ID : 11GLMO801
Lab ID : 9903596-04
Matrix : Water
Date Collected : 03/16/99
Date Received : 03/16/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/19/99	0537	144845	1
T-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/19/99	0537	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/19/99	0537	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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: April 05, 1999

Sample ID : 11GLMO801

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/19/99	0537	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.24	10.2	ug/l	1.0	TSD	03/27/99	2205	144885	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					
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	03/19/99	2053	144710	4
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	5

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/19/99	1445	144885 6
TRACE	FGD	03/18/99	1200	144710 7

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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)

Sample ID : 11GLMO801

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	65.0	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	61.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	57.8	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	85.9	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	87.4	(66.0 - 117.)
Toluene-d8	EDB-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	85.9	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	87.4	(66.0 - 117.)
Toluene-d8	MTBE-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	85.9	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	87.4	(66.0 - 117.)
Toluene-d8	NAP-8260B	85.2	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	85.9	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	87.4	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	85.2	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 200.7
M 5	SW-846 9070
M 6	EPA 3510
M 7	EPA 3005

Notes:
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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: April 05, 1999

Sample ID : 11GLMO801

M = Method	Method-Description

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

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 05, 1999

Sample ID	: NBCH663-001
Lab ID	: 9903596-05
Matrix	: Water
Date Collected	: 03/16/99
Date Received	: 03/16/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/19/99	1131	144845	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	JWF	03/19/99	1131	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/19/99	1131	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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)

Sample ID : NBCH663-001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/19/99	1131	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.20	10.0	ug/l	1.0	TSD	03/27/99	2236	144885	3
ACENAPHTHYLENE	U	ND	1.30	10.0	ug/l	1.0					
ANTHRACENE	U	ND	2.30	10.0	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.80	10.0	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.00	10.0	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.70	10.0	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.50	10.0	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.60	10.0	ug/l	1.0					
CHRYSENE	U	ND	2.20	10.0	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.20	10.0	ug/l	1.0					
FLUORANTHENE	U	ND	3.10	10.0	ug/l	1.0					
FLUORENE	U	ND	2.10	10.0	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.40	10.0	ug/l	1.0					
PHENANTHRENE	U	ND	1.80	10.0	ug/l	1.0					
PYRENE	U	ND	2.50	10.0	ug/l	1.0					
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	03/19/99	2059	144710	4
General Chemistry											
NITROGEN, NITRATE		0.0580	0.0127	0.0500	mg/l	1.0	RWS	03/16/99	2334	144708	5
SULFATE (AS SO4)		267	0.760	4.00	mg/l	20.	RWS	03/17/99	0044	144708	5
Total Rec. Petro. Hydrocarbons	U	ND	1.22	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	6

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	ES	03/19/99	1445	144885	7

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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: April 05, 1999

Sample ID : NBCH663-001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TRACE							FGD	03/18/99	1200	144710	8

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	80.1	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	74.2	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	73.3	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	88.4	(73.0 - 129.)
ibromofluoromethane	EDB-8260B	96.0	(66.0 - 117.)
oluene-d8	EDB-8260B	91.9	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	88.4	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	96.0	(66.0 - 117.)
Toluene-d8	MTBE-8260B	91.9	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	88.4	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	96.0	(66.0 - 117.)
Toluene-d8	NAP-8260B	91.9	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	88.4	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	96.0	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	91.9	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	EPA 200.7
M 5	EPA 300.0
M 6	SW-846 9070
M 7	EPA 3510
M 8	EPA 3005

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Laboratory Certifications

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

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

Sample ID : NBCH663-001

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).
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any questions to your Project Manager, Valerie Davis at (843) 769-7391.

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 09, 1999

Sample ID : NBCH663-001
Lab ID : 9903846-08
Matrix : Water
Date Collected : 03/23/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	04/07/99	1318	145431	1
The following prep procedures were performed:											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

Notes:
The qualifiers in this report are defined as follows:
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9903846-08

GENERAL ENGINEER LABORATORY

Client Sample ID: NBCH663-001

GC Volatiles

Lot-Sample #...:	I9C170140-003	Work Order #...:	CRNLH101	Matrix.....:	WATER
Date Sampled...:	03/16/99 14:45	Date Received..:	03/17/99		
Prep Date.....:	03/26/99	Analysis Date..:	03/26/99		
Prep Batch #...:	9088303	Analysis Time..:	14:50		
Dilution Factor:	1				
		Method.....:	RSK SOP-175		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methane	49 B	0.50	ug/L

NOTE(S):

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 26, 1999

Sample ID : NBCH663-002
Lab ID : 9903340-15
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/18/99	0516	144624	1
TERT-BUTYL METHYL ETHER		6.04	3.60	5.00	ug/l	1.0					
NAPHTHALENE	J	2.61	0.600	5.00	ug/l	1.0	MAP	03/18/99	0516	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/18/99	0516	144624	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE		8.55	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					

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

Sample ID : NBCH663-002

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	MAP	03/18/99	0516	144624	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.40	10.9	ug/l	1.0	MKP	03/17/99	0929	144250	3
ACENAPHTHYLENE	U	ND	1.42	10.9	ug/l	1.0					
ANTHRACENE	U	ND	2.51	10.9	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	3.05	10.9	ug/l	1.0					
BENZO(A)PYRENE	U	ND	2.18	10.9	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	5.12	10.9	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.73	10.9	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.83	10.9	ug/l	1.0					
CHRYSENE	U	ND	2.40	10.9	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.40	10.9	ug/l	1.0					
FLUORANTHENE	U	ND	3.38	10.9	ug/l	1.0					
FLUORENE	U	ND	2.29	10.9	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.71	10.9	ug/l	1.0					
PHENANTHRENE	U	ND	1.96	10.9	ug/l	1.0					
PYRENE	U	ND	2.73	10.9	ug/l	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	2.50	1.22	5.00	mg/l	1.0	AAT	03/25/99	0900	145262	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds							ES	03/10/99	1430	144250	5

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)

Sample ID : NBCH663-002

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	58.6	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	53.5	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	56.0	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	69.8*	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	76.5	(66.0 - 117.)
Toluene-d8	EDB-8260B	80.2	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	69.8*	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	76.5	(66.0 - 117.)
Toluene-d8	MTBE-8260B	80.2	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	69.8*	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	76.5	(66.0 - 117.)
Toluene-d8	NAP-8260B	80.2	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	69.8*	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	76.5	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	80.2	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

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

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

Sample ID : NBCH663-002

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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

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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 30, 1999

Sample ID : NBCH663-003
Lab ID : 9903379-04
Matrix : Water
Date Collected : 03/10/99
Date Received : 03/10/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/18/99	1513	144845	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	J	1.33	0.600	5.00	ug/l	1.0	JWF	03/18/99	1513	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/18/99	1513	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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 30, 1999

Sample ID : NBCH663-003

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/18/99	1513	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.29	10.4	ug/l	1.0	TSD	03/18/99	2110	144378	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					
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	ND	2.00	5.00	mg/l	1.0	AAT	03/26/99	1300	145339	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GMS	03/11/99	1400	144378	5

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)

Sample ID : NBCH663-003

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	66.5	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	59.3	(35.3 - 108.)
p-Terphenyl-d14	M610-TETR	80.7	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	85.0	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	85.3	(66.0 - 117.)
Toluene-d8	EDB-8260B	86.4	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	85.0	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	85.3	(66.0 - 117.)
Toluene-d8	MTBE-8260B	86.4	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	85.0	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	85.3	(66.0 - 117.)
Toluene-d8	NAP-8260B	86.4	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	85.0	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	85.3	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	86.4	(73.0 - 122.)

M = Method	Method-Description
M 1	EPA 8260B
M 2	EPA 8260
M 3	SW846 8270C
M 4	SW-846 9070
M 5	EPA 3510

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

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)

Sample ID : NBCH663-003

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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

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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: April 09, 1999

Sample ID : NBCH663-003
Lab ID : 9903846-09
Matrix : Water
Date Collected : 03/23/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
LEAD	U	ND	0.678	5.00	ug/l	1.0	MBL	04/07/99	1334	145431	1
The **following prep procedures were performed:**											
TRACE							FGD	03/26/99	1030	145431	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3005

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

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

Reviewed By

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(843) 556-8171 • Fax (843) 766-1178

9903846-09

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

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

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

cc: TETR00498 Report Date: March 26, 1999

Sample ID : ZHTLO1501
Lab ID : 9903340-01
Matrix : Water
Date Collected : 03/09/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
TERT-BUTYL METHYL ETHER	U	ND	3.60	5.00	ug/l	1.0	MAP	03/17/99	1445	144624	1
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1445	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1445	144624	1
1,1,2,2-TETRACHLOROETHANE	U	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	U	ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					

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

Sample ID : ZHTLO1501

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TOLUENE	U	ND	0.500	5.00	ug/l	1.0					
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0	MAP	03/17/99	1445	144624	1
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	MTBE-8260B	73.3	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	77.1	(66.0 - 117.)
Toluene-d8	MTBE-8260B	80.1	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	73.3	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	77.1	(66.0 - 117.)
Toluene-d8	NAP-8260B	80.1	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	73.3	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	77.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	80.1	(73.0 - 122.)

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

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

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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

Sample ID : ZHTLO1501

M = Method	Method-Description

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

Reviewed By

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Laboratory Certifications

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

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

cc: TETR00498 Report Date: April 05, 1999

Sample ID	: ZHTLO1701
Lab ID	: 9903596-01
Matrix	: Water
Date Collected	: 03/16/99
Date Received	: 03/16/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	JWF	03/19/99	0353	144845	1
ERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
APHTHALENE	J	0.726	0.600	5.00	ug/l	1.0	JWF	03/19/99	0353	144845	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	JWF	03/19/99	0353	144845	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
ETHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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Laboratory Certifications

STATE	GEL	EPI
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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: April 05, 1999

Sample ID : ZHTLO1701

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	JWF	03/19/99	0353	144845	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	EDB-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	85.1	(66.0 - 117.)
Toluene-d8	EDB-8260B	84.8	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	85.1	(66.0 - 117.)
Toluene-d8	MTBE-8260B	84.8	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	84.4	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	85.1	(66.0 - 117.)
Toluene-d8	NAP-8260B	84.8	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	84.4	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	85.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	84.8	(73.0 - 122.)

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

Laboratory Certifications

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: April 05, 1999

Sample ID : ZHTLO1701

M = Method	Method-Description

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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

Sample ID : ZHRL00501
Lab ID : 9903340-02
Matrix : Water
Date Collected : 03/08/99
Date Received : 03/09/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	MAP	03/17/99	1516	144624	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	MAP	03/17/99	1516	144624	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	MAP	03/17/99	1516	144624	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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: April 09, 1999

Sample ID : ZHTL02201 (TRIP BLANK)
Lab ID : 9903846-01
Matrix : Water
Date Collected : 03/22/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	RMB	03/29/99	1546	145472	1
TERT-BUTYL METHYL ETHER		ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	RMB	03/29/99	1546	145472	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	RMB	03/29/99	1546	145472	1
1,1,2,2-TETRACHLOROETHANE		ND	0.500	1.00	ug/l	1.0					
1,1,2-TRICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHANE	U	ND	0.400	1.00	ug/l	1.0					
1,1-DICHLOROETHENE	U	ND	0.700	1.00	ug/l	1.0					
1,2-DICHLOROBENZENE	U	ND	0.400	1.00	ug/l	1.0					
1,2-DICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0					
1,2-DICHLOROPROPANE	U	ND	0.200	1.00	ug/l	1.0					
TRANS-1,2-DICHLOROETHENE		ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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: April 09, 1999

Sample ID : ZHTL02201 (TRIP BLANK)

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0				
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	RMB 03/29/99	1546	145472	1
TRICHLOROETHYLENE (TCE)	U	ND	0.600	1.00	ug/l	1.0				
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0				
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0				
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0				
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0				
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0				

Surrogate Recovery	Test	Percent%	Acceptable Limits
Bromofluorobenzene	EDB-8260B	84.3	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	85.9	(66.0 - 117.)
Toluene-d8	EDB-8260B	76.2	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	84.3	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	85.9	(66.0 - 117.)
Toluene-d8	MTBE-8260B	76.2	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	84.3	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	85.9	(66.0 - 117.)
Toluene-d8	NAP-8260B	76.2	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	84.3	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	85.9	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	76.2	(73.0 - 122.)

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

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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: April 09, 1999

Sample ID : ZHTL02201 (TRIP BLANK)

M = Method	Method-Description

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Reviewed By

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9903846-01

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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: April 09, 1999

Sample ID : ZHRL00601 (RINSE BLANK)
Lab ID : 9903846-02
Matrix : Water
Date Collected : 03/22/99
Date Received : 03/24/99
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Ethylene Dibromide	U	ND	1.00	1.00	ug/l	1.0	RMB	03/29/99	1621	145472	1
TERT-BUTYL METHYL ETHER	U	ND	3.60	5.00	ug/l	1.0					
NAPHTHALENE	U	ND	0.600	5.00	ug/l	1.0	RMB	03/29/99	1621	145472	2
Priority Pollutant Volatiles - 32 items											
1,1,1-TRICHLOROETHANE	U	ND	0.200	1.00	ug/l	1.0	RMB	03/29/99	1621	145472	1
1,1,2,2-TETRACHLOROETHANE	U	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	U	ND	0.700	1.00	ug/l	1.0					
1,3-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
1,4-DICHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
BENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOFORM	U	ND	0.400	1.00	ug/l	1.0					
CARBON TETRACHLORIDE	U	ND	0.200	1.00	ug/l	1.0					
CHLOROBENZENE	U	ND	0.300	1.00	ug/l	1.0					
CHLORODIBROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROFORM	U	ND	0.700	1.00	ug/l	1.0					
BROMODICHLOROMETHANE	U	ND	0.400	1.00	ug/l	1.0					
DICHLORODIFLUOROMETHANE		ND	1.20	5.00	ug/l	1.0					
ETHYLBENZENE	U	ND	0.300	5.00	ug/l	1.0					
BROMOMETHANE	U	ND	0.300	1.00	ug/l	1.0					
CHLOROMETHANE	U	ND	0.200	1.00	ug/l	1.0					
METHYLENE CHLORIDE	U	ND	1.20	5.00	ug/l	1.0					

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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)

Sample ID : ZHRL00601 (RINSE BLANK)

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
TETRACHLOROETHYLENE	U	ND	0.700	1.00	ug/l	1.0					
TOLUENE	U	ND	0.500	5.00	ug/l	1.0	RMB	03/29/99	1621	145472	1
TRICHLOROETHYLENE (TCE)		ND	0.600	1.00	ug/l	1.0					
TRICHLOROFLUOROMETHANE		ND	1.70	5.00	ug/l	1.0					
VINYL CHLORIDE	U	ND	0.400	1.00	ug/l	1.0					
XYLENES, TOTAL	U	ND	1.10	5.00	ug/l	1.0					
CIS-1,3-DICHLOROPROPENE	U	ND	0.300	1.00	ug/l	1.0					
TRANS-1,3-DICHLOROPROPENE		ND	0.300	1.00	ug/l	1.0					
Extractable Organics											
Polyaromatic Hydrocarbon Compounds - 15 items											
ACENAPHTHENE	U	ND	2.18	10.0	ug/l	1.0	TSD	03/29/99	1407	145440	3
ACENAPHTHYLENE	U	ND	1.29	10.0	ug/l	1.0					
ANTHRACENE	U	ND	2.28	10.0	ug/l	1.0					
BENZO(A)ANTHRACENE	U	ND	2.77	10.0	ug/l	1.0					
BENZO(A)PYRENE	U	ND	1.98	10.0	ug/l	1.0					
BENZO(B)FLUORANTHENE	U	ND	4.65	10.0	ug/l	1.0					
BENZO(G,H,I)PERYLENE	U	ND	2.48	10.0	ug/l	1.0					
BENZO(K)FLUORANTHENE	U	ND	2.57	10.0	ug/l	1.0					
CHRYSENE	U	ND	2.18	10.0	ug/l	1.0					
DIBENZ(A,H) ANTHRACENE	U	ND	2.18	10.0	ug/l	1.0					
FLUORANTHENE	U	ND	3.07	10.0	ug/l	1.0					
FLUORENE	U	ND	2.08	10.0	ug/l	1.0					
INDENO(1,2,3-CD)PYRENE	U	ND	3.37	10.0	ug/l	1.0					
PHENANTHRENE	U	ND	1.78	10.0	ug/l	1.0					
PYRENE	U	ND	2.48	10.0	ug/l	1.0					

The following prep procedures were performed:

GC/MS Base/Neutral Compounds BMC 03/26/99 1230 145440 4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-TETR	64.2	(41.2 - 107.)
Nitrobenzene-d5	M610-TETR	55.1	(35.3 - 108.)

GENERAL ENGINEERING LABORATORIES

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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)

Sample ID : ZHRL00601 (RINSE BLANK)

Surrogate Recovery	Test	Percent %	Acceptable Limits
p-Terphenyl-d14	M610-TETR	53.4	(36.6 - 110.)
Bromofluorobenzene	EDB-8260B	88.5	(73.0 - 129.)
Dibromofluoromethane	EDB-8260B	87.1	(66.0 - 117.)
Toluene-d8	EDB-8260B	78.6	(73.0 - 122.)
Bromofluorobenzene	MTBE-8260B	88.5	(73.0 - 129.)
Dibromofluoromethane	MTBE-8260B	87.1	(66.0 - 117.)
Toluene-d8	MTBE-8260B	78.6	(73.0 - 122.)
Bromofluorobenzene	NAP-8260B	88.5	(73.0 - 129.)
Dibromofluoromethane	NAP-8260B	87.1	(66.0 - 117.)
Toluene-d8	NAP-8260B	78.6	(73.0 - 122.)
Bromofluorobenzene	PP VOA-TETR	88.5	(73.0 - 129.)
Dibromofluoromethane	PP VOA-TETR	87.1	(66.0 - 117.)
Toluene-d8	PP VOA-TETR	78.6	(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.

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: April 09, 1999

Sample ID : ZHRL00601 (RINSE BLANK)

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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

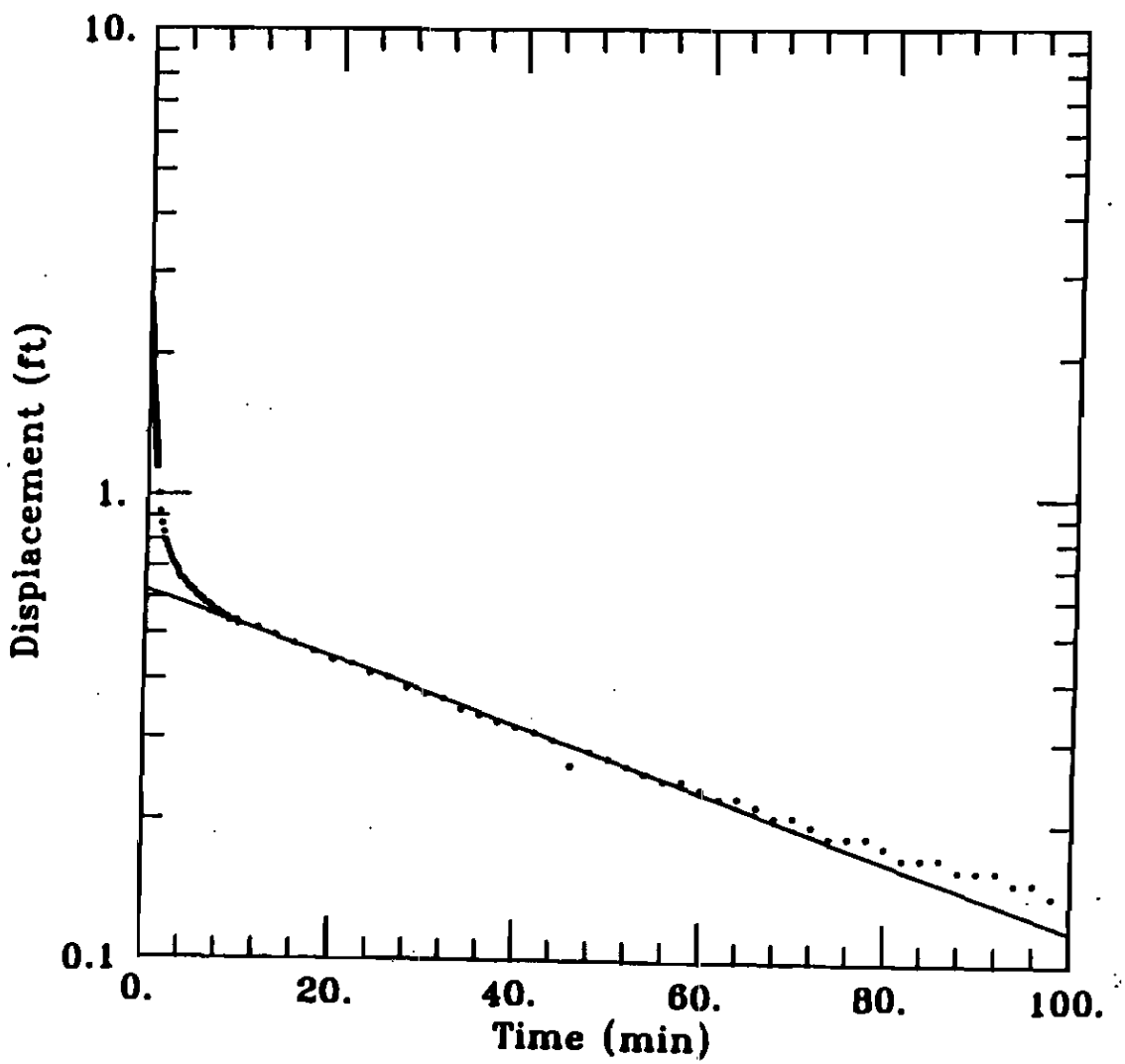
APPENDIX E

AQUIFER CHARACTERIZATION GRAPHS

Client: **CLEAN** | Company: **E/A&H**

Location: **NAS CHARLESTON** | Project: **2908-08450**

NBCH178001 Rising Head Slug Test



DATA SET:
17801RIS.AQT
01/16/95

AQUIFER MODEL:
Unconfined

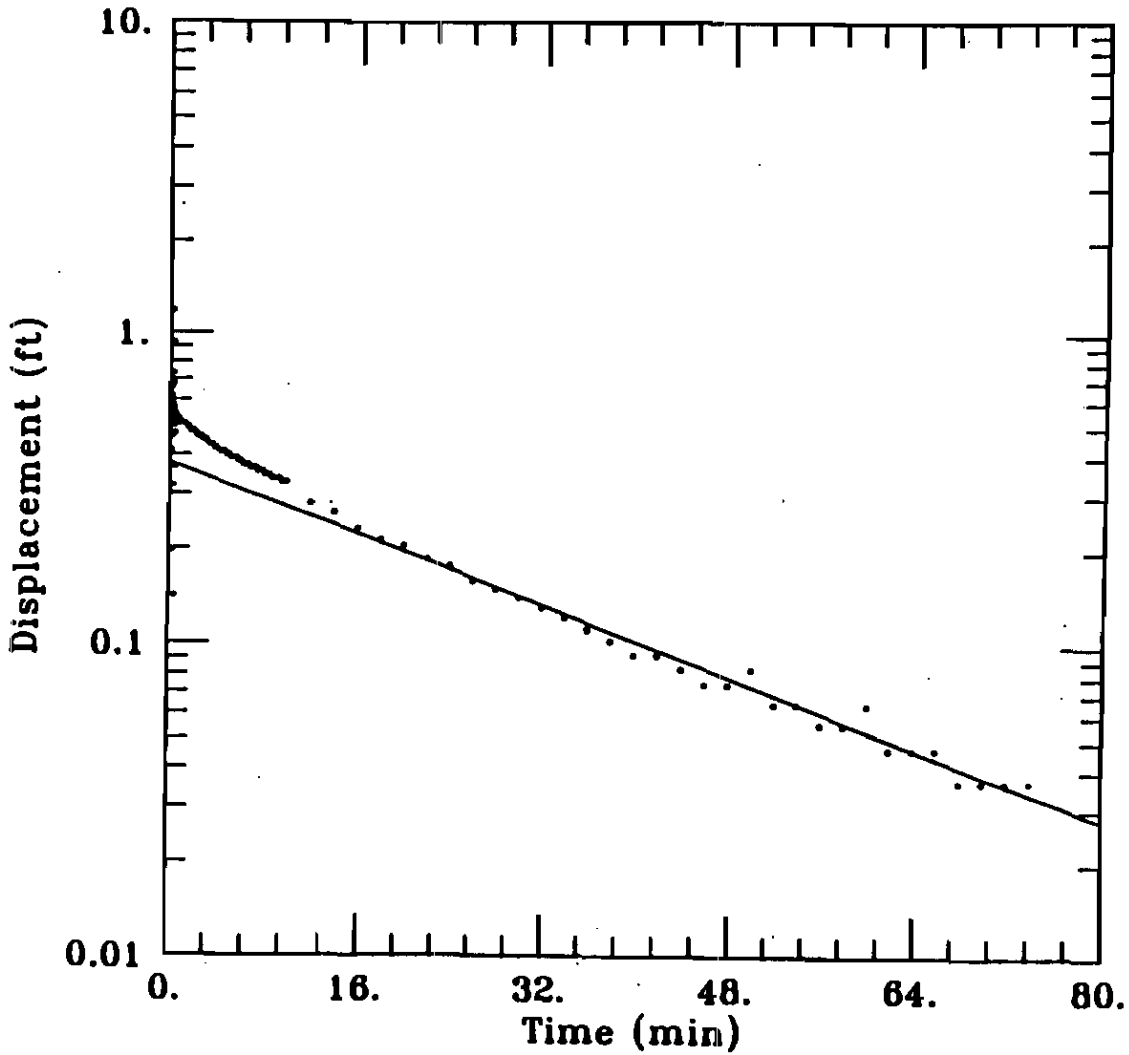
SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0 = 0.5886 ft
rc = 0.08333 ft
rw = 0.3333 ft
L = 8. ft
b = 12. ft
H = 8. ft

PARAMETER ESTIMATES:
K = 7.17E-05 ft/min
y0 = 0.6229 ft

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

NBCH178001 Falling Head Slug Test



DATA SET:
17801FAL.AQT
01/16/95

AQUIFER MODEL:
Unconfined

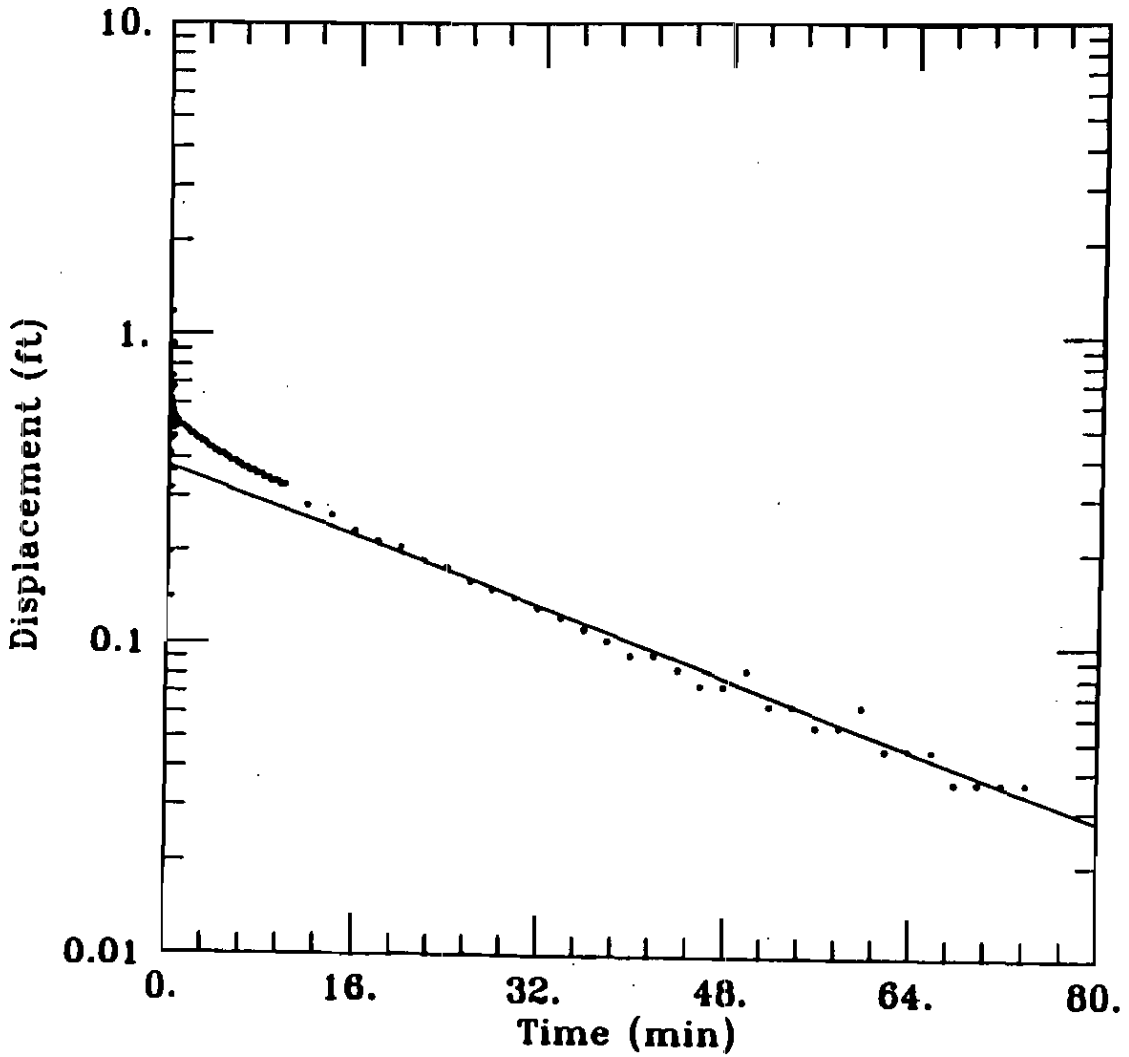
SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0 = 0.5886 ft
rc = 0.08333 ft
rw = 0.3333 ft
L = 8. ft
b = 12. ft
H = 8. ft

PARAMETER ESTIMATES:
K = 0.0001409 ft/min
y0 = 0.378 ft

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

NBCH178001 Falling Head Slug Test



DATA SET:
17801FAL.AQT
01/16/95

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

TEST DATA:
H0 = 0.5886 ft
rc = 0.08333 ft
rw = 0.3333 ft
L = 8. ft
b = 12. ft
H = 8. ft

PARAMETER ESTIMATES:
K = 0.0001409 ft/min
y0 = 0.378 ft

APPENDIX F

DOMENICO MODEL CALCULATIONS

ZONE H, SITE 11, 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
POE = Point of Exposure	
SSTL = Site-Specific Target Level	mg/L
$SSTL_{SOURCE}$ = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L
$SSTL_{COMP}$ = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L
X_{POE} = x = Distance from Plume Source to POE (along Centerline)	m
X_{COMP} = x = Distance from POE to Compliance Point (along Centerline)	m
Y = Source Width (Perpendicular to Flow Direction)	m
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m
K_s = Saturated Hydraulic Conductivity	m/sec
I = Groundwater Gradient	cm/cm
θ = Porosity in Saturated Zone	cm^3/cm^3

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
α_x = Longitudinal Dispersivity = x/10	m
α_y = Transverse Dispersivity = $\alpha_x/3$	m
α_z = Vertical Dispersivity = $\alpha_y/20$	m
k_{oc} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_c = Constituent Retardation Factor	
V/R_c = Maximum Transport Rate of Dissolved Constituent = $(K_s I)/(\theta R_c)$	m/sec
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_2O/g-C	k_D cm^3-H_2O/g-soil	V m/sec	R_c	C_{POE}/C_{SOURCE}
Naphthalene	0.44	0.13411	15	2	3.15E+08	5.40E-07	0.0104	0.43	1.65	0.01	0.00	0.001	9.24E-03	1543	14.25732	1.31E-08	55.708	8.829E-02

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

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

$$\frac{C_X}{C_{SOURCE}} = \frac{1}{2} erfc\left[\frac{\left(x - \frac{vt}{R_c}\right)}{2\sqrt{\alpha_X \frac{vt}{R_c}}}\right] \times erf\left[\frac{Y}{4\sqrt{\alpha_Y x}}\right] \times erf\left[\frac{Z}{2\sqrt{\alpha_Z x}}\right]$$

Constituent	C_{SOURCE} mg/L	C_X mg/L
Naphthalene	0.114	0.010

Prepared By: _____

Reviewed By: _____

ZONE H, SITE 11, 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
POE = Point of Exposure	
SSTL = Site-Specific Target Level	mg/L
$SSTL_{SOURCE}$ = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L
$SSTL_{COMP}$ = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L
$X_{POE} = x$ = Distance from Plume Source to POE (along Centerline)	m
$X_{COMP} = x$ = Distance from POE to Compliance Point (along Centerline)	m
Y = Source Width (Perpendicular to Flow Direction)	m
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m
K_s = Saturated Hydraulic Conductivity	m/sec
I = Groundwater Gradient	cm/cm
θ = Porosity in Saturated Zone	cm^3/cm^3

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{OC} = Fraction Organic Carbon in Soil	g-C/g-soil
α_x = Longitudinal Dispersivity = x/10	m
α_y = Transverse Dispersivity = $\alpha_x/3$	m
α_z = Vertical Dispersivity = $\alpha_x/20$	m
k_{OC} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_C = Constituent Retardation Factor	
V/R_C = Maximum Transport Rate of Dissolved Constituent = $(K_s I)/(\theta R_C)$	m/sec
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_2O/g-C	k_D cm^3-H_2O/g-soil	V m/sec	R_C	C_{POE}/C_{SOURCE}
Naphthalene	0.88	0.26823	15	2	6.31E+08	5.40E-07	0.0104	0.43	1.65	0.03	0.01	0.00	9.24E-03	1543	14.25732	1.31E-08	55.708	8.829E-02

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

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

$$\frac{C_X}{C_{SOURCE}} = \frac{1}{2} erfc\left[\frac{\left(x - \frac{vt}{R_c}\right)}{2\sqrt{\alpha_X \frac{vt}{R_c}}}\right] \times erf\left[\frac{Y}{4\sqrt{\alpha_Y x}}\right] \times erf\left[\frac{Z}{2\sqrt{\alpha_Z x}}\right]$$

Constituent	C_{SOURCE} mg/L	C_X mg/L
Naphthalene	0.114	0.010

Prepared By: _____

Reviewed By: _____

APPENDIX G

RBSL AND SSTL CALCULATIONS

ZONE H, SITE 11, 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
POE = Point of Exposure	
SSTL = Site-Specific Target Level	mg/L
$SSTL_{SOURCE}$ = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L
$SSTL_{COMP}$ = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L
X_{POE} = x = Distance from Plume Source to POE (along Centerline)	m
X_{COMP} = x = Distance from POE to Compliance Point (along Centerline)	m
Y = Source Width (Perpendicular to Flow Direction)	m
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m
K_s = Saturated Hydraulic Conductivity	m/sec
I = Groundwater Gradient	cm/cm
θ = Porosity in Saturated Zone	cm^3/cm^3

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
α_X = Longitudinal Dispersivity = 0.1x	m
α_Y = Transverse Dispersivity = $\alpha_X/3$	m
α_Z = Vertical Dispersivity = $\alpha_X/20$	m
k_{oc} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_C = Constituent Retardation Factor	
V/R_C = Maximum Transport Rate of Dissolved Constituent = (K_sI)/(θR_C)	m/sec
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_2O/g-C	k_D cm^3-H_2O/g-sc	V m/sec	R_C	C_{POE}/C_{SOURCE}
Naphthalene	1100	335.284	15	2	1.00E+13	5.40E-07	0.0104	0.43	1.65	33.53	11.18	1.68	9.24E-03	1543	14.25732	1.31E-08	55.708	3.284E-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_2O/g-C	k_D cm^3-H_2O/g-sc	V m/sec	R_C	C_{POE}/C_{COMP}
Naphthalene	1004	306.023	15	2	1.00E+13	5.40E-07	0.0104	0.43	1.65	30.60	10.20	1.53	9.24E-03	1543	14.25732	1.31E-08	55.708	3.940E-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.

*X_{POE} is the approximate distance from monitoring well NBCH633-001 to the Cooper River. The compliance point was considered to be monitoring well CNC 11-M05.

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

$$\frac{C_X}{C_{SOURCE}} = \frac{1}{2} erfc\left[\frac{\left(x - \frac{vt}{R_c}\right)}{2\sqrt{\alpha_X \frac{vt}{R_c}}}\right] \times erf\left[\frac{Y}{4\sqrt{\alpha_Y x}}\right] \times erf\left[\frac{Z}{2\sqrt{\alpha_Z x}}\right]$$

Constituent	POE RBSL mg/L	$SSTL_{SOURCE}$ mg/L	$SSTL_{COMP}$ mg/L
Naphthalene	0.010	3.045	2.538

Prepared By: _____

Reviewed By: _____

ZONE H, SITE 11, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
SCDHEC UST ID No. 09868

DDMENICO'S DILUTIDN/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

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

Parameter Descriptions:	Units
POE = Point of Exposure	
SSTL = Site-Specific Target Level	mg/L
$SSTL_{SOURCE}$ = Hydrocarbon Concentration in Plume Source Area protective of RBSLs at POE	mg/L
$SSTL_{COMP}$ = Hydrocarbon Concentration at Compliance Point protective of RBSLs at POE	mg/L
X_{POE} = x = Distance from Plume Source to POE (along Centerline)	m
X_{COMP} = x = Distance from POE to Compliance Point (along Centerline)	m
Y = Source Width (Perpendicular to Flow Direction)	m
Z = Source Depth (Perpendicular to Flow Direction in Vertical Plane)	m
K_s = Saturated Hydraulic Conductivity	m/sec
i = Groundwater Gradient	cm/cm
θ = Porosity in Saturated Zone	cm^3/cm^3

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
α_x = Longitudinal Dispersivity = 0.1x	m
α_y = Transverse Dispersivity = $\alpha_x/3$	m
α_z = Vertical Dispersivity = $\alpha_x/20$	m
k_{oc} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_c = Constituent Retardation Factor	
V/R_c = Maximum Transport Rate of Dissolved Constituent = $(K_s i/\theta R_c)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE}	X_{POE}	Y	Z	t	K_s	i	θ	ρ_s	α_x	α_y	α_z	f_{oc}	k_{oc}	k_D	V	R_c	C_{POE}/C_{SOURCE}
	ft	m	m	m	sec	m/sec	m/m	cm^3/cm^3	g/cm^3	m	m	m	g-C/g-soil	cm^3-H_2O/g-C	cm^3-H_2O/g-sc	m/sec		
Naphthalene	1000	304.804	15	2	1.00E+13	5.40E-07	0.0104	0.43	1.65	30.48	10.16	1.52	9.24E-03	1543	14.25732	1.31E-08	55.708	3.972E-03

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

*X_{POE} is the approximate distance from monitoring well CNC11-M04 to the Cooper River.

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

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

Constituent	POE RBSL	$SSTL_{SOURCE}$
	mg/L	mg/L
Naphthalene	0.010	2.518

Prepared By: _____

Reviewed By: _____

Construction Worker RBSL

Dermal RBSL

Chemical	Kow	MW	Kp cm/hr	B unitless	τ_{event} hr/event	c	b	t* hr	t_{event} hr/event	DAevent
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

Chemical	BW kg	AT day	EV events/day	ED yrs	EF days/yr	SA cm^2	CSF derm $[mg/kg\text{-}day]^{-1}$	Rfd derm mg/kg-day	Target HQ	RBSL mg/L
Naphthalene	70	365	1	1	90	4500	NA	3.20E-02	1.0	1.63

Incidental Ingestion RBSL

Chemical	BW kg	AT day	IR L/day	ED yrs	EF days/yr	Target HQ	CSF oral	Rfd oral [mg/kg-day]	RBSL mg/L
Naphthalene	70	365	0.01	1	90	1.0	NA	4.00E-02	1135.56

Inhalation RBSL

Chemical	TR (carc)	HI (nonc)	BWadult kg	AT yr	CSF $[mg/kg\text{-}day]^{-1}$	RfD (nonc) [mg/kg-day]	IR air m^3/day	EF day/yr	ED yr	RBSLair mg/m^3	H cm^3/cm^3	RBSLwater mg/L
Naphthalene	NA	1	70	1	NA	3.71E-04	20	90	1	5.27E-03	2.00E-03	2.63

SUMMARY: CONSTRUCTION WORKER RBSL

Chemical	Dermal RBSL mg/L	Incidental Ingestion RBSL mg/L	Inhalation RBSL mg/L	Minimum RBSL mg/L
Naphthalene	1.63	1135.56	2.63	**1.63**

Prepared By: _____

Reviewed By: _____

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]
	RBSL [mg/L]	SSTL MW CNC11-M04 [mg/L]	SSTL MW NBCH633-001 [mg/L]	SSTL MW CNC11-M05 [mg/L]	RBSL [mg/L]	SSTL onsite [mg/L]	[mg/L]
Naphthalene	0.01	2.52	3.05	2.54	1.63	1.63	1.63

RBSL - Groundweter RBSL that is protective of exposure et the receptor point
SSTL - Groundweter SSTL at the specified locetion protective of the RBSL at the POE.
SSTLs were developed for three on-site monitoring wells: CNC11-M04, NBCH663-001, and CNC11-M05. Monitoring well CNC11-M05 was used ae a compliance well for MW NBCH633-001. Monitoring well CNC11-M04 did not have an associated complience well, because there is no monitoring well downgradient of it.
The construction worker receptor is onsite; therefore, the RBSL and the SSTL are the same for the construction worker.

(a) The mimimum 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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