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RAPID ASSESSMENT REPORT FOR SITE 33 BUILDING NH 62 ZONE C CNC CHARLESTON
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TETRA TECH

**Rapid Assessment Report
For
Site 33, Building NH 62**

**Zone C
Charleston Naval Complex
North Charleston, South Carolina**



**Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0093**

January, 2000

**RAPID ASSESSMENT REPORT
FOR
SITE 33, BUILDING NH 62**

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

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

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

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

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PREPARED UNDER THE SUPERVISION OF:



**PAUL 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:

A handwritten signature in black ink that reads "Gregory D. Swanson".

1/24/00

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 33 (Building NH 62) which includes a closed underground storage tank (UST) and aboveground storage tank (AST) system which supplied fuel oil to Building Nh 62 at Charleston Naval Complex (CNC) Zone C, in North Charleston, South Carolina. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control.

TtNUS performed the following actions during the RA:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, evaluate public and private potable wells, locate utilities, locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed the previously prepared Underground Storage Tank Assessment Report for UST NH62-1 and AST NH62-2 to determine boring locations and monitoring well placements;
- Conducted a site survey to identify utilities and to construct a site plan;
- Performed a direct push investigation to collect soil samples for field screening using an organic vapor analyzer and collect soil and groundwater samples for mobile lab screening analysis of benzene, toluene, ethyl benzene, total xylenes (BTEX), and diesel range organics.
- Installed three temporary monitoring wells to approximately 12 feet below land surface (bls);
- Installed five shallow permanent monitoring wells to approximately 12 feet bls, and a vertical delineation well to approximately 36 feet bls;
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260 and PAHs using USEPA Method 8270;
- Performed groundwater natural attenuation sampling;
- Collected soil samples for laboratory analysis for BTEX and naphthalene using USEPA Method 8260, polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270, total organic carbon (TOC) using USEPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods; and
- Surveyed monitoring well and piezometer top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

Conclusion

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

Recommendation

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

1.0 INTRODUCTION

Site 33 is a closed underground storage tank (UST) and closed aboveground storage tank (AST) system which provided fuel oil to Building NH 62 at the Charleston Naval Complex (CNC), Zone C in Charleston, South Carolina. This Rapid Assessment (RA) was performed by Tetra Tech NUS, Inc.'s (TtNUS's) Tallahassee, Florida, office, located at 1401 Oven Park Drive, Suite 102, Tallahassee, Florida 32312 (telephone number 850-385-9899) on behalf of the U.S. Navy Southern Division (SOUTHDIV) Naval Facilities Engineering Command (NAVFAC), 2155 Eagle Drive, North Charleston, South Carolina 29406 (telephone number 843-820-7307). Authorization to conduct the RA for the site was issued by NAVFAC under Contract Task Order (CTO) 0093. Fieldwork necessary to complete the RA was performed May 12-18, June 16, July 1-9, and August 7-10, 1999, by TtNUS.

1.1 SITE DESCRIPTION

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

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

Building NH 62 is a former housing and storage facility that contained two unregulated tanks on the east side of the building, UST NH62-1 and AST NH62-2 (Figure 3). UST NH62-1 was a 2,500-gallon steel tank and AST NH62-2 was a 1,000-gallon painted steel tank. The tanks stored heating fuel for running the building's boiler. The UST was reported to be older than 20 years with the age of the AST being reported as unknown at the time the fuel distribution systems were removed. It is unknown when the UST and AST system was last in operation [Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth, Virginia, Environmental Detachment Charleston (SPORTENDETCNASN), 1996].

1.2 SITE HISTORY

In 1901, the U.S. Navy acquired 2,250 acres near Charleston to build a shipyard and the first naval officer was assigned duty in early 1902. Subsequently, buildings and a dry dock were constructed in the Naval Yard. The dry dock was completed in 1909 along with several other brick buildings and the main power plant, which is still in operation today. The first ship was placed in dry dock and work began on fleet vessels in 1910. World War I brought about an expansion of the yards, facilities, land area, and work force. The yard built two gunboats, several submarine chasers, and tugs in addition to performing repairs and other services to the fleet. In 1933, building activity had increased principally in construction of several Coast Guard tugs, a Coast Guard cutter, and a Navy gunboat, creating the need for more facilities and a much larger work force. In 1943 civilian work force peaked with almost 26,000 employees divided among three daily shifts. In 1956, construction began on piers, barracks, and buildings for mine warfare ships and personnel. Later in the decade, the facility became a major home port for combatant ships and submarines of the U.S. Atlantic Fleet [Ensafe/Allan & Hoshall, Inc. (E/A&H), 1997].

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, 1997). With the scheduled closure of the base, operations were scaled back and environmental cleanup proceeded to make the property available for redevelopment after closure. As part of the environmental cleanup process, the UST and AST at Building NH 62 were removed and the tank closure completed November 25, 1996.

From November 12 through November 25, 1996, UST NH62-1 and AST NH62-2 were removed, cleaned, and recycled as scrap metal. At the time of the UST NH62-1 and AST NA62-2 removal, no corrosion, pitting, or holes were found in the tank or fuel distribution piping. It was discovered during the removal of UST NH62-1 that the fuel distribution piping for the UST had previously been removed and the tank abandoned. The piping from UST NH62-1 was reported to have been placed in the same trench to the building as the AST NH62-2 piping (SPORTENDECHASN, 1996).

AST NH62-2 was located in a concrete block berm with UST NH62-1 located in the ground beneath the AST berm. The berm was dismantled during the excavation of UST NH62-1. The fuel supply and return line for AST NH62-2 consisted of 1-inch-diameter copper tubing which penetrated the southwest corner of the berm floor, then traveled approximately 15 feet into Building NH62 (SPORTENDECHASN, 1996).

During the removal of UST NH62-1, petroleum odors were detected in the soils excavated from the tank bed. Groundwater encountered in the tank excavation was reported to have contained a thin product sheen that was removed from the groundwater using absorbent pads. Groundwater and soil samples obtained from the tank excavation indicated low levels of polynuclear aromatic hydrocarbons (PAHs) and aromatic volatile organic compounds in the groundwater and soil; however, the detection limits for the samples were elevated due to matrix interference (SPORTENDECHASN, 1996). The Underground Storage Tank Assessment Report for UST NH62-1 and AST NH62-2 is included in Appendix A.

1.3 RECEPTOR SURVEY RESULTS

A survey of the site vicinity was conducted by TTNUS personnel to identify potential receptors for petroleum hydrocarbon contamination. The site plan (Figure 2) depicts the public utilities located within 250 feet of Building NH 62 (UST study area). Specific information concerning the depth of utilities below land surface is currently unavailable. However, according to facility personnel, utility lines are typically located approximately 2 to 6 feet below land surface (bls) (SPORTENVDECHASN, 1999). The following utility receptors were located:

- Sanitary sewer, water utility: A sanitary sewer line enters Building NH 62 on the south side of the building and extends west to a sewer line system. The sewer line is located approximately 90 feet to the south and is hydraulically downgradient (i.e., with respect to groundwater flow) of the site. A water line enters Building NH 62 on the southwest side of the building approximately 120 feet southwest of the site. A water line also enters Building 61 at the northwest corner of the building approximately 90 feet downgradient of the site. A water line which originates southeast of the study area enters Building 68 on the west side of the building. This water line extends in a north to south orientation approximately 90 feet east, and is upgradient to the site.
- Electrical utility, gas utility: A subsurface electrical line is located approximately 90 feet south of the site and borders Building NH 62 to the south. This electrical line extends toward the west. A gas line extending east to west is located north of Building NH 62, approximately 200 feet upgradient to the site.
- Storm drain utility: The nearest downgradient storm drain piping to the site extends northwest to southeast beneath Building NH 62. This storm drain is located approximately 40 feet from the site. A storm drain is also located approximately 50 feet south of the site and drains into a storm drain that extends toward the southeast.

According to the Final RCRA Facility Investigation Report for Zone H (E/A&H, 1996a) a survey of groundwater users within a 7-mile radius of CNC was conducted by the South Carolina Water Resources Commission to ascertain the extent of any shallow groundwater usage. Results of the water use investigation revealed that no drinking water wells, which utilize the shallow aquifer, are located within a 4-mile radius of CNC. Irrigation wells were not identified within 1,000 feet of the site. Numerous monitoring wells are located within 1,000 feet of the site. The nearest surface water bodies to the site are the Cooper River located approximately 2,400 feet to the east and Noisette Creek located approximately 2,400 feet to the north. No basements are located on the CNC property (E/A&H, 1996a).

There are no city, county, or state zoning ordinances as the property (CNC) is currently owned by the federal government. Information concerning zoning ordinances was obtained from the SOUTHDIV Remedial Project Manager located at 2155 Eagle Drive, North Charleston, South Carolina 92406 (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, 1997).

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, 1997). 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 including 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, 1997).

Groundwater occurs under water table or poorly confined conditions within the recent or Pleistocene deposits overlying the Ashley Formation of the Cooper Group. Transmissivity in the Pleistocene aquifer is generally less than 1,000 feet per day and well yields are variable, ranging from 0 to 200 gallons per minute (gpm). This groundwater contains high concentrations of iron and is commonly acidic at shallow depths (E/A&H, 1997).

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, 1997).

2.0 ASSESSMENT INFORMATION

2.1 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

2.1.1 Site Geology

Eight direct push soil borings were advanced at Site 33 under the supervision of a TtNUS geologist from May 12 through May 13, 1999 (Figure 3). Seven borings advanced to 12 feet bls and one boring advanced to 28 feet bls provided soil samples to characterize the subsurface lithology. On June 16, 1999, five shallow monitoring wells were installed to a depth of 12 feet bls. During installation soil grab samples were collected to describe the subsurface lithology. On July 1 and July 7, 1999, a vertical delineation monitoring well was installed. During the drilling process, lithologic samples were collected using split-spoon samplers to characterize the subsurface lithology to a depth of 36 feet bls.

Based on lithologic descriptions from the soil borings and monitoring wells, the subsurface soil generally consist of brown sandy silt from the surface to approximately 5 feet bls. Underlying the sandy silt is olive and gray silty sand units which extend from approximately 5 feet bls to 13 feet bls. Underlying the silty sands are dark olive to orange sand which were present to a depth of 28 feet bls (Figures 4 and 5). Boring logs are presented in Appendix B.

2.1.2 Site Hydrogeology

Five shallow water table monitoring wells, CNC33-MW01, CNC33-MW02, CNC33-MW03, CNC33-MW04, and CNC33-MW05, and one deep vertical delineation monitoring well, CNC33-MW06D, were installed as part of this RA investigation (see Figure 3). The shallow monitoring wells were completed to a depth of 12 feet bls. Each shallow monitoring well was completed using 10 feet of 2-inch-diameter, 0.01-inch machine-slotted Schedule 40 polyvinyl chloride (PVC) screen that bracketed the water table. Monitoring well CNC33-MW06D was completed as a Type III monitoring well with 6-inch-diameter PVC surface casing grouted to a depth of 25 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to a depth of 36 feet and a 2-inch-diameter PVC monitoring well was installed with a 5-foot, 0.01-inch machine-slotted PVC screen. Well construction logs for the RA monitoring wells are presented in Appendix B. At the completion of the well installations, a South Carolina registered professional surveyor surveyed each monitoring well location and the top of casing elevation.

Three temporary, small diameter, PVC piezometers were installed on May 12, 1999 at boring locations CNC33-B02, CNC33-B04, and CNC33-B05. Each piezometer was constructed of 1-inch-diameter Schedule 40 PVC threaded casing and well screen. Each piezometer was completed with 10-foot screen section installed to bracket the water table. The piezometers were used to inspect the groundwater for the presence of free product at the tank locations for UST NH62-1 and AST NH62-2.

Groundwater in shallow wells at Site 33 was encountered at depths ranging from approximately 4 to 4.5 feet bls during the RA investigation. The recorded water-level data collected during the RA are presented in Table 1. Groundwater elevation measurements were recorded from the site monitoring wells on August 8, 1999. Figure 6 presents the groundwater potentiometric surface recorded during the field event on August 8, 1999. The potentiometric surface maps depict a groundwater flow direction toward the south.

As part of the Final RCRA Facility Investigation Report for Zone B (E/A&H, 1996b), a tidal influence investigation was conducted to determine what effects tidal ranges in Noisette Creek and the Cooper River exhibit on groundwater flow within Zone B. The objective of the investigation was to measure water levels in the shallow aquifer during low, mid, and high tides in Zones A and B. Select wells in Zones C and E near the perimeter of Zone B were also measured to obtain additional data. Since Zone B is bordered by Noisette Creek to the north and is situated between Zone C and the Cooper River, results from the Zone B tidal influence investigation were used to evaluate effects of tidal influence on Site 33. Site 33 is located in Zone C of the RCRA Facility Investigation.

Measurements of tidal fluctuations identified that surface water elevations for Noisette Creek and the Cooper River varied greatly with tidal events; however, the tidal fluctuations produced less than 0.1-foot variations in all of the Zone B shallow wells. The results identified no significant change in groundwater flow direction resulting from tidal fluctuations in Zone B (E/A&H, 1996b). Since Site 33 is located farther inland from the Cooper River than the Zone B study area and farther inland to the Noisette Creek tributary, the impact of tidal fluctuation on the shallow groundwater flow direction at Site 33 is considered negligible.

2.2 ASSESSMENT RESULTS

Eight soil borings were completed as part of the screening portion of the soil investigation at Site 33. Five soil borings were completed to collect soil samples for analysis at a fixed base laboratory to confirm the chemicals of concern (CoC). The soil borings for screening evaluation were completed using a Direct Push Technology (DPT) rig. Samples were collected to evaluate subsurface soil vapors, soil contaminant

concentration (via a mobile laboratory), and groundwater contaminant concentrations (via a mobile laboratory). The soil samples for organic vapor screening were collected from a maximum depth of 7 feet bls. The soil and groundwater samples collected for mobile laboratory screening were analyzed for benzene, toluene, ethyl benzene, and xylenes (BTEX), and diesel range organics.

Soil samples for CoC evaluation were collected on May 18, 1999, and analyzed for BTEX, ethylene dibromide (EDB) and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260; and PAHs using USEPA Method 8270. One sample was collected for total organic carbon (TOC) analysis using USEPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) using USEPA Method 9071, and grain size analysis using sieve and hydrometer analysis. The sample collection was conducted in accordance with the SCDHEC guidance document Standard Limited Assessment (June 1997). Lithologic logs for each soil boring are presented in Appendix B. The soil boring locations are shown on Figure 3 and the assessment results are presented in Section 2.3.1.

A comprehensive groundwater monitoring event was conducted on August 7, 1999. On August 10, 1999, monitoring well CNC33-M03 was resampled for USEPA Method 8260 parameters since the volatile organic analysis (VOA) bottles from the August 7, 1999, sampling event were broken during sample shipment. Groundwater sampling was conducted using a peristaltic pump and low flow, quiescent techniques. The monitoring wells were sampled in accordance with SCDHEC's guidance document South Carolina Risk-Based Corrective Action for Petroleum Releases (January 1998). Each well was purged of three 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 tertiary butyl ether (MTBE), EDB, 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. Groundwater natural attenuation data are summarized on Table 3.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Eight soil borings were completed to evaluate for soil vapors as part of the soil screening assessment at Site 33. Organic vapor analyzer (OVA) headspace measurements were collected from vadose zone soils to evaluate soil vapor concentrations. Table 4 summarizes the soil vapor screening results. Figure 3 presents the soil boring locations.

Low levels of soil vapors were detected with vapor concentrations ranging from 2 to 6 parts per million (ppm). The highest soil vapor concentrations were detected in samples from 5 to 7 feet bls at boring CNC33-B05 located at the north end of the former UST pit.

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 collected from each soil boring was analyzed in a mobile laboratory for BTEX, naphthalene, and diesel range organics using USEPA Methods 8021B and 8015M. The soil samples were selected based on the soil vapor screening results with the additional criteria that the samples originate in the vadose zone above the water table. Table 5 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 5, BTEX and naphthalene constituents were not detected in any of the mobile laboratory soil samples. Diesel range organics were detected at three boring locations (CNC33-B04, CNC33-B05, and CNC33-B08) at concentrations ranging from 15 milligrams per kilogram (mg/kg) to 19 mg/kg. Diesel range organics were reported below the laboratory detection limits in the remaining groundwater samples.

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

2.3.3 Groundwater Mobile Laboratory Results

A groundwater sample was collected from each soil boring location and was analyzed by a mobile laboratory for BTEX, naphthalene, and diesel range organics using USEPA Methods 8021B and 8015M. Table 6 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 6, BTEX constituents were reported below detection limits in all samples except at CNC33-B03 where ethylbenzene and total xylenes were detected at 3.8 microgram per liter (ug/L) and 4.3 ug/L. Naphthalene was detected in three samples (borings CNC33-B03, CNC33-B04, and CNC33-B05) at concentrations ranging from 6.9 ug/l to 61 ug/L. Low levels of diesel range organics were

detected in all samples, except CNC33-B01, at concentrations ranging from 0.1 milligrams per liter (mg/L) to 1.8 mg/L.

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

2.4 CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

2.4.1 Chemicals of Concern in Soil

Five subsurface soil samples were collected from the Site 33 area for determination of CoCs. The soil boring locations are shown on Figure 3, and Table 7 summarizes the CoCs detected in the soil samples. All soil CoCs, except for benzene, were reported below the laboratory detection limits and below the Risk Based Screening Level (RBSL) for CoCs in sandy soils. Benzene was reported below detection limits in all samples at concentrations of less than 6 or 7 microgram per kilogram (ug/Kg). The laboratory detection limit is slightly above the RBSL established at 5 ug/kg for benzene; however, the detection limits reported by the laboratory reflect the lowest achievable levels by US EPA Method 3550 which utilizes an encore sampler for VOA analysis. The VOA detection limits are established based on the dry weight of the soil and the amount of soil collected in the encore sampler. The RBSL for sandy soil was used based on the boring logs and a grain size analysis completed on sample 33SLB080405 indicating a sandy soil matrix. Soil analytical data sheets and grain size analysis reports are provided in Appendix D.

2.4.2 Chemicals of Concern in Groundwater

Table 8 presents the analytical results for CoCs detected in the groundwater samples collected during August 1999. Groundwater analytical data sheets for the August 1999, field event are presented in Appendix D. No CoCs were detected above method detection limits in the groundwater samples. During the RA investigation, no free product was detected in any of the site monitoring wells or piezometer wells.

2.5 ANALYTICAL DATA

All analytical data from the Underground Storage Tank Assessment Report (SPORTENDECHASN 1996) are presented in Appendix A. Soil analytical data generated during this RA are summarized in Table 7. Groundwater analytical data generated during this RA are summarized in Table 8. The soil and groundwater laboratory analytical data for this RA are included in Appendix D.

2.6 AQUIFER CHARACTERISTICS AND EVALUATION

Groundwater levels were measured from the site monitoring wells on August 8, 1999. The groundwater flow direction across the site is toward the south as illustrated on Figure 6. The hydraulic gradient between monitoring wells CNC33-MW02 and CNC33-MW03 on August 8, was 0.0042 feet per foot (ft/ft), respectively.

As part of the Final RCRA Facility Investigation Report for Zone C, rising and falling head slug tests were conducted on nine shallow monitoring wells throughout Zone C to determine the hydraulic conductivity of the surficial aquifer (E/A&H, 1997). Slug tests were conducted by instantaneously adding (falling head) or removing (rising head) a volume (slug) of water from the well and measuring the recovering water level with a data logger. A hydraulic conductivity value was then calculated for the rising head test and for the falling head test. The average hydraulic conductivity for each well was determined by calculating the geometric mean of the rising and falling head values. Because hydraulic conductivity data are lognormally distributed, the geometric mean was determined to be the most representative measure of central 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 33. To make this determination the screened interval and proximity to the site were evaluated. Based on this evaluation, monitoring well NBCC047006 was selected as the most representative well. NBCC047006 is approximately 300 feet southeast of the site and is completed to a depth of approximately 12 feet bls with a 10-foot screened interval. The geometric mean of the rising and falling head conductivities for NBCC047006 was 4.06 feet per day (E/A&H, 1997). The well completion record for NBCC047006 is provided in Appendix E.

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. Using Darcy's Law the average linear velocity of the groundwater may be expressed as:

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

where:

- V = average velocity
- K = hydraulic conductivity = 4.06 ft/day
- n = volumetric porosity = 0.45
(from sieve results of 90% sand & 5% clay and Figure C1 in SCDHEC, 1998)
- i = most recent hydraulic gradient measurement = 0.0042 ft/ft

therefore:

$$V = \left(\frac{4.06 \text{ ft/day}}{0.45} \right) \times 0.0042 \text{ ft/ft}$$

$$V = 0.0379 \text{ ft/day}$$

In summary, the seepage velocity of the surficial aquifer was calculated to be approximately 14 feet per year based on a hydraulic conductivity of 4.06 feet per day, a hydraulic gradient of 0.0011 ft/ft, and a porosity of 45% for sandy soil.

2.7 FATE AND TRANSPORT MODEL DESCRIPTION

Laboratory analysis of groundwater and soil samples collected during the RA investigation detected no soil or groundwater CoCs at concentrations above the SCDHEC RBSLs. The soil and groundwater samples from the RA investigation were collected near the UST NH62-1 and AST NH62-2 fuel storage and distribution systems. No free product was detected in the groundwater during the RA investigation; therefore, evaluation of Site 33 will stop at Tier 1. Fate and transport modeling is not required for Tier 1 evaluation.

2.8 PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN

Since fate and transport modeling was not performed, predicted migration and attenuation of CoCs were not evaluated.

3.0 TIER 1 EVALUATION

3.1 COMPARISON OF ANALYTICAL RESULTS WITH RBSLs

Soil samples collected on May 18, 1999, were analyzed for BTEX and PAH constituents. Naphthalene was the only CoC parameter detected in the samples. An estimated naphthalene concentration of 4 ug/kg was detected in sample 33SLB060405 (boring CNC33-B06) collected at a depth of 4 to 5 feet bls. The naphthalene concentration is less than the naphthalene RBSL established at 210 ug/kg for sandy soils less than 5 feet above groundwater.

Groundwater samples collected from August 7 through August 10, 1999, were analyzed for BTEX, MTBE, and PAHs. All CoC parameters were reported below the SCDHEC RBSL. A comparison of soil and groundwater concentrations to RBSLs is summarized in Tables 7 and 8.

3.2 SITE CONCEPTUAL EXPOSURE MODEL

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

Drinking water at the site and surrounding properties is provided by the city of Charleston water treatment plants. The closest surface water is Noisette Creek and the Cooper River located approximately 2,400 feet north and 2,400 feet east of the site, respectively. Potable wells and irrigation wells were not identified within 1,000 feet of the site (E/A&H 1996a). Numerous monitoring wells are located within 1,000 feet of the Site (E/A&H 1996a). Groundwater flow is towards the south.

3.3 EXPOSURE PATHWAY ANALYSIS

SCDHEC requires that only those exposure pathways with COC concentrations exceeding Tier 1 RBSL concentrations be examined in a Tier 2 Risk-Based Corrective Action Report. Since there were no CoC concentrations exceeding the RBSLs, an exposure pathway was not performed.

3.4 IDENTIFICATION OF DATA REQUIREMENTS

No additional data is required.

3.5 SITE-SPECIFIC TARGET LEVELS

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

3.6 RECOMMENDATIONS

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

4.0 REFERENCES

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

E/A&H (Ensafe/Allen & Hoshall, Inc.) 1996, Final RCRA Facility Investigation Reported for Zone B, Naval Base Charleston, Charleston, South Carolina, November 21, 1996.

E/A&H (Ensafe/Allen & Hoshall, Inc.) 1997, Final RCRA Facility Investigation Reported for Zone C, Naval Base Charleston, Charleston, South Carolina, November 14, 1997.

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

SCDHEC, 1998. South Carolina Risk-Based Corrective Action for Petroleum Releases, January 1998.

SPORTENDECHASN (Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston), 1996, Underground Storage Tank (UST) Assessment Report, Charleston Naval Base Complex, North Charleston, South Carolina, November 25, 1996.

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

TABLE 1

**GROUNDWATER ELEVATIONS
SITE 33, BUILDING NH 62
ZONE C, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Well No.	Total Depth of Well (ft)	Top of Casing Elevation, ft (MSL)	Date Measured	Depth to Free Product (BTOC)	Depth to Water, ft (BTOC)	Groundwater Elevation, ft (MSL)
CNC33-MW01	12	9.53	8/8/99	ND	5.11	4.42
CNC33-MW02	12	9.49	8/8/99	ND	5.11	4.38
CNC33-MW03	12	9.00	8/8/99	ND	4.49	4.51
CNC33-MW04	12	10.20	8/8/99	ND	5.53	4.64
CNC33-MW05	12	8.57	8/8/99	ND	4.31	4.26
CNC33-MW06D	36	9.74	8/8/99	ND	5.49	4.25

Notes:

MSL - Mean Sea Level

BTOC - Below Top of Casing

ft - feet

ND - Not Detected

TABLE 2

**GROUNDWATER FIELD MEASUREMENTS
SITE 33, BUILDING NH 62
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Well I.D.	Date Sampled	Purge method	Volume (gallons)	Temp. (° C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)
CNC33-MW01	08/08/99	PP	3.2	24.2	6.67	0.336	7	0.19
CNC33-MW02	08/08/99	PP	3.3	24.8	6.51	0.278	3	1.16
CNC33-MW03	08/07/99	PP	3.6	25.6	6.55	0.296	18	1.33
	08/10/99	PP	4.0	24.7	6.38	0.319	0	0.49
CNC33-MW04	08/07/99	PP	4.0	25.4	6.21	0.120	5	3.64
CNC33-MW05	08/08/99	PP	3.7	25.0	6.50	0.287	5	0.91
CNC33-MW06D	08/07/99	PP	14.5	21.0	6.63	0.21	4	0.19

Notes:

(° C) - Degrees Celsius

PP - Peristaltic pump, low flow technique

µMHOS/cm - Micro HOS per centimeter

NTU - Nephelometric turbidity units

mg/l - milligrams per liter

TABLE 3

**GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
SITE 33, BUILDING NH 62
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA**

Well I.D.	Date Sampled	Dissolved Oxygen (mg/L)	Alkalinity (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) *
CNC33-MW01	8/7/99	2.0	155	49	0.03	0.34	11.0	0.4	<0.05	6	570
CNC33-MW02	8/7/99	1.5	130	68	0.03	3.30	0.0	0.3	<0.05	16	360
CNC33-MW05	8/7/99	2.0	119	62	0.02	2.91	2.0	0.3	<0.05	21	6.3

Notes:

mg/L - Milligrams per liter

ug/L - Micrograms per liter

E- Estimated Concentration

* Fixed base laboratory analysis

TABLE 4

**SUMMARY OF OVA SOIL SCREENING RESULTS
 SITE 33, BUILDING NH 62
 ZONE C, FORMER CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA**

Sample Location	Sample Depth (feet)	Total Organic Vapor Headspace Concentration
CNC33-B01	1-2	4
	2-3	4
	3-4	4
	5-6	4
CNC33-B02	1-2	4
	2-3	4
	3-4	4
	5-6	4
CNC33-B03	1-2	4
	2-3	4
	3-4	4
CNC33-B04	1-2	4
	2-3	4
	3-4	4
	4-5	4
	5-6	4
	6-7	4
	7-8	4
CNC33-B05	5-6	6
	6-7	6
	7-8	6
CNC33-B06	2-3	4
	3-4	4
	4-5	4
	6-7	4
CNC33-B07	1-2	2
	2-3	2
	3-4	2
CNC05-B08	1-2	2
	2-3	2
	3-4	2
	4-5	2
	6-7	2

Note: OVA - organic vapor analyzer equipped with a flame ionization detector

TABLE 5

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Mobile Laboratory Screening Data ⁽¹⁾					
			Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Total Xylenes (ug/kg)	Nap-Thalene (ug/kg)	Diesel Range Organics (mg/kg)
CNC33-B01	33SFB01-0304	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	<10
CNC33-B02	33SFB02-0304	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	<10
CNC33-B02	33SFB02-0304 ⁽²⁾	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	NA
CNC33-B03	33SFB03-0304	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	<10
CNC33-B04	33SFB04-0304	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	16
CNC33-B04	33SFB04-0304 ⁽²⁾	3-4	NA	NA	NA	NA	NA	17
CNC33-B05	33SFB05-0304	3-4	<5.0	<5.0	<5.0	<5.0	<5.0	19
CNC33-B06	33SFB06-0405	4-5	<5.0	<5.0	<5.0	<5.0	<5.0	<10
CNC33-B07	33SFB07-0405	4-5	<5.0	<5.0	<5.0	<5.0	<5.0	<10
CNC33-B08	33SFB08-0405	4-5	<5.0	<5.0	<5.0	<5.0	<5.0	15

NOTES:

⁽¹⁾ Mobile laboratory screening data were analyzed using USEPA Method 8021/8015M. Compounds not detected are reported as less than the instrument detection limit.

⁽²⁾ Laboratory duplicate

NA Not analyzed
 ug/kg Micrograms per kilogram
 mg/kg Milligrams per kilogram

TABLE 6

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
 SITE 33, BUILDING NH 62
 ZONE C, FORMER CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Laboratory Screening Data ⁽¹⁾					
		Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Napthalene (ug/L)	Diesel Range Organics (mg/L)
CNC33-B01	33GFB01-12	<1.0	<1.0	<1.0	<1.0	<1.0	<0.1
CNC33-B02	33GFB02-11	<1.0	<1.0	<1.0	<1.0	<1.0	0.3
CNC33-B02 ²	33GFB02-11 ⁽²⁾	<1.0	<1.0	<1.0	<1.0	<1.0	NA
CNC33-B03	33GFB03-11	<1.0	<1.0	3.8	4.3	61	1.8
CNC33-B04	33GFB04-11	<1.0	<1.0	<1.0	<1.0	18	0.1
CNC33-B05	33GFB05-11	<1.0	<1.0	<1.0	<1.0	6.9	0.4
CNC33-B05 ²	33GFB05-11 ⁽²⁾	NA	NA	NA	NA	NA	0.4
CNC33-B06	33GFB06-11	<1.0	<1.0	<1.0	<1.0	<1.0	0.2
CNC33-B07	33GFB07-11	<1.0	<1.0	<1.0	<1.0	<1.0	0.1
CNC33-B08	33GFB08-10	<1.0	<1.0	<1.0	<1.0	<1.0	0.2

NOTES:

⁽¹⁾ Laboratory screening data were analyzed using USEPA Method 8020/8015M. Compounds not detected are reported as less than the instrument detection limit.

⁽²⁾ Laboratory duplicate

NA Not analyzed
 ug/L Micrograms per liter
 mg/L Milligrams per liter

TABLE 7

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Soil Boring / Sample No.	Sample Date	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl-benzene (ug/kg)	Xylenes (total) (ug/kg)	Benzo(a) anthracene (ug/kg)	Benzo(b) fluoranthene (ug/kg)	Benzo(k) fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenzo(a,h) anthracene (ug/kg)	Naphthalene (ug/kg)
RBSL ⁽¹⁾		5	1622	1260	42471	73084	29097	231109	12998	87866	210
CNC33-B01 / 33SLB010304	18-May-99	< 6	< 6	< 6	< 6	< 2000	< 2000	< 2000	< 2000	< 2000	< 6
CNC33-B04 / 33SLB040304	18-May-99	< 6	< 6	< 6	< 6	< 400	< 400	< 400	< 400	< 400	< 6
CNC33-B04 / 33SLB040304D ⁽²⁾	18-May-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC33-B05 / 33SLB050304	18-May-99	< 7	< 7	< 7	< 7	< 360	< 360	< 360	< 360	< 360	< 7
CNC33-B06 / 33SLB060405	18-May-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	4 ⁽³⁾
CNC33-B08 / 33SLB080405	18-May-99	< 6	< 6	< 6	< 6	< 400	< 400	< 400	< 400	< 400	< 6

All concentrations are in micrograms per kilograms (ug/kg).

NA - Not analyzed

⁽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 sample

⁽³⁾ Indicates the presence of an analyte at a concentration less than the reporting limit and greater than the detection limit.

TABLE 8

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

Monitoring Well/ Sample No.	Sample Date	Benzene (ug/L)	Ethyl- benzene (ug/L)	Toluene (ug/L)	Xylenes (total) (ug/L)	MTBE (ug/L)	Naphthalene (ug/L)	Benzo(a) anthracene (ug/L)	Benzo(b) fluoranthene (ug/L)	Benzo(k) fluoranthene (ug/L)	Chrysene (ug/L)	Dibenzo(a,h) anthracene (ug/L)
RBSL ⁽¹⁾		5	700	1000	10000	40	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾	10 ⁽²⁾
CNC33-MW01 / 33GLM0101	8-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33-MW01 / 33GLM0101D	8-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33-MW02 / 33GLM0201	8-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33-MW03 / 33GLM0301	7-Aug-99	NA	NA	NA	NA	NA	NA	< 10	< 10	< 10	< 10	< 10
CNC33-MW03 / 33GLM0301	10-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA
CNC33-MW04 / 33GLM0401	7-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33-MW05 / 33GLM0501	8-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33-MW06D / 33GLM0601	7-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10
CNC33TL ⁽³⁾ / 33TL00101	9-Aug-99	< 5	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA

All concentrations are in ug/L

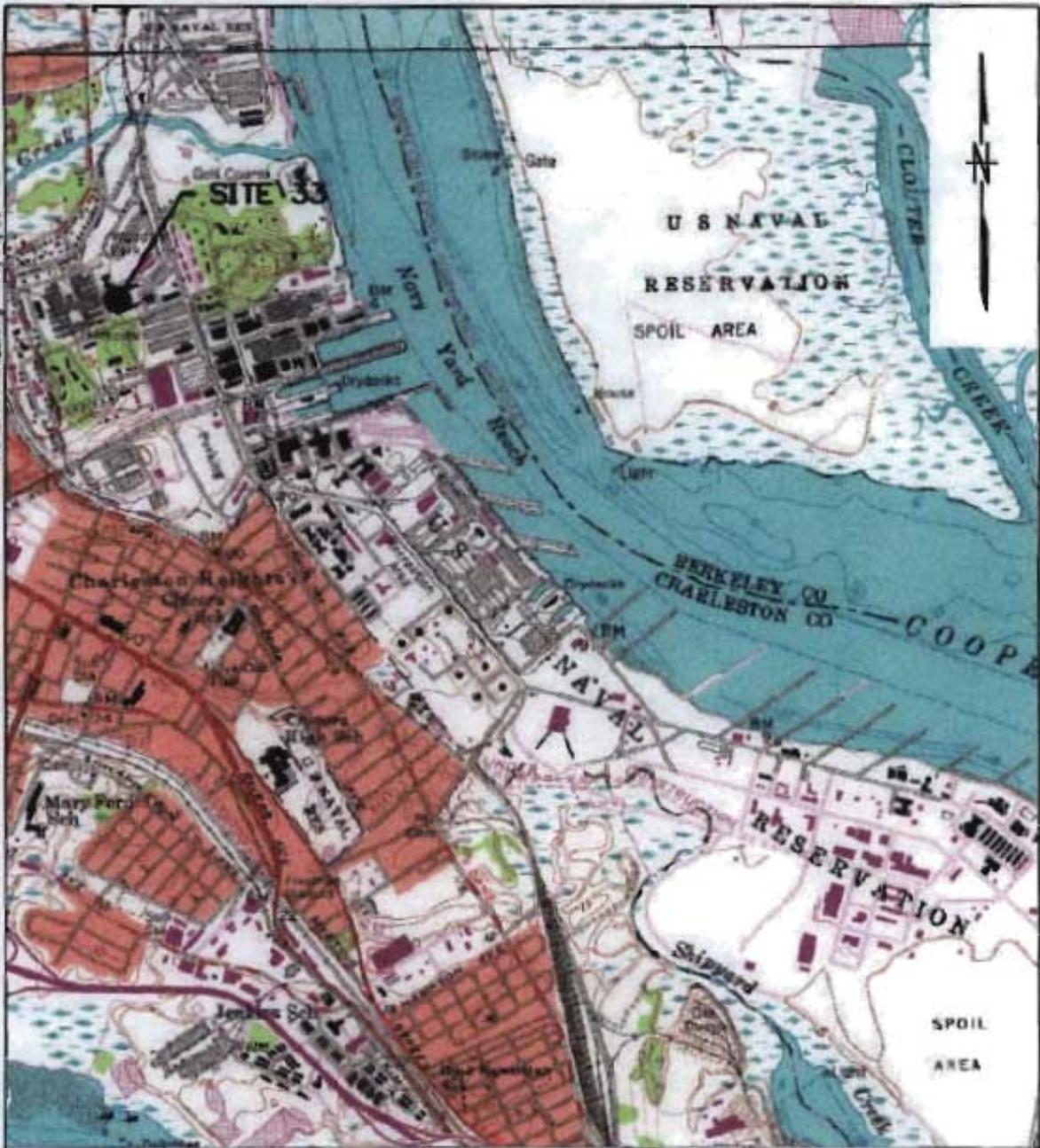
NA - Not analyzed

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

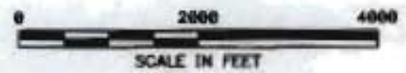
⁽²⁾ The Risk based screening level for individual PAH CoC is 10 ug/L or 25 ug/L for total PAHs.

⁽³⁾ Trip blank

ACAD: 01 840485.dwg 01/25/98 HJP



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

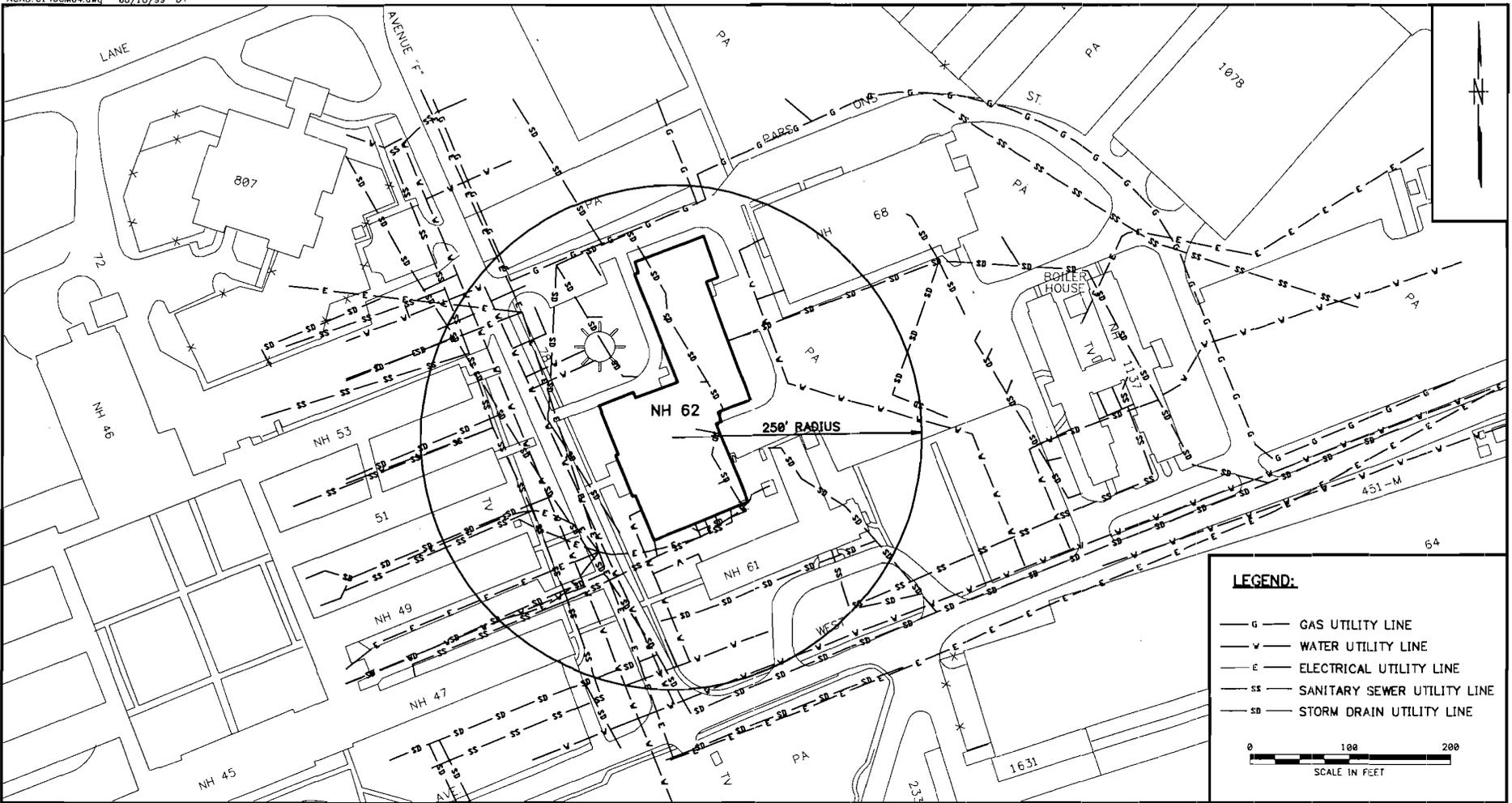


DRAWN BY	DATE
HJP	8/20/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE	
AS NOTED	



SITE LOCATION MAP
SITE 33, BUILDING NH62-1 & 2, ZONE C
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SC

CONTRACT NO. N0164	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0



LEGEND:

- G — GAS UTILITY LINE
- W — WATER UTILITY LINE
- E — ELECTRICAL UTILITY LINE
- SS — SANITARY SEWER UTILITY LINE
- SD — STORM DRAIN UTILITY LINE

0 100 200
SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY
DLT 8/18/99
DATE

CHECKED BY
DATE

COST/SCHED-AREA

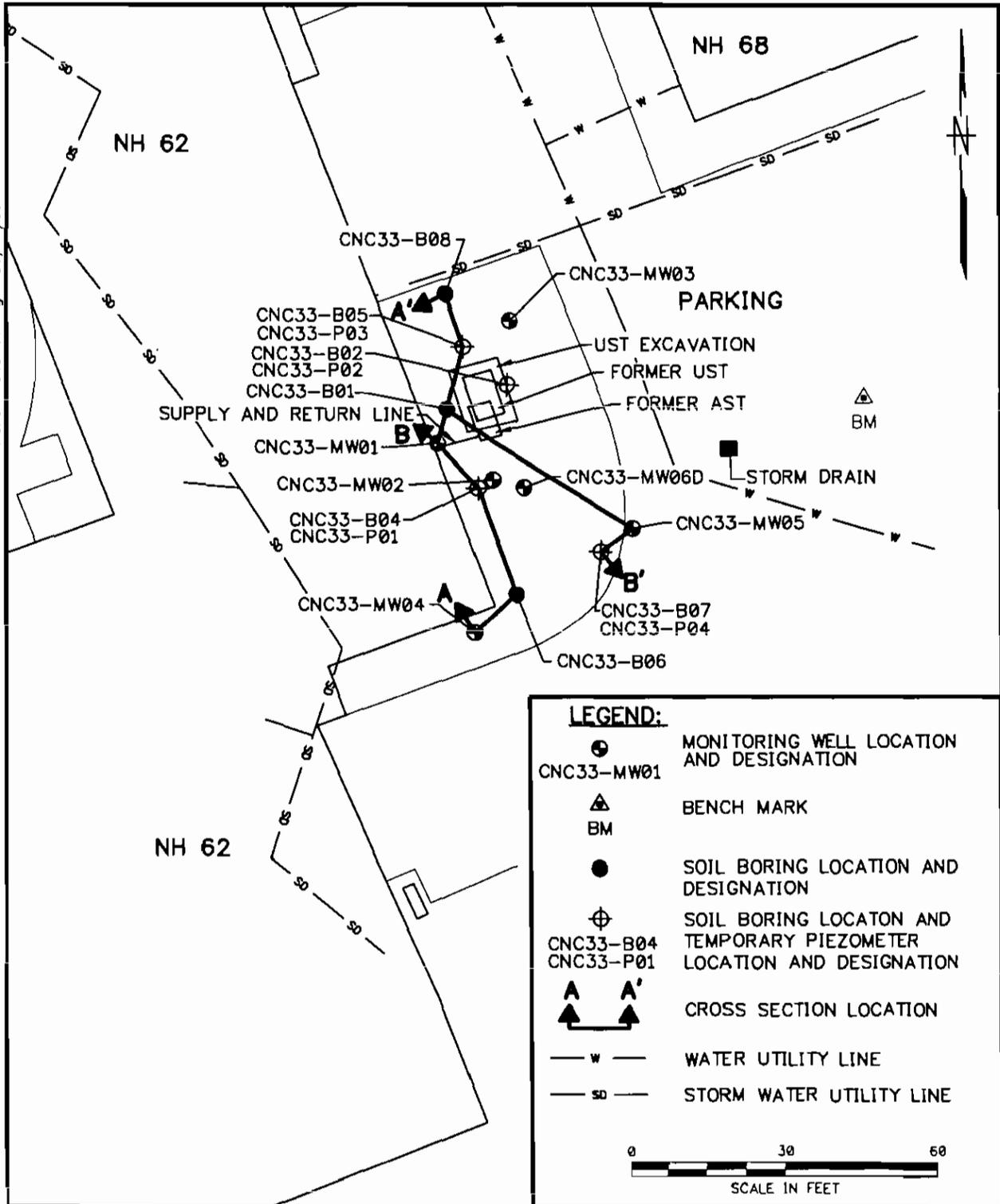
SCALE
AS NOTED



SITE VICINITY MAP
SITE 33, BUILDING NH 62
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0146	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2	REV. 0

ACAD: 0164CM08.dwg 10/08/99 HJP

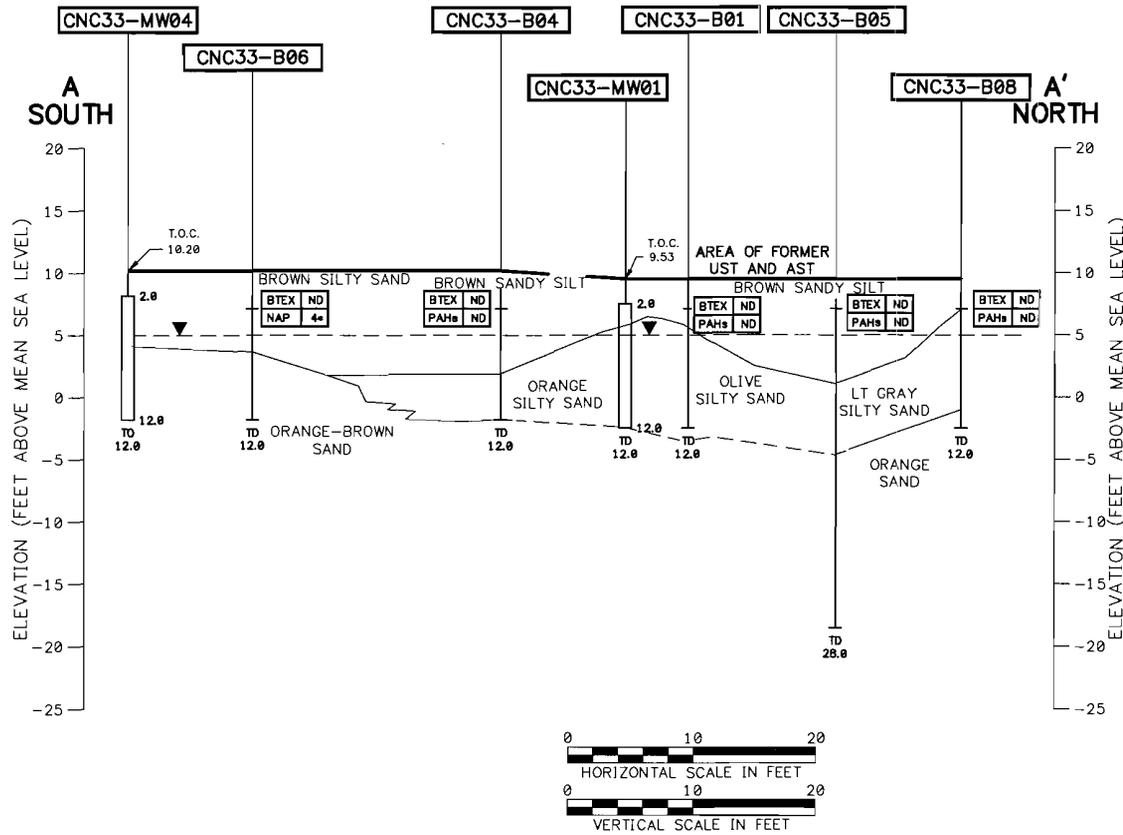


DRAWN BY HJP	DATE 10/5/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SITE MAP AND SAMPLING LOCATIONS
SITE 33, BUILDING NH 62
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0164	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV. 0



LEGEND:

SAMPLE LOCATION **CNC33-MW04**

GROUND SURFACE ELEVATION
GROUND SURFACE

TOP OF MONITORED INTERVAL (FT BGS)

LITHOLOGIC CONTACT (INFERRED BETWEEN BORINGS)

BOTTOM OF MONITORED INTERVAL (FT BGS)

TOTAL DEPTH OF WELL OR BORING (FT BGS)

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)

4+ NAPHTHALENE SOIL CONCENTRATION (ug/Kg)

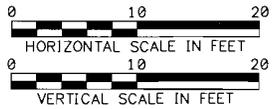
• ANALYTE AT CONCENTRATION LESS THAN THE REPORTING LIMIT AND GREATER THAN THE DETECTION LIMIT

BTEX	ND	SOIL PARAMETER CONCENTRATION AT SAMPLE DEPTHS.
PAHs	ND	

BTEX = BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES
 NAP = NAPHTHALENE
 PAHs = POLYNUCLEAR AROMATIC HYDROCARBONS
 ND = NOT DETECTED (BELOW LABORATORY DETECTION LIMITS)

NOTE:

GROUNDWATER BTEX, NAPHTHALENE, PAHs PARAMETERS REPORTED BELOW DETECTION LIMITS IN MONITORING WELLS CNC33-MW04 AND CNC33-MW01.



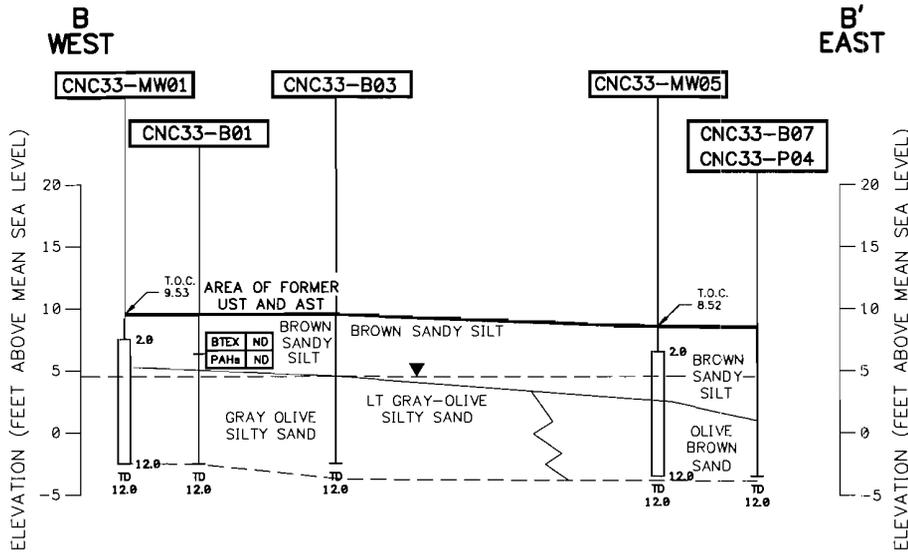
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY: HJP DATE: 10/5/99
 CHECKED BY: DATE:
 COST/SCHED-AREA:
 SCALE: AS NOTED



GEOLOGIC CROSS SECTION A-A'
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0164	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV. 0

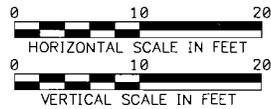


LEGEND:

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)

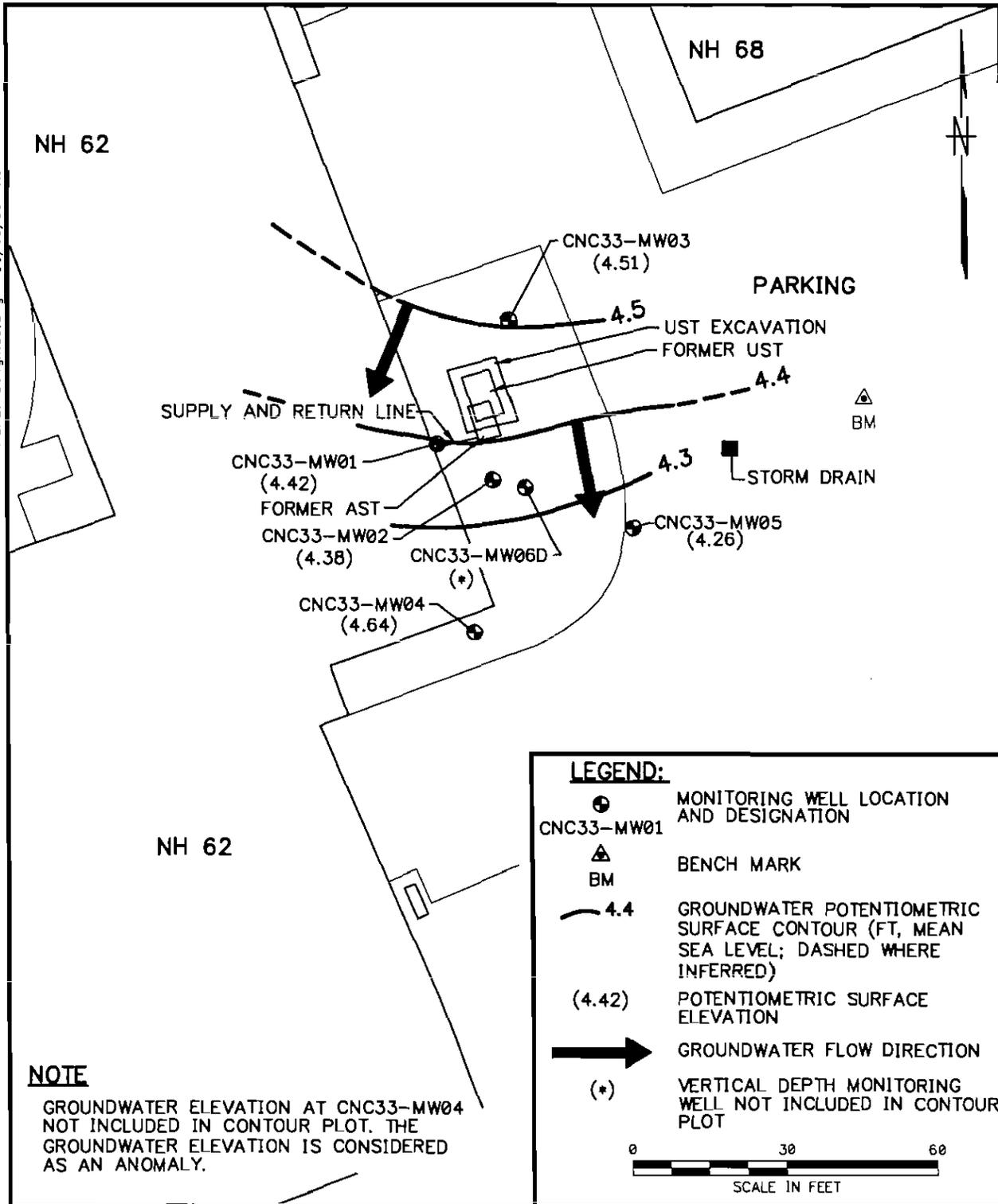
BTEX = BENZENE, TOULENE, ETHYL.BENZENE AND TOTAL XYLENES
 NAP = NAPHTHALENE
 NO = NOT DETECTED (BELOW LABORATORY DETECTION LIMITS)

NOTE:
 GROUNDWATER BTEX, NAPHTHALENE, PAHs PARAMETERS REPORTED BELOW DETECTION LIMITS IN MONITORING WELLS CNC33-MW01 AND CNC33-MW05.



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY HJP 10/5/99	DATE 10/5/99		GEOLOGIC CROSS SECTION B-B' SITE 33, BUILDING NH 62 ZONE C, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO. 0164	
							CHECKED BY	DATE			APPROVED BY	DATE
							COST/SCHED-AREA				APPROVED BY	DATE
							SCALE AS NOTED				DRAWING NO. FIGURE 5	REV. 0

ACAD: 0164gm01.dwg 10/08/99 HJP



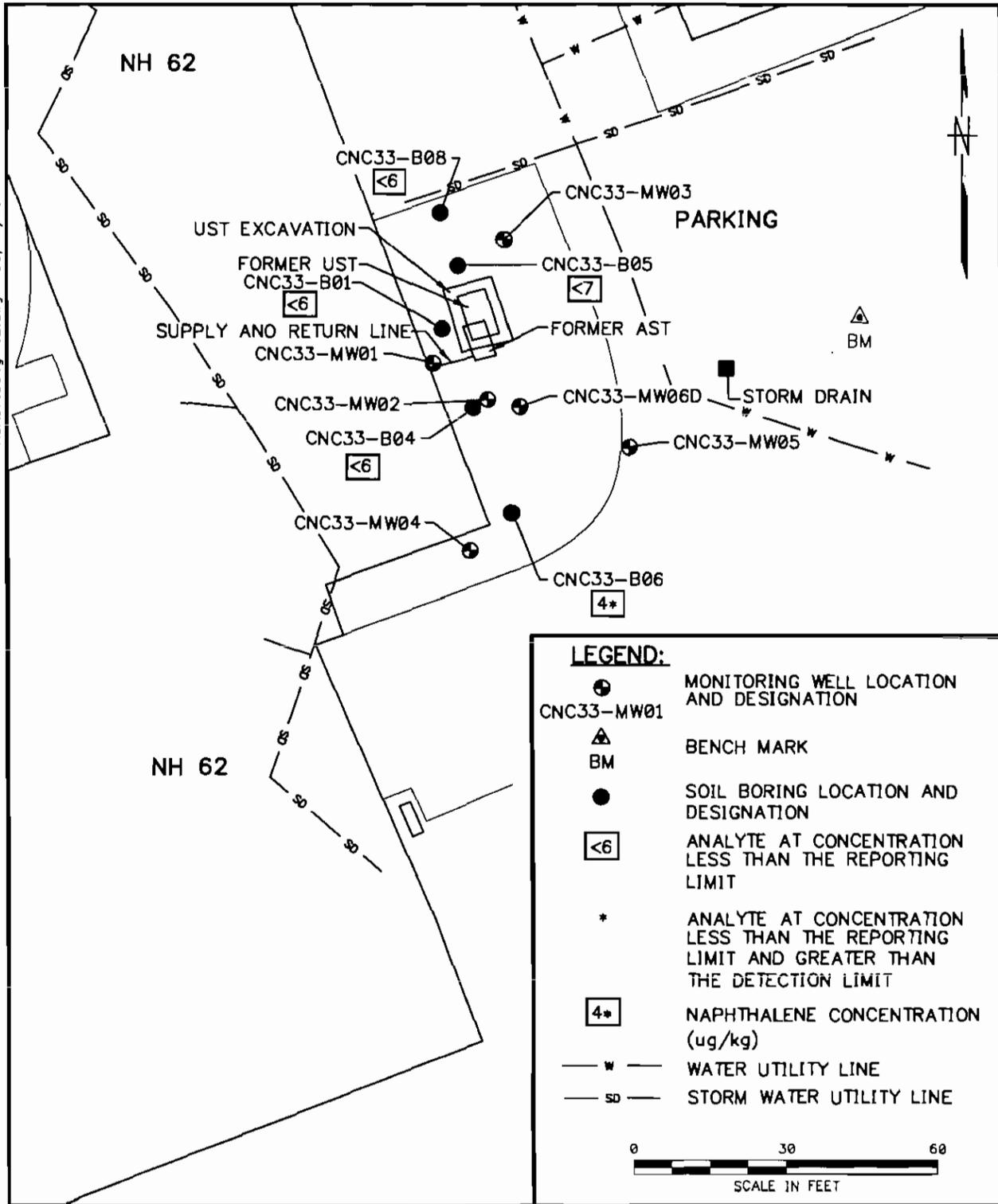
DRAWN BY HJP	DATE 10/5/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



GROUNDWATER POTENTIOMETRIC MAP
 (AUGUST 8, 1999)
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0164	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 6	REV. 0

ACAD:0164gm02.dwg 10/08/99 HJP



DRAWN BY HJP	DATE 10/5/99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SOIL NAPHTHALENE CONCENTRATION MAP
 (MAY 1999)
 SITE 33, BUILDING NH 62
 ZONE C, CHARLESTON NAVAL COMPLEX
 NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0164	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 7	REV. 0

APPENDIX A

**UNDERGROUND STORAGE TANK ASSESSMENT REPORT
UST NH62-1 and AST NH62-2**

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

Date Received

State Use Only

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

I OWNERSHIP OF UST(S)

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

Mailing Address: P.O. Box 190010

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

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

II SITE IDENTIFICATION AND LOCATION

Site I.D. #: Unregulated

Facility Name: Charleston Naval Base Complex, Building NH62

Street Address: Avenue "F"

City: North Charleston, 29405-2413 County: Charleston

III CLOSURE INFORMATION

Closure Started: 12 Nov 96

Closure Completed: 25 Nov 96

Number of USTs Closed: 1, and 1 AST

N/A

SPORTENVDETHASN

Consultant

UST Removal Contractor

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

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

LCDR Paul Rose

Name (Type or Print)



Signature

V. UST INFORMATION

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

Tank 1 UST	Tank 2 AST	Tank 3	Tank 4	Tank 5	Tank 6
NH62-1	NH62-2				
Fuel oil	Fuel oil				
2500 gal.	1000 gal.				
>20 yrs	Unk				
Steel	Steel				
Unk	Unk				
7	N/A				
N	N				
N	N				
R	R				
N	N				
N	N				

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

UST NH62-1 and AST NH62-2 were removed, drained, cut open at both ends, and cleaned with a steam cleaner. They were then cut up for recycling as scrap metal. (See Attachment III.)

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

The residual fuel oil and waste water were recycled. The sludge was found too thick to be pumped into our collection facility and will be shipped out as non-regulated sludge waste.

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

No corrosion, pitting, or holes were found.

VI. PIPING INFORMATION

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

Tank 1 UST NH62-1	Tank 2 AST NH62-2	Tank 3	Tank 4	Tank 5	Tank 6
See note 1	copper				
15'	15'				
1 See note 2	1 See note 2				
S	S				
See note 1	Y				
See note 1	N				
See note 1	N				
See note 1	Unk				

Note 1: When the UST was uncovered it was found that the piping had been previously removed and the tank abandoned. There was evidence, however, that the UST piping ran in the same trench to the building as the AST piping. Thus, the soil sampling done for AST piping should detect any possible release by the former UST piping.

Note 2: The tanks provided fuel oil to Building NH62.

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

No corrosion, pitting, or holes were found.

VII. BRIEF SITE DESCRIPTION AND HISTORY

Building NH62 is a former housing and storage facility. There were two unregulated tanks on the east side of the building (identified as NH62-1 & NH62-2). The UST was a 2500 gallon steel tank and the AST was a 1000 gallon painted steel tank that were used for storing heating fuel for running boilers. The AST was in a concrete block berm and the UST was in the ground below the AST berm. Demolition of the berm was necessary to remove the UST.

VIII. SITE CONDITIONS

Yes No Unk

	Yes	No	Unk
<p>A. Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells?</p> <p>If yes, indicate depth and location on the site map.</p>		X	
<p>B. Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells?</p> <p>If yes, indicate location on site map and describe the odor (strong, mild, etc.)</p>	X		
<p>C. Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)? <u>UST excavation, 6 1/2' below GSL, 6" deep</u></p>	X		
<p>D. Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map.</p> <p>Name of DHEC representative authorizing soil removal: _____</p>		X*	
<p>E. Was a petroleum sheen or free product detected on any excavation or boring waters?</p> <p>If yes, indicate location and thickness on the site map.</p>	X**		

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

** The groundwater had a thin product sheen. This was collected with absorbent pads.

X. SAMPLING METHODOLOGY

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

After the removal of UST NH62-1 and AST NH62-2 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	USTNH62-1 =	SPORT -0249-1
Soil Sample	USTNH62-2 =	SPORT -0249-2
Soil Sample	USTNH62-3 =	SPORT -0249-3
Soil Sample	USTNH62-4 =	SPORT -0249-4
Soil Sample	USTNH62-5 =	SPORT -0249-5
Soil Sample	USTNH62-6 =	SPORT -0249-6
Soil Sample	USTNH62-7 =	SPORT -0249-7
Ground Water Sample	USTNH62-8 =	SPORT -0249-8
VOA trip blank	USTNH62-9 =	SPORT -0249-9

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. The AST piping soil sample was taken under the piping at the entry to the building since there were no mechanical connections. UST soil samples were extracted at the tank ends just above the ground water level. The ground water sample was taken from the bottom center of the UST excavation. Biased composite samples were taken from the excavation dirt piles to characterize the soil for reuse or remediation.

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 SPORTENVDETHASN until they were transferred to General Engineering Laboratories for analysis as documented in the attached Chain-of-Custody Record.

XI. RECEPTORS

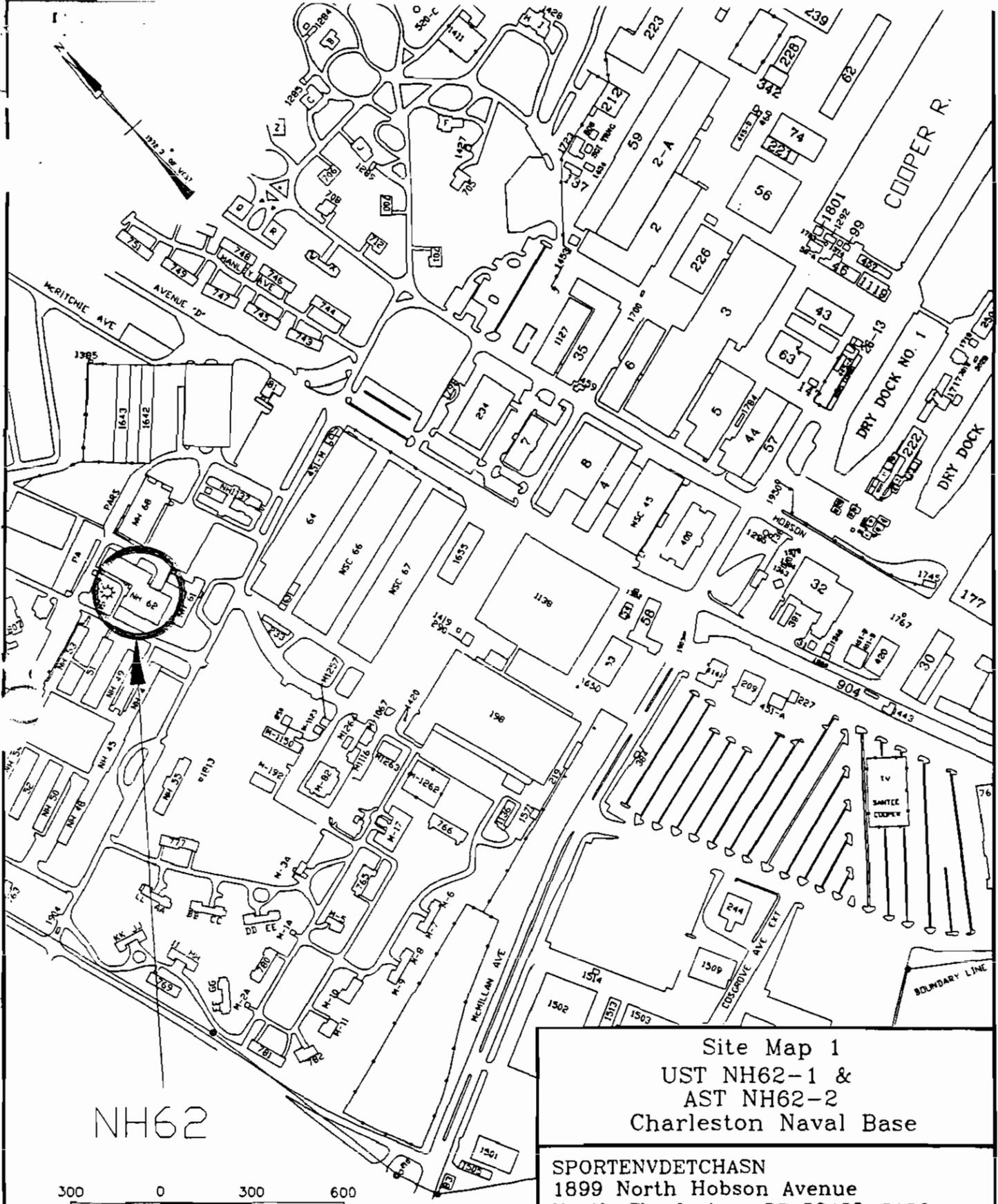
Yes No

A.	<p>Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system?</p> <p>If yes, indicate type of receptor, distance, and direction on site map.</p>		X
B.	<p>Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system?</p> <p>If yes, indicate type of well, distance, and direction on site map.</p>		X
C.	<p>Are there any underground structures (e.g., basements) located within 100 feet of the UST system?</p> <p style="text-align: center;">[partial basements]</p> <p>If yes, indicate the type of structure, distance, and direction on site map</p>	X	
D.	<p>Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination?</p> <p style="text-align: center;">[storm drain]</p> <p>If yes, indicate the type of utility, distance, and direction on the site map.</p>	X	
E.	<p>Has contaminated soil been identified at a depth of less than 3 feet below land surface in an area that is not capped by asphalt or concrete?</p> <p>If yes, indicate the area of contaminated soil on the site map.</p>		X

SITE MAP

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

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

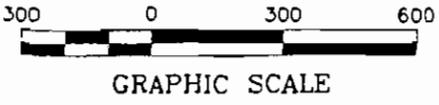


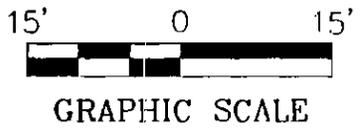
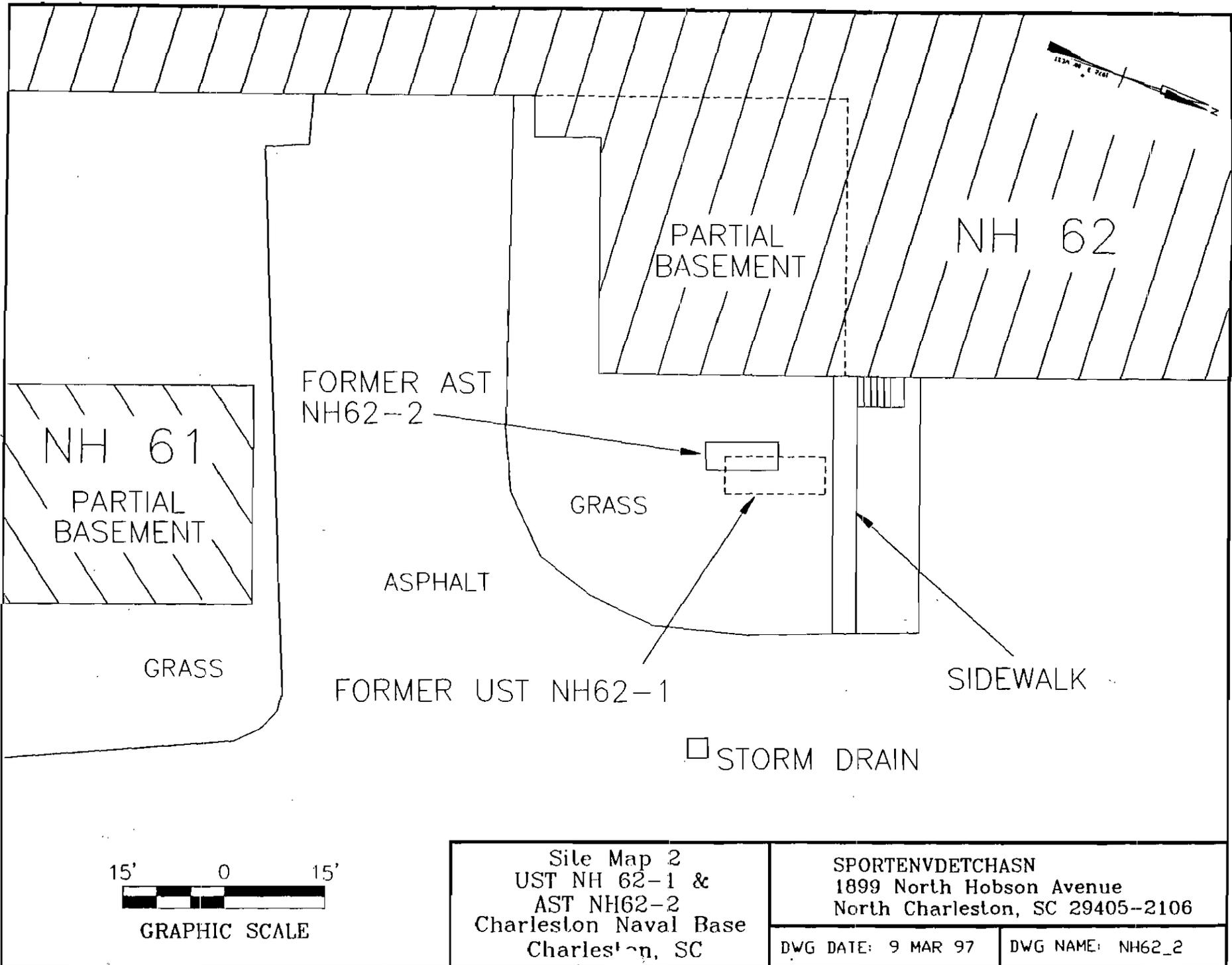
NH62

Site Map 1
 UST NH62-1 &
 AST NH62-2
 Charleston Naval Base

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

DWG NAME: NH62_1 DWG DATE: 9 MAR 97





Site Map 2
 UST NH 62-1 &
 AST NH62-2
 Charleston Naval Base
 Charleston, SC

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

DWG DATE: 9 MAR 97 DWG NAME: NH62_2

BUILDING NH 62
PARTIAL BASEMENT

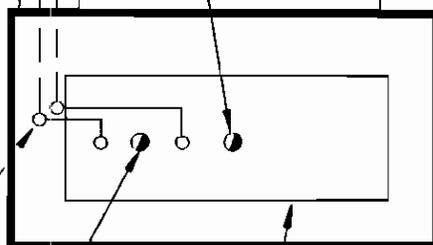


FILL BERM DRAIN VALVE

S.S. SPORT 0249-3
(MOIST SAND AND CLAY,
NO ODOR, OVA 0 ppm)

S.S. SPORT 0249-5
(MOIST SANDY SOIL, SLIGHT PETRO
ODOR, OVA 0 ppm)

STORM DRAIN PIPE



SUPPLY & RETURN PIPING
(1" COPPER, PIPES PENETRATED THE
BERM FLOOR AND TRAVELED BELOW
GROUND INTO BUILDING NH 62.)

VENT

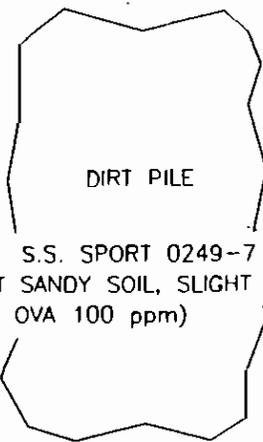
FORMER AST NH62-2

AST CINDER BLOCK BERM

GRASS

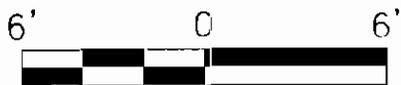
ASPHALT

SIDEWALK



S.S. SPORT 0249-7
(MOIST SANDY SOIL, SLIGHT PETRO
ODOR, OVA 100 ppm)

LEGEND
S.S. - SOIL SAMPLE



GRAPHIC SCALE

Site Map 3
AST NH62-2
Charleston Naval Base
Charleston, SC

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

DWG DATE: 10 MAR 97

DWG NAME: NH62_3

BUILDING NH 62
PARTIAL BASEMENT

S.S. SPORT 0249-4
(MOIST SANDY SOIL, SLIGHT PETRO ODOR, OVA 0 ppm)

SUPPLY & RETURN PIPING
(1" COPPER, FOUND DISCONNECTED AND OPEN)

FORMER UST NH62-1

UST EXCAVATION

S.S. SPORT 0249-2
(MOIST SAND AND CLAY, MILD
PETRO ODOR, OVA 30 ppm)

GROUNDWATER, ~ 5'X15'X4" DEEP

G.W. SPORT 0249-8
(MILD PETRO ODOR AND SHEEN)

SOUNDING TUBE

REMOTE FILL
(FOUND CAPPED)

S.S. SPORT 0249-6
(MOIST SANDY SOIL, SLIGHT PETRO ODOR, OVA 11 ppm)

GRASS

ASPHALT

LEGEND
G.W. - GROUNDWATER SAMPLE
S.S. - SOIL SAMPLE

VENT

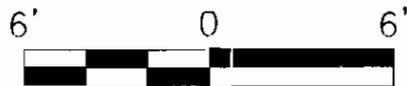
S.S. SPORT 0249-1
(MOIST CLAY & SAND, SLIGHT
PETRO ODOR, OVA 10 ppm)

FILL

DIRT PILE

S.S. SPORT 0249-7
(MOIST SANDY SOIL, SLIGHT PETRO
ODOR, OVA 100 ppm)

SIDEWALK



GRAPHIC SCALE

Site Map 4
UST NH62-1
Charleston Naval Base
Charleston, SC

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

DWG DATE: 9 MAR 97

DWG NAME: NH62_4

UST NH62-1 and AST NH62-2



Photo 1: UST and AST prior to removal from the site. Note UST sounding connection/fill in foreground and Vent line against building.

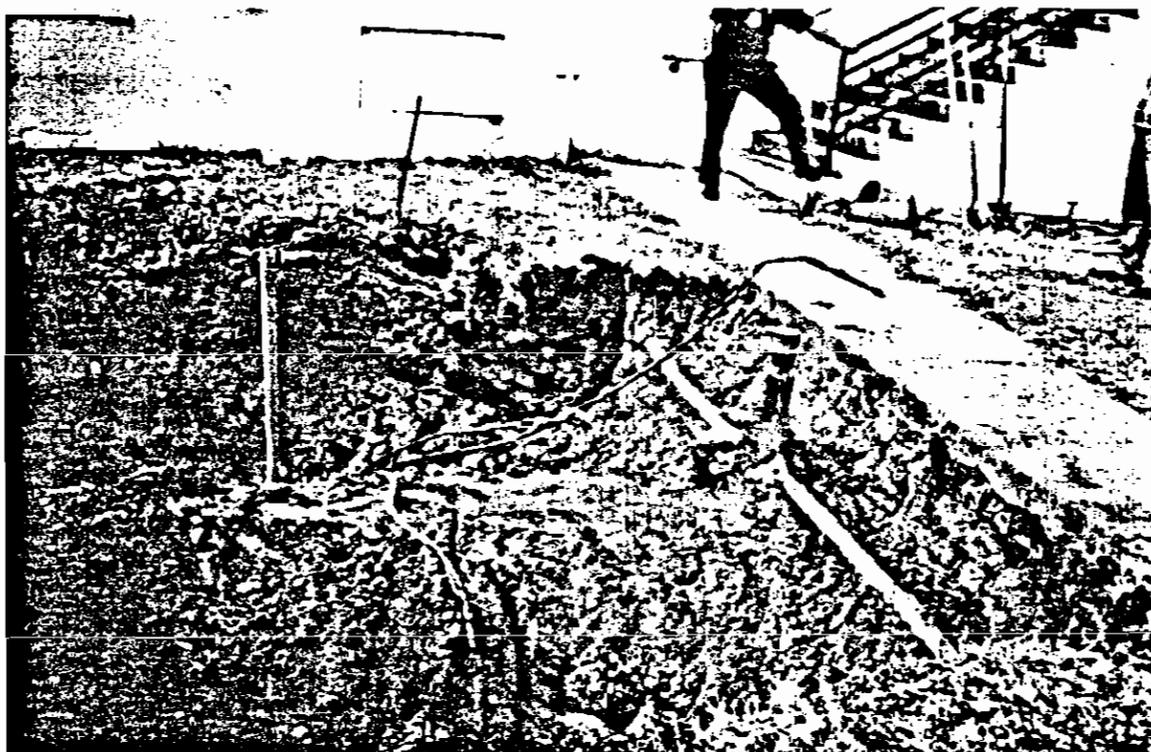


Photo 2: UST NH62-1 after removal of AST NH62-2 and concrete block berm. Note Fill line running out to curb and vent line running to building.

UST NH62-1 and AST NH62-2

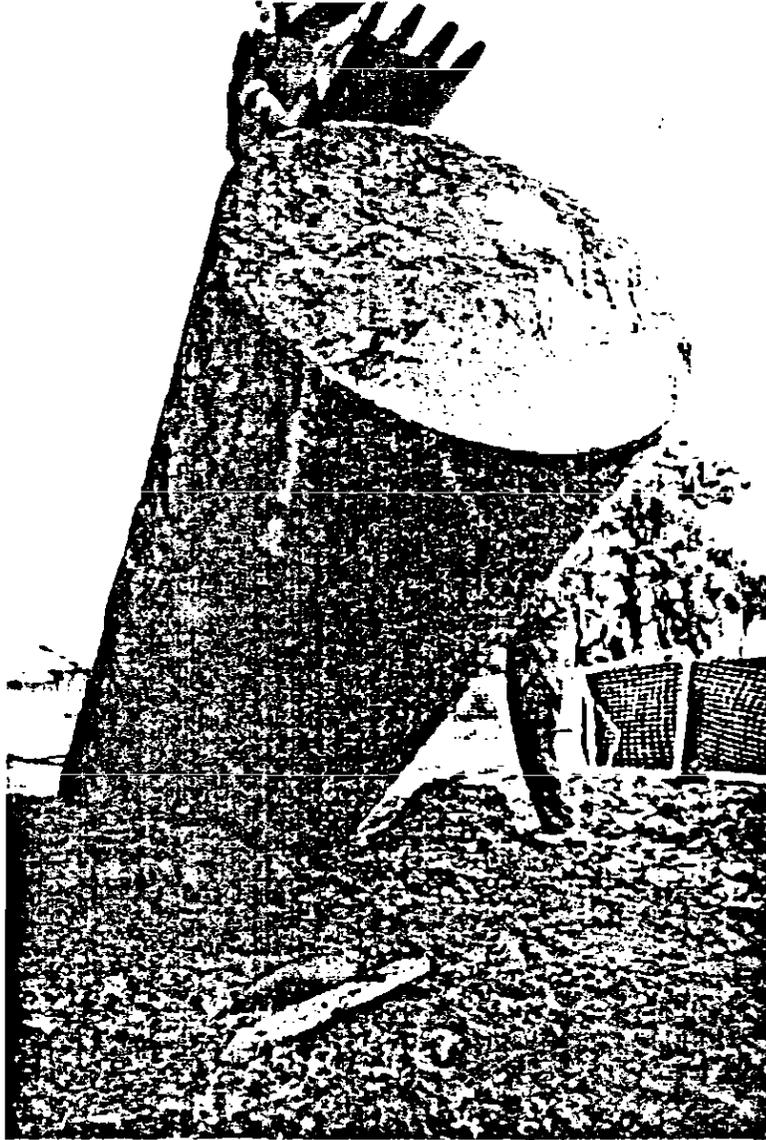


Photo 3: UST NH62-1 during removal from excavation and prior to transport to cleaning pad.

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

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Laboratory Certifications

STATE	GEL	EPI
FL	25713687294	EX7472/874
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 3

Sample ID : SPORT0249-1
 Lab ID : 9611359-01
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

PARAMETER	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	40.0	80.0	ug/kg	40.	JAC	11/26/96	2130	94268	1
Ethylbenzene		292	40.0	80.0	ug/kg	40.					
Toluene	U	0.00	40.0	80.0	ug/kg	40.					
Xylenes (TOTAL)		688	40.0	80.0	ug/kg	40.					
Naphthalene	U	0.00	40.0	80.0	ug/kg	40.					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	16500	32900	ug/kg	100	RLC	11/26/96	0256	94058	2
Acenaphthylene	U	0.00	16500	32900	ug/kg	100					
Anthracene	U	0.00	16500	32900	ug/kg	100					
Benzo(a)anthracene	U	0.00	16500	32900	ug/kg	100					
Benzo(a)pyrene	U	0.00	16500	32900	ug/kg	100					
Benzo(b)fluoranthene	U	0.00	16500	32900	ug/kg	100					
Benzo(ghi)perylene	U	0.00	16500	32900	ug/kg	100					
Benzo(k)fluoranthene	U	0.00	16500	32900	ug/kg	100					
Chrysene	U	0.00	16500	32900	ug/kg	100					
Dibenzo(a,h)anthracene	U	0.00	16500	32900	ug/kg	100					
Fluoranthene	U	0.00	16500	32900	ug/kg	100					
Fluorene	U	0.00	16500	32900	ug/kg	100					
Indeno(1,2,3-c,d)pyrene	U	0.00	16500	32900	ug/kg	100					
Naphthalene	U	0.00	16500	32900	ug/kg	100					
Phenanthrene	U	5920	16500	32900	ug/kg	100					
Pyrene	U	0.00	16500	32900	ug/kg	100					

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

JPB 11/22/96 1300 94058 3

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9611359-01



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Laboratory Certifications

STATE	CEL	EPA
FL	587156/87284	187472/8748
NC	235	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 3

Sample ID : SPORT0249-1

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

Comments:

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	156.*	(30.0 - 115.)
Nitrobenzene-d5	M610	172.*	(23.0 - 120.)
p-Terphenyl-d14	M610	172.*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	107.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	85.6	(74.0 - 128.)
Toluene-d8	BTEX-8260	99.2	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	107.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	85.6	(74.0 - 128.)
Toluene-d8	NAP-8260	99.2	(53.4 - 163.)

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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Laboratory Certifications

STATE	GEL	EPI
FL	E67156/87294	E87472/874
NC	233	
SC	10120	10582
TN	02934	02994

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 3 of 3

Sample ID : SPORT0249-1

M = Method Method-Description

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

Karen Blakeeoy
 Reviewed By

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9611359-01





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Laboratory Certifications

STATE	GEL	EPL
FL	087156/7394	087472/7451
NC	283	
SC	10120	10313
TN	02794	02794

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: December 04, 1996

Page 1 of 2

Sample ID : SPORT0249-2
 Lab ID : 9611359-02
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>STEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	11/26/96	1655	94268	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.170	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	J	2.80	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	658	1320	ug/kg	4.0	RLC	11/25/96	2220	94058	2
Acenaphthylene	U	0.00	658	1320	ug/kg	4.0					
Anthracene	U	0.00	658	1320	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	658	1320	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	658	1320	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	658	1320	ug/kg	4.0					
Benzo(g,h)perylene	U	0.00	658	1320	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	658	1320	ug/kg	4.0					
Chrysene	U	0.00	658	1320	ug/kg	4.0					
Dibenz(a,h)anthracene	U	0.00	658	1320	ug/kg	4.0					
Fluoranthene	U	0.00	658	1320	ug/kg	4.0					
Fluorene	U	0.00	658	1320	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	171	658	1320	ug/kg	4.0					
Naphthalene	U	0.00	658	1320	ug/kg	4.0					
Phenanthrene	U	0.00	658	1320	ug/kg	4.0					
Pyrene	U	0.00	658	1320	ug/kg	4.0					

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

JPB 11/22/96 1300 94058 3

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(803) 556-8171 • Fax (803) 766-1178



9611359-02



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	OEL	EPI
FL	EF7156/87294	EF7472/87
NC	233	
SC	10120	10982
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 2

Sample ID : SPOR0249-2

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	96.6	(30.0 - 115.)
Nitrobenzene-d5	M610	83.0	(23.0 - 120.)
p-Terphenyl-d14	M610	102.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	123.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	90.0	(74.0 - 128.)
Toluene-d8	BTEX-8260	106.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	123.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	90.0	(74.0 - 128.)
Toluene-d8	NAP-8260	106.	(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:

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

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

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

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

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

Karen Blakeney
 Reviewed By

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9611359-02





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Laboratory Certifications

STATE	OSL	EP1
FL	247156/77294	227422/77451
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 2

Sample ID : SPORT0249-3
 Lab ID : 9611359-03
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatiles Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	11/26/96	1857	94268	1
Ethylbenzene	U	0.240	1.00	2.00	ug/kg	1.0					
Toluene	U	0.330	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.880	1.00	4.00	ug/kg	1.0					
Naphthalene	J	1.70	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	167	333	ug/kg	1.0	RLC	11/25/96	2250	94058	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	11.3	167	333	ug/kg	1.0					
Benzo(b)fluoranthene	U	19.0	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					

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

JPB 11/22/96 1300 94058 3

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9611359-03



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STATE	GEL	EPI
FL	E17156/7254	287472/87A
NC	233	
SC	10130	10583
TN	02934	02954

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 2

Sample ID : SPORT0249-3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	89.6	(30.0 - 115.)
Nitrobenzene-d5	M610	96.2	(23.0 - 120.)
p-Terphenyl-d14	M610	88.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	112.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	86.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	109.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	112.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	86.4	(74.0 - 128.)
Toluene-d8	NAP-8260	109.	(53.4 - 163.)

M = Method

Method-Description

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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

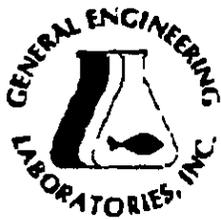
Karen Blakemey
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9611359-03*





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STATE	GEL	EPI
FL	E17156/87294	E27472/87451
XK	238	
SC	10120	10812
TX	02934	02934

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

Contact: Mr. Bill Hiern

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 2

Sample ID : SPORT0249-4
 Lab ID : 9611359-04
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	11/27/96	0903	94268	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)		11.0	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	6580	13200	ug/kg	40.	RLC	11/25/96	2321	94058	2
Acenaphthylene	U	0.00	6580	13200	ug/kg	40.					
Anthracene	U	0.00	6580	13200	ug/kg	40.					
Benzo(a)anthracene	U	0.00	6580	13200	ug/kg	40.					
Benzo(a)pyrene	U	0.00	6580	13200	ug/kg	40.					
Benzo(b)fluoranthene	U	224	6580	13200	ug/kg	40.					
Benzo(ghi)perylene	U	0.00	6580	13200	ug/kg	40.					
Benzo(k)fluoranthene	U	0.00	6580	13200	ug/kg	40.					
Chrysene	U	0.00	6580	13200	ug/kg	40.					
Dibenzo(a,h)anthracene	U	0.00	6580	13200	ug/kg	40.					
Fluoranthene	U	0.00	6580	13200	ug/kg	40.					
Fluorene	U	0.00	6580	13200	ug/kg	40.					
Indeno(1,2,3-c,d)pyrene	U	0.00	6580	13200	ug/kg	40.					
Naphthalene	U	0.00	6580	13200	ug/kg	40.					
Phenanthrene	U	0.00	6580	13200	ug/kg	40.					
Pyrene	U	0.00	6580	13200	ug/kg	40.					

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

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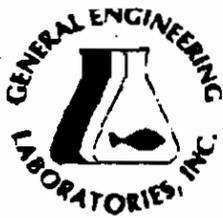
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STATE	QEL	EPI
FL	E87156A7294	E31472/8709
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 2

Sample ID : SPORT0249-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	128.*	(30.0 - 115.)
Nitrobenzene-d5	M610	96.2	(23.0 - 120.)
p-Terphenyl-d14	M610	160.*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	100.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	79.2	(74.0 - 128.)
Toluene-d8	BTEX-8260	102.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	100.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	79.2	(74.0 - 128.)
Toluene-d8	NAP-8260	102.	(53.4 - 163.)

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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

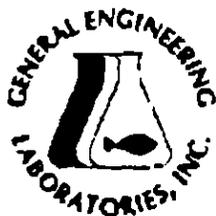
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STATE	QEL	EPI
FL	287156/8724	287472/87434
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

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Sample ID : SPORT0249-3
 Lab ID : 9611359-05
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	2.0	JAC	11/26/96	1958	94268	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	RLC	11/23/96	2351	94058	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	46.5	166	332	ug/kg	1.0					
Benzo(b)fluoranthene	U	66.4	166	332	ug/kg	1.0					
Benzo(ghi)perylene	U	26.6	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	56.4	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	69.7	166	332	ug/kg	1.0					

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

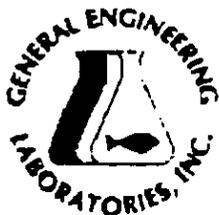
JPB 11/22/96 1300 94058 3

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STATE	GEL	EPA
FL	147196/17294	267672874
NC	233	
SC	10120	10382
TN	02934	02934

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

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

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 2

Sample ID : SPORT0249-5

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	90.1	(30.0 - 115.)
Nitrobenzene-d5	M610	93.7	(23.0 - 120.)
p-Terphenyl-d14	M610	91.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	111.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	89.6	(74.0 - 128.)
Toluene-d8	BTEX-8260	110.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	111.	(59.7 - 159.)
Dibromofluorobenzene	NAP-8260	89.6	(74.0 - 128.)
Toluene-d8	NAP-8260	110.	(53.4 - 163.)

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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

Karen Blakeney
 Reviewed By

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9611359-05





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STATE	QEL	EPI
FL	287136/87294	287472/87458
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiern

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 3

Sample ID : SPORT0249-6
 Lab ID : 9611359-06
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	11/26/96	2028	94268	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	648	1300	ug/kg	4.0	RLC	11/26/96	0022	94058	2
Acenaphthylene	U	0.00	648	1300	ug/kg	4.0					
Anthracene	U	0.00	648	1300	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	648	1300	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	648	1300	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	648	1300	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	648	1300	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	648	1300	ug/kg	4.0					
Chrysene	U	0.00	648	1300	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	648	1300	ug/kg	4.0					
Fluoranthene	U	0.00	648	1300	ug/kg	4.0					
Fluorene	U	0.00	648	1300	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	648	1300	ug/kg	4.0					
Naphthalene	U	0.00	648	1300	ug/kg	4.0					
Phenanthrene	U	0.00	648	1300	ug/kg	4.0					
Pyrene	U	0.00	648	1300	ug/kg	4.0					

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

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STATE	GEL	EPI
FL	E17156/RT294	E17472/RT143
NC	233	
SC	10120	10582
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 3

Sample ID : SPORT0249-6

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

Comments:

Volatile Organics contained matrix interferences.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	95.9	(30.0 - 115.)
Nitrobenzene-d5	M610	83.1	(23.0 - 120.)
p-Terphenyl-d14	M610	108.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	123.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	90.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	114.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	123.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	90.4	(74.0 - 128.)
Toluene-d8	NAP-8260	114.	(53.4 - 163.)

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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STATE	GEL	EPH
FL	28718647294	287472/87438
NC	337	
SC	10320	:0582
TN	02924	02534

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

Contact: Mr. Bill Hies

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 3 of 3

Sample ID : SPORT0249-6

M & Method	Method-Description
------------	--------------------

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

Karen Blakemey

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Laboratory Certifications

STATE	GEL	EPI
FL	E17196/17294	E27472/17458
NC	233	
SC	10120	10512
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 3

Sample ID : SPORT0249-7
 Lab ID : 9611359-07
 Matrix : Soil
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

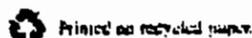
Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JAC	11/26/96	2059	94268	1
Ethylbenzene		23.5	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)		64.0	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	6640	13300	ug/kg	40.	RLC	11/26/96	0053	94058	2
Acenaphthylene	U	0.00	6640	13300	ug/kg	40.					
Anthracene	U	0.00	6640	13300	ug/kg	40.					
Benzo(a)anthracene	U	0.00	6640	13300	ug/kg	40.					
Benzo(a)pyrene	U	0.00	6640	13300	ug/kg	40.					
Benzo(b)fluoranthene	U	0.00	6640	13300	ug/kg	40.					
Benzo(ghi)perylene	U	0.00	6640	13300	ug/kg	40.					
Benzo(k)fluoranthene	U	0.00	6640	13300	ug/kg	40.					
Chrysene	U	0.00	6640	13300	ug/kg	40.					
Dibenzo(a,h)anthracene	U	0.00	6640	13300	ug/kg	40.					
Fluoranthene	U	0.00	6640	13300	ug/kg	40.					
Fluorene	U	0.00	6640	13300	ug/kg	40.					
Indeno(1,2,3-c,d)pyrene	U	0.00	6640	13300	ug/kg	40.					
Naphthalene	U	0.00	6640	13300	ug/kg	40.					
Phenanthrene	U	3850	6640	13300	ug/kg	40.					
Pyrene	U	770	6640	13300	ug/kg	40.					

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

JPB 11/22/96 1300 94058 3

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9611359-07



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Laboratory Certification

STATE	CEL	EPI
FL	EFT156/8729*	887472/17451
NC	239	
SC	10120	10892
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 3

Sample ID : SPORT0249-7

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

Comments:

Volatile Organics contained matrix interferences.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	144.*	(30.0 - 115.)
Nitrobenzene-d5	M610	104.	(23.0 - 120.)
p-Terphenyl-d14	M610	152.*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	117.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	83.6	(74.0 - 128.)
Toluene-d8	BTEX-8260	107.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	117.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	83.6	(74.0 - 128.)
Toluene-d8	NAP-8260	107.	(53.4 - 163.)

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

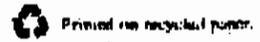
Notes:

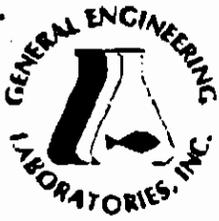
- The qualifiers in this report are defined as follows:
- ND indicates that the analyte was not detected at a concentration greater than the detection limit.
- J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
- U indicates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

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Laboratory Certifications

STATE	GEL	EPI
FL	E17136/87294	571472/87438
NC	239	
SC	10120	10882
TN	02994	02994

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: December 04, 1996

Page 3 of 3

Sample ID : SPORT0249-7

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

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

Karen Blakemey

Reviewed By

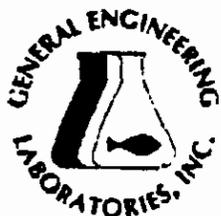
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STATE	GEL	EPI
FL	ES7156/87294	ES17472/87451
NC	230	
SC	10120	10382
TX	02924	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 1 of 3

Sample ID : SPORT0249-8
 Lab ID : 9611359-08
 Matrix : Ground H₂O
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	100	200	ug/l	100	JAC	11/22/96	1607	94103	1
Ethylbenzene	U	84.0	100	200	ug/l	100					
Toluene	U	16.0	100	200	ug/l	100					
Xylenes (TOTAL)		300	100	200	ug/l	100					
Methyl Tert Butyl Ether	U	0.00	200	200	ug/l	100					
Naphthalene	U	0.00	100	200	ug/l	100					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	2000	4000	ug/l	400	JCB	11/26/96	1536	94012	2
Acenaphthylene	U	0.00	2000	4000	ug/l	400					
Anthracene	U	0.00	2000	4000	ug/l	400					
Benzo(a)anthracene	U	0.00	2000	4000	ug/l	400					
Benzo(a)pyrene	U	0.00	2000	4000	ug/l	400					
Benzo(b)fluoranthene	U	0.00	2000	4000	ug/l	400					
Benzo(g,h)perylene	U	0.00	2000	4000	ug/l	400					
Benzo(k)fluoranthene	U	0.00	2000	4000	ug/l	400					
Chrysene	U	0.00	2000	4000	ug/l	400					
Dibenzo(a,h)anthracene	U	0.00	2000	4000	ug/l	400					
Fluoranthene	U	0.00	2000	4000	ug/l	400					
Fluorene	U	0.00	2000	4000	ug/l	400					
Indeno(1,2,3-c,d)pyrene	U	0.00	2000	4000	ug/l	400					
Naphthalene	U	0.00	2000	4000	ug/l	400					
Phenanthrene	U	0.00	2000	4000	ug/l	400					
Pyrene	U	0.00	2000	4000	ug/l	400					

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STATE	URL	EPI
FL	E87136/87294	E874729
NC	233	
SC	10120	10343
TN	02934	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: December 04, 1996

Page 2 of 3

Sample ID : SPORT0249-8

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
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The following prep procedures were performed:
 GC/MS Base/Neutral Compounds

GWL 11/21/96 1700 94012 3

Comments:

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

As a result, the detection limits are elevated.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(43.0 - 108.)
Nitrobenzene-d5	M610	0.00*	(35.0 - 111.)
p-Terphenyl-d14	M610	0.00*	(33.0 - 125.)
Bromofluorobenzene	BTEX-8260	98.8	(80.0 - 128.)
Dibromofluoromethane	BTEX-8260	84.8	(67.7 - 135.)
Toluene-d8	BTEX-8260	102.	(76.8 - 122.)
Bromofluorobenzene	MTBE-8260	98.8	(80.0 - 128.)
Dibromofluoromethane	MTBE-8260	84.8	(67.7 - 135.)
Toluene-d8	MTBE-8260	102.	(76.8 - 122.)
Bromofluorobenzene	NAP-8260	98.8	(80.0 - 128.)
Dibromofluoromethane	NAP-8260	84.8	(67.7 - 135.)
Toluene-d8	NAP-8260	102.	(76.8 - 122.)

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

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Laboratory Certifications

STATE	GEL	EPI
FL	257136/7294	217472/1748
NC	233	
SC	10130	10582
TN	02934	02924

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: December 04, 1996

Page 3 of 3

Sample ID : SPORT0249-B

M = Method	Method-Description
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Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

Karen Blakeney
 Reviewed By

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Laboratory Certification

STATE	OEL	EPI
FL	EE7156/7294	B674
NC	233	
SC	16720	10882
TN	02934	02834

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: November 26, 1996

Page 1 of 2

Sample ID : SPORT0249-9
 Lab ID : 9611359-09
 Matrix : GroundH2O
 Date Collected : 11/19/96
 Date Received : 11/20/96
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/l	1.0	JAC	11/22/96	1638	94103	
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	0.00	1.00	4.00	ug/l	1.0					
Methyl Tert Butyl Ether	U	0.00	2.00	2.00	ug/l	1.0					
Naphthalene	U	0.870	1.00	2.00	ug/l	1.0					

Surrogate Recovery	Test	Percent%	Acceptable Limits
Bromofluorobenzene	BTEX-8260	101.	(80.0 - 128.)
Dibromofluoromethane	BTEX-8260	81.6	(67.7 - 135.)
Toluene-d8	BTEX-8260	103.	(76.8 - 122.)
Bromofluorobenzene	MTBE-8260	101.	(80.0 - 128.)
Dibromofluoromethane	MTBE-8260	81.6	(67.7 - 135.)
Toluene-d8	MTBE-8260	103.	(76.8 - 122.)
Bromofluorobenzene	NAP-8260	101.	(80.0 - 128.)
Dibromofluoromethane	NAP-8260	81.6	(67.7 - 135.)
Toluene-d8	NAP-8260	103.	(76.8 - 122.)

M = Method	Method-Description
M1	EPA 8260

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9611359-09



GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	087156/1294	81472/17451
NC	233	
SC	10130	10312
TN	02914	02934

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: November 26, 1996

Page 2 of 2

Sample ID : SPORT0249-9

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

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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

Karen Blakeney
 Reviewed By

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9611359-09



TEL: 803-852-5812

DEC. -04.96 (WED) 17:47 GEN. ENGINEERING

141 WC 00146

General Engineer
 2040 Savage Road
 Charleston, South Carolina 29414
 P.O. Box 30712
 Charleston, South Carolina 29417
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CHAIN OF CUSTODY RECORD

Page 1 of 1

9611359 KBB

Client Name/Facility Name		SAMPLE ANALYSIS REQUIRED (X) use remarks area to specify specific compounds or methods														Use F or P in the boxes to indicate whether sample was filtered and/or preserved				
SPORT ENV DET CHASN		# OF CONTAINERS	pH conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	BA Extractables	PCB's	Cyanide	Coliform - specify type	BTEX NAPTH	PAH	Remarks
Collected by/Company	SAMPLE ID																			
SPORT ENV DET CHASN																				
	-01	SPORT 249-1	11/19/96	1310	X	X												X	X	UST NH-62-1 SOIL
	-02	SPORT 249-2	11/19/96	1325	X	X												X	X	UST NH-62-2 SOIL
	-03	SPORT 249-3	11/19/96	1340	X	X												X	X	UST NH-62-3 SOIL
	-04	SPORT 249-4	11/19/96	1355	X	X												X	X	UST NH-62-4 SOIL
	-05	SPORT 249-5	11/19/96	1410	X	X												X	X	UST NH-62-5 SOIL
	-06	SPORT 249-6	11/19/96	1420	X	X												X	X	UST NH-62-6 SOIL
	-07	SPORT 249-7	11/19/96	1430	X	X												X	X	UST NH-62-7 SOIL PILE
	-08	SPORT 249-8	11/19/96	1445														(1)	X	UST NH-62-8 GW
	-09	SPORT 249-9	11/19/96	1130														(1)		UST NH-62 TRIP BLANK UOA
																				(1) BTEX NAPTH & MTBE

Relinquished by: <i>BS Tunney</i>	Date: 11/20/96	Time: 0900	Received by: <i>Fred L. McLean Jr.</i>	Relinquished by: <i>Fred L. McLean Jr.</i>	Date: 11/20/96	Time: 1430	Received by: <i>Raymond Reed</i>
Relinquished by: <i>Raymond Reed</i>	Date: 11/20/96	Time: 1455	Received by lab by: <i>Loren Blaney</i>	Date: 11/20/96	Time: 1455	Remarks:	

White = sample collector Yellow = file Pink = with report

Attachment III

Certificates of Disposal (tanks)

APPENDIX B
GEOLOGIC BORING LOGS

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62
 PROJECT NUMBER: ND164 Zone C
 DRILLING COMPANY: _____
 DRILLING RIG: 250/5700

BORING NUMBER: CNC 33-B01
 DATE: 5-12-99
 GEOLOGIST: COLERAN
 DRILLER: SISCO

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION		U S C S	Remarks	PID/FID Reading (ppm)								
					Soil Density/ Consistency or Rock Hardness	Color			Material Classification	Sample	Sampler BZ	Borehole -	Driller BZ				
	<u>C</u>																
	<u>1</u>				<u>Brown</u>		<u>Sandy silt</u>		<u>Moist</u>	<u>4</u>							
	<u>2</u>				<u>"</u>		<u>" "</u>		<u>"</u>	<u>7</u>							
<u>X</u>	<u>3</u>				<u>"</u>		<u>" "</u>		<u>"</u>	<u>7</u>							
	<u>4</u>		<u>3</u>														
	<u>5</u>				<u>Brown</u>		<u>Sandy silt + clay</u>		<u>Moist</u>	<u>7</u>							
	<u>6</u>				<u>"</u>		<u>Sandy silt</u>		<u>Moist</u>	<u>4</u>							
	<u>7</u>				<u>Olive</u>		<u>Silty sand</u>		<u>Wet</u>	<u>1</u>							
	<u>8</u>		<u>3.5</u>		<u>Olive</u>		<u>Silty sand</u>		<u>Wet</u>	<u>1</u>							
	<u>9</u>				<u>Olive</u>		<u>Silty sand</u>		<u>Saturated</u>	<u>1</u>							
	<u>10</u>				<u>"</u>		<u>" "</u>		<u>"</u>	<u>1</u>							
	<u>11</u>				<u>Gray</u>		<u>" "</u>		<u>"</u>	<u>1</u>							
	<u>12</u>		<u>3.5</u>		<u>Gray</u>		<u>" "</u>		<u>"</u>	<u>1</u>							
				<u>EOB</u>													

in rock coring, enter rock brokenness.

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

Remarks: _____

Drilling Area
Background (ppm): 4

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

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62 BORING NUMBER: 33-B02
 PROJECT NUMBER: NO164 Zone C DATE: 5-12
 DRILLING COMPANY: _____ GEOLOGIST: SJCW
 DRILLING RIG: 250/5400 DRILLER: COLEMAN

Sample No. and Type or ROD	Depth (Fl. or Run No.)	Blows / 6" or ROD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S .	Remarks	PDFID Reading (ppm)								
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole	Driller BZ					
	0																	
	1				Brown		Sandy silt		Moist	4								
	2				"		" "		"	4								
X	3				"		" "		"	4								
	4		3															
	5				Off		Sandy silt		Moist	4								
	6				Off		Silty sand		Wet									
	7				Gray		Silty sand		Saturated									
	8		2.5															
	9				Lt. Off		Silty sand		Saturated									
	10				Gray		" "		"									
	11				Lt. Gray		Sand		"									
	12		2.5															
				EOB														

* When rock coring, enter rock brokenness.
 ** Include monitor reading in 8 foot intervals @ borehole. Increase reading frequency if elevated response read.
 Remarks: SCREEN: 12 ft. to 2 ft. 6/s. Drilling Area Background (ppm): 4
 Converted to Well: Yes X No ~~_____~~ Well I.D. #: _____
 Temporary Piezometer: 10 ft. of SCREEN. 5 ft. of RISER (2 3ft. of stick-up).

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62 BORING NUMBER: 33-1303
 PROJECT NUMBER: ND164 Zone C DATE: 5-12
 DRILLING COMPANY: _____ GEOLOGIST: SISCO
 DRILLING RIG: 250 / 5400 DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S	Remarks	PIOPRO Reading (ppm)							
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole	Driller BZ				
0																	
	1	/			lt. Brown		Sandy silt		Moist								
	2	/			" "		" "		" "								
	3	/			Drain		" silty gravel		"								
	4	/	3														
	5	/			olive		Sandy silt		Moist								
	6	/			lt. gray		" silty gravel		Wet								
	7	/															
	8	/	2														
	9	/			olive		Silty sand		Saturated								
	10	/			olive		Silty Sand		"								
	11	/															
	12	/	2														
					EOD												

When rock coring, enter rock brokenness
 Include monitor reading in 6 foot intervals @ borehole Increase reading frequency if elevated response read.
 Remarks: _____ Drilling Area Background (ppm): 4
 Converted to Well: Yes _____ No X Well I.D. #: _____

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62 BORING NUMBER: 33-B04
 PROJECT NUMBER: ND164 Zone C DATE: 5-12
 DRILLING COMPANY: _____ GEOLOGIST: JBSCO
 DRILLING RIG: 250/5400 DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)				
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole	Driller BZ	
0														
	1				br.		sandy silt		moist dry	4				
	3				br.		" "		moist	4				
X	3				br.		" "		moist	4				
X	4		2'		br.		" "		moist	4				
	5				br.		" "		moist	4				
	6				br.		" "		moist	4				
	7				"		" "		wet	4				
	8		2'		"		" "		saturated	4				
	9						dk gray		saturated					
	10						" " wood fragment		saturated					
	11						silty sand		saturated					
	12		3'				*orange silty sand		saturated					

heads pace =
5 ft from
3-4 ft.

* When rock coring, enter rock brokenness.

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

Remarks: SCREEN = 11ft. to 14ft. SLS

Drilling Area Background (ppm): 4

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

STICK-L
Temporary Diameter = 10 ft. screen 5 ft. riser 3 ft.

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62
 PROJECT NUMBER: ND164 Zone C
 DRILLING COMPANY: _____
 DRILLING RIG: 250 / 5400

BORING NUMBER: CNC 33 - B05
 DATE: 5-12
 GEOLOGIST: S/SCOTT ALEXANDER
 DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)			
					Soil Density/Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole	Driller BZ
0							grass		dry				
1							2" bricklayer		dry				
2													
3													
4			1'										
5							sandy silt		moist				
6							sand silt		moist				
7							brown sandy silt		moist				
8			2'				Some backfill concrete pieces/saturated bot						
9													
10													
11							dk grey silty sand		Saturated				
12			2.5'				lt grey silty sand		Saturated				
13							Silty sand		Saturated				
14							dark olive Sand/petroleum		Saturated				
15							lt. olive Sand "odor"		Saturated				
16			4'				orange sand " "		Saturated				
17							lt orange sand		Saturated				
18							dk orange sand		Saturated				
19							dk orange sand		Saturated				
20			4'				dk orange sand		Saturated				
21							liner had to						
22							be hunged out						
23			6'				sample lost						
24							orange sand		Saturated				
25							orange sand		Saturated				

}

liner stuck in barrel

For rock coring, enter rock brokenness.

Remarks: * Off-set 1ft. 3ft. for Temp. Pyrometer. Background (ppm): 5
 SCREEN FROM 11 FT. TO 14 FT. (5 FT. OF RQD).
 Converted to Well: Yes X No _____ Well I.D. #: _____

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62 BORING NUMBER: CNC 33-B06
 PROJECT NUMBER: ND164 Zone C DATE: 5-12
 DRILLING COMPANY: _____ GEOLOGIST: SJSCO
 DRILLING RIG: 250 w/ 5400 DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FT) or Screened Interval	MATERIAL DESCRIPTION		U S C S	Remarks	PID/FID Reading (ppm)									
					Soil Density/ Consistency or Rock Hardness	Color			Material Classification	Sample	Sampler BZ	Borehole "	Driller BZ"					
0																		
1																		
2					brown			Sandy silt				4						
3					brwn			Sandy silt				4						
X 4			2.5'		brwn			Sandy silt				4						
X 5																		
6								Sandy silt some clay				4						
7			2.7'		orange			Sand				Saturated						
8			2.7'		orange-brown			Sand				Saturated						
9					orange			Sand				Saturated						
10					brwn			Sand				Saturated						
11					w/some olive			Sand				Saturated						
12			3.5'		" "			Sand				Saturated						
					EOB													

* When rock coring, enter rock brokenness.

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

Remarks: _____

Drilling Area
Background (ppm): 4

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

BORING LOG

PROJECT NAME: CNC Site 33 Bldg NH62 BORING NUMBER: CNC33-307
 PROJECT NUMBER: ND164 Zone C DATE: 5 12 99
 DRILLING COMPANY: T. DeWitt or GEOLOGIST: JISC/ALB/KW/MS
 DRILLING RIG: 250 w/ 5400 DRILLER: CHYDE

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)			
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole**	Driller BZ**
1				dk brown	dk brown	Sandy silt		Mist	2				
2				dk brown	dk brown	Sandy silt		Mist	2				
3				dk brown	dk brown	Sandy silt		Mist	2				
4			3'	dk brown	dk brown	Sandy silt some clay		Wet	2				
5				dk brown	dk brown	Sandy silt some clay		Wet	2				
6				dk brown	dk brown	Sandy silt some clay		Wet	2				
7				dk brown	dk brown	Sandy silt some clay		Wet	2				
8			3.2'	olive	olive	sand		Saturated	2				
9				olive	olive	sand		Saturated	2				
10				olive	olive	sand		Saturated	2				
11				olive	olive	sand		Saturated	2				
12			3.8'	olive	olive	sand		Saturated	2				
				EOB									

* When rock conng. enter rock brokeness.

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

Remarks: SCREEN 10ft. to ground surface (Riser) Drilling Area Background (ppm): 2

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

Riser broke at threads. No Riser

BORING LOG

PROJECT NAME: Charleston S Site 33 BORING NUMBER: CNC 33 B08
 PROJECT NUMBER: NO164 ZONE C DATE: 5/13/99
 DRILLING COMPANY: Tidewater GEOLOGIST: _____
 DRILLING RIG: Geoprobe DRILLER: Mark Coleman

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION			U S C S *	Remarks	PID/FID Reading (ppm)			
					Soil Density/ Consistency or Rock Hardness	Color	Material Classification			Sample	Sampler BZ	Borehole**	Driller BZ**
	1								dry	2			
	2								dry	2			
	3								dry	2			
X	4		2.5'						" "	2			
	5								sandy silt	moist			
	6								sand silt	saturated	5		
	7								brown silty sand	saturated			
	8		2.5'						orange br. silty sand	saturated			
	9								silty sand	saturated			
	10								silty sand	saturated			
	11								orange sand	saturated			
	12		4'						orange sand	saturated			
									EOB				

When rock coring, enter rock brokeness.
 ** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.
 Remarks: _____ Drilling Area Background (ppm): 2
 Converted to Well: Yes No Well I.D. #: _____

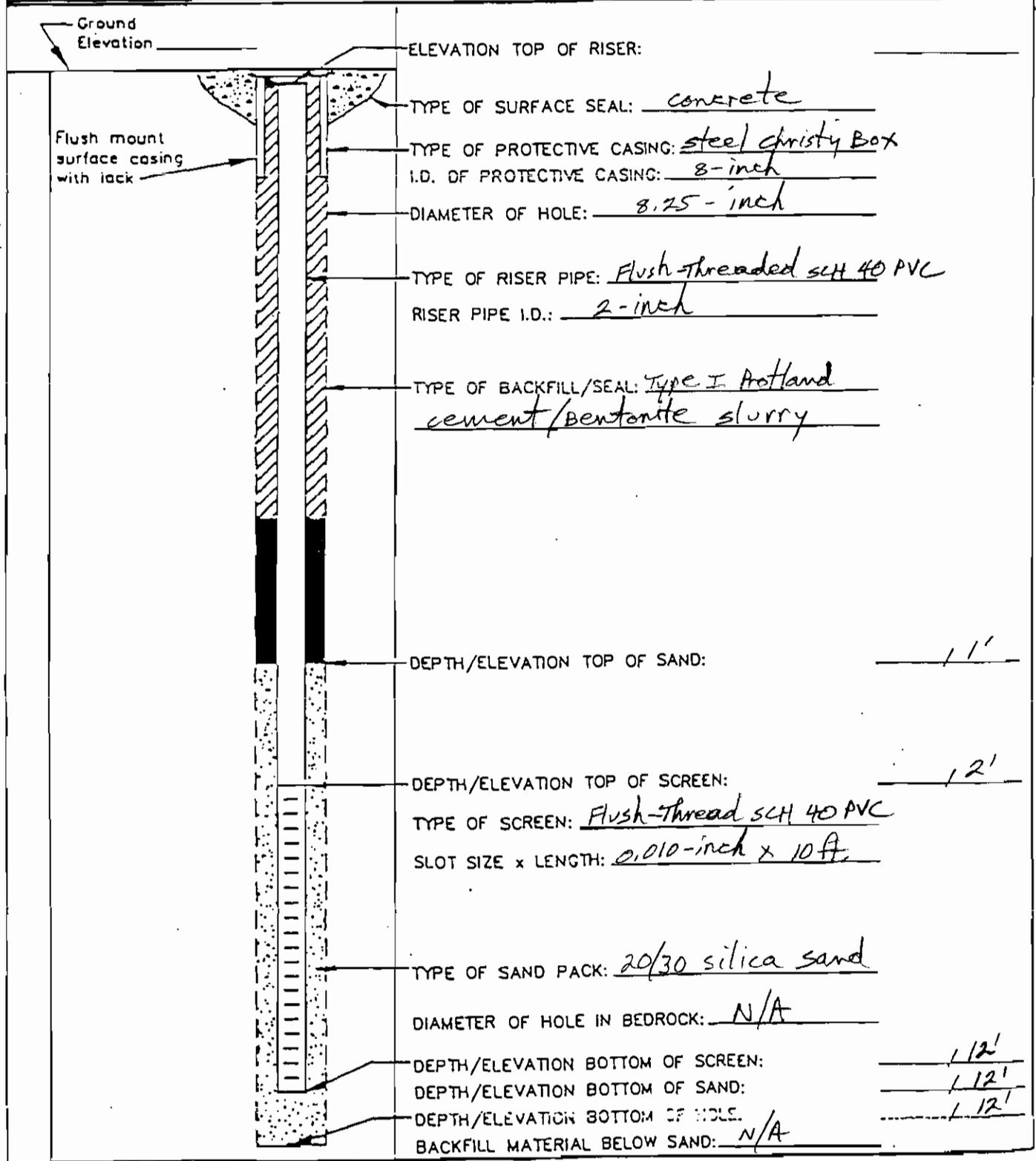
APPENDIX C

FIELD SAMPLING DATA SHEETS



MONITORING WELL SHEET

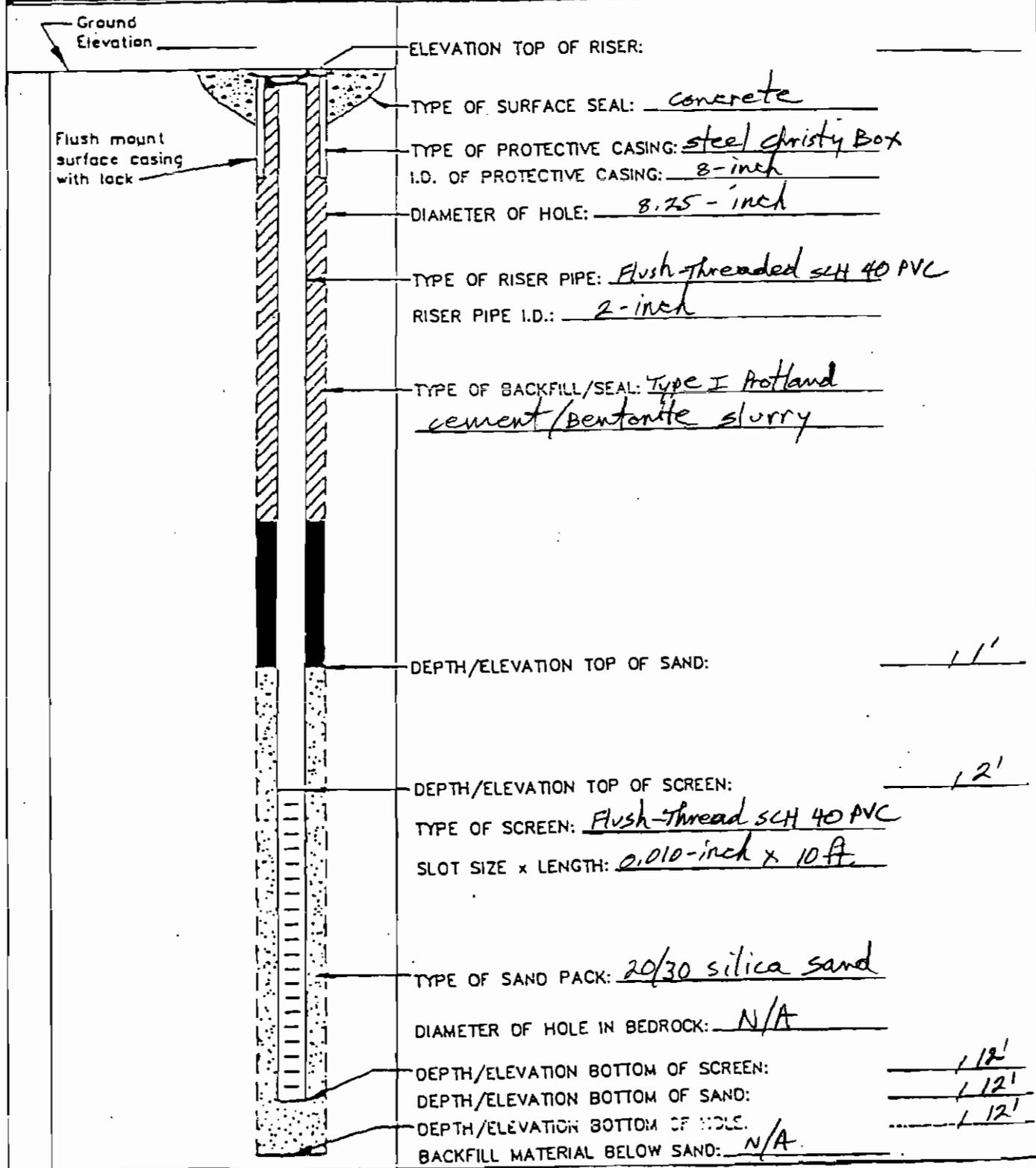
PROJECT <u>CNC ZONE C</u>	LOCATION <u>site 33/Bldg NH62</u>	DRILLER <u>Custom Drilling</u>
PROJECT NO. <u>NO164</u>	BORING <u>CNC33-MW01</u>	DRILLING METHOD <u>HSA</u>
ELEVATION _____	DATE <u>6/16/99</u>	DEVELOPMENT METHOD <u>Surface Pump</u>
FIELD GEOLOGIST <u>Mark Darrington</u>		





MONITORING WELL SHEET

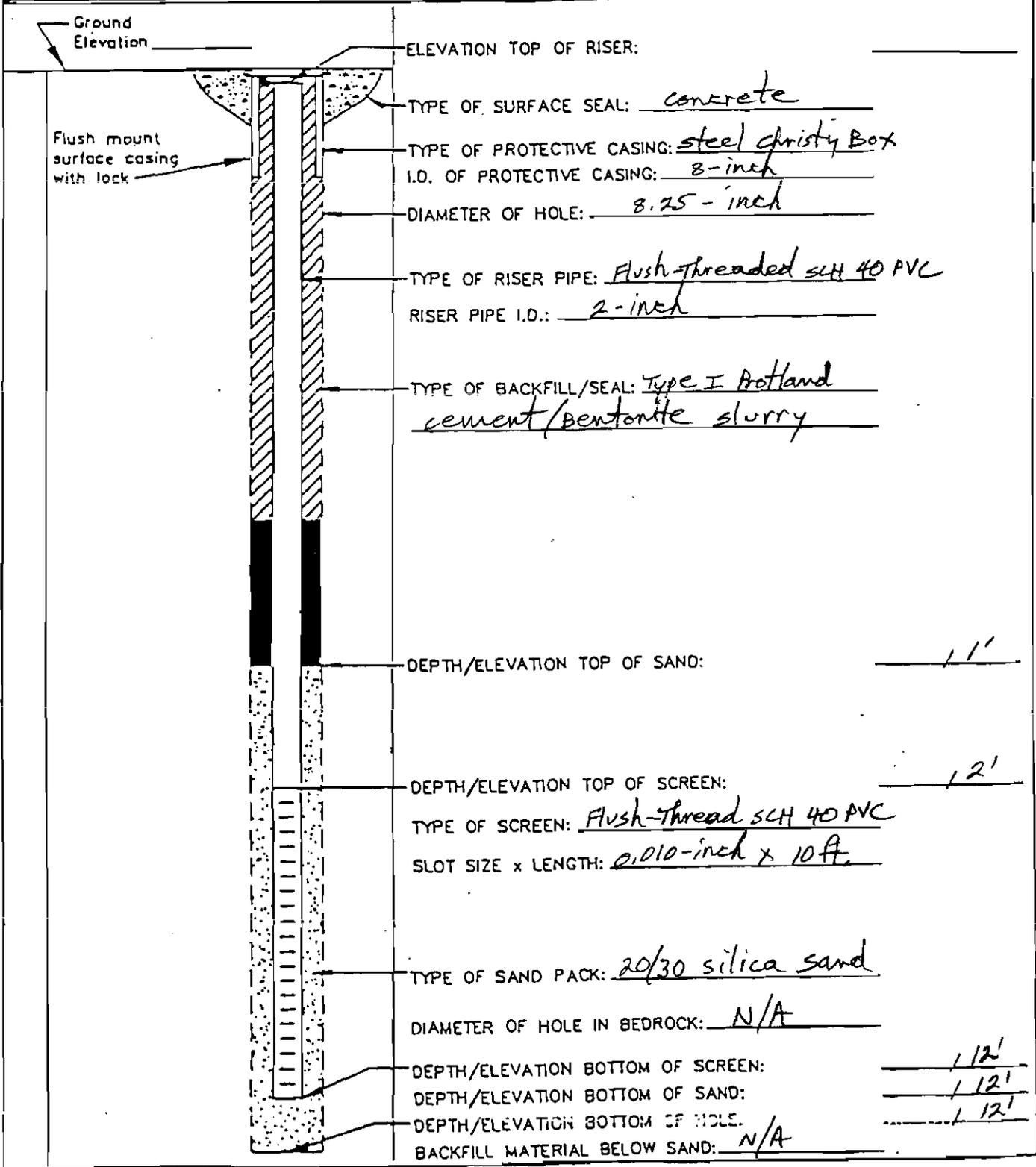
PROJECT <u>CNC Zone C</u>	LOCATION <u>site 33/Bldg NH62</u>	DRILLER <u>Custom Drilling</u>
PROJECT NO. <u>NO16A</u>	BORING <u>CNC33-MW02</u>	DRILLING METHOD <u>HSA</u>
ELEVATION _____	DATE <u>6/16/99</u>	DEVELOPMENT METHOD <u>Surface Pump</u>
FIELD GEOLOGIST <u>Mark Darrington</u>		





MONITORING WELL SHEET

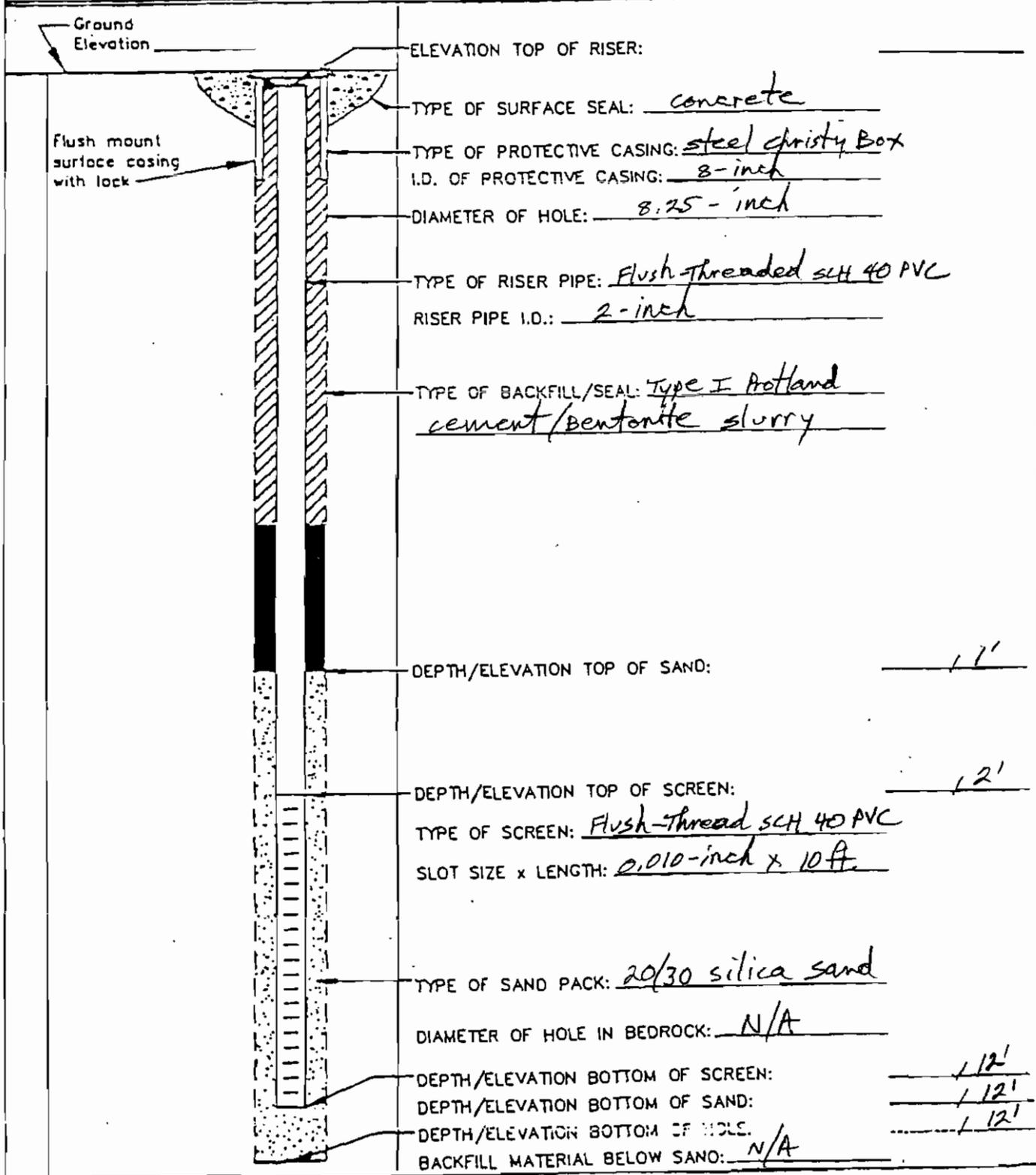
PROJECT <u>CNC ZONE C</u>	LOCATION <u>site 33/Bldg NH62</u>	DRILLER <u>Custom Drilling</u>
PROJECT NO. <u>NO164</u>	BORING <u>CNC33 - MW03</u>	DRILLING METHOD <u>HSA</u>
ELEVATION _____	DATE <u>6/16/99</u>	DEVELOPMENT METHOD <u>surface pump</u>
FIELD GEOLOGIST <u>Mark Darrington</u>		





MONITORING WELL SHEET

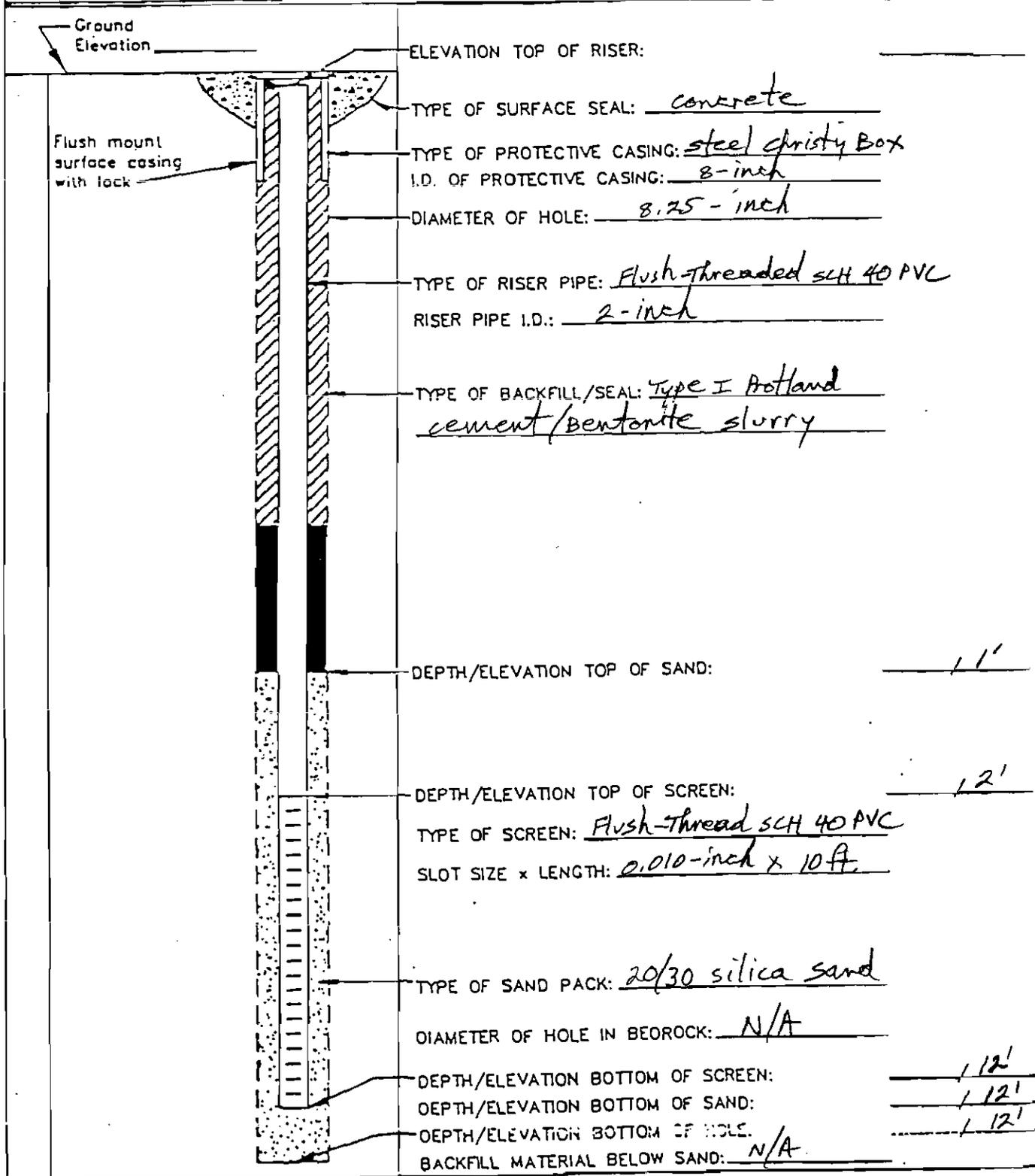
PROJECT <u>CNC ZONE C</u>	LOCATION <u>site 33/Bldg NH62</u>	DRILLER <u>Custom Drilling</u>
PROJECT NO. <u>NO164</u>	BORING <u>CNC33 - MW84</u>	DRILLING METHOD <u>HSA</u>
ELEVATION _____	DATE <u>6/16/99</u>	DEVELOPMENT METHOD <u>surface Pump</u>
FIELD GEOLOGIST <u>Mark Darrington</u>		





MONITORING WELL SHEET

PROJECT <u>CNC Zone C</u>	LOCATION <u>site 33/Bldg NH62</u>	DRILLER <u>Custom Drilling</u>
PROJECT NO. <u>NO16A</u>	BORING <u>CNC33-MW05</u>	DRILLING METHOD <u>HSA</u>
ELEVATION _____	DATE <u>6/16/99</u>	DEVELOPMENT METHOD <u>surface Pump</u>
FIELD GEOLOGIST <u>Mark Darrington</u>		

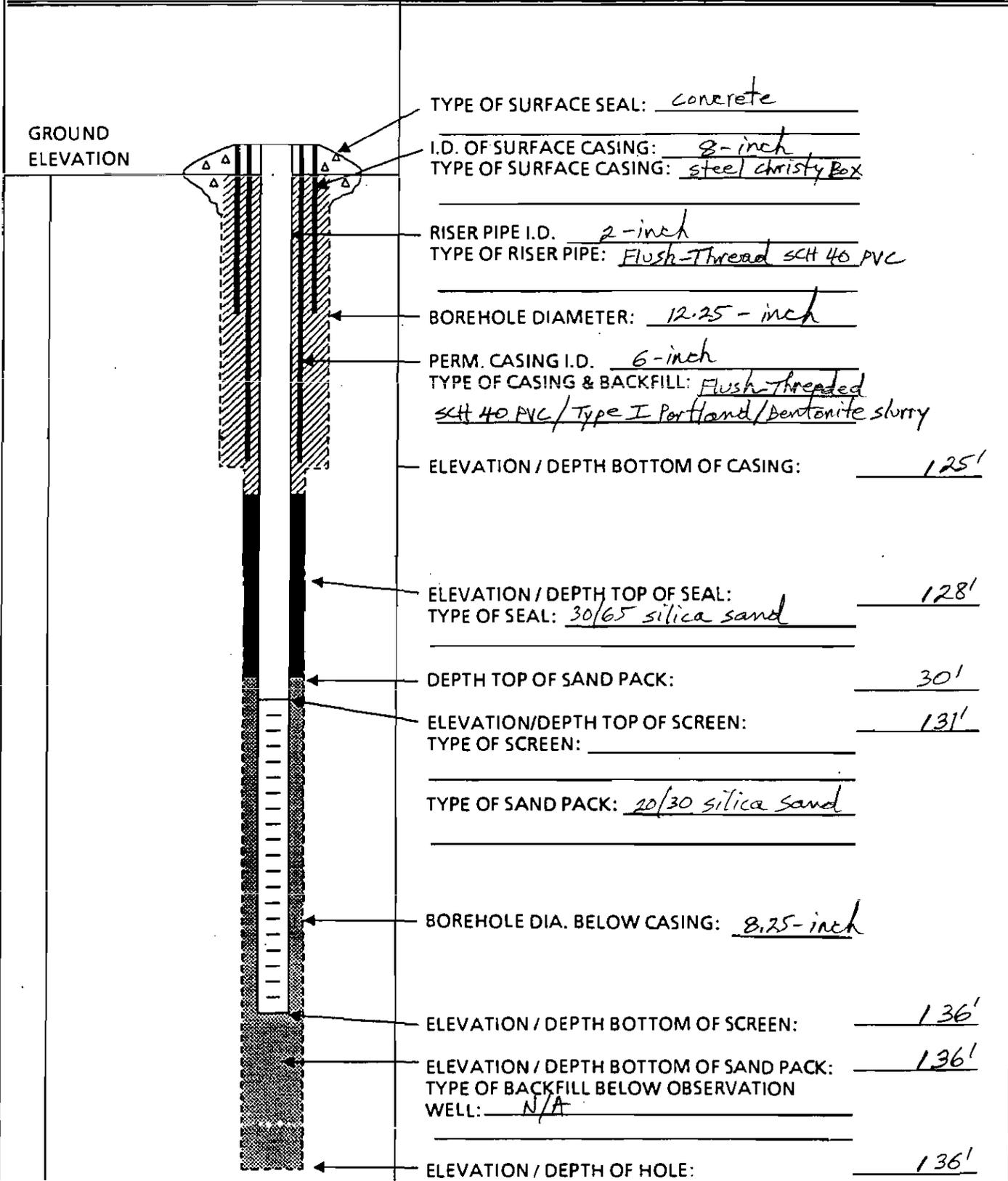




MONITORING WELL SHEET

PROJECT CNC Zone C LOCATION site 33/Bldg NH62
 PROJECT NO. NO164 BORING CNC33-MWOOD
 ELEVATION _____ DATE 7/9/99
 FIELD GEOLOGIST Mark Darrington

DRILLER Custom Drilling
 DRILLING METHOD HSA/Mud Rotary
 DEVELOPMENT METHOD surface Pump





GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 33 Bldg. NH62
 Project No.: ND164 Zone C

Sample ID No.: _____
 Sample Location: CNC 33 Well
 Sampled By: J. Alvarez / D. Anderson

- Domestic Well Data
- Monitoring Well Data
- Other Well Type: _____
- QA Sample Type: _____

C.O.C. No.: _____
 Type of Sample:
 Low Concentration
 High Concentration

SAMPLING DATA								
Date: <u>8-8-99</u>	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Time: <u>1258</u>								
Method:								

PURGE DATA								
Date: <u>2-2-99</u>	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method: <u>Low Flow</u>	Initial	<u>6.38</u>	<u>.297</u>	<u>24.8</u>	<u>64</u>	<u>0.97</u>		
Monitor Reading (ppm):	Initial	<u>6.61</u>	<u>.341</u>	<u>24.5</u>	<u>18</u>	<u>0.55</u>	-	-
Well Casing Diameter:	2	<u>6.74</u>	<u>.330</u>	<u>24.4</u>	<u>8</u>	<u>0.53</u>	-	-
Well Casing Material:	2	<u>6.70</u>	<u>.333</u>	<u>24.9</u>	<u>7</u>	<u>0.97</u>	-	-
Total Well Depth (TD): <u>11.85</u>	<u>3</u>	<u>6.67</u>	<u>.336</u>	<u>24.7</u>	<u>7</u>	<u>0.19</u>	-	-
Static Water Level (WL): <u>5.11</u>								
One Casing Volume (gal): <u>0915</u>	<u>1.08</u>							
Start Purge (hrs): <u>0915</u>								
End Purge (hrs): <u>1006</u>								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION			
Analysis	Preservative	Container Requirements	Collected
<u>BTEX/EDB</u>		<u>3 x 40ml</u>	
<u>Dissolved Methane</u>		<u>3 x 40ml</u>	
<u>PAH</u>		<u>2 x 1ltr.</u>	
<u>Anions</u>		<u>1 x plastic</u>	

OBSERVATIONS / NOTES

$$\begin{array}{r}
 11.85 \\
 - 5.11 \\
 \hline
 6.74
 \end{array}
 \times
 \begin{array}{r}
 6.74 \\
 \times 16 \\
 \hline
 4084 \\
 + 6740 \\
 \hline
 10784
 \end{array}$$

Circle if Applicable:

MS/MSD Duplicate ID No.: _____

Signature(s): [Signature]



GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 33 Bldg. NH62
Project No.: NO164 Zone C

Sample ID No.: 33GLMØ2Ø1
Sample Location: CNC 33 Mw 2
Sampled By: JALDA
C.O.C. No.: _____

- Domestic Well Data
- Monitoring Well Data
- Other Well Type: _____
- QA Sample Type: _____

- Type of Sample:
- Low Concentration
- High Concentration

SAMPLING DATA

Date: <u>8-8-99</u>	Color	pH	S.C. ms/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Time: <u>1300</u>								
Method:								

PURGE DATA

Date: <u>8-8-99</u>	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity
Method: <u>Low Flow</u>	Initial	<u>6.38</u>	<u>.293</u>	<u>23.7</u>	<u>7</u>	<u>0.45</u>	-
Monitor Reading (ppm):	1	<u>6.45</u>	<u>.284</u>	<u>24.4</u>	<u>21</u>	<u>0.62</u>	-
Well Casing Diameter:	2	<u>6.47</u>	<u>.280</u>	<u>24.9</u>	<u>2</u>	<u>0.18</u>	-
Well Casing Material:	3	<u>6.51</u>	<u>.278</u>	<u>24.8</u>	<u>3</u>	<u>1.16</u>	-
Total Well Depth (TD): <u>1.94</u>							
Static Water Level (WL): <u>5.11</u>							
One Casing Volume (gal): <u>Ø16</u>							
Start Purge (hrs): <u>Ø916</u>							
End Purge (hrs): <u>1008</u>							
Total Purge Time (min):							
Total Vol. Purged (gal/L):							

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
<u>BTEX/EDB</u>		<u>3 x 40 ml</u>	
<u>DISsolved Methane</u>		<u>3 x 40 ml</u>	
<u>PAH</u>		<u>2 x 1 ltr.</u>	
<u>Anions</u>		<u>1 x plastic</u>	

OBSERVATIONS / NOTES

$$\begin{array}{r} 11.94 \\ - 5.11 \\ \hline 6.83 \end{array}$$

$$\begin{array}{r} 5.11 \\ + 6.83 \\ \hline 11.008 \end{array}$$

Circle if Applicable:

MSMSD

Duplicate ID No.:

33GLMØ2Ø1 D

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Page of

Project Site Name:	<u>CNC Site 33 Bldg. NH62</u>	Sample ID No.:	<u>33GLM0301</u>
Project No.:	<u>ND164 Zone C</u>	Sample Location:	<u>CNC33MW3</u>
<input type="checkbox"/> Domestic Well Data		Sampled By:	<u>DA/TA</u>
<input type="checkbox"/> Monitoring Well Data		C.O.C. No.:	<u> </u>
<input type="checkbox"/> Other Well Type:	<u> </u>	Type of Sample:	
<input type="checkbox"/> QA Sample Type:	<u> </u>	<input type="checkbox"/> Low Concentration	
		<input type="checkbox"/> High Concentration	

SAMPLING DATA:

Date: <u>8-7-99</u>	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: <u>0932</u>	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method:								

PURGE DATA:

Date: <u>8-7-99</u>	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method:	Initial	<u>6.41</u>	<u>.367</u>	<u>24.0</u>	<u>0.110</u>	<u>1.58</u>		
Monitor Reading (ppm):	1	<u>6.50</u>	<u>.307</u>	<u>25.4</u>	<u>1.4</u>	<u>1.45</u>		
Well Casing Diameter & Material	2	<u>6.54</u>	<u>.298</u>	<u>25.4</u>	<u>9</u>	<u>0.98</u>		
Type:	3	<u>6.55</u>	<u>.296</u>	<u>25.6</u>	<u>18</u>	<u>1.33</u>		
Total Well Depth (TD): <u>12.00</u>								
Static Water Level (WL): <u>4.49</u>								
One Casing Volume (gal/L):								
Start Purge (hrs): <u>0820</u>								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
<u>BTEX/EDB</u>	<u>HCl</u>	<u>3 x 40ml</u>	
<u>PAH</u>	<u>PAH</u>	<u>2 x 11</u>	

OBSERVATIONS / NOTES:

~~3.7~~ 1.9
 12.06
 4.49

 6.51

Circle if Applicable:		Signature(s):
<input type="checkbox"/> MS/MSD	Duplicate ID No.:	

GROUNDWATER SAMPLE LOG SHEET

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u> Project No.: <u>ND164 Zone C</u> <input type="checkbox"/> Domestic Well Data <input type="checkbox"/> Monitoring Well Data <input type="checkbox"/> Other Well Type: _____ <input type="checkbox"/> QA Sample Type: _____	Sample ID No.: <u>336LM0401</u> Sample Location: <u>CNC 33 MW 4</u> Sampled By: <u>DAWA</u> C.O.C. No.: _____ Type of Sample: <input type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration
---	--

SAMPLING DATA:								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
<u>8-7-99</u>	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: <u>0930</u>								
Method:								

PURGE DATA:								
Date:	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
<u>8-7-99</u>	Initial	<u>6.26</u>	<u>.108</u>	<u>24.9</u>	<u>10</u>	<u>3.12</u>		
Method:								
Monitor Reading (ppm):	1	<u>6.18</u>	<u>.116</u>	<u>25.2</u>	<u>8</u>	<u>3.22</u>		
Well Casing Diameter & Material	2	<u>6.23</u>	<u>.119</u>	<u>25.3</u>	<u>3</u>	<u>3.54</u>		
Type:	3	<u>6.21</u>	<u>.120</u>	<u>25.4</u>	<u>5</u>	<u>3.64</u>		
Total Well Depth (TD): <u>11.9φ</u>								
Static Water Level (WL): <u>5.53</u>								
One Casing Volume (gal/L):								
Start Purge (hrs): <u>0825</u>								
End Purge (hrs): <u>0930</u>								
Total Purge Time (min):								
Total Vol. Purged (gal/L): <u>49</u>								

SAMPLE COLLECTION INFORMATION:			
Analysis	Preservative	Container Requirements	Collected
<u>BTEX/ENB</u>	<u>HCl</u>	<u>3 x 40 ml</u>	
<u>PAH</u>		<u>2 x 1 l</u>	

OBSERVATIONS / NOTES:

11.9φ
5.53

6.37

Circle if Applicable: <input type="checkbox"/> MS/MSD Duplicate ID No.: _____	Signature(s):
--	-------------------



GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 33 Bldg. NH62
Project No.: NO 164 Zone C

Sample ID No.: _____
Sample Location: CNC 33 MW5
Sampled By: JALDA

- Domestic Well Data
- Monitoring Well Data
- Other Well Type: _____
- QA Sample Type: _____

- C.O.C. No.: _____
- Type of Sample:
- Low Concentration
 - High Concentration

SAMPLING DATA

Date: <u>8-2-99</u>	Color	pH	S.C. mS/cm	Temp. °C	Turbidity NTU	DO	Salinity	Eh mV
Time: <u>1259</u>								
Method:								

PURGE DATA

Date: <u>8-2-99</u>	Volume	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	
Method: <u>Low Flow</u>	Initial	<u>6.38</u>	<u>.297</u>	<u>24.8</u>	<u>64</u>	<u>0.97</u>	-	-
Monitor Reading (ppm):	1	<u>6.51</u>	<u>.288</u>	<u>25.0</u>	<u>9</u>	<u>0.72</u>	-	-
Well Casing Diameter:	2	<u>6.53</u>	<u>.290</u>	<u>25.1</u>	<u>5</u>	<u>0.63</u>	-	-
Well Casing Material:	3	<u>6.50</u>	<u>.287</u>	<u>25.0</u>	<u>5</u>	<u>0.91</u>	-	-
Total Well Depth (TD): <u>12.68</u>								
Static Water Level (WL): <u>4.31</u>								
One Casing Volume (gal): <u>1175</u> ¹²⁴								
Start Purge (hrs): <u>0917</u>								
End Purge (hrs): <u>1009</u>								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
<u>BTEX/EDR</u>		<u>3 x 40ml</u>	
<u>Dissolved Methane</u>		<u>3 x 40ml</u>	
<u>PAH</u>		<u>2 x 1ltr.</u>	
<u>Antons</u>		<u>1 x plastic</u>	

OBSERVATIONS / NOTES

$$\begin{array}{r} 12.68 \\ - 4.31 \\ \hline 7.77 \end{array}$$

$$\begin{array}{r} 7.77 \\ + 2.16 \\ \hline 9.93 \end{array}$$

$$\begin{array}{r} 9.93 \\ - 2.77 \\ \hline 7.16 \end{array}$$

Circle if Applicable:

MS/MSD

Duplicate ID No.: _____

Signature(s):



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: _____
Project No.: <u>N0164 Zone C</u>	Sample Location: <u>CNC 33 MWS</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): _____	

SAMPLING DATA:

Date: _____	Color (Visual)	ORP (EH) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time: _____								
Method: _____								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1102

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	1-5 mg/L	200 ml	0.200 N	0.01	_____	x 0.01	= _____ mg/L
<input type="checkbox"/>	2-10 mg/L	100 ml	0.200 N	0.02	_____	x 0.02	= _____ mg/L

CHEMetrics: 2 mg/L

Notes: _____

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1121

Filtered:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= _____ mg/L
<input type="checkbox"/>	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= _____ mg/L
<input checked="" type="checkbox"/>	100-400 mg/L	100 ml	1.600 N	1.0	_____ & <u>119</u>	x 1.0	= <u>119</u> mg/L
<input type="checkbox"/>	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= _____ mg/L
<input type="checkbox"/>	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= _____ mg/L
<input type="checkbox"/>	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= _____ mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	<u>0</u>	<u>0</u>	<u>119</u>

CHEMetrics: _____ mg/L

Notes: _____

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1150

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	10-50 mg/L	200 ml	0.3636 N	0.1	_____	x 0.1	= _____ mg/L
<input checked="" type="checkbox"/>	20-100 mg/L	100 ml	0.3636 N	0.2	<u>310</u>	x 0.2	= <u>62</u> mg/L
<input type="checkbox"/>	100-400 mg/L	200 ml	3.636 N	1.0	_____	x 1.0	= _____ mg/L
<input type="checkbox"/>	200-1000 mg/L	100 ml	3.636 N	2.0	_____	x 2.0	= _____ mg/L

CHEMetrics: _____ mg/L

Notes: _____

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



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

②

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: <u>33GLMPS01</u>
Project No.: <u>NO164</u> <u>Zone C</u>	Sample Location: <u>(NC 33 MWS)</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): 	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S²⁻):

Equipment: DR-700	DR-8 __	HS-C Color Chart	HS-WR Color Wheel	Analysis Time: <u>1059</u>
Program/Module: 610nm	93		Other: _____	
Concentration: <u>0.02</u> mg/L				Filtered: <input type="checkbox"/>
Notes: _____				

Sulfate (SO₄²⁻):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: _____
Program/Module: _____	91		
Concentration: _____ mg/L			Filtered: <input type="checkbox"/>
Standard Solution: <input type="checkbox"/>	Results: _____		
Standard Additions: <input type="checkbox"/>	Digits Required: 0.1ml: _____	0.2ml: _____	0.3ml: _____
Notes: _____			

Nitrite (NO₂⁻-N):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: <u>1259</u>
Program/Module: _____	60		Filtered: <input type="checkbox"/>
Concentration: <u>2</u> mg/L			Reagent Blank Correction: <input type="checkbox"/>
	Standard Solution: <input type="checkbox"/>	Results: <input type="checkbox"/>	
Notes: _____			

Nitrate (NO₃⁻-N):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: _____
Program/Module: _____	55		Filtered: <input type="checkbox"/>
Concentration: _____ mg/L			Nitrite Interference Treatment: <input type="checkbox"/>
Standard Solution: <input type="checkbox"/>	Results: _____	Reagent Blank Correction: <input type="checkbox"/>	
Standard Additions: <input type="checkbox"/>	Digits Required: 0.1ml: _____	0.2ml: _____	0.3ml: _____
Notes: _____			



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

②

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: <u>33GLM4541</u>
Project No.: <u>ND164</u> <u>Zone C</u>	Sample Location: <u>CNC 33MWS</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): <input type="checkbox"/>	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn²⁺):

Equipment: DR-700	DR-8 <u> </u>	HACH MN-5	Other: _____	Analysis Time: <u>1147</u>
Program/Module: 525nm	41			
Concentration: <u>0.3</u> mg/L				Filtered: <input type="checkbox"/>
				Digestion: <input type="checkbox"/>
Standard Solution: <input type="checkbox"/>	Results: _____			Reagent Blank Correction: <input type="checkbox"/>
Standard Additions: <input type="checkbox"/>	Digits Required: 0.1ml: _____	0.2ml: _____	0.3ml: _____	

Notes: _____

Ferrous Iron (Fe²⁺):

Equipment: DR-700	DR-8 <u> </u>	IR-18C Color Wheel	Other: _____	Analysis Time: <u>1232</u> ^{31 DDA}
Program/Module: 500nm <u>DDA</u>	33			
Concentration: <u>5.17291</u> mg/L				Filtered: <input type="checkbox"/>

Notes: _____

Hydrogen Sulfide (H₂S):

Equipment: HS-C	Other: _____	Analysis Time: _____
Concentration: _____ mg/L	Exceeded 5.0 mg/L range on color chart: <input type="checkbox"/>	

Notes: _____

QA/QC Checklist:

- All data fields have been completed as necessary:
- Correct measurement units are cited in the SAMPLING DATA block:
- Multiplication is correct for each *Multiplier* table:
- Final calculated concentration is within the appropriate *Range Used* block:
- Alkalinity *Relationship* is determined appropriately as per manufacturer instructions:
- QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents:
- Nitrite Interference treatment used for Nitrate test if Nitrite was detected:
- Title block is initialized by person who performed the QA/QC Checklist:



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: _____
Project No.: <u>NO164</u> <u>Zone C</u>	Sample Location: <u>CNC33MW2</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): _____	

Date:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time: _____								
Method: _____								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-10 mg/L) Analysis Time: 1458

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	1-5 mg/L	200 ml	0.200 N	0.01	_____	x 0.01	= _____ mg/L
<input type="checkbox"/>	2-10 mg/L	100 ml	0.200 N	0.02	_____	x 0.02	= _____ mg/L

CHEMetrics: 1.5 mg/L 1-2

Notes: _____

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1117

Filtered:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= _____ mg/L
<input type="checkbox"/>	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= _____ mg/L
<input checked="" type="checkbox"/>	100-400 mg/L	100 ml	1.600 N	1.0	_____ & <u>134</u>	x 1.0	= <u>134</u> mg/L
<input type="checkbox"/>	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= _____ mg/L
<input type="checkbox"/>	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= _____ mg/L
<input type="checkbox"/>	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= _____ mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	<u>0</u>	<u>0</u>	<u>13.4</u>

CHEMetrics: _____ mg/L

Notes: _____

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1146

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	10-50 mg/L	200 ml	0.3636 N	0.1	_____	x 0.1	= _____ mg/L
<input checked="" type="checkbox"/>	20-100 mg/L	100 ml	0.3636 N	0.2	<u>340</u>	x 0.2	= <u>68</u> mg/L
<input type="checkbox"/>	100-400 mg/L	200 ml	3.636 N	1.0	_____	x 1.0	= _____ mg/L
<input type="checkbox"/>	200-1000 mg/L	100 ml	3.636 N	2.0	_____	x 2.0	= _____ mg/L

CHEMetrics: _____ mg/L

Notes: _____

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



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Page of

(2)

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: <u>33GLMΦ2Φ1</u>
Project No.: <u>NO164</u> <u>Zone C</u>	Sample Location: <u>CNC33MW2</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): <input type="checkbox"/>	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S²⁻):

Equipment: DR-700	DR-8 __	HS-C Color Chart	HS-WR Color Wheel	Analysis Time: <u>1058</u>
Program/Module: 610nm	93		Other: _____	
Concentration: <u>0.03</u> mg/L				Filtered: <input type="checkbox"/>
Notes: _____				

Sulfate (SO₄²⁻):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: _____
Program/Module: _____	91		
Concentration: _____ mg/L			Filtered: <input type="checkbox"/>
Standard Solution: <input type="checkbox"/>	Results: _____		
Standard Additions: <input type="checkbox"/>	Digits Required: 0.1ml: _____	0.2ml: _____	0.3ml: _____
Notes: _____			

Nitrite (NO₂⁻-N):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: <u>1258</u>
Program/Module: _____	60		Filtered: <input type="checkbox"/>
Concentration: <u>0</u> mg/L			Reagent Blank Correction: <input type="checkbox"/>
	Standard Solution: <input type="checkbox"/>	Results: <input type="checkbox"/>	
Notes: _____			

Nitrate (NO₃⁻-N):

Equipment: DR-700	DR-8 __	Other: _____	Analysis Time: _____
Program/Module: _____	55		Filtered: <input type="checkbox"/>
Concentration: _____ mg/L			Nitrite Interference Treatment: <input type="checkbox"/>
Standard Solution: <input type="checkbox"/>	Results: _____	Reagent Blank Correction: <input type="checkbox"/>	
Standard Additions: <input type="checkbox"/>	Digits Required: 0.1ml: _____	0.2ml: _____	0.3ml: _____
Notes: _____			



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Page of

(B)

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: <u>33GLMΦ201</u>
Project No.: <u>NO164 Zone C</u>	Sample Location: <u>CNC 33 MW2</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): <input type="checkbox"/>	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn²⁺):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: 11:48 ^{DRA}

Program/Module: 525nm 41

Concentration: 0.3 mg/L Filtered:

Standard Solution: Results: _____ Digestion:

Standard Additions: Reagent Blank Correction:

Digits Required: 0.1ml: _____ 0.2ml: _____ 0.3ml: _____

Notes: _____

Ferrous Iron (Fe²⁺):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 12:30 ^{DRA}

Program/Module: 500nm ^{DRA} 33

Concentration: 0.913.30 mg/L Filtered:

Notes: _____

Hydrogen Sulfide (H₂S):

Equipment: HS-C Other: _____ Analysis Time: _____

Concentration: _____ mg/L Exceeded 5.0 mg/L range on color chart:

Notes: _____

QA/QC Checklist:

All data fields have been completed as necessary:

Correct measurement units are cited in the SAMPLING DATA block:

Multiplication is correct for each *Multiplier* table:

Final calculated concentration is within the appropriate *Range Used* block:

Alkalinity *Relationship* is determined appropriately as per manufacturer instructions:

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents:

Nitrite interference treatment used for Nitrate test if Nitrite was detected:

Title block is initialized by person who performed the QA/QC Checklist:



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: _____
Project No.: <u>N0164 Zone C</u>	Sample Location: <u>CNC33 MW1</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): 	

SAMPLING DATA:

Date:	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal	pH
Time:	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method:								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1055

1-1φ

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	1-5 mg/L	200 ml	0.200 N	0.01	_____ & _____	x 0.01	= _____ mg/L
<input type="checkbox"/>	2-10 mg/L	100 ml	0.200 N	0.02	_____ & _____	x 0.02	= _____ mg/L

CHEMetrics: - 2 mg/L

Notes: _____

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 1113

Filtered:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
<input type="checkbox"/>	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= _____ mg/L
<input type="checkbox"/>	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= _____ mg/L
<input checked="" type="checkbox"/>	100-400 mg/L	100 ml	1.600 N	1.0	_____ & <u>155</u>	x 1.0	= <u>155</u> mg/L
<input type="checkbox"/>	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= _____ mg/L
<input type="checkbox"/>	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= _____ mg/L
<input type="checkbox"/>	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= _____ mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	<u>φ</u>	<u>φ</u>	<u>1.55</u>

CHEMetrics: _____ mg/L

Notes: _____

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 114φ

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Concentration
<input type="checkbox"/>	10-50 mg/L	200 ml	0.3636 N	0.1	_____	x 0.1 = _____ mg/L
<input type="checkbox"/>	20-100 mg/L	100 ml	0.3636 N	0.2	<u>245</u>	x 0.2 = <u>49</u> mg/L
<input type="checkbox"/>	100-400 mg/L	200 ml	3.636 N	1.0	_____	x 1.0 = _____ mg/L
<input type="checkbox"/>	200-1000 mg/L	100 ml	3.636 N	2.0	_____	x 2.0 = _____ mg/L

CHEMetrics: _____ mg/L

Notes: _____

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



FIELD ANALYTICAL LOG SHEET GEOCHEMICAL PARAMETERS

(A)

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. N#62</u>	Sample ID No.: <u>33GFMD101</u>
Project No.: <u>NO164 Zone C</u>	Sample Location: <u>CNC33MW1</u>
Sampled By: _____	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): <input type="checkbox"/>	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S²⁻):

Equipment: DR-700	DR-8 <u> </u>	HS-C Color Chart	HS-WR Color Wheel	Analysis Time: <u>1057</u>
Program/Module: 610nm	93		Other: _____	

Concentration: 0.03 mg/L Filtered:

Notes: _____

Sulfate (SO₄²⁻):

Equipment: DR-700	DR-8 <u> </u>	Other: _____	Analysis Time: _____
Program/Module: _____	91		

Concentration: _____ mg/L Filtered:

Standard Solution: Results: _____

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

Notes: _____

Nitrite (NO₂⁻-N):

Equipment: DR-700	DR-8 <u> </u>	Other: _____	Analysis Time: <u>1257</u>
Program/Module: _____	60		Filtered: <input type="checkbox"/>

Concentration: 11 mg/L Reagent Blank Correction:

Standard Solution: Results:

Notes: _____

Nitrate (NO₃⁻-N):

Equipment: DR-700	DR-8 <u> </u>	Other: _____	Analysis Time: _____
Program/Module: _____	55		Filtered: <input type="checkbox"/>

Concentration: _____ mg/L Nitrite Interference Treatment:

Standard Solution: Results: _____ Reagent Blank Correction:

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

Notes: _____



FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

(A)

Tetra Tech NUS, Inc.

Page of

Project Site Name: <u>CNC Site 33 Bldg. NH62</u>	Sample ID No.: <u>33GLM0101</u>
Project No.: <u>NO164</u> <u>Zone C</u>	Sample Location: <u>CNC S3 MW1</u>
Sampled By: <u>DRA</u>	Duplicate: <input type="checkbox"/>
Field Analyst: _____	Blank: <input type="checkbox"/>
Field Form Checked as per QA/QC Checklist (initials): <input type="checkbox"/>	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn²⁺):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: 1145

Program/Module: 525nm 41

Concentration: 0.4 mg/L Filtered:

Standard Solution: Results: _____ Digestion:

Standard Additions: Reagent Blank Correction:

Digits Required: 0.1ml: _____ 0.2ml: _____ 0.3ml: _____

Notes: _____

Ferrous Iron (Fe²⁺):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1229

Program/Module: 500nm DRA 33

Concentration: 0.50.34 mg/L Filtered:

Notes: _____

Hydrogen Sulfide (H₂S):

Equipment: HS-C Other: _____ Analysis Time: _____

Concentration: _____ mg/L Exceeded 5.0 mg/L range on color chart:

Notes: _____

QA/QC Checklist:

All data fields have been completed as necessary:

Correct measurement units are cited in the SAMPLING DATA block:

Multiplication is correct for each *Multiplier* table:

Final calculated concentration is within the appropriate *Range Used* block:

Alkalinity *Relationship* is determined appropriately as per manufacturer instructions:

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents:

Nitrite Interference treatment used for Nitrate test if Nitrite was detected:

Title block is initialized by person who performed the QA/QC Checklist:

APPENDIX D

SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA



September 15, 1999

Mr. Paul Calligan
Tetra Tech Nus
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

RE: Katahdin Lab Number: WP3570
Project ID: CNC Charleston
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date(s): 8/10/99

Dear Mr. Calligan:

Please find enclosed the following information:

- * Report of Analysis
- * Quality Control Data Summary
- * Chain of Custody
- * Confirmation

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. This cover letter is an integral part of the ROA.

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Maria Crouch
Authorized Signature

09/15/99
Date



SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECHNUS
CASE CNC CHARLESTON

Sample Receipt

The following samples were received on August 10, 1999 and were logged in under Katahdin Analytical Services work order number WP3570 for a hardcopy due date of September 9, 1999.

<u>Sample No.</u>	<u>Sample Identification</u>
WP3570-1	19GLM0101
WP3570-2	19GLM0401
WP3570-3	19GLM0201
WP3570-4	29GLM0601
WP3570-5	33GLM0401
WP3570-6	33GLM0601
WP3570-7	41GLM0101D
WP3570-8	41GLM0701
WP3570-9	41GLM0601
WP3570-10	33GLM0201D
WP3570-11	33GLM0101
WP3570-12	33GLM0201
WP3570-13	33GLM0501
WP3570-14	41GLM0301
WP3570-15	41GLM0101
WP3570-16	41GLM0501
WP3570-17	33GLM0301
WP3570-18	33TL00101

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

Sample analyses have been performed by the methods as noted herein.

Volatile Organic Analysis

Seventeen aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on August 10, 1999 and were specified to be analyzed by USEPA method 8260B for the analytes benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, and EDB.

Analyses for this workorder were performed on the 5970-Q instrument. A VSTD050 (50 ppb

standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ppb.

Batch QC (VBLK, and LCS) was performed in each twelve-hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. A matrix spike/matrix spike duplicate pair was performed on sample WP3570-14.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" (software-generated) on the pertinent quantitation reports. All "M" flags have been dated and initialed by the analyst performing the integration. In addition, all "M" flags have been reviewed and approved by the GC/MS supervisor. Copies of each manual integration are included in the pertinent quantitation reports.

No other protocol deviations were noted by the volatile organics staff.

Semivolatile Organics Analysis

Seventeen aqueous samples were received by Katahdin Analytical Services laboratory on August 10, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the samples occurred following USEPA method 3510 on August 13, 1999. A laboratory control spike, consisting of all PAH analytes spiked into organic free water, was extracted in the batch, along with a matrix spike/matrix spike duplicate pair on sample WP3570-4.

Initial analyses of samples WP3570-1 and -2 yielded target analyte concentrations over the upper limit of the calibration curve. The analysis of sample WP3570-1 also yielded a low recovery of the surrogate terphenyl-d14. Re-analyses occurred at 1:2 dilutions for each. Both sets of data for sample WP3570-2 are included in this data package. Sample WP3570-1 was reextracted on August 23, 1999, following USEPA method 3510, outside of holding times. Surrogate recoveries for this reextracted sample met QC limits. All three sets of data for this sample are included in the data package.

Initial analysis of sample WP3570-3 yielded a low recovery of the surrogate terphenyl-d14. Re-extraction occurred on August 23, 1999, following USEPA method 3510. The re-extracted sample also had a low recovery of the surrogate terphenyl-d14, confirming matrix interference. Both sets of data are included in the data package.

Analysis of the QC sample WP3570-4MS yielded a low recovery of the surrogate terphenyl-d14. In accordance with the method, no action was taken with this QC sample.

Initial analysis of sample WP3570-17 yielded internal standard area recovery deviations. Re-analysis yielded a similar result, confirming matrix interference. Both sets of data are included in this data package.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" by the data system. All manual integrations have been dated and initialed by the responsible analyst. Copies of each manual integration are included in the data package. All manual integrations have been reviewed and approved by the GC/MS supervisor.

No other protocol deviations were noted by the semivolatiles organics staff.

Wet Chemistry Analysis

For work order WP3570 analyses for Nitrate (E300) and Sulfate (E300) were performed according to the U.S. EPA "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA 600/R-93/100, August 1993. All samples were run within laboratory hold time.

The wet chemistry staff noted no protocol deviations.

LAB (WORK ORDER) # WP3570

PAGE: 1 OF 3

COOLER: 1 OF 3

COC# _____

SDG# _____

DATE / TIME RECEIVED: 08-10-99 ~ 0900

DELIVERED BY: FED EX

RECEIVED BY: BKR

LIMS ENTRY BY: SW

LIMS REVIEW BY / PM: KAP

CLIENT: Tetra Tech SC

PROJECT: CNC CHARLESTON

mm

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TEMP BLANK TEMP (°C) = <u>1.2</u>	<i>called client on 8/10/99 proceed with analysis. KAP 8/10/99</i>
6. SAMPLES RECEIVED AT 4°C +/- 2? (ICE / ICE PACKS PRESENT <input checked="" type="checkbox"/> or N?)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COOLER TEMP (°C) = <u>NA</u>	(RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)
7. VOLATILES FREE OF HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. TRIP BLANK PRESENT IN THIS COOLER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN): <u>SC</u>					

LOG - IN NOTES⁽¹⁾:
 33GLM0301: All 3 vials arrived broken - called client on 8/10/99 - they will resample.
 33GLM 101D as written on COC was written 33GLM 201D on containers. called client on 8/10/99 Log in as per containers per client request.
 Logged in according to C.O.C.
 Per client request on 8/11/99, 19GLM0501 should be 19GLM0201. KAP 8/11/99

⁽¹⁾ Use this space (and additional sheets if necessary) to document samples that are received broken or compromised, C-O-C discrepancies, radiation checks, residual chlorine check, results of pH check if required. If samples required pH adjustment, record volume and type of preservative added.

0000074

LAB (WORK ORDER) # WP 3570

PAGE: 2 OF 3

COOLER: 2 OF 3

CLIENT: Tetra Tech - SC

COC# _____
 SDG# _____

PROJECT: CNC CHARACTERIZATION

DATE / TIME RECEIVED: 08-10-99 ~ 09:00

DELIVERED BY: EDEN

RECEIVED BY: BKL

LIMS ENTRY BY: SW

LIMS REVIEW BY / PM: KMP

Wm

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TEMP BLANK TEMP (°C) = <u>0.3</u>	<u>called client on 8/10/99. Not a problem with analysis. KMP 8/10/99</u>
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE ICE PACKS PRESENT (Y or N)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COOLER TEMP (°C) = _____ NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. TRIP BLANK PRESENT IN THIS COOLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN): <u>SC</u>					

LOG - IN NOTES⁽¹⁾:

0000075

⁽¹⁾ Use this report (and additional sheets if necessary) to document samples that are received broken, compromised, C-O-C discrepancies, radiation checks, residual chlorine check, res... pH check if... B. If samples required pH adjustment, record volume and type of preservative ad...

LAB (WORK ORDER) # WP 3570

PAGE: 3 OF 3

COOLER: 3 OF 3

CLIENT: Tetratedh SC

COC# _____

SDG# _____

DATE / TIME RECEIVED: 08-10-99 ~ 0900

DELIVERED BY: FEDEX

RECEIVED BY: BKR

LIMS ENTRY BY: SW

LIMS REVIEW BY / PM: KAP

PROJECT: CNC CHARLESTON

mm

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TEMP BLANK TEMP (°C) = <u>0.5</u>	<i>called client on 8/10/99 proceed with analyses EAC 8/10/99</i>
6. SAMPLES RECEIVED AT 4°C +/- 2? (ICE) ICE PACKS PRESENT (Y or N)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COOLER TEMP (°C) = <u>NA</u> (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. TRIP BLANK PRESENT IN THIS COOLER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN): <u>SC</u>					

LOG - IN NOTES⁽¹⁾:

⁽¹⁾ Use this space (and additional sheets if necessary) to document samples that are received broken or compromised, C-O-C discrepancies, radiation checks, residual chlorine check, results of pH check if required. If samples required pH adjustment, record volume and type of preservative added.

0000076

KATAHDIN ANALYTICAL SERVICES, INCORPORATED
New England-ME Laboratory (207) 874-2400
CONFIRMATION

ORDER NO WP-3570

Project Manager: Andrea J. Colby

REPORT TO: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

ORDER DATE: 08/10/99
 PHONE: 850/385-98
 FAX: 850/385-9860
 DUE: 09 SEP
 FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
 TETRA TECH NUS, INC.
 FOSTER PLAZA 7, 661 ANDERSEN DR.
 PITTSBURGH, PA 15220

PHONE: 412/921-7090
 PO: N7912-P99264
 PROJECT: CTO#68

SAMPLED BY: J.ALEXANDER

DELIVERED BY: FEDEX

DISPOSE: AFTER 09 OCT

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3570-1	19GLM0101	06 AUG 1107	10 AUG	AQ
	WP3570-2	19GLM0401	06 AUG 1110		
	WP3570-3	19GLM0201	06 AUG 1158		
	WP3570-4	29GLM0601	07 AUG 1510		
	WP3570-5	33GLM0401	07 AUG 0930		
	WP3570-6	33GLM0601	07 AUG 0935		
	WP3570-7	41GLM0101D	09 AUG		
	WP3570-8	41GLM0701	09 AUG 1540		
	WP3570-9	41GLM0601	09 AUG 1542		
	WP3570-10	33GLM0201D	08 AUG		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	10	75.00	750.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	10	125.00	1250.00
TOTALS		10	200.00	2000.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2 WP3570-11	33GLM0101	08 AUG 1258	10 AUG	AQ
WP3570-12	33GLM0201	08 AUG 1300		
WP3570-13	33GLM0501	08 AUG 1259		
WP3570-14	41GLM0301	09 AUG 0929		
WP3570-15	41GLM0101	09 AUG 0920		
WP3570-16	41GLM0501	09 AUG 0936		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	6	75.00	450.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	6	125.00	750.00
GC Subcontract		6	95.00	570.00
Nitrogen, Nitrate (as N)	E300	6	30.00	180.00
Sulfate (as SO4)	E300	6	0.00	0.00
TOTALS		6	325.00	1950.00

KATAHDIN ANALYTICAL SERVICES, INCORPORATED
New England-ME Laboratory (207) 874-2400
CONFIRMATION

ORDER NO WP-3570

Project Manager: Andrea J. Colby
ORDER DATE: 08/10/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 09 SEP
FAC.ID: CNC CHARLESTON

REPORT TO: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

INVOICE: ACCOUNTS PAYABLE
TETRA TECH NUS, INC.
FOSTER PLAZA 7, 661 ANDERSEN DR.
PITTSBURGH, PA 15220

PHONE: 412/921-7090
PO: N7912-P99264

PROJECT: CTO#68

SAMPLED BY: J.ALEXANDER

DELIVERED BY: FEDEX

DISPOSE: AFTER 09 OCT

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP3570-17 33GLM0301	07 AUG 0932	10 AUG	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP3570-18 33TL00101	09 AUG	10 AUG	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	75.00	75.00

ORDER NOTE: QC-IV NFESC-D
DD(KAS007QC-DB3)
CNC CHARLESTON
REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH, PA 15220
REPORT AND DISK

INVOICE: With Report

TOTAL ORDER AMOUNT \$4,150.00
This is NOT an Invoice

AJC/BKR/KP/WEST.KP(dw)

08-19 Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

0000080
01 8/25/99



KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
\$	'\$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmed matrix interference.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-6	Sample reextraction was required due to exceedance of quality control criteria. The original extraction was performed within hold time while reextraction was not within hold time. Results for the reextracted sample met all quality control criteria and are reported here.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-5
 SDG: WP3570
 Report Date: 9/13/99
 PO No. : N7912-P99264
 Project: CTO#68
 % Solids: N/A
 Method: EPA 8270
 Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0401	AQ	8/7/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
PERYLENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	59	%	1.0		
2-FLUOROBIPHENYL	60	%	1.0		
TERPHENYL-D14	79	%	1.0		

port Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-5
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0401	AQ	8/7/99	8/10/99	8/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	97	%	1.0		
1,2-DICHLOROETHANE-D4	91	%	1.0		
TOLUENE-D8	97	%	1.0		
P-BROMOFLUOROBENZENE	94	%	1.0		

Report Notes:



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-6
SDG: WP3570
Report Date: 9/13/99
PO No.: N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0601	AQ	8/7/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	68	%	1.0		
2-FLUOROBIPHENYL	70	%	1.0		
TERPHENYL-D14	72	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP3570-6
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0601	AQ	8/7/99	8/10/99	8/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	93	%	1.0		
1,2-DICHLOROETHANE-D4	86	%	1.0		
TOLUENE-D8	94	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-10
 SDG: WP3570
 Report Date: 9/13/99
 PO No. : N7912-P99264
 Project: CTO#68
 % Solids: N/A
 Method: EPA 8270
 Date Analyzed: 8/17/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0201D	AQ	8/8/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	61	%	1.0		
2-FLUOROBIPHENYL	59	%	1.0		
TERPHENYL-D14	71	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP3570-10
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0201D	AQ	8/8/99	8/10/99	8/16/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	5	ug/L	1.0	5	5
TOLUENE	5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	5	ug/L	1.0	5	5
ETHYLBENZENE	5	ug/L	1.0	5	5
NAPHTHALENE	5	ug/L	1.0	5	5
MTBE	5	ug/L	1.0	5	5
TOTAL XYLENES	5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	103	%	1.0		
1,2-DICHLOROETHANE-D4	102	%	1.0		
TOLUENE-D8	103	%	1.0		
P-BROMOFLUOROBENZENE	106	%	1.0		

Report Notes:

CLIENT: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-3570-11
Report Date: 09/15/99
PO No. : N7912-P99264
Project : CTO#68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
33GLM0101	Aqueous	J.ALEXANDER		08/08/99	08/10/99			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrogen, Nitrate (as N)	<0.050	mg/L	1.0	0.050	E300	08/11/99	CF	
Sulfate (as SO4)	5.9	mg/L	1.0	1.0	E300	08/11/99	CF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

09/15/99

LJO/baekp(dw)/msm
PH11N3W1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-11
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0101	AQ	8/8/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	78	%	1.0		
2-FLUOROBIPHENYL	78	%	1.0		
TERPHENYL-D14	88	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
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Proj. ID: CNC CHARLESTON

Lab Number: WP3570-11
 SDG: WP3570
 Report Date: 9/13/99
 PO No. : N7912-P99264
 Project: CTO#68
 % Solids: N/A
 Method: SW8260
 Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0101	AQ	8/8/99	8/10/99	8/16/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	103	%	1.0		
1,2-DICHLOROETHANE-D4	100	%	1.0		
TOLUENE-D8	106	%	1.0		
P-BROMOFLUOROBENZENE	100	%	1.0		

Report Notes:



CLIENT: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

Lab Number : WP-3570-12
 Report Date: 09/15/99
 PO No. : N7912-P99264
 Project : CIO#68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY			SAMPLED DATE RECEIVED		
33GLM0201	Aqueous	J.ALEXANDER			08/08/99	08/10/99	
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Nitrogen, Nitrate (as N)	<0.050	mg/L	1.0	0.050	E300	08/11/99 CF	
Sulfate (as SO4)	16.	mg/L	1.0	1.0	E300	08/11/99 CF	

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

09/15/99

LJC/baekp(dw)/msm
 PH11N3W1
 CC: MS. LEE LECK
 TETRA TECH NUS
 FOSTER PLAZA 7
 661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Owen Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP3570-12
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/17/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0201	AQ	8/8/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	63	%	1.0		
2-FLUOROBIPHENYL	65	%	1.0		
TERPHENYL-D14	70	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
Tetra Tech NUS
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Suite 102
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Proj. ID: CNC CHARLESTON

Lab Number: WP3570-12
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0201	AQ	8/8/99	8/10/99	8/16/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	103	%	1.0		
1,2-DICHLOROETHANE-D4	100	%	1.0		
TOLUENE-D8	104	%	1.0		
P-BROMOFLUOROBENZENE	107	%	1.0		

Report Notes:



Lab Number : WP-3570-13
 Report Date: 09/15/99
 PO No. : N7912-P99264
 Project : CTO#68

CLIENT: PAUL CALLIGAN
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WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
33GLM0501	Aqueous	J.ALEXANDER		08/08/99	08/10/99		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Nitrogen, Nitrate (as N)	<0.050	mg/L	1.0	0.050	E300	08/11/99	CF
Sulfate (as SO4)	21.	mg/L	2.0	1.0	E300	08/14/99	CF

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.

09/15/99

LJO/baebae/msm
 PH11N3W1
 CC: MS. LEE LECK
 TETRA TECH NUS
 FOSTER PLAZA 7
 661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-13
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0501	AQ	8/8/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	63	%	1.0		
2-FLUOROBIPHENYL	64	%	1.0		
TERPHENYL-D14	73	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
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 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-13
 SDG: WP3570
 Report Date: 9/13/99
 PO No. : N7912-P99264
 Project: CTO#68
 % Solids: N/A
 Method: SW8260
 Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0501	AQ	8/8/99	8/10/99	8/16/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	100	%	1.0		
DICHLOROETHANE-D4	101	%	1.0		
LUENE-D8	104	%	1.0		
P-BROMOFLUOROBENZENE	106	%	1.0		

Report Notes:



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-17
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/17/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0301	AQ	8/7/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	65	%	1.0		
2-FLUOROBIPHENYL	71	%	1.0		
TERPHENYL-D14	79	%	1.0		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-17RA
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0301	AQ	8/7/99	8/10/99	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	58	%	1.0		
2-FLUOROBIPHENYL	64	%	1.0		
TERPHENYL-D14	77	%	1.0		

Report Notes: O-13



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Owen Park Dr.
Suite 102
Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3570-18
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33TL00101	AQ	8/9/99	8/10/99	8/18/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	102	%	1.0		
1,2-DICHLOROETHANE-D4	101	%	1.0		
TOLUENE-D8	99	%	1.0		
P-BROMOFLUOROBENZENE	100	%	1.0		

Report Notes:



Method Blank and Laboratory Control Sample Results

Client: Tetra Tech NUS

Work Order: WP3570

METHOD BLANK RESULTS

LABORATORY CONTROL SAMPLE RESULTS

Parameter	Date of Prep	Date of Analysis	Concentration			Practical Quantitation Level**	LABORATORY CONTROL SAMPLE RESULTS				
			Units	Measured in Blank	Acceptance Range		Units	True Value	Measured Value	Percent Recovered	Acceptance Range (%)
Nitrate-Nitrogen	11-Aug-99	11-Aug-99	mg/L	< 0.050	< 0.050	0.050	mg/L	2.5	2.2	88.0	80-120
Sulfate	11-Aug-99	11-Aug-99	mg/L	< 1.0	< 1.0	1.0	mg/L	10	8.26	82.6	80-120
	14-Aug-99	14-Aug-99	mg/L	< 1.0	< 1.0	1.0	mg/L	10	10.2	102.0	80-120

** Practical quantitation level is the lowest concentration measurable for samples with normal chemical and physical composition during routine laboratory operations.

DATA QUALITY COMMENTS:

Results of all quality control measurements are within the laboratory and method specified acceptance range except as noted.



Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client: Tetra Tech NUS

Work Order: WP3570

DUPLICATE RESULTS

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Parameter	Katahdin Sample No	Sample Measurements		Mean	Acceptance Range		Concentration or Quantity				Matrix Spike Recovery (%)			RPD (%)	Acceptance Range (%)
		Units	Rep 1	Rep 2	Conc	RPD (%)	for RPD (%)	Units	Sampl Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1		
Nitrate - N	WP3570-16	mg/L	<0.050	<0.050	<0.050	0.0	0-20	mg/L	<0.050	2.0	1.76		88.0	75-125	0-20

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

DATA QUALITY COMMENTS:

Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

4B
SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;081399

Lab Name: Katahdin Analytical Services

SDG No.: WP3570

Lab File ID: Z1740

Lab Sample ID: SBLK;081399

Instrument ID: 5972-Z

Date Extracted: 8/13/99

GC Column: RTX-624 ID: 0.18 (mm)

Date Analyzed: 08/16/99

Matrix: (soil/water) WATER

Time Analyzed: 13:03

Level: (low/med) LOW

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS'S, MS AND MSD'S

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
29GLM0601MS	WP3570-4MS	Z1746	8/16/99	5:45:00 PM
29GLM0601MSD	WP3570-4MSD	Z1747	8/16/99	6:31:00 PM
41GLM0101D	WP3570-7	Z1750	8/16/99	8:51:00 PM
41GLM0701	WP3570-8	Z1755	8/17/99	2:23:00 PM
33GLM0201D	WP3570-10	Z1757	8/17/99	3:56:00 PM
33GLM0201	WP3570-12	Z1759	8/17/99	5:30:00 PM
41GLM0301	WP3570-14	Z1761	8/17/99	7:04:00 PM
41GLM0101	WP3570-15	Z1762	8/17/99	7:51:00 PM
41GLM0501	WP3570-16	Z1763	8/17/99	8:38:00 PM
33GLM0301	WP3570-17	Z1764	8/17/99	9:26:00 PM
LCS;081399	LCS;081399	Z1765	8/17/99	10:14:00 PM
33GLM0601	WP3570-6	Z1770	8/18/99	9:25:00 AM
19GLM0101	WP3570-1	Z1771	8/18/99	10:13:00 AM
19GLM0501	WP3570-3	Z1772	8/18/99	11:00:00 AM
19GLM0401	WP3570-2	Z1773	8/18/99	11:49:00 AM
29GLM0601	WP3570-4	Z1774	8/18/99	12:35:00 PM
33GLM0401	WP3570-5	Z1775	8/18/99	1:23:00 PM
41GLM0601	WP3570-9	Z1776	8/18/99	2:10:00 PM
33GLM0101	WP3570-11	Z1777	8/18/99	2:56:00 PM
33GLM0501	WP3570-13	Z1778	8/18/99	3:42:00 PM
33GLM0301	WP3570-17RA	Z1779	8/18/99	4:29:00 PM
19GLM0101	WP3570-1DL	Z1780	8/18/99	5:19:00 PM
19GLM0401	WP3570-2DL	Z1781	8/18/99	6:05:00 PM



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: SBLK081399
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK081399	AQ	-	-	8/13/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	46	%	1.0		
2-FLUOROBIPHENYL	48	%	1.0		
TERPHENYL-D14	64	%	1.0		

Report Notes:

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z1765

Sample ID: LCS;081399

Date Run: 8/17/99

Analyst: KRT

Time Injected 10:14:00 PM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	50	47.8	96	70-130
ACENAPHTHENE	50	50.4	101	70-130
ACENAPHTHYLENE	50	50.8	102	70-130
ANTHRACENE	50	55.6	111	70-130
BENZO[A]ANTHRACENE	50	51.2	102	70-130
BENZO[A]PYRENE	50	50.0	100	70-130
BENZO[B]FLUORANTHENE	50	47.7	95	70-130
BENZO[G,H,I]PERYLENE	50	46.7	93	70-130
BENZO[K]FLUORANTHENE	50	58.9	118	70-130
CHRYSENE	50	53.8	108	70-130
DIBENZ[A,H]ANTHRACENE	50	45.0	90	70-130
FLUORANTHENE	50	52.4	105	70-130
FLUORENE	50	49.2	98	70-130
INDENO[1,2,3-CD]PYRENE	50	40.5	81	70-130
NAPHTHALENE	50	48.7	97	70-130
PHENANTHRENE	50	53.3	106	70-130
PYRENE	50	55.6	111	70-130

* Out of Limits

1

0000056

Katabdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3570-4	Z1774	8/18/99	12:35:00 PM	KRT	AQ	8270_99
WP3570-4MS	Z1746	8/16/99	5:45:00 PM	KRT	AQ	8270_99
WP3570-4MSD	Z1747	8/16/99	6:31:00 PM	KRT	AQ	8270_99

Compound Name	Native (ug/L)	MS Spk Amount (ug/L)	MSD Spk Amount (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD RPD (%)	RPD Limit (%)
CHRYSENE	0	47	48	19.8	31.8	*42	66	60-140	*46	30
ACENAPHTHENE	0	47	48	23.1	26.9	*49	*56	60-140	15	30
ACENAPHTHYLENE	0	47	48	24.2	26.6	*51	*55	60-140	9.4	30
ANTHRACENE	0	47	48	24.1	33.6	*51	70	60-140	*33	30
BENZO[A]ANTHRACENE	0	47	48	18.4	30.4	*39	63	60-140	*49	30
BENZO[A]PYRENE	0	47	48	15.1	25.4	*32	*53	60-140	*51	30
BENZO[B]FLUORANTHENE	0	47	48	13.7	23.2	*29	*48	60-140	*51	30
2-METHYLNAPHTHALENE	0	47	48	21.6	23.5	*46	*49	60-140	8.4	30
BENZO[K]FLUORANTHENE	0	47	48	18.0	29.0	*38	60	60-140	*47	30
PYRENE	0	47	48	22.8	32.2	*48	67	60-140	*34	30
DIBENZ[A,H]ANTHRACENE	0	47	48	12.3	22.6	*26	*47	60-140	*59	30
FLUORANTHENE	0	47	48	20.4	31.4	*44	65	60-140	*42	30
FLUORENE	0	47	48	21.5	27.1	*46	*56	60-140	23	30
INDENO[1,2,3-CD]PYRENE	0	47	48	12.1	25.5	*26	*53	60-140	*71	30
NAPHTHALENE	0	47	48	23.3	23.4	*50	*49	60-140	0.43	30
PHENANTHRENE	0	47	48	22.9	28.5	*49	*59	60-140	22	30
BENZO[G,H,I]PERYLENE	0	47	48	12.8	23.0	*27	*48	60-140	*57	30

RPD = [(ms res - msd res) / (ms res + msd res)/2] * 100

* Out of Limits

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKQ13A

Lab Name: Katahdin Analytical Services

SDG No.: WP3570

Lab File ID: Q6291

Lab Sample ID: VBLKQ13A

Date Analyzed: 08/13/99

Time Analyzed: 11:30

GC Column: RTX-502 ID: 0.53 (mm)

Heated Purge: (Y/N) N

Instrument ID: 5970-Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS'S, MS AND MSD'S

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSQ13A	LCSQ13A	Q6290	8/13/99	10:40:00 AM
19GLM0101	WP3570-1	Q6297	8/13/99	3:39:00 PM
19GLM0401	WP3570-2	Q6298	8/13/99	4:18:00 PM
19GLM0501	WP3570-3	Q6299	8/13/99	4:56:00 PM
29GLM0601	WP3570-4	Q6300	8/13/99	5:35:00 PM
33GLM0401	WP3570-5	Q6301	8/13/99	6:14:00 PM
33GLM0601	WP3570-6	Q6302	8/13/99	6:53:00 PM
41GLM0101D	WP3570-7	Q6303	8/13/99	7:32:00 PM
41GLM0701	WP3570-8	Q6304	8/13/99	8:11:00 PM



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKQ13A
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ13A	AQ	-	-	8/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	89	%	1.0		
1,2-DICHLOROETHANE-D4	81	%	1.0		
TOLUENE-DB	94	%	1.0		
P-BROMOFLUOROBENZENE	93	%	1.0		

Report Notes:

Katahdin Analytical Services
8266 LCS Recovery Sheet

Lab File: Q6290

Sample ID: LCSQ13A

Date Run: 8/13/99

Analyst: KMC

Time Injected 10:40:00 AM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	57.0	114	60-140
BENZENE	50	57.4	115	60-140
ETHYLBENZENE	50	57.3	115	60-140
MTBE	50	51.8	104	60-140
NAPHTHALENE	50	53.7	107	60-140
TOLUENE	50	57.0	114	60-140
TOTAL XYLENES	150	160	107	60-140

* Out of Limits

1

0000063

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBKQ16B

Lab Name: Katahdin Analytical Services

SDG No.: WP3570

Lab File ID: Q6330

Lab Sample ID: VBKQ16B

Date Analyzed: 08/16/99

Time Analyzed: 16:37

GC Column: RTX-502 ID: 0.53 (mm)

Heated Purge: (Y/N) N

Instrument ID: 5970-Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS'S, MS AND MSD'S

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSQ16B	LCSQ16B	Q6328	8/16/99	3:08:00 PM
41GLM0601	WP3570-9	Q6331	8/16/99	5:16:00 PM
33GLM0201D	WP3570-10	Q6332	8/16/99	5:55:00 PM
33GLM0101	WP3570-11	Q6333	8/16/99	6:34:00 PM
33GLM0201	WP3570-12	Q6334	8/16/99	7:13:00 PM
33GLM0501	WP3570-13	Q6335	8/16/99	7:52:00 PM



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: VBLKQ16B
 SDG: WP3570
 Report Date: 9/13/99
 PO No. : N7912-P99264
 Project: CTO#68
 % Solids: N/A
 Method: SW8260
 Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ16B	AQ	-	-	8/16/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	102	%	1.0		
2-DICHLOROETHANE-D4	95	%	1.0		
TOLUENE-D8	105	%	1.0		
P-BROMOFLUOROBENZENE	102	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Q6328

Sample ID: LCSQ16B

Date Run: 8/16/99

Analyst: KMC

Time Injected 3:08:00 PM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	52.2	104	60-140
BENZENE	50	51.8	104	60-140
ETHYLBENZENE	50	58.7	117	60-140
MTBE	50	49.3	98	60-140
NAPHTHALENE	50	53.1	106	60-140
TOLUENE	50	53.3	106	60-140
TOTAL XYLENES	150	160	106	60-140

* Out of Limits

1

0000066

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKQ18A

Lab Name: Katahdin Analytical Services

SDG No.: WP3570

Lab File ID: Q6372

Lab Sample ID: VBLKQ18A

Date Analyzed: 08/18/99

Time Analyzed: 17:09

GC Column: RTX-502 ID: 0.53 (mm)

Heated Purge: (Y/N) N

Instrument ID: 5970-Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS'S, MS AND MSD'S

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSQ18A	LCSQ18A	Q6371	8/18/99	4:21:00 PM
41GLM0101	WP3570-15	Q6373	8/18/99	6:07:00 PM
41GLM0501	WP3570-16	Q6374	8/18/99	6:46:00 PM
33TL00101	WP3570-18	Q6375	8/18/99	7:25:00 PM



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKQ18A
SDG: WP3570
Report Date: 9/13/99
PO No. : N7912-P99264
Project: CTO#68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/18/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ18A	AQ	-	-	8/18/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	98	%	1.0		
1,2-DICHLOROETHANE-D4	96	%	1.0		
TOLUENE-D8	104	%	1.0		
P-BROMOFLUOROBENZENE	101	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Q6371

Sample ID: LCSQ18A

Date Run: 8/18/99

Analyst: KMC

Time Injected 4:21:00 PM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	54.2	108	60-140
BENZENE	50	53.8	108	60-140
ETHYLBENZENE	50	61.8	124	60-140
MTBE	50	51.1	102	60-140
NAPHTHALENE	50	51.0	102	60-140
TOLUENE	50	54.2	108	60-140
TOTAL XYLENES	150	169	112	60-140

* Out of Limits

1

0000073



ENSR
Air Toxics Specialty Laboratory
42 Nagog Park
Acton, MA 01720

DATE: August 31, 1999

TO: Andrea Colby
Katahdin Analytical
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098

Re: Organic Analyses of Aqueous Samples by Gas Chromatography Flame
Ionization Detection (GC/FID)

PROJECT #: **8601-008-200**

LAB ID #: **990140**

ANALYTICAL PROCEDURE:

Six (6) aqueous samples were analyzed under the guidelines of EPA SW846 Method 3810.

A Hewlett Packard 5890 series II gas chromatograph (GC) equipped with a Hewlett Packard flame ionization detector (FID) was used for the analysis. A 1.0 mL headspace aliquot of each sample was injected into the column for analysis. The operating conditions of the GC/FID are listed in Table 1. A five point calibration was performed for the target analytes (methane, ethylene, ethane).

No problems occurred during sample receipt or log-in.

A laboratory blank was analyzed daily in the same manner as the samples. Target compounds were not present in the laboratory blank.

MS/MSD was performed on sample WP3574-4(06) / WP3574-4(07)

Date Samples Received by the Laboratory: 08/12/99

Date Analysis Started: 08/26/99

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SAMPLE LOG-IN & RECEIPT CHECKLIST

Client/Proj #: KATAHDIN WP 3570

Proj Mgr: M. HOYT

Lab Pool #: 990140

Inspected & Logged in by: A. REZ

Date Time: 8/22/99 @ 1100

Sample Matrix	Number of Samples	Analysis Requested	Analyze by (date)	Storage Location
<u>⊕ AQUEOUS VOLATILES</u>	<u>6</u>	<u>M, E, E_g</u>	<u>8/22/99</u>	<u>R1</u>

Circle the appropriate response:

- 1) Shipped / Hand delivered
- 2) COC present / not present on receipt
- 3) COC Tape present / not present on shipping container
- 4) Samples broken / intact on receipt
- 5) Samples ambient / chilled on receipt 5°C
- 6) Samples preserved correctly / incorrectly / none recommended
- 7) Received within / outside holding time
- 8) COC tapes present / not present on samples
- 9) Discrepancies / NO discrepancies noted between COCs and samples

Additional Comments: _____

ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ ENSR _____ Contract: _____

WP3570-11 (H)

Lab Code: _____ Case No.: _____ SAS NO.: _____ SDG NO.: _____

Matrix: (soil/water) _____ water _____ Lab Sample ID: _____ 990140-1 _____

Sample wt / vol: _____ 32.5 ml _____ (g/ml) Lab File ID: _____ KAT_008 _____

Level: (low/med) _____ low _____ Date Received: _____ 08/12/99 _____

% Moisture: _____ NA _____ Date Analyzed: _____ 08/26/99 _____

GC Column: _____ Carboxen 1004 _____ OD: _____ 1/16" _____ Dilution Factor: _____ 1 _____

Soil Extract Volume: _____ NA _____ (µl) Soil Aliquot Volume: _____ NA _____ (µl)

CONCENTRATION UNITS:

CAS NO. COMPOUND (µg/L or PPMv) _____ µg/L _____ Q

74-82-8	Methane	570	
74-85-1	Ethene	9.0	U
74-84-0	Ethane	9.6	U

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ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

WP3570-12 (G)

Lab Name: _____ ENSR _____ Contract: _____

Lab Code: _____ Case No.: _____ SAS NO.: _____ SDG NO.: _____

Matrix: (soil/water) _____ water _____ Lab Sample ID: _____ 990140-2 _____

Sample wt / vol: _____ 32.5 ml _____ (g/ml) Lab File ID: _____ KAT_009 _____

Level: (low/med) _____ low _____ Date Received: _____ 08/12/99 _____

% Moisture: _____ NA _____ Date Analyzed: _____ 08/26/99 _____

GC Column: _____ Carboxen 1004 _____ OD: _____ 1/16" _____ Dilution Factor: _____ 1 _____

Soil Extract Volume: _____ NA _____ (µl) Soil Aliquot Volume: _____ NA _____ (µl)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or PPMv) _____ µg/L _____	Q
74-82-8	Methane	360	
74-85-1	Ethene	9.0	U
74-84-0	Ethane	9.6	U

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ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: ENSR Contract:

WP3570-13 (H)

Lab Code: Case No.: SAS SDG NO.:

Matrix: (soil/water) water Lab Sample ID: 990140-3

Sample wt / vol: 32.5 ml (g/ml) Lab File ID: KAT_010

Level: (low/med) low Date Received: 08/12/99

% Moisture: NA Date Analyzed: 08/26/99

GC Column: Carboxen 1004 OD: 1/16" Dilution Factor: 1

Soil Extract Volume: NA (µl) Soil Aliquot Volume: NA (µl)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(µg/L or PPMv)	µg/L	
74-82-8	Methane		6.3	
74-85-1	Ethene		9.0	U
74-84-0	Ethane		9.6	U

ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: ENSR Contract:

VBLK01

Lab Code: Case No.: SAS NO.: SDG NO.: Matrix: (soil/water) water Lab Sample ID: VBLK01 Sample wt / vol: 32.5 ml (g/ml) Lab File ID: KAT_006 Level: (low/med) low Date Received: NA % Moisture: NA Date Analyzed: 08/26/99 GC Column: Carboxen 1004 OD: 1/16" Dilution Factor: 1 Soil Extract Volume: NA (μ l) Soil Aliquot Volume: NA (μ l)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(μ g/L or PPMv)	<u> </u> μ g/L <u> </u>	
74-82-8	Methane	5.2		U
74-85-1	Ethene	9.0		U
74-84-0	Ethane	9.6		U

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ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: ENSR Contract:

LCS01

Lab Code: Case No.: SAS NO.: SDG NO.:

Matrix: (soil/water) water Lab Sample ID: VLCS01

Sample wt / vol: 32.5 ml (g/ml) Lab File ID: KAT_007

Level: (low/med) low Date Received: NA

% Moisture: NA Date Analyzed: 08/26/99

GC Column: Carboxen 1004 OD: 1/16" Dilution Factor: 1

Soil Extract Volume: NA (µl) Soil Aliquot Volume: NA (µl)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or PPMv) <u> </u> µg/L <u> </u>	Q
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74-82-8	Methane	200	
74-85-1	Ethene	420	
74-84-0	Ethane	460	

1
ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ ENSR _____ Contract: _____

WP3574-4(06)MS

Lab Code: _____ Case No.: _____ SAS NO.: _____ SDG NO.: _____

Matrix: (soil/water) _____ water _____ Lab Sample ID: _____ 990141-4 MS _____

Sample wt / vol: _____ 32.5 ml _____ (g/ml) Lab File ID: _____ KAT_022 _____

Level: (low/med) _____ low _____ Date Received: _____ NA _____

% Moisture: _____ NA _____ Date Analyzed: _____ 08/26/99 _____

GC Column: _____ Carboxen 1004 _____ OD: _____ 1/16" _____ Dilution Factor: _____ 1 _____

Soil Extract Volume: _____ NA _____ (µl) Soil Aliquot Volume: _____ NA _____ (µl)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (µg/L or PPMv) _____ µg/L _____	Q
74-82-8	Methane	1,000	
74-85-1	Ethene	410	
74-84-0	Ethane	400	

1
ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: _____ ENSR _____ Contract: _____

WP3574-4(07)MSD

Lab Code: _____ Case No.: _____ SAS NO.: _____ SDG NO.: _____

Matrix: (soil/water) _____ water _____ Lab Sample ID: _____ 990141-4 MSD _____

Sample wt / vol: _____ 32.5 ml _____ (g/ml) Lab File ID: _____ KAT_023 _____

Level: (low/med) _____ low _____ Date Received: _____ NA _____

% Moisture: _____ NA _____ Date Analyzed: _____ 08/26/99 _____

GC Column: _____ Carboxen 1004 _____ OD: _____ 1/16" _____ Dilution Factor: _____ 1 _____

Soil Extract Volume: _____ NA _____ (µl) Soil Aliquot Volume: _____ NA _____ (µl)

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(µg/L or PPMv)	µg/L	
74-82-8	Methane		910	
74-85-1	Ethene		420	
74-84-0	Ethane		430	

LABORATORY CONTROL SPIKE RECOVERY

Lab Name: _____ ENSR _____ Contract: _____

Lab Code: _____ Case NO.: _____ SAS NO.: _____ SDG NO.: _____

Laboratory Control Sample No: _____ LCS01 _____

COMPOUND	SPIKE ADDED (µg/L)	LCS CONCENTRATION (µg/L)	LCS		QC LIMITS REC.
			REC	#	
Methane	205.0	204.7	99.9%		50 - 150
Ethene	362.4	421.2	116%		50 - 150
Ethane	388.5	458.1	118%		50 - 150

* - Values outside of QC limits.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSR

Contract: _____

Lab Code: _____ Case NO.: _____ SAS NO.: _____ SDG NO.: _____

Matrix Spike - EPA Sample NO.: WP3574-4

COMPOUND	SPIKE ADDED (µg/L)	SAMPLE CONCENTRATION (µg/L)	MS CONCENTRATION (µg/L)	MS % REC	QC LIMITS REC.
Methane	205.0	805.4	1,040	114%	50-150
Ethene	362.4	54.39	408.9	97.8%	50-150
Ethane	388.5	0	397.3	102%	50-150

COMPOUND	SPIKE ADDED (µg/L)	MSD CONCENTRATION (µg/L)	MSD % REC	% RPD #	QC LIMITS RPD	REC.
Methane	205.0	905.9	49.0% *	12%	50	50-150
Ethene	362.4	424.5	102%	4.3%	50	50-150
Ethane	388.5	426.7	110%	7.1%	50	50-150

Spike recovery: 1 out of 6 outside limits.RPD: 0 out of 3 outside limits.

Comments:

4
METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name: ENSR Contract:

VBLK01

Lab Code: Case No.: SAS NO.: SDG NO.:

Lab File ID: KAT_006 Lab Sample ID: VBLK01

Instrument ID: HPGC#3 Date Analyzed: 08/16/99

Matrix: (soil/water) water Level: (low/med) low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES; MS AND MSD

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	LCS01	VLCS01	KAT 007	08/16/99
02	WP3570-11 (H)	990140-1	KAT 008	08/16/99
03	WP3570-12 (G)	990140-2	KAT 009	08/16/99
04	WP3570-13 (H)	990140-3	KAT 010	08/16/99
05	WP3570-14 (G)	990140-4	KAT 011	08/16/99
06	WP3570-15 (I)	990140-5	KAT 012	08/16/99
07	WP3570-16 (G)	990140-6	KAT 013	08/16/99
08	WP3570-14 (G)DL	990140-4DL	KAT 014	08/16/99
09	WP3574-4 (06)MS	990141-4 MS	KAT 022	08/16/99
10	WP3574-4 (07)MSD	990141-4 MSD	KAT 023	08/16/99
11	WP3570-15 (I)DL	990140-5DL	KAT 024	08/16/99
12				
13				
14				
15				
16				
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18				
19				
20				
21				
22				
23				
24				
25				
26				

COMMENTS:

September 15, 1999

Mr. Paul Calligan
Tetra Tech Nus
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

RE: Katahdin Lab Number: WP3585
Project ID: CNC Charleston
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date(s): 8/11/99

Dear Mr. Calligan:

Please find enclosed the following information:

- * Report of Analysis
- * Quality Control Data Summary
- * Chain of Custody
- * Confirmation

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. This cover letter is an integral part of the ROA.

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Mary S. Merrill
Authorized Signature

9.15.99
Date



**SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON**

Sample Receipt

The following samples were received on August 11, 1999 and were logged in under Katahdin Analytical Services work order number WP3585 for a hardcopy due date of September 10, 1999.

<u>KATAHDIN</u> <u>Sample No.</u>	<u>TTNUS</u> <u>Sample Identification</u>	<u>GEL</u> <u>Sample Identification</u>
WP3585-1	19GLM0501	
WP3585-2	41GLM0201	
WP3585-3	41GLM0401	
WP3585-4	41GLM0801	
WP3585-5	41GLM04300101	
WP3585-6	33GLM0301	
WP3585-7	41TL00201	
WP3585-8	42SLP150607	9908377-01

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

Sample analyses have been performed by the methods as noted herein. Semivolatile Organics were subcontracted to GEL.

Volatile Organic Analysis

One soil/sediment and seven aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on August 11, 1999 and were specified to be analyzed by USEPA method 8260B for the analytes benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, and EDB.

Analyses for this workorder were performed on the 5972-F (aqueous) and 5973-U (low level soil) instruments. A VSTD050 (50 ppb standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ppb.

Batch QC (VBLK, and LCS) was performed in each twelve-hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. No matrix spike/matrix spike duplicate was performed on any sample in this workorder.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" (software-generated) on the pertinent quantitation reports. All "M" flags have been dated and initialed by the analyst performing the integration. In addition, all "M" flags have been reviewed and approved by the GC/MS supervisor. Copies of each manual integration are included in the pertinent quantitation reports.

No other protocol deviations were noted by the volatile organics staff.

Semivolatile Organic Analysis

Five aqueous samples were received by Katahdin Analytical Services laboratory on August 11, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the samples occurred following USEPA method 3510 on August 17, 1999. A laboratory control spike/laboratory control spike duplicate pair, consisting of all PAH analytes spiked into organic free water, was extracted in the batch.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" by the data system. All manual integrations have been dated and initialed by the responsible analyst. Copies of each manual integration are included in the data package. All manual integrations have been reviewed and approved by the GC/MS supervisor.

No other protocol deviations were noted by the semivolatiles organics staff.

KATAHDIN ANALYTICAL SERVICES, INC.
SAMPLE RECEIPT CONDITION REPORT
 Tel. (207) 874-2400
 Fax (207) 775-4029

LAB (WORK ORDER) # WP 3585

PAGE: 1 OF 1

COOLER: 1 OF 1

COC# _____

SDG# _____

DATE / TIME RECEIVED: 8-11-99 0845

DELIVERED BY: FedEx

RECEIVED BY: SAW

LIMS ENTRY BY: SAW

LIMS REVIEW BY / PM: KBP

CLIENT: Tetra Tech

PROJECT: Charleston

Wm

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Sampler did not sign COC</u>	
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<u>called client on 8/11</u>
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TEMP BLANK TEMP (°C) = <u>0.7</u>	
6. SAMPLES RECEIVED AT 4°C ± 2°?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COOLER TEMP (°C) = <u>NA</u>	
(ICE) ICE PACKS PRESENT (Y or N)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. TRIP BLANK PRESENT IN THIS COOLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN): <u>SC</u>					

LOG - IN NOTES⁽¹⁾:

0000034

⁽¹⁾ Use this space (and additional sheets if necessary) to document samples that are received broken, compromised, C-O-C discrepancies, radiation checks, residual chlorine check, res. check if r. d. If samples required pH adjustment, record volume and type of preservative ad. pH



340 County Road No. 3
 P.O. Box 720
 Westbrook, ME 04098
 Tel: (207) 874-2400
 Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Page ___ of ___

Client: **Tetra Tech NUS** Contact: **Blynn Howard** Phone #: **(43) 554 4925** Fax #: **()**

Address: **NH 21 Ave H** City: **N. Charleston** State: **ME** Zip Code: **29405**

Purchase Order #: _____ Proj. Name / No.: _____ Katahdin Quote #: _____

Bill (if different than above): _____ Address: _____

Sampler (Print / Sign): _____ Copies To: _____

LAB USE ONLY WORK ORDER #: **WP3585**
 KATAHDIN PROJECT MANAGER: _____

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

REMARKS: _____

SHIPPING INFO: FED EX UPS CLIENT
 AIRBILL NO: **813402904500**
 TEMP: TEMP BLANK INTACT NOT INTACT

| Filt. |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| OYON |
| | | | | | | | | | | | |

* Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.																	
* 19GLM0501	8/10/99/1208	W	5	3	2															
41GLM0201	8/10/99/1552		5	3	2															
41GLM0401	1/1633		5	3	2															
41GLM0801	1/1747		5	3	2															
1GL04000101	1/1610		5	3	2															
33GLM0301	1/1415		3	3																
41TL00201	1/		2	2																
42SLP150607	1/1735	S	5																	
	/																			
	/																			
	/																			
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	/																			
	/																			
	/																			
	/																			
	/																			
	/																			
	/																			

COMMENTS: **19GLM0501 sampled on 8/6/99 is actually 19GLM0201. Tagged wrong**

Relinquished By: (Signature) <i>[Signature]</i>	Date / Time 8/10/99 1830	Received By: (Signature) <i>[Signature]</i>	Relinquished By: (Signature)	Date / Time 8-11-99 0845	Received By: (Signature) <i>[Signature]</i>
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

KATAHDIN ANALYTICAL SERVICES, INCORPORATED
 New England-ME Laboratory (207) 874-2400
 CONFIRMATION

ORDER NO WP-3585

Project Manager: Andrea J. Colby

REPORT TO: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

ORDER DATE: 08/11/99
 PHONE: 850/385-98
 FAX: 850/385-9888
 DUE: 10 SEP
 FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
 TETRA TECH NUS, INC.
 FOSTER PLAZA 7, 661 ANDERSEN DR.
 PITTSBURGH, PA 15220

PHONE: 412/921-7090
 PO: N7912-P99264

PROJECT: CTO #68

SAMPLED BY: CLIENT

DELIVERED BY: FEDEX

DISPOSE: AFTER 10 OCT

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3585-1	19GLM0501	10 AUG 1208	11 AUG	AQ
	WP3585-2	41GLM0201	10 AUG 1552		
	WP3585-3	41GLM0401	10 AUG 1633		
	WP3585-4	41GLM0801	10 AUG 1747		
	WP3585-5	41GLM04300101	10 AUG 1610		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	5	75.00	375.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	5	125.00	625.00
TOTALS		5	200.00	1000.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATR.
2 WP3585-6	33GLM0301	10 AUG 1415	11 AUG	AQ
WP3585-7	41TL00201	10 AUG		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	75.00	150.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3 WP3585-8	42SLP150607	10 AUG 1735	11 AUG	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	170.00	170.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
GC/MS Subcontract SVOA		1	135.00	135.00
TOTALS		1	305.00	305.00

KATAHDIN ANALYTICAL SERVICES, INCORPORATED
New England-ME Laboratory (207) 874-2400
CONFIRMATION

Page 2

ORDER NO WP-3585

Project Manager: Andrea J. Colby

REPORT TO: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

ORDER DATE: 08/11/99

PHONE: 850/385-9899

FAX: 850/385-9860

DUE: 10 SEP

FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
TETRA TECH NUS, INC.
FOSTER PLAZA 7, 661 ANDERSEN DR.
PITTSBURGH, PA 15220

PHONE: 412/921-7090

PO: N7912-P99264

PROJECT: CTO #68

SAMPLED BY: CLIENT

DELIVERED BY: FEDEX

DISPOSE: AFTER 10 OCT

ORDER NOTE: QC-IV NFESC
DD(KAS007QC-DB3)
CNC CHARLESTON
REPORT COPY: MS. LEE LECK
FOSTER PLAZA 7
661 ANDERSEN DR
PITTSBURGH, PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT \$1,455.00

This is NOT an Invoice

AJC/BKR/KP/WEST.KP(dw)

08-19 Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

0000037
w/12/99



KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Owen Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3585-6
 SDG: WP3585
 Report Date: 9/14/99
 PO No.: N7912-P99264
 Project: CTO #68
 % Solids: N/A
 Method: SW8260
 Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33GLM0301	AQ	8/10/99	8/11/99	8/16/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DiBROMOFLUOROMETHANE	95	%	1.0		
1,2-DICHLOROETHANE-D4	98	%	1.0		
1,2-DICHLOROETHANE-D6	98	%	1.0		
p-TOLUENE-D8	98	%	1.0		
p-BROMOFLUOROBENZENE	98	%	1.0		

Report Notes:

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKF16A

Lab Name: Katahdin Analytical Services

SDG No.: WP3585

Lab File ID: F1455

Lab Sample ID: VBLKF16A

Date Analyzed: 08/16/99

Time Analyzed: 9:50

GC Column: RTX-624 ID: 0.18 (mm)

Heated Purge: (Y/N) N

Instrument ID: 5972-F

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, LCS'S, MS AND MSD'S

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSF16A	LCSF16A	F1454	8/16/99	9:04:00 AM
41GLM0201	WP3585-2	F1460	8/16/99	1:08:00 PM
41GLM0401	WP3585-3	F1461	8/16/99	1:45:00 PM
41GLM0801	WP3585-4	F1462	8/16/99	2:22:00 PM
41GLM04300101	WP3585-5	F1463	8/16/99	2:58:00 PM
33GLM0301	WP3585-6	F1464	8/16/99	3:35:00 PM
41TL00201	WP3585-7	F1465	8/16/99	4:11:00 PM



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKF16A
SDG: WP3585
Report Date: 9/14/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF16A	AQ	-	-	8/16/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	94	%	1.0		
1,2-DICHLOROETHANE-D4	95	%	1.0		
OLUENE-D8	99	%	1.0		
-BROMOFLUOROBENZENE	100	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F1454

Sample ID: LCSF16A

Date Run: 8/16/99

Analyst: DJP

Time Injected 9:04:00 AM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.5	93	60-140
BENZENE	50	44.7	89	60-140
ETHYLBENZENE	50	47.2	94	60-140
MTBE	50	45.6	91	60-140
NAPHTHALENE	50	44.4	89	60-140
TOLUENE	50	47.5	95	60-140
TOTAL XYLENES	150	138	92	60-140

* Out of Limits

1



**SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON**

Sample Receipt

The following samples were received on May 19, 1999 and were logged in under Katahdin Analytical Services work order number WP2502 for a hardcopy due date of June 18, 1999.

<u>KATAHDIN</u> <u>Sample No.</u>	<u>TTNUS</u> <u>Sample Identification</u>	<u>GEL</u> <u>Sample No.</u>
WP2502-1	34SLB01-0203	
WP2502-2	32SLB02-0506	
WP2502-3	32SLB04-0506	
WP2502-4	32SLB01-0506	
WP2502-5	32SLB03-0506D	
WP2502-6	34SLB03-0304	9905606-05
WP2502-7	34SLB02-0304D	
WP2502-8	32SLB03-0506	9905606-04
WP2502-9	34SLB02-0304	
WP2502-10	34SLB04-0304	
WP2502-11	33SLB05-0304	9905606-06
WP2502-12	33SLB04-0304D	
WP2502-13	33SLB04-0304	
WP2502-14	33SLB06-0405	
WP2502-15	33SLB01-0304	
WP2502-16	32SLB09-0506	
WP2502-17	34SLB05-0203	
WP2502-18	33SLB08-0405	
WP2502-19	04TL00104	
WP2502-20	01E00101	
WP2502-21	01F00101	

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

Sample analyses have been performed by the methods as noted herein.

Volatile Organic Analysis

Three aqueous (trip blank) and eighteen soil/sediment samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on May 19, 1999 and were specified to be analyzed by USEPA method 8260B for the analytes benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, and EDB.

Analyses for this SDG were performed on instruments 5970-Q (medium level soil), 5972-Z (low level soil), 5972-M (low level soil), and 5972-F (medium level soil and aqueous). A VSTD050 (50 ppb standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ug/l.

Batch QC (VBLK, and LCS) was performed in each twelve hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. No matrix spike/matrix spike duplicate pair was analyzed on any of the samples in this workorder.

Method 8000B, section 7.5.1.2.1 (Revision 2, 12/96) states, "in those instances where the RSD for one or more analytes exceeds 20%, the initial calibration curve may still be acceptable if the mean of the RSD values for all analytes in the calibration is less than or equal to 20%." Method 8260B narrows this 20% maximum to 15%.

In the calibration curves analyzed in this SDG, several analytes had %RSD values exceeding the allowed 15%. Since the average %RSD for all analytes was 8.3%, 8.4%, 13.4%, 13.4%, and 14.1%, the curves were acceptable.

Analysis of sample WP2502-1 was performed using the methanol extract due to high target analyte concentrations, resulting in elevated reporting limits.

Initial analysis of sample WP2502-2 yielded target analyte concentrations over the upper limit of the calibration curve and a high recovery of the surrogate BFB. Reanalysis occurred with the methanol extract successfully. Both sets of data for this sample are included in the data package.

Initial analyses of samples WP2502-4, -8, -10, -11, -12, -13, -14, -15, and -18 yielded internal standard area recovery and/or surrogate recovery deviations. Reanalysis of each yielded similar results, confirming matrix interference. For each sample, both sets of data are included in this data package.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" (software-generated) on the pertinent quantitation reports. All "M" flags have been dated and initialed by the analyst performing the integration. In addition, all "M" flags have been reviewed and approved by the GC/MS supervisor. Copies of each manual integration are included in the pertinent quantitation reports.

No other protocol deviations were noted by the volatile organics staff.

000003

Semivolatile Organic Analysis

Eighteen soil/sediment samples were received by the Katahdin GC/MS laboratory on May 19, 1999 for analysis in accordance with 8270C for the PAH list of analytes.

Extraction of all of the soil samples occurred following USEPA method 3550 on May 29, 1999. A laboratory control spike, consisting of all TCL analytes spiked into organic free sand, was extracted in the batch along with a site specific MS/MSD pair on sample WP2502-1.

Samples WP2502-2, -15, and -17 were analyzed at dilutions due to the matrix (1:100, 1:5, and 1:25, respectively), resulting in elevated reporting limits.

Initial analyses of samples WP2502-11-14 and 18 yielded internal standard area recovery deviations. Reanalyses yielded similar results, confirming matrix interference in each sample. Reanalysis of sample WP2502-18 (WP2502-18RA) occurred nineteen minutes outside of the twelve hour DFTPP tuning window. Both sets of data for each sample are included in the data package.

Method 8000B, section 7.5.1.2.1 (Revision 2, 12/96) states, "in those instances where the RSD for one or more analytes exceeds 20%, the initial calibration curve may still be acceptable if the mean of the RSD values for all analytes in the calibration is less than or equal to 20%." Section 7.3.7.1 of method 8270C (revision 3, 12/96) narrows this 20% maximum to 15%.

In the calibration curves analyzed in this SDG, several analytes had %RSD values exceeding the allowed 15%. Since the average %RSD for all analytes was 8.5% and 8.5%, respectively, the curves were acceptable.

Several manual integrations were performed due to split peaks; all have been flagged with a "M" by the data system. All manual integrations have been dated and initialed by the responsible analyst. Copies of each manual integration are included in the data package. All manual integrations have been reviewed and approved by the GC/MS supervisor.

No other protocol deviations were noted by the semivolatiles organics staff.

Wet Chemistry Analysis

For work order WP2502 the analyses for Total Combustible Organics (TCO) have been performed in accordance with the "Annual Book of ASTM Standards", 1987. Analyses for Solids-Total Residue (TS) for work order WP2502 samples have been performed in accordance with "Contract Laboratory Program Statement of Work for Inorganic Analysis".

All analyses were performed within analytical hold time. No protocol deviations were noted by the Wet Chemistry laboratory staff.

0000004

Subcontracted Analysis

Analyses for Total Organic Carbon and Total Petroleum Hydrocarbon were subcontracted to outside laboratories. Both sets of data are included as separate sections to the data package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager and/or his designee, as verified by the following signature.

Deborah J. Nadeau
Authorized Signature
7.19.99

0000005

KATAH ANALYTICAL SERVICES, INC.
SAMPLE RECEIPT CONDITION REPORT
 Tel. (207) 874-2400
 Fax (207) 775-4029

LAB (WORK ORDER) # WP 2502

PAGE: 1 OF 2

COOLER: 1 OF 2

COC# —

SDG# —

DATE / TIME RECEIVED: 5-19-99 0945

DELIVERED BY: FedEx

RECEIVED BY: Saw

LIMS ENTRY BY: ADC

LIMS REVIEW BY / PM: AX

CLIENT: Tetra Tech - So

PROJECT: CNC Charleston

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>only received UOA for AQ</u>	<u>ADC notified Baul Callege and was told to proceed w/ UOA</u>
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TEMP BLANK TEMP (°C) = <u>2.5</u>	
6. SAMPLES RECEIVED AT 4°C ± 2? (ICE) ICE PACKS PRESENT (Y or N)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	COOLER TEMP (°C) = <u>NA</u>	
(RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)					
7. VOLATILES FREE OF HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8. TRIP BLANK PRESENT IN THIS COOLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN):					

LOG - IN NOTES⁽¹⁾:

⁽¹⁾ Use this space (and additional sheets if necessary) to document samples that are received broken or compromised, C-O-C discrepancies, radiation checks, residual chlorine check, results of pH check if required. If samples required pH adjustment, record volume and type of preservative added.

KATAHDIN ANALYTICAL SERVICES, INC.

SAMPLE RECEIPT CONDITION REPORT

Tel. (207) 874-2400

Fax (207) 775-4029

LAB (WORK ORDER) # WP 2502

PAGE: 2 OF 2

COOLER: 2 OF 2

COC# -

SDG# -

DATE / TIME RECEIVED: 5-19-99 0945

DELIVERED BY: FedEx

RECEIVED BY: Saw

LIMS ENTRY BY: AJC

LIMS REVIEW BY / PM: AJC

CLIENT: Tetra Tech - SC

PROJECT: CNC Charleston

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<u>Seal</u>		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. CHAIN OF CUSTODY MATCHES SAMPLES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5. TEMPERATURE BLANKS PRESENT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		TEMP BLANK TEMP (°C)= <u>2.2</u>	
6. SAMPLES RECEIVED AT 4°C +/- 2? (ICE) ICE PACKS PRESENT (Y) or N?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		COOLER TEMP (°C)= <u>NA</u> (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>NA</u>	
8. TRIP BLANK PRESENT IN THIS COOLER	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
11. SAMPLES PROPERLY PRESERVED ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
12. CORRECTIVE ACTION REPORT FILED?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A		
13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP <u>NFESC</u> ACOE AFCEE OTHER (STATE OF ORIGIN):					

LOG - IN NOTES⁽¹⁾:

Use this space (and additional sheets if necessary) to document samples that are received broken or compromised, C-O-C discrepancies, radiation checks, residual chlorine check, results of pH check if required. If samples required pH adjustment, record volume and type of preservative used.



P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN OF CUSTODY

PLEASE PRINT IN PEN

Page 1 of 2

Client: **Tetra Tech NUS** Contact: **Bryn Howze** Phone #: **(423) 483-9900** Fax #: **()**
 Address: **NH-21 Ave H** City: **North Charleston** State: **SC** Zip Code: **29405**
 Purchase Order #: _____ Proj. Name / No.: _____ Katahdin Quote #: _____

Bill (if different than above) Address: _____

Sampler (Print / Sign) _____ Copies To: _____

LAB USE ONLY WORK ORDER #: **WP2502**
 KATAHDIN PROJECT MANAGER _____

REMARKS: _____
 SHIPPING INFO: FED EX UPS CLIENT
 AIRBILL NO: _____
 TEMP °C: TEMP BLANK INTACT NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

* Sample Description	Data / Time col'd	Matrix	No. of Cntrs.	Fit										
				OYON										
34SLB01-0203	5/18/0935	S	5	X		X								
32SLB02-0506	5/18/0820	S	5	X		X								25
32SLB04-0506	5/18/0830	S	5	X		X								0
32SLB01-0506	5/18/0810	S	5	X		X								0
32SLB03-0506D	5/18/0850	S	5	X		X								10
34SLB03-0304	5/18/1025	S	5	X		X								0
34SLB02-0304D	5/18/1010	S	5	X		X								100
32SLB03-0506	5/18/0850	S	5	X		X								10
32SLB09-0506	5/18/0840	S	6	X		X	X							4
34SLB02-0304	5/18/1010	S	5	X		X								100
34SLB05-0203	5/18/0958	S	6	X		X	X							3
34SLB04-0304	5/18/0950	S	5	X		X								0
33SLB05-0304	5/18/1235	S	5	X		X								1
33SLB04-0304D	5/18/1220	S	5	X		X								2
33SLB04-0304	5/18/1220	S	5	X		X								2
33SLB08-0405	5/18/1205	S	6	X		X	X							1

COMMENTS: _____

Relinquished By: (Signature)	Date / Time: 5/18/99 1430	Received By: (Signature) Fed Ex	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

ORIGINAL

NEW ENGLAND ANALYTICAL SERVICES, INCORPORATED
 New England-ME Laboratory (207) 874-2400
 CONFIRMATION

ORDER NO WP-2502

Project Manager: Andrea J. Colby

REPORT TO: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

ORDER DATE: 05/19/99
 PHONE: 850/385-9899
 FAX: 850/385-9860
 DUE: 18 JUN
 FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
 TETRA TECH NUS, INC.
 661 ANDERSEN DRIVE, FOSTER PLAZA VII
 PITTSBURGH, PA 15220-2745

PHONE: 412/921-7090
 PO: N7912-P99264

PROJECT: CTO #68

SAMPLED BY: CLIENT

DELIVERED BY: FEDEX

DISPOSE: AFTER 18 JUL

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP2502-1	34SLB01-0203	18 MAY 0935	19 MAY	SL
	WP2502-2	32SLB02-0506	18 MAY 0820		
	WP2502-3	32SLB04-0506	18 MAY 0830		
	WP2502-4	32SLB01-0506	18 MAY 0810		
	WP2502-5	32SLB03-0506D	18 MAY 0850		
	WP2502-7	34SLB02-0304D	18 MAY 1010		
	WP2502-9	34SLB02-0304	18 MAY 1010		
	WP2502-10	34SLB04-0304	18 MAY 0950		
	WP2502-12	33SLB04-0304D	18 MAY 1220		
	WP2502-13	33SLB04-0304	18 MAY 1220		
	WP2502-14	33SLB06-0405	18 MAY 1155		
	WP2502-15	33SLB01-0304	18 MAY 1145		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	12	0.00	0.00
Volatile Organics by 8260B	SW8260	12	85.00	1020.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	12	135.00	1620.00
TOTALS		12	220.00	2640.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2 WP2502-16	32SLB09-0506	18 MAY 0840	19 MAY	SL
WP2502-17	34SLB05-0203	18 MAY 0958		
WP2502-18	33SLB08-0405	18 MAY 1205		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	110.00	330.00
TOTALS		3	330.00	990.00

0000010

KC611499

NEW ENGLAND ANALYTICAL SERVICES, INCORPORATED
 New England-ME Laboratory (207) 874-2400
 CONFIRMATION

ORDER NO WP-2502

Project Manager: Andrea J. Colby

REPORT TO: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

ORDER DATE: 05/19/99
 PHONE: 850/385-9866
 FAX: 850/385-9866
 DUE: 18 JUN
 FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
 TETRA TECH NUS, INC.
 661 ANDERSEN DRIVE, FOSTER PLAZA VII
 PITTSBURGH, PA 15220-2745

PHONE: 412/921-7090
 PO: N7912-P99264

PROJECT: CTO #68

SAMPLED BY: CLIENT

DELIVERED BY: FEDEX

DISPOSE: AFTER 18 JUL

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3 WP2502-19	04TL00104	03 MAY 1515	19 MAY	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4 WP2502-20	01E00101	18 MAY 1405	19 MAY	AQ
WP2502-21	01F00101	18 MAY 1400		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	75.00	150.00

LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5 WP2502-6	34SLB03-0304	18 MAY 1025	19 MAY	SL
WP2502-8	32SLB03-0506	18 MAY 0850		
WP2502-11	33SLB05-0304	18 MAY 1235		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	135.00	405.00
Total Combustible Organics	ASTM D2974	3	30.00	90.00

TOTALS		3	385.00	1155.00
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000001

5/19/99

KATAHDIN ANALYTICAL SERVICES, INCORPORATED
New England-ME Laboratory (207) 874-2400
CONFIRMATION

Page 3

ORDER NO WP-2502

Project Manager: Andrea J. Colby

REPORT TO: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
TETRA TECH NUS, INC.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

PHONE: 412/921-7090
PO: N7912-P99264

PROJECT: CTO #68

SAMPLED BY: CLIENT

DELIVERED BY: FEDEX

DISPOSE: AFTER 18 JUL

ORDER NOTE: QC-IV NFESC-D
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH, PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT \$5,020.00
This is NOT an Invoice

AJC/BKR/WEST.AJC(dw)

06-14 Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

0000012

Dr Colby



KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
\$	'\$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmed matrix interference.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.



KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	# flag denotes surrogate compound recovery is out of criteria.
DL	'DL' flag denotes inability to calculate surrogate recovery due to sample dilution.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmed matrix interference.



CLIENT: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr., Suite 102
 Tallahassee, FL 32308

Lab Number : WP-2502-11
 Report Date: 07/19/99
 PO No. : N7912-P99264
 Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

Page 18 of 18

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED				
33SLB05-0304	Solid	CLIENT		05/18/99	05/19/99			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	88.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1
Total Combustible Organics	1.6	wt %	1.0	0.1	ASTM D2974-8	06/07/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' val.
 (1) Sample Preparation on 05/19/99 by JF
 (2) Sample Preparation on 06/04/99 by JF

07/19/99

LJO/baeajc (dw) /msm
 PE19TSS0
 CC: MS. LEE LECK
 TETRA TECH NUS
 FOSTER PLAZA 7
 661 ANDERSEN DR



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-11
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88

Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB05-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	<360	ug/Kg	1.1	360	330
FLUORENE	<360	ug/Kg	1.1	360	330
PHENANTHRENE	<360	ug/Kg	1.1	360	330
ANTHRACENE	<360	ug/Kg	1.1	360	330
FLUORANTHENE	<360	ug/Kg	1.1	360	330
PYRENE	<360	ug/Kg	1.1	360	330
ENZO[A]ANTHRACENE	<360	ug/Kg	1.1	360	330
CHRYSENE	<360	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.1	360	330
NITROBENZENE-D5	78	%	1.1		
2-FLUOROBIPHENYL	68	%	1.1		
TERPHENYL-D14	84	%	1.1		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-11RA
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB05-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
NAPHTHALENE	<360	ug/Kg	1.2	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.2	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.2	360	330
ACENAPHTHENE	<360	ug/Kg	1.2	360	330
FLUORENE	<360	ug/Kg	1.2	360	330
PHENANTHRENE	<360	ug/Kg	1.2	360	330
ANTHRACENE	<360	ug/Kg	1.2	360	330
FLUORANTHENE	<360	ug/Kg	1.2	360	330
PYRENE	<360	ug/Kg	1.2	360	330
BENZO[A]ANTHRACENE	<360	ug/Kg	1.2	360	330
CHRYSENE	<360	ug/Kg	1.2	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.2	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.2	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.2	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.2	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.2	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.2	360	330
NITROBENZENE-D5	82	%	1.2		
2-FLUOROBIPHENYL	57	%	1.2		
TERPHENYL-D14	86	%	1.2		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-11
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB05-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.5	7	5
TOLUENE	<7	ug/Kg	1.5	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.5	7	5
ETHYLBENZENE	<7	ug/Kg	1.5	7	5
NAPHTHALENE	<7	ug/Kg	1.5	7	5
MTBE	<7	ug/Kg	1.5	7	5
TOTAL XYLENES	<7	ug/Kg	1.5	7	5
DIBROMOFLUOROMETHANE	88	%	1.5		
1,2-DICHLOROETHANE-D4	104	%	1.5		
TOLUENE-D8	\$62	%	1.5		
P-BROMOFLUOROBENZENE	\$60	%	1.5		

Report Notes: \$, O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-11RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB05-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.3	6	5
TOLUENE	<6	ug/Kg	1.3	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.3	6	5
ETHYLBENZENE	<6	ug/Kg	1.3	6	5
NAPHTHALENE	<6	ug/Kg	1.3	6	5
MTBE	<6	ug/Kg	1.3	6	5
TOTAL XYLENES	<6	ug/Kg	1.3	6	5
DIBROMOFLUOROMETHANE	81	%	1.3		
1,2-DICHLOROETHANE-D4	85	%	1.3		
TOLUENE-D8	73	%	1.3		
P-BROMOFLUOROBENZENE	\$59	%	1.3		

Report Notes: \$, O-13

CLIENT: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-2502-12
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
33SLB04-0304D	Solid	CLIENT		05/18/99	05/19/99		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	89.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-12
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 89
Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	<360	ug/Kg	1.1	360	330
FLUORENE	<360	ug/Kg	1.1	360	330
PHENANTHRENE	<360	ug/Kg	1.1	360	330
ANTHRACENE	<360	ug/Kg	1.1	360	330
FLUORANTHENE	<360	ug/Kg	1.1	360	330
PYRENE	<360	ug/Kg	1.1	360	330
BENZO[A]ANTHRACENE	<360	ug/Kg	1.1	360	330
CHRYSENE	<360	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.1	360	330
NITROBENZENE-D5	83	%	1.1		
2-FLUOROBIPHENYL	80	%	1.1		
TERPHENYL-D14	89	%	1.1		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-12RA
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 89
 Method: EPA 8270
 Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	<360	ug/Kg	1.1	360	330
FLUORENE	<360	ug/Kg	1.1	360	330
PHENANTHRENE	<360	ug/Kg	1.1	360	330
ANTHRACENE	<360	ug/Kg	1.1	360	330
FLUORANTHENE	<360	ug/Kg	1.1	360	330
PYRENE	<360	ug/Kg	1.1	360	330
BENZO[A]ANTHRACENE	<360	ug/Kg	1.1	360	330
CHRYSENE	<360	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.1	360	330
NITROBENZENE-D5	64	%	1.1		
2-FLUOROBIPHENYL	55	%	1.1		
TERPHENYL-D14	77	%	1.1		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-12
SDG: WP2502
Report Date: 6/26/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 89
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	<6	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	89	%	1.1		
1,2-DICHLOROETHANE-D4	109	%	1.1		
TOLUENE-D8	80	%	1.1		
P-BROMOFLUOROBENZENE	77	%	1.1		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-12RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 89
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	<7	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	\$64	%	1.4		
1,2-DICHLOROETHANE-D4	\$64	%	1.4		
TOLUENE-D8	\$43	%	1.4		
P-BROMOFLUOROBENZENE	\$17	%	1.4		

Report Notes: \$

CLIENT: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-2502-13
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CIO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
33SLB04-0304	Solid	CLIENT		05/18/99	05/19/99		
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	86.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-13
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: EPA 8270
 Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	<400	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	<400	ug/Kg	1.2	400	330
ANTHRACENE	<400	ug/Kg	1.2	400	330
FLUORANTHENE	<400	ug/Kg	1.2	400	330
PYRENE	<400	ug/Kg	1.2	400	330
BENZO[A]ANTHRACENE	<400	ug/Kg	1.2	400	330
CHRYSENE	<400	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[A]PYRENE	<400	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	<400	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	<400	ug/Kg	1.2	400	330
NITROBENZENE-D5	78	%	1.2		
2-FLUOROBIPHENYL	73	%	1.2		
TERPHENYL-D14	84	%	1.2		

Report Notes: O-13



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
 Proj. ID: CNC CHARLESTON

Lab Number: WP2502-13RA
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: EPA 8270
 Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	<400	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	<400	ug/Kg	1.2	400	330
ANTHRACENE	<400	ug/Kg	1.2	400	330
FLUORANTHENE	<400	ug/Kg	1.2	400	330
PYRENE	<400	ug/Kg	1.2	400	330
BENZO[A]ANTHRACENE	<400	ug/Kg	1.2	400	330
CHRYSENE	<400	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[A]PYRENE	<400	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	<400	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	<400	ug/Kg	1.2	400	330
NITROBENZENE-D5	71	%	1.2		
2-FLUOROBIPHENYL	62	%	1.2		
TERPHENYL-D14	75	%	1.2		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-13
 SDG: WP2502
 Report Date: 6/26/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: SW8260
 Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.2	6	5
TOLUENE	<6	ug/Kg	1.2	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.2	6	5
ETHYLBENZENE	<6	ug/Kg	1.2	6	5
NAPHTHALENE	<6	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	94	%	1.2		
1,2-DICHLOROETHANE-D4	109	%	1.2		
TOLUENE-D8	80	%	1.2		
P-BROMOFLUOROBENZENE	57	%	1.2		

Report Notes: \$



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-13RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 86
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.5	7	5
TOLUENE	<7	ug/Kg	1.5	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.5	7	5
ETHYLBENZENE	<7	ug/Kg	1.5	7	5
NAPHTHALENE	<7	ug/Kg	1.5	7	5
MTBE	<7	ug/Kg	1.5	7	5
TOTAL XYLENES	<7	ug/Kg	1.5	7	5
DIBROMOFLUOROMETHANE	84	%	1.5		
1,2-DICHLOROETHANE-D4	85	%	1.5		
TOLUENE-D8	\$66	%	1.5		
P-BROMOFLUOROBENZENE	\$52	%	1.5		

Report Notes: \$

CLIENT: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-2502-14
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
33SLB06-0405	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	86.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0

CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-14
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 86

Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB06-0405	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	<360	ug/Kg	1.1	360	330
FLUORENE	<360	ug/Kg	1.1	360	330
PHENANTHRENE	<360	ug/Kg	1.1	360	330
ANTHRACENE	<360	ug/Kg	1.1	360	330
FLUORANTHENE	<360	ug/Kg	1.1	360	330
PYRENE	<360	ug/Kg	1.1	360	330
BENZO[A]ANTHRACENE	<360	ug/Kg	1.1	360	330
CHRYSENE	<360	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.1	360	330
NITROBENZENE-D5	94	%	1.1		
2-FLUOROBIPHENYL	88	%	1.1		
TERPHENYL-D14	100	%	1.1		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
 Proj. ID: CNC CHARLESTON

Lab Number: WP2502-14RA
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: EPA 8270
 Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB06-0405	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	<400	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	<400	ug/Kg	1.2	400	330
ANTHRACENE	<400	ug/Kg	1.2	400	330
FLUORANTHENE	<400	ug/Kg	1.2	400	330
PYRENE	<400	ug/Kg	1.2	400	330
BENZO[A]ANTHRACENE	<400	ug/Kg	1.2	400	330
CHRYSENE	<400	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[A]PYRENE	<400	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	<400	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	<400	ug/Kg	1.2	400	330
NITROBENZENE-D5	71	%	1.2		
2-FLUOROBIPHENYL	66	%	1.2		
TERPHENYL-D14	71	%	1.2		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-14
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 86
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB06-0405	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	J4	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	91	%	1.1		
1,2-DICHLOROETHANE-D4	84	%	1.1		
TOLUENE-D8	86	%	1.1		
P-BROMOFLUOROBENZENE	\$60	%	1.1		

Report Notes: J, \$



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-14RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 86
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB06-0405	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	<6	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	86	%	1.1		
1,2-DICHLOROETHANE-D4	83	%	1.1		
OLUENE-D8	70	%	1.1		
P-BROMOFLUOROBENZENE	\$43	%	1.1		

Report Notes: \$

CLIENT: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-2502-15
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WICH#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

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SAMPLE DESCRIPTION	MATRIX			SAMPLED BY		SAMPLED DATE RECEIVED	
33SLB01-0304	Solid			CLIENT		05/18/99	05/19/99
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	83.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc (dw) /msm
PE19TSS0

CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
 Proj. ID: CNC CHARLESTON

Lab Number: WP2502-15
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 83
 Method: EPA 8270
 Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB01-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
NAPHTHALENE	<2000	ug/Kg	6.0	2000	330
2-METHYLNAPHTHALENE	<2000	ug/Kg	6.0	2000	330
ACENAPHTHYLENE	<2000	ug/Kg	6.0	2000	330
ACENAPHTHENE	<2000	ug/Kg	6.0	2000	330
FLUORENE	<2000	ug/Kg	6.0	2000	330
PHENANTHRENE	<2000	ug/Kg	6.0	2000	330
ANTHRACENE	<2000	ug/Kg	6.0	2000	330
FLUORANTHENE	<2000	ug/Kg	6.0	2000	330
PYRENE	<2000	ug/Kg	6.0	2000	330
BENZO[A]ANTHRACENE	<2000	ug/Kg	6.0	2000	330
CHRYSENE	<2000	ug/Kg	6.0	2000	330
BENZO[B]FLUORANTHENE	<2000	ug/Kg	6.0	2000	330
BENZO[K]FLUORANTHENE	<2000	ug/Kg	6.0	2000	330
BENZO[A]PYRENE	<2000	ug/Kg	6.0	2000	330
INDENO[1,2,3-CD]PYRENE	<2000	ug/Kg	6.0	2000	330
DIBENZ[A,H]ANTHRACENE	<2000	ug/Kg	6.0	2000	330
BENZO[G,H,I]PERYLENE	<2000	ug/Kg	6.0	2000	330
NITROBENZENE-D5	72	%	6.0		
2-FLUOROBIPHENYL	71	%	6.0		
TERPHENYL-D14	85	%	6.0		

Report Notes: O-1



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Owen Park Dr.
Suite 102
Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-15
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 83
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB01-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.2	6	5
TOLUENE	<6	ug/Kg	1.2	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.2	6	5
ETHYLBENZENE	<6	ug/Kg	1.2	6	5
NAPHTHALENE	<6	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	80	%	1.2		
1,2-DICHLOROETHANE-D4	74	%	1.2		
TOLUENE-D8	76	%	1.2		
P-BROMOFLUOROBENZENE	\$62	%	1.2		

Report Notes: \$



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-15RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 83
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB01-0304	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	<6	ug/Kg	1.2	6	5
TOLUENE	<6	ug/Kg	1.2	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.2	6	5
ETHYLBENZENE	<6	ug/Kg	1.2	6	5
NAPHTHALENE	<6	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	97	%	1.2		
1,2-DICHLOROETHANE-D4	91	%	1.2		
1,2-DICHLOROETHANE-D8	86	%	1.2		
P-BROMOFLUOROBENZENE	57	%	1.2		

Report Notes: \$



CLIENT: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-2502-18
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON REPORT OF ANALYTICAL RESULTS Page 15 of 18

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED				
33SLB08-0405	Solid	CLIENT	05/18/99	05/19/99			
PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED BY	NOTES
Solids-Total Residue (TS)	86.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99 JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99
LJO/baeajc(dw)/msm
PE19TSS1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
 Proj. ID: CNC CHARLESTON

Lab Number: WP2502-18
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: EPA 8270
 Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB08-0405	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	<400	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	<400	ug/Kg	1.2	400	330
ANTHRACENE	<400	ug/Kg	1.2	400	330
FLUORANTHENE	<400	ug/Kg	1.2	400	330
YRENE	<400	ug/Kg	1.2	400	330
BENZO[A]ANTHRACENE	<400	ug/Kg	1.2	400	330
CHRYSENE	<400	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[A]PYRENE	<400	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	<400	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	<400	ug/Kg	1.2	400	330
NITROBENZENE-D5	68	%	1.2		
2-FLUOROBIPHENYL	79	%	1.2		
TERPHENYL-D14	68	%	1.2		

Report Notes: O-13



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-18RA
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: EPA 8270
 Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB08-0405	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	<400	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	<400	ug/Kg	1.2	400	330
ANTHRACENE	<400	ug/Kg	1.2	400	330
FLUORANTHENE	<400	ug/Kg	1.2	400	330
PYRENE	<400	ug/Kg	1.2	400	330
BENZO[A]ANTHRACENE	<400	ug/Kg	1.2	400	330
CHRYSENE	<400	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	<400	ug/Kg	1.2	400	330
BENZO[A]PYRENE	<400	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	<400	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	<400	ug/Kg	1.2	400	330
NITROBENZENE-D5	99	%	1.2		
2-FLUOROBIPHENYL	81	%	1.2		
TERPHENYL-D14	#124	%	1.2		

Report Notes: O-13, #



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-18
 SDG: WP2502
 Report Date: 6/26/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 86
 Method: SW8260
 Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB08-0405	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	<6	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	\$47	%	1.1		
1,2-DICHLOROETHANE-D4	\$48	%	1.1		
TOLUENE-D8	\$13	%	1.1		
P-BROMOFLUOROBENZENE	\$1	%	1.1		

Report Notes: \$



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: WP2502-18RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 86
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
33SLB08-0405	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	<6	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	\$24	%	1.1		
1,2-DICHLOROETHANE-D4	\$28	%	1.1		
TOLUENE-D8	\$4	%	1.1		
P-BROMOFLUOROBENZENE	\$1	%	1.1		

Report Notes: \$



Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP2502

Parameter	Date of Prep	Date of Analysis	METHOD BLANK RESULTS				LABORATORY CONTROL SAMPLE RESULTS				
			Units	Concentration Measured in Blank	Acceptance Range	Practical Quantitation Level**	Units	True Value	Measured Value	Percent Recovered	Acceptance Range (%)
TS -Total Residue	19-May-99	20-May-99	wt %	< 0.10	< 0.10	0.10	wt %	90	89.8	100	80-120
	19-May-99	20-May-99	wt %	< 0.10	< 0.10	0.10	wt %	90	90	100	80-120
TCO-Total Combustible Organics	04-Jun-99	07-Jun-99	wt %	< 0.10	< 0.10	0.10	wt %	NA	NA	NA	

** Practical quantitation level is the lowest concentration measurable for samples with normal chemical and physical composition during routine laboratory operations.

DATA QUALITY COMMENTS:

Results of all quality control measurements are within the laboratory and method specified acceptance range except as noted.



Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client:	Tetra Tech NUS
Work Order:	WP2502

DUPLICATE RESULTS

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Parameter	Sample No	Sample Measurements		Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Concentration or Quantity				Matrix Spike Recovery (%)		RPD (%)	Acceptance Range (%)	
		Rep 1	Rep 2				Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1			Sample +Spike Dup 2
TS	WP2502-6	wt%	78.6	78.9	78.8	0.4	0-20	MS/MSD Not Applicable for this Parameter							
TS	WP2502-16	wt%	83.6	82.2	82.9	1.7	0-20	MS/MSD Not Applicable for this Parameter							

RPD = Relative percent difference, which is the absolute value of the difference between two replicate results divided by the mean concentration then multiplied by 100%.

DATA QUALITY COMMENTS:

Results of all quality control measurements are within the laboratory or contract specified acceptance range except as noted. The laboratory does not use the sample duplicate and matrix spike acceptance ranges as acceptance criteria for a specific analysis. Sample duplicate and matrix spike data are used to evaluate method performance in the environmental sample matrix only. Please refer to LCS data for assessment of quality control for each parameter.

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SOIL SEMIVOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (NBZ) #	SMC2 (FBP) #	SMC3 (TPH) #	Total Out
SBLK;052999	SBLK;052999	74	79	86	0
LCS;052999	LCS;052999	68	70	72	0
32SLB04-0506	WP2502-3	59	62	64	0
32SLB03-0506D	WP2502-5	64	56	70	0
32SLB01-0506	WP2502-4	76	78	86	0
32SLB03-0506	WP2502-8	59	63	74	0
34SLB01-0203	WP2502-1	54	54	70	0
34SLB01-0203MS	WP2502-1MS	58	59	74	0
34SLB01-0203MSD	WP2502-1MSD	68	70	72	0
33SLB05-0304	WP2502-11	78	66	84	0
33SLB04-0304D	WP2502-12	83	80	89	0
33SLB06-0405	WP2502-14	85	80	90	0
33SLB04-0304	WP2502-13	78	73	84	0
32SLB09-0506	WP2502-16	67	63	77	0
33SLB08-0405	WP2502-18	68	79	68	0
34SLB04-0304	WP2502-10	62	61	67	0
33SLB05-0304	WP2502-11RA	82	57	86	0
33SLB04-0304D	WP2502-12RA	64	55	77	0
LB04-0304	WP2502-13RA	71	62	75	0
SLB06-0405	WP2502-14RA	71	66	71	0
34SLB03-0304	WP2502-6	62	57	69	0
34SLB02-0304D	WP2502-7	58	55	79	0
33SLB08-0405	WP2502-18RA	99	81	124 *	1
SBLKA;052999	SBLKA;052999	85	82	88	0
34SLB02-0304	WP2502-9	68	64	75	0
33SLB01-0304	WP2502-15	72	71	85	0
32SLB02-0506	WP2502-2	DL	DL	DL	0
34SLB05-0203	WP2502-17	DL	DL	DL	0

QC LIMITS

SMC1 (NBZ) = NITROBENZENE-D5 (14-107)
 SMC2 (FBP) = 2-FLUOROBIPHENYL (32-109)
 SMC3 (TPH) = TERPHENYL-D14 (26-116)

Column to be used to flag recovery value

* Values are outside of QC limits



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;052999
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 100
 Method: EPA 8270
 Date Analyzed: 7/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	74	%	1.0		
2-FLUOROBIPHENYL	79	%	1.0		
TERPHENYL-D14	86	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Owen Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: SBLKA;052999
 SDG: WP2502
 Report Date: 7/19/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 100
 Method: EPA 8270
 Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLKA;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	85	%	1.0		
2-FLUOROBIPHENYL	82	%	1.0		
TERPHENYL-D14	88	%	1.0		

Report Notes:

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: K1561

Sample ID: LCS;052999

Date Run: 7/3/99

Analyst: KRT

Time Injected: 6:47:00 PM

Matrix: SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	1667	1200	72	60-140
ACENAPHTHENE	1667	1290	77	60-140
ACENAPHTHYLENE	1667	1170	70	60-140
ANTHRACENE	1667	1240	74	60-140
BENZO[A]ANTHRACENE	1667	1290	77	60-140
BENZO[A]PYRENE	1667	1220	74	60-140
BENZO[B]FLUORANTHENE	1667	1240	74	60-140
BENZO[G,H,I]PERYLENE	1667	1500	90	60-140
BENZO[K]FLUORANTHENE	1667	1340	81	60-140
CHRYSENE	1667	1330	80	60-140
DIBENZ[A,H]ANTHRACENE	1667	1390	84	60-140
FLUORANTHENE	1667	1390	84	60-140
FLUORENE	1667	1200	72	60-140
INDENO[1,2,3-CD]PYRENE	1667	1530	92	60-140
NAPHTHALENE	1667	1220	73	60-140
PHENANTHRENE	1667	1320	79	60-140
PYRENE	1667	1130	68	60-140

* Out of Limits

1

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP2502-1	K1572	7/6/99	2:44:00 PM	KRT	SL	8270_99
WP2502-1MS	K1573	7/6/99	3:30:00 PM	KRT	SL	8270_99
WP2502-1MSD	K1574	7/6/99	4:17:00 PM	KRT	SL	8270_99

Compound Name	Native (ug/Kg)	MS Spk	MSD Spk	MS	MSD	MS	MSD	Recovery Limits (%)	RPD RPD (%)	RPD Limit (%)
		Amount (ug/Kg)	Amount (ug/Kg)	Result (ug/Kg)	Result (ug/Kg)	REC (%)	REC (%)			
CHRYSENE	0	2320	2320	1580	1730	68	75	60-140	9.1	50
ACENAPHTHENE	0	2320	2320	1500	1700	64	73	60-140	12	50
ACENAPHTHYLENE	0	2320	2320	1440	1620	62	70	60-140	12	50
ANTHRACENE	0	2320	2320	1540	1660	66	72	60-140	7.5	50
BENZO[A]ANTHRACENE	0	2320	2320	1590	1640	68	71	60-140	3.1	50
BENZO[A]PYRENE	0	2320	2320	1530	1750	66	75	60-140	13	50
BENZO[B]FLUORANTHENE	0	2320	2320	1630	1960	70	84	60-140	18	50
2-METHYLNAPHTHALENE	0	2320	2320	1370	1500	*59	65	60-140	9.0	50
BENZO[K]FLUORANTHENE	0	2320	2320	1750	1940	76	84	60-140	10	50
PYRENE	0	2320	2320	1560	1500	67	64	60-140	3.9	50
DIBENZ[A,H]ANTHRACENE	0	2320	2320	1320	1400	*57	60	60-140	5.9	50
FLUORANTHENE	0	2320	2320	1660	1800	72	77	60-140	8.1	50
FLUORENE	0	2320	2320	1560	1690	67	73	60-140	8.0	50
INDENO[1,2,3-CD]PYRENE	0	2320	2320	1290	1240	*56	*53	60-140	4.0	50
NAPHTHALENE	0	2320	2320	1360	1540	*59	66	60-140	12	50
PERYLENE	0	2320	2320	1590	1780	69	77	60-140	11	50
BENZO[G,H,I]PERYLENE	0	2320	2320	1320	1490	*57	64	60-140	12	50

RPD = [(ms res - msd res) / (ms res + msd res) / 2] * 100

* Out of Limits

1

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: WATER

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
LCSF26B	LCSF26B	85	83	86	90	0
VBLKF26B	VBLKF26B	84	84	87	82	0
01E00101	WP2502-20	83	82	88	84	0
01F00101	WP2502-21	83	82	88	83	0
LCSF01A	LCSF01A	92	98	88	96	0
VBLKF01A	VBLKF01A	89	91	91	86	0
LCSQ28A	LCSQ28A	104	100	97	100	0
VBLKQ28A	VBLKQ28A	93	90	97	95	0

QC LIMITS

SMC1 (DFM) = DIBROMOFLUOROMETHANE (75-129)
 SMC2 (DCA) = 1,2-DICHLOROETHANE-D4 (65-135)
 SMC3 (TOL) = TOLUENE-D8 (82-120)
 SMC4 (BFB) = P-BROMOFLUOROBENZENE (69-125)

Column to be used to flag recovery value

* Values are outside of QC limits

2A
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
04TL00104	WP2502-19	83	83	86	81	0
32SLB02-0506DL	WP2502-2DL	88	89	87	130	0
MBLK060199	MBLK060199	90	88	86	83	0
LCSM27C	LCSM27C	121	126	120	119	0
VBLKM27C	VBLKM27C	122	122	122	120	0
33SLB05-0304	WP2502-11	88	104	62 *	60 *	2
33SLB04-0304D	WP2502-12	89	109	80	77	0
33SLB04-0304	WP2502-13	94	109	80	57 *	1
34SLB01-0203	WP2502-1	92	87	94	97	0
LCSZ27B	LCSZ27B	94	92	96	81	0
VBLKZ27A	VBLKZ27A	105	104	105	83	0
32SLB04-0506	WP2502-3	88	86	92	88	0
32SLB01-0506	WP2502-4	90	87	78	67	0
32SLB03-0506D	WP2502-5	95	88	94	83	0
34SLB02-0304D	WP2502-7	88	83	82	75	0
32SLB03-0506	WP2502-8	12 *	18 *	2 *	5 *	4
34SLB04-0304	WP2502-10	84	78	77	52 *	1
33SLB01-0304	WP2502-15	80	74	76	62 *	1
32Z28A	LCSZ28A	96	92	109	102	0
VBLKZ28A	VBLKZ28A	88	90	85	90	0
34SLB03-0304	WP2502-6	84	79	96	135	0
32SLB03-0506RE	WP2502-8RE	49 *	45 *	47 *	43 *	4
34SLB02-0304	WP2502-9	79	82	86	66	0
34SLB04-0304RE	WP2502-10RE	70	65 *	61 *	36 *	3
33SLB05-0304RE	WP2502-11RE	81	85	73	59 *	1
33SLB04-0304DRE	WP2502-12RE	64 *	64 *	43 *	17 *	4
33SLB04-0304RE	WP2502-13RE	84	85	66 *	52 *	2
LCSZ29A	LCSZ29A	104	103	103	89	0
VBLKZ29B	VBLKZ29B	120	119	102	79	0
32SLB01-0506RE	WP2502-4RE	74	73	60 *	44 *	2
LCSZ01A	LCSZ01A	89	97	87	90	0
VBLKZ01A	VBLKZ01A	103	103	108	90	0
32SLB02-0506	WP2502-2	105	103	109	198 *	1

QC LIMITS

- SMC1 (DFM) = DIBROMOFLUOROMETHANE (69-148)
- SMC2 (DCA) = 1,2-DICHLOROETHANE-D4 (66-149)
- SMC3 (TOL) = TOLUENE-D8 (68-147)
- SMC4 (BFB) = P-BROMOFLUOROBENZENE (64-152)

Column to be used to flag recovery value

* Values are outside of QC limits

2A
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
33SLB06-0405	WP2502-14	91	84	86	60 *	1
34SLB05-0203	WP2502-17	96	88	96	73	0
33SLB08-0405	WP2502-18	47 *	48 *	13 *	1 *	4
33SLB06-0405RE	WP2502-14RE	86	83	70	43 *	1
32SLB09-0506	WP2502-16	96	94	90	72	0
33SLB08-0405RE	WP2502-18RE	24 *	28 *	4 *	1 *	4
33SLB01-0304RE	WP2502-15RE	97	91	88	57 *	1
LCS	LCS	109	106	116	167 *	1
LCSD	LCSD	112	108	117	109	0

QC LIMITS

SMC1 (DFM) = DIBROMOFLUOROMETHANE (69-148)
 SMC2 (DCA) = 1,2-DICHLOROETHANE-D4 (66-149)
 SMC3 (TOL) = TOLUENE-D8 (68-147)
 SMC4 (BFB) = P-BROMOFLUOROBENZENE (64-152)

Column to be used to flag recovery value

* Values are outside of QC limits



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Owen Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKF26B
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF26B	AQ	-	-	5/26/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	84	%	1.0		
1,2-DICHLOROETHANE-D4	84	%	1.0		
1,2-DICHLOROETHANE-D8	87	%	1.0		
P-BROMOFLUOROBENZENE	82	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ27A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ27A	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	105	%	1.0		
1,2-DICHLOROETHANE-D4	104	%	1.0		
TOLUENE-D8	105	%	1.0		
P-BROMOFLUOROBENZENE	83	%	1.0		

Report Notes:



**KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS**

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKM27C
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM27C	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	5	ug/Kg	1.0	5	5
TOLUENE	5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	5	ug/Kg	1.0	5	5
ETHYLBENZENE	5	ug/Kg	1.0	5	5
NAPHTHALENE	5	ug/Kg	1.0	5	5
MTBE	5	ug/Kg	1.0	5	5
TOTAL XYLENES	5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	122	%	1.0		
1,2-DICHLOROETHANE-D4	122	%	1.0		
LUENE-D8	122	%	1.0		
BROMOFLUOROBENZENE	120	%	1.0		

port Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKQ28A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ28A	AQ	-	-	5/28/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	5	ug/L	1.0	5	5
TOLUENE	5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	5	ug/L	1.0	5	5
ETHYLBENZENE	5	ug/L	1.0	5	5
NAPHTHALENE	5	ug/L	1.0	5	5
MTBE	5	ug/L	1.0	5	5
TOTAL XYLENES	5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	93	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	97	%	1.0		
P-BROMOFLUOROBENZENE	95	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
 Tetra Tech NUS
 1401 Oven Park Dr.
 Suite 102
 Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ28A
 SDG: WP2502
 Report Date: 6/25/99
 PO No. : N7912-P99264
 Project: CTO #68
 % Solids: 100
 Method: SW8260
 Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ28A	SL	-	-	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	86	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	85	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ01A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ01A	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample	Method
				PQL	PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	103	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	108	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Owen Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: VBLKF01A
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF01A	AQ	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	89	%	1.0		
1,1-DICHLOROETHANE-D4	91	%	1.0		
1,1-DICHLOROETHANE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	86	%	1.0		

Report Notes:



KATAHDIN ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
Suite 102
Tallahassee, FL 32308
Proj. ID: CNC CHARLESTON

Lab Number: MBLK060199
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
MBLK060199	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<600	ug/Kgdrywt	120	600	5
TOLUENE	<600	ug/Kgdrywt	120	600	5
1,2-DIBROMOETHANE	<600	ug/Kgdrywt	120	600	5
ETHYLBENZENE	<600	ug/Kgdrywt	120	600	5
NAPHTHALENE	<600	ug/Kgdrywt	120	600	5
MTBE	<600	ug/Kgdrywt	120	600	5
TOTAL XYLENES	<600	ug/Kgdrywt	120	600	5
DIBROMOFLUOROMETHANE	90	%	120		
1,2-DICHLOROETHANE-D4	68	%	120		
TOLUENE-D8	86	%	120		
P-BROMOFLUOROBENZENE	83	%	120		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0520

Sample ID: LCSF26B

Date Run: 5/26/99

Analyst: JSS

Time Injected 5:55:00 PM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	43.4	87	60-140
BENZENE	50	42.0	84	60-140
ETHYLBENZENE	50	43.7	87	60-140
MTBE	50	45.0	90	60-140
NAPHTHALENE	50	45.2	90	60-140
TOLUENE	50	43.3	87	60-140
TOTAL XYLENES	150	130	86	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0870

Sample ID: LCSZ27B

Date Run: 5/27/99

Analyst: JSS

Time Injected 4:25:00 PM

Matrix: SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	44.8	90	60-140
BENZENE	50	44.0	88	60-140
ETHYLBENZENE	50	51.3	102	60-140
MTBE	50	50.4	101	60-140
NAPHTHALENE	50	48.0	96	60-140
TOLUENE	50	43.4	87	60-140
TOTAL XYLENES	150	157	105	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M0484

Sample ID: LCSM27C

Date Run: 5/27/99

Analyst: JSS

Time Injected 5:24:00 PM

Matrix: SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	57.1	114	60-140
BENZENE	50	53.4	107	60-140
ETHYLBENZENE	50	52.0	104	60-140
MTBE	50	58.1	116	60-140
NAPHTHALENE	50	59.8	120	60-140
TOLUENE	50	54.3	108	60-140
TOTAL XYLENES	150	152	102	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0889

Sample ID: LCSZ28A

Date Run: 5/28/99

Analyst: JSS

Time Injected 9:14:00 AM

Matrix: SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.8	94	60-140
BENZENE	50	51.2	102	60-140
ETHYLBENZENE	50	66.3	133	60-140
MTBE	50	55.7	111	60-140
NAPHTHALENE	50	78.8	*158	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	204	136	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Q5312

Sample ID: LCSQ28A

Date Rnn: 5/28/99

Analyst: HMP

Time Injected 9:39:00 AM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	47.7	95	60-140
BENZENE	50	49.2	98	60-140
ETHYLBENZENE	50	50.0	100	60-140
MTBE	50	43.5	87	60-140
NAPHTHALENE	50	46.5	93	60-140
TOLUENE	50	48.6	97	60-140
TOTAL XYLENES	150	136	91	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0922

Sample ID: LCSZ01A

Date Run: 6/1/99

Analyst: KRT

Time Injected 7:46:00 AM

Matrix: SL

Compound Name	Spike Amt (ng/Kg)	Result (ng/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	52.5	105	60-140
BENZENE	50	48.7	97	60-140
ETHYLBENZENE	50	59.1	118	60-140
MTBE	50	56.7	113	60-140
NAPHTHALENE	50	56.0	112	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	183	122	60-140

* Out of Limits

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0637

Sample ID: LCSF01A

Date Run: 6/1/99

Analyst: KRT

Time Injected 11:12:00 AM

Matrix: AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.3	93	60-140
BENZENE	50	43.4	87	60-140
ETHYLBENZENE	50	46.0	92	60-140
MTBE	50	47.4	95	60-140
NAPHTHALENE	50	43.4	87	60-140
TOLUENE	50	44.8	90	60-140
TOTAL XYLENES	150	132	88	60-140

* Out of Limits

1

Katahdin Analytical Services
LCS/LCSD Report

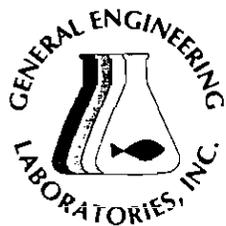
Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
LCS	Z0934	6/1/99	15:42	KRT	SL	8260
LCSD	Z0935	6/1/99	16:19	KRT	SL	8260

Compound Name	Spk Amt ug/Kg	LCS Result ug/Kg	LCSD Result ug/Kg	LCS Rec (%)	LCSD Rec (%)	Rec. Limits (%)	RPD (%)	RPD Limit (%)
1,2-DIBROMOETHANE	50	52.8	53.0	100	110	60-140	9.5	30
BENZENE	50	55.7	57.0	110	110	60-140	0	30
ETHYLBENZENE	50	66.6	67.2	130	130	60-140	0	30
MTBE	50	50.2	53.6	100	110	60-140	9.5	30
NAPHTHALENE	50	49.8	54.3	100	110	60-140	9.5	30
TOLUENE	50	60.1	60.5	120	120	60-140	0	30
TOTAL XYLENES	150	207	208	140	140	60-140	0	30

$RPD = (lcs\ rec - lcsd\ rec) / [(lcsd\ rec + lcsd\ rec) / 2] * 100$

* Out of Limits

1



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

June 2, 1999

Ms. Andrea Colby
Katahdin Analytical
340 County Rd
Westbrook, ME 04092

Dear Ms. Colby:

Enclosed is a data package for samples from the former Charleston Naval Complex site. The samples were analyzed for general chemistry.

General Engineering Laboratories appreciates this opportunity to provide you with analytical results, and trusts that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171.

Yours very truly,

Valerie S. Davis
Project Manager

enclosure



CASE NARRATIVE
for
Katahdin Analytical
Former Charleston Naval Complex Site
SDG #95606

June 2, 1999

Laboratory Identification:

General Engineering Laboratories, Inc. (GEL)

Mailing Address:

PO Box 30712
Charleston, SC 29417

Express Mail Delivery and Shipping Address:

2040 Savage Rd
Charleston, SC 29414

Telephone Number:

(843) 769-7391

Summary:

Sample receipt

The samples from the former Charleston Naval Complex site arrived at General Engineering Laboratories, Inc., Charleston, SC on May 18, 1999, for environmental analyses. The sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The following samples were received by the laboratory:

<u>Laboratory Identification</u>	<u>Sample Description</u>
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304



General Narrative:

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed in the analytical case narratives.

Internal Chain of Custody:

Custody was maintained for the samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, and General Chemistry.

The following are definitions of reporting limits used at General Engineering Laboratories:

DL **Detection Limit:** The minimum level of an analyte that can be determined (identified not quantified) with 99% confidence. The values are normally achieved by preparing and analyzing seven aliquots of laboratory water spiked 1 to 5 times the estimated MDL, taking the standard deviation and multiplying it against the one-tailed t-statistic at 99%. This computed value is then verified for reasonableness by repeating the study using the concentration found in the initial study, calculating an F-ratio, and computing the final limit. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The detection limit is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is above zero. It answers the question "Is It Present".

QL **Quantitation Limit:** The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The QL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting. For many analytes the QL analyte concentration is selected as the lowest non-zero standard in the calibration curve.

Sample QL's are highly matrix-dependent. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The QL is always \geq DL.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.



Valerie S. Davis
Project Manager

fc:9905606%

Case Narrative for
KATA
SDG# 95606

TOTAL ORGANIC CARBON

Analytical Batch Number: 150121

Analytical Method: SW846 9060 Modified

<u>Laboratory Number</u>	<u>Sample Description</u>
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC615649	Duplicate of 9905519-05
QC615649	Post Spike of 9905519-05
QC615647	Blank
QC615650	Laboratory Control Sample

Sample Preparation:

The method quoted is for aqueous samples only. It is modified to accommodate soils analysis.

Instrument Calibration:

The instrument used was a Dohrmann DC-80 TOC analyzer. The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

No target analytes were detected in the method blank above the required acceptance limit.

Spike Analyses:

The post spike was run on the following Sample Number.

9905519-05

The analyte recovery in the post spike was within the required acceptance limits.

Laboratory Control Samples:

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 150797

Analytical Method: SW846 9071A

<u>Laboratory Number</u>	<u>Sample Description</u>
9905606-01	17SLB03-0506
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC618246	Blank
QC618247	Laboratory Control Sample
QC618248	Matrix Spike of 9905606-06
QC618249	Duplicate of 9905606-06

Instrument Calibration:

The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

No target analytes were detected in the method blank above the required acceptance limit.

Spike Analyses:

The matrix spike was run on the following Sample Number.

9905606-06

The analyte recovery in the matrix spike was within the required acceptance limits.

Laboratory Control Samples:

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

9905606-06

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

The above narrative has been reviewed by: J. A. A Date: 05/13/99

FEDERAL SAMPLE RECEIPT REVIEW

Client KAFIA

Received by [Signature]

Date 5/18/99

GEL COOLER GEL POLY COOLER CLIENT COOLER OTHER

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

REVIEW [Signature]

DATE 5/18/99

SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

Client: Katahdin Analytical
 340 County Road
 Westbrook, Maine 04092
 Contact: Ms. Andrea Colby
 Project Description: Former Naval Complex

cc: KATA00199

Report Date: June 13, 1999

Page 1 of 2

Sample ID : 33SLB05-0304
 Lab ID : 9905606-06
 Matrix : Soil
 Date Collected : 05/18/99
 Date Received : 05/18/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		233	111	222	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		10.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		3750	43.1	100	mg/kg	1.0	LS	05/28/99	1304	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

Notes:

The qualifiers in this report are defined as follows:

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

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

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

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

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



QC Summary Report

Project Description: Former Naval Complex

cc: KATA00199

Lab. Sample ID: 9905606-06

Report Date: June 11, 1999

Page 1 of 1

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC618246	BLANK	150797											
Total Rec. Petro. Hydrocarbons						150	mg/kg				AAT	06/11/99	1030
QC618249	9905606-06DUP	150797											
Total Rec. Petro. Hydrocarbons				233		267	mg/kg	13.3					
QC618247	LCS	150797											
Total Rec. Petro. Hydrocarbons			11200			10700	mg/kg		95.3	(70.0 - 116.)			
QC618248	9905606-06MS	150797											
Total Rec. Petro. Hydrocarbons			13400	233		11500	mg/kg		84.2	(70.0 - 130.)			
QC613273	BLANK	149550											
Evaporative Loss @ 105 C						0.00	wt%				GJ	05/19/99	1517
QC613272	9905606-06DUP	149550											
Evaporative Loss @ 105 C				10.0		9.00	wt%	10.5					
QC615647	BLANK	150121											
Total Organic Carbon						1.62	mg/kg				LS	05/28/99	1055
QC615650	LCS	150121											
Total Organic Carbon			3750			4340	mg/kg		116	(88.0 - 130.)	LS	05/28/99	1051

Notes:

The qualifiers in this report are defined as follows:

J indicates presence of analyte < RL (Report Limit)

U indicates presence of analyte < DL (Detect Limit)

n/a indicates that spike recovery limits do not apply when

sample concentration exceeds spike conc by a factor of 4 or more

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

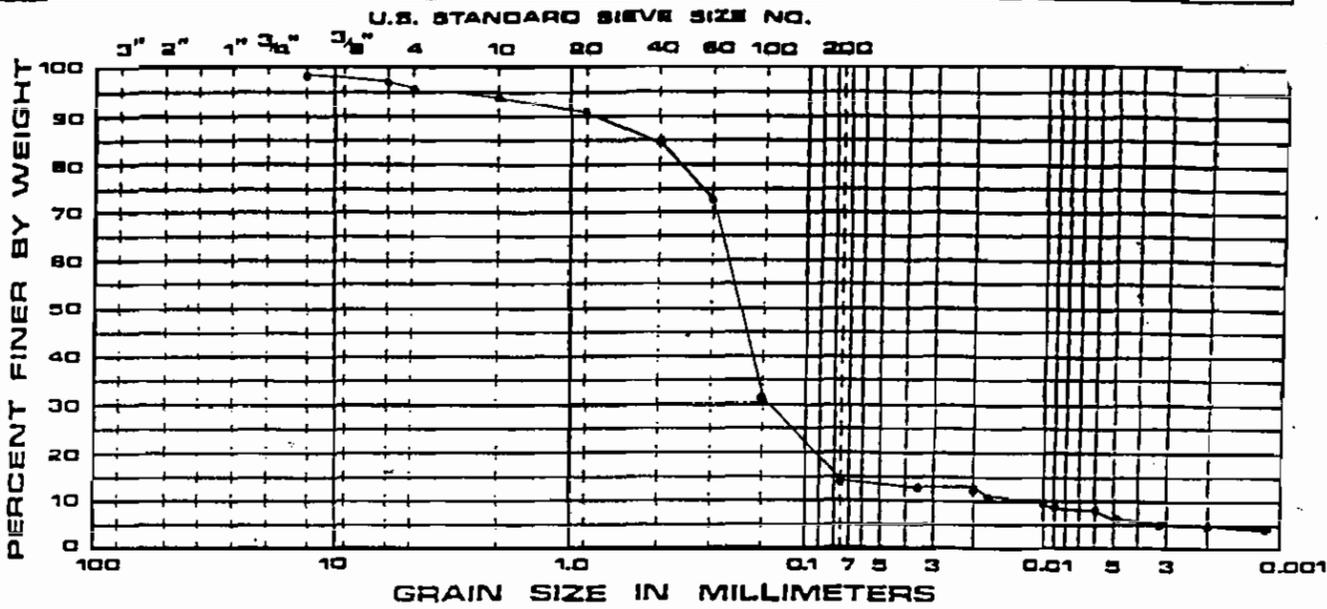
Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS
Client KATAHDIN ANALYTICAL
Sample No. 18, SANDY GRAVEL, WP-2502-18

<u>Sieve Size</u>	<u>Percent Passing</u>	<u>PROJECT Specifications %</u>
1/2 "	100.0	
1/4 "	96.1	
# 4	95.0	
# 10	93.3	
# 20	90.5	
# 40	85.5	
# 60	77.9	
# 100	41.9	
# 200	21.4	

GRAIN SIZE ANALYSIS

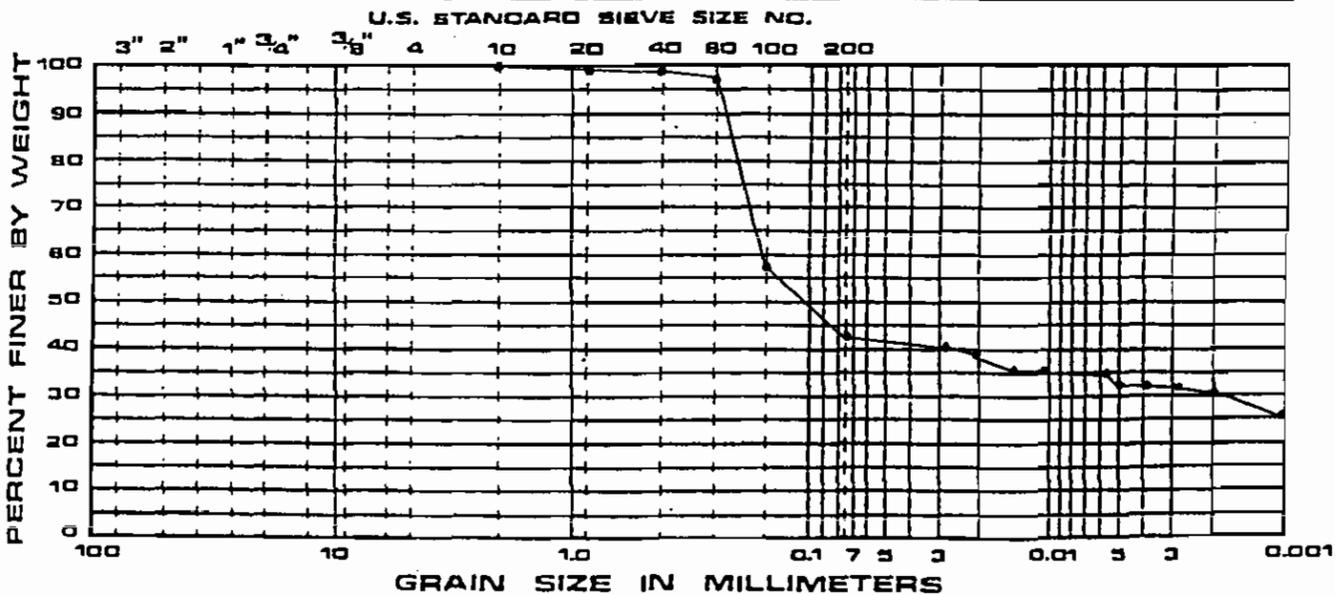
COBBLE	GRAVEL			SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE		



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION	W
•	WP2480-18	15			

GRAIN SIZE ANALYSIS

COBBLE	GRAVEL			SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE		



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION	W
•	WP2502-16	16			

APPENDIX E

**BOIRNG LOG OF MONITORING WELL
USED IN AQUIFER CHARACTERIZATION EVALUATION**

EnSafe/Allen & Hoshall

Monitoring Well NBCC047006

Project: Zone C - Naval Base Charleston

Coordinates: 2315164.71E, 377240.48 N

Location: Charleston, SC

Surface Elevation: 9.8 feet msl

Started at 1330 on 4-5-95

TOC Elevation: 12.27 feet msl

Completed at 1445 on 4-5-95

Depth to Groundwater: 7.53 feet TOC Measured: 6-21-95

Drilling Method: 4.25" ID (7.5" OD) HSA with split spoon

Groundwater Elevation: 4.74 feet msl

Drilling Company: Alliance Environmental

Total Well Depth: 121 feet bgs

Geologist: Peter Bayley

Well Screen: 21 to 21 feet bgs

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)	WELL DIAGRAM
								Surface conditions: soil and grass		
5			1	37	0	[Stippled pattern]	SP	Sand: brown to dark gray, very fine to fine with some medium, trace of silt, soft, wet at 3.5'.	6.8 6.1	
10			2	0	0	[Stippled pattern]	SP	Sand: gray with orange FeOx banding in upper 3", very fine to fine with trace medium, trace silt, soft, wet; more brown in upper 5".	2 17	
15			3	75	0				32	
20			4	37	0	[Stippled pattern]	SP	Sand: brown to dark brown, very fine to fine, trace silt, soft, wet, some granule to pebbly layer at 13.2-13.4'.	3.9	