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RAPID ASSESSMENT REPORT FOR SITE 26 BUILDING 6 ZONE E CNC CHARLESTON SC

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Rapid Assessment Report
For
Site 26, Building 6

Zone E
Charleston Naval Complex
North Charleston, South Carolina

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0089

January, 2000

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RAPID ASSESSMENT REPORT
FOR
SITE 26, BUILDING 6

ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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

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EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 26 which formerly contained an underground storage tank (UST) system for Building 6 at the Charleston Naval Complex (CNC) Zone F, in North Charleston, South Carolina. The USTs (UST-6A and 6B), two 2,500-gallon tanks were used to store fuel/heating oil for heating purposes for Building 6 and Facility 226. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan and approval letter dated November 4, 1998.

TtNUS performed the following actions during this assessment:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, to evaluate public and private potable wells, to locate utilities line areas, to locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed the previously prepared Underground Storage Tank Assessment Report for USTs 6A and 6B to determine boring locations and monitoring well placements;
- Conducted site survey to identify utilities and to construct a site plan;
- Performed direct push technology investigation; collected soil and groundwater samples for field screening of petroleum hydrocarbon constituents using an organic vapor analyzer (OVA);
- Collected groundwater samples from direct push borings for mobile lab screening analysis for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and diesel range organics (DRO);
- Installed three temporary piezometers at selected soil borings;
- Installed thirteen shallow permanent monitoring wells to depths of approximately 12 to 14 feet below land surface (bls) and two deep, vertical delineation monitoring well to depths of approximately 33 feet bls;
- Collected groundwater samples from the thirteen newly installed permanent monitoring wells (including one duplicate sample) and five existing shallow monitoring wells for fixed-base laboratory analysis for BTEX, methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260, polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270;

- Collected ten soil samples (including one duplicate sample) for fixed-base laboratory analysis for BTEX and naphthalene using USEPA Method 8260, PAHs using USEPA Method 8270,
- Collected one soil sample for fixed-base laboratory analysis for total organic carbon (TOC) using USEPA Method 9060, total recoverable petroleum hydrocarbon (TRPH) using USEPA Method 9071A, and grain size analysis using American Society of Testing and Materials (ASTM) Method D-422; and
- Surveyed monitoring well top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

Conclusion

On September 22, 1999, depth to groundwater measurements were obtained from each permanent monitoring well, with the exception of five newly installed wells. Based on the groundwater elevation data from the wells where depth to groundwater was measured, the localized groundwater flow direction in the vicinity of the former USTs at the site is towards the east-northeast. However, from the middle of Building 6 and west of Building 6, groundwater flows to the west and is believed to flow west-northwest. Furthermore, it is believed that the numerous underground utilities located in the immediate vicinity of Building 6 and the former USTs influence groundwater flow locally in this area. No free product was detected in any temporary or permanent monitoring well at the site.

On August 19 and 23, 1999, soil samples were collected from confirmation soil borings and analyzed for BTEX and PAHs by a fixed-base laboratory. Toluene was the only CoC detected in the soil sampled. On August 13, 16 and September 8, 1999, groundwater samples were collected from five monitoring wells. Barium was detected above the RBSL for metals in four of the five wells sampled. Since the elevated levels of barium are not associated with any metals it is not believed to be associated with past petroleum products or waste oil storage at this site.

The vertical and horizontal extent of petroleum hydrocarbon impact to soil and groundwater in the vicinity of the former UST system at Building 6 has been delineated. On-site construction worker site-specific target levels (SSTLs) were calculated to evaluate the exposure pathway for groundwater CoCs. Calculated concentrations of naphthalene (0.053 mg/L) in groundwater in equilibrium with fuel oil at the source well CNC26-P13 are below the site SSTLs (0.15 mg/L for benzene and 1.63 for naphthalene).

Recommendation

Since dibenzo(a,h)anthracene in the soil exceeded the SSTL for dermal contact for a commercial worker, intrinsic corrective action is required according to SCDHEC guidelines.

1.0 INTRODUCTION

Site 26 contains a closed underground storage tank (UST) system located adjacent to Building 6 at the Charleston Naval Complex (CNC), Zone E located in Charleston, South Carolina. The CNC is the location of the former Charleston Naval Shipyard. This Rapid Assessment (RA) project was managed by Tetra Tech NUS, Inc.'s (TtNUS's) Tallahassee, Florida, office located at 1401 Oven Park Drive, Suite 102, Tallahassee, Florida, 32308 (telephone number 850-385-9899) on behalf of the U.S. Navy Southern Division (SouthDiv) Naval Facilities Engineering Command (NAVFAC), 2155 Eagle Drive, North Charleston, South Carolina (telephone number 843-820-7307). Authorization to conduct the RA for the site was issued by NAVFAC under Contract Task Order (CTO) 0097. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan approval letter dated November 4, 1998. Fieldwork necessary to complete the RA was performed from late June to late September 1999. While performing the RA assessment field work activities were interrupted twice due to approaching hurricanes (Dennis and Floyd).

1.1 SITE DESCRIPTION

The CNC is located within the city limits of North Charleston, on the west bank of the Cooper River in Charleston County, South Carolina, as shown on Figure 1. This facility consists of two major areas: a developed area on the west bank of the Cooper River, and an undeveloped dredge materials area on the east bank of the Cooper River on Daniel Island in Berkley County. The developed portion of the facility is on the peninsula bound on the west by the Ashley River and on the east by the Cooper River.
Site 26 is located within the developed portion of the facility, 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 facility 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 6 is the former Charleston Naval Shipyard's forge shop, which was built in 1906 and expanded in 1967. Building 6 is situated inside what was formerly the Controlled Industrial Area (CIA) of the shipyard. Building 6 utilized two 2,500-gallon USTs (UST 6A and 6B) to store fuel/heating oil for heating purposes for Building 6 and Facility 226. Facility 226 is located adjacent to and east of Building 6 within the CIA.

The tanks were positioned end-to end and were located under a concrete cap in the middle of the asphalt paved parking lot/lay-down yard northeast of Building 6. USTs 6A and 6B were formerly located approximately 80-85 feet northeast from the northern corner of Building 6, as shown in Figure 3. The UST systems for Building 6 and Facility 226 were installed in 1967 and were permanently abandoned by method of removal on May 7, 1996 [Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth, Virginia, Environmental Detachment Charleston (SPORTENDETCHASN), 1996].

1.2 SITE HISTORY

In 1901, the U.S. Navy acquired 2,250 acres near Charleston to 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 remain 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 vessels of the naval 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, the civilian work force peaked with almost 26,000 employees divided among three daily shifts. In 1956, construction began on piers, barracks, and buildings for mine warfare ships and personnel. Later in the decade, the facility became a major homeport for combatant ships and submarines of the U.S. Atlantic Fleet [Ensafe/Allan & Hoshall, Inc. (E/A&H), 1996].

In 1993, major cuts in defense spending, as a result in part to the end of the cold war, caused the Charleston Naval Shipyard to be added to the list of bases scheduled for closure under the Defense Base Realignment and Closure Act (BRAC). BRAC regulates the closure and transition of property back to the community (E/A&H, 1996). With the scheduled closure of the base, operations were scaled back and environmental cleanup proceeded to make the property available for redevelopment after closure. Following closure of the base, this facility has been referred to as the Charleston Naval Complex (CNC). As part of the environmental cleanup process, the UST systems at Building 6 were removed on May 7, 1996.

Between May 7 and 15, 1996, UST 6A and UST 6B were removed, cleaned, and recycled as scrap metal. At the time of removal, USTs 6A and 6B were reported to be in relatively good condition. However, several holes of 1/8-inch diameter were later discovered in the upper portion of each tank. These holes were not discovered until the tanks were cut open for cleaning. At the time of removal, no visible

corrosion or pitting was observed. Both USTs used galvanized steel piping for supply and return lines, although the exact piping diameter is not known. At the time of the removal of the tanks, the product pipelines were reported as severely corroded, however, no holes were discovered. Contaminated soil encountered during the UST excavation was stockpiled at the site. The excavation was backfilled with clean fill material. The disposition of the stockpiled contaminated soil is not known. Gravel was used to fill the excavation to an elevation above the water table. Geofabric was then laid over the gravel prior to returning the excavated soil to the tank pit (SPORTENDETCHASN, 1996).

During removal of the tanks, groundwater was encountered at a depth of approximately 7 feet below land surface (bls). No petroleum hydrocarbon sheen or free product was observed floating on the surface of the groundwater, although, strong petroleum odors were noted in the vicinity of the excavation during removal of the two USTs. No groundwater samples were collected from the UST excavation during the UST closure assessment. However, fourteen soil samples, including one duplicate soil sample, were collected (five samples, including one duplicate sample, from the UST excavation pit and nine samples from the two piping runs from the USTs). Laboratory analysis of soils reported naphthalene at concentrations above the Risk Based Screening Levels (RBSLs) for chemical of concern (CoC) constituents established by the SCDHEC (Risk-Based Corrective Action For Petroleum Releases, January 5, 1999). Concentrations of benzene, toluene, ethylbenzene, total xylenes, and naphthalene exceeded the RBSLs in soil (clay-rich at depths between 5-10 feet bls) in samples collected from borings located along the UST piping trench. Soil sampling locations and laboratory data are provided in the Underground Storage Tank Assessment Report for UST 6A and 6B, which is included in Appendix A.

1.3 RECEPTOR SURVEY RESULTS

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

- Water utility, electrical utility, sanitary sewer utility, and storm water drainage utility: Water, electrical, sanitary sewer, and storm water drainage lines are located beneath Second Street, located immediately north of Building 6, and extend from the intersection of Hobson Avenue and Second Street beyond the intersection of Second Street and Avenue "B." At the intersection of Second Street and Avenue "B", all of these utility lines, with the exception of storm water drainage, extend to the

south-southeast to Building 3, passing Building 6 to the northeast at a distance of approximately 10-15 feet from the building. In addition, these lines extend north-northeast from the intersection of Second Street and Avenue "B" beneath Avenue "B." Electrical and storm drainage lines are also located south of Building 6. These lines are located immediately adjacent to the build and extend from Hobson Avenue to the northeastern corner of Building 6, running parallel to the building.

- Natural Gas Utility: Natural gas lines are located to the northeast of Building 6 and extend across the former location of the USTs to Building 226. The gas lines that service these two buildings originate from the northwest and extend to the intersection of Second Avenue and Avenue "B" beneath Second Avenue.

- Steam utility: A steam line is located beneath Second Street and services Building 35, located north of Building 6. The steam line stems from the main steam line at the intersection of Hobson Avenue and Second Street and extends northeast beneath Second Street before entering Building 35 near the buildings eastern-most corner.

A survey of groundwater users within a 7-mile radius of CNC was performed for the Final RCRA Facility Investigation Report for Zone E (E/A&H, 1996). According to this report, a survey of groundwater users within a 7-mile radius of CNC was conducted by the South Carolina Water Resources Commission to ascertain the extent of any shallow groundwater usage. Results of the water use investigation revealed that no drinking water wells, which utilize the shallow aquifer, are located within a 4-mile radius of CNC. Irrigation wells were not identified within 1,000 feet of the site. Numerous monitoring wells are located within 1,000 feet of the site. The nearest surface water body to USTs 6A and 6B is the Cooper River, located approximately 600 feet to the east.

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

1.4 REGIONAL GEOLOGY AND HYDROGEOLOGY

CNC is located in Charleston County, South Carolina, in the Lower South Carolina Coastal Plain Physiographic Province on the Cooper River side of the Charleston Peninsula. The peninsula is formed by the confluence of the Cooper and Ashley Rivers. Topography in the area is typical of the South

Carolina lower coastal plain and is characterized by having low-relief plains broken by the meandering streams and rivers, flowing toward the coast past occasional marine terrace escarpments (E/A&H, 1996).

The geology of the Charleston area is typical of the southern Atlantic Coastal Plain. Cretaceous-age and younger sediments thicken seaward and are underlain by older igneous and metamorphic basement rock. Surface exposures consist of recent or Pleistocene sands, silts, and clays of high organic content referred to as the Wando Formation (E/A&H, 1996). Underlying the Wando Formation, increasing with age, are the Oligocene-age and Late Eocene-age Cooper Group and the early Eocene-age Santee Limestone. The Cooper Group is comprised of the Ashley, Parker's Ferry, and Harleyville Formations. The formation of particular importance in the Cooper Group is the Ashley Formation, which was formerly referred to as the Cooper Marl in most regional geologic literature. In more recent geologic nomenclature, the name "Cooper" has been given to a group of formations which includes the Ashley Formation, a pale green to olive-brown, sandy phosphoric limestone or marl, which is locally muddy and/or sandy. The Ashley Formation in the vicinity of Charleston is encountered at a depth of approximately 30 to 70 feet bls. The top of the Ashley Formation has been reported to be associated with an erosional basin and the entire Cooper Unit, including the Ashley Formation, is indicated to be approximately 300 feet thick (E/A&H, 1996).

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

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

2.0 ASSESSMENT INFORMATION

2.1 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

2.1.1 Site Geology

Fifty-eight (58) soil borings (CNC26-B01 through CNC26-B58) were advanced at Site 26 using direct-push technology (DPT) under the supervision of a TtNUS geologist from May through August, 1999 (see Figure 3). These borings ranged in depth from 5 to 12 feet bls and provided soil samples to characterize the subsurface lithology. On August 8, 10, and 17, 1999, eleven (11) shallow groundwater monitoring wells (CNC26-MW01 through CNC26-MW08, CNC26-MW12, and CNC26-MW13) were installed to depths ranging from 11.9 feet to 14 feet bls, as shown in Figure 4. Grab samples from the soil cuttings were collected during the borehole construction to describe the subsurface lithology. On August 18 through 20, 1999, two vertical delineation wells (CNC26-MW09D and CNC26-MW10D) were installed. During the drilling process, lithologic samples were collected using a split-spoon sampler to characterize the subsurface lithology from 15 to 33 feet bls. A general view of the subsurface lithology is presented in Figures 5, 6, and 7.

Based on lithologic descriptions from the soil borings and monitoring wells, the subsurface soil generally consists of mixtures of sand, silty sand, and clayey sand from the ground surface to approximately 12 feet bls. Underlying these deposits are clayey sands, silty sands, and sand containing a minor amount of shell debris to a depth of approximately 33 feet bls. Boring logs are presented in Appendix B.

2.1.2 Site Hydrogeology

Three temporary, small diameter PVC piezometers, CNC26-P01 through CNC26-P03, were installed in borings CNC26-B21, CNC26-B19, and CNC26-B23, respectively. Each temporary piezometer was constructed of 1.25-inch diameter, Schedule 80, PVC, flush threaded casing and well screen. The piezometers were completed at depths of approximately 13 feet bls with a 10-foot PVC screen section that bracketed the water table. A TtNUS geologist surveyed the top of casing elevations from each piezometer to a local temporary reference point. The groundwater elevation data obtained from the piezometers were used in conjunction with the field screening data to aid in the placement of permanent monitoring wells. Based on the water table elevations from the temporary piezometers, the relative groundwater flow direction at the site was to the east-northeast.

Eleven shallow water table monitoring wells, CNC26-MW01 through CNC26-MW08, CNC26-MW12, and CNC26-MW13 and two deep, vertical delineation monitoring wells, CNC26-MW09D and CNC26-MW10D, were installed as part of this RA investigation (see Figure 3). The shallow monitoring wells were completed to depths ranging from 11.9 feet to 14 feet bls. Each shallow monitoring well was completed using 10 feet of 0.01-inch machine slotted Schedule 40 polyvinyl chloride (PVC) screen that bracketed the water table. Monitoring wells CNC26-MW09D and CNC26-MW10D were each completed as a Type III monitoring wells with 6-inch-diameter PVC surface casing grouted to a depth of 23 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to a depth of 33 feet. 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 installation activities, each monitoring well location and the top of casing elevation was surveyed by a South Carolina Registered Professional Surveyor.

Groundwater level measurements collected from the shallow monitoring wells indicate groundwater generally occurs under unconfined conditions at depths of 4.45 to 6.21 feet bls in the site area. No free product was measured in any piezometer or permanent well at the site. A complete round of groundwater elevation measurements were recorded from the site's permanent monitoring wells on September 22, and are presented in Table 1 and shown on Figure 8. Based on the potentiometric surface map, it appears that groundwater flow within 100 feet of the former UST system is primarily to the east, towards the Cooper River. However, north of Building 6 along Second Avenue (approximately 200 feet west-northwest of the former UST system), groundwater flows to the west-northwest.

As part of the Final RFI Report for Zone E (E/A&H, 1996), a tidal influence investigation was conducted. The objective of the investigation was to provide long-term water level monitoring to determine the effects of the tidal fluctuation on wells and groundwater flow throughout Zone E. During the tidal study water levels were recorded in 19 wells throughout Zone E over 4 days. Measurements were recorded every hour using data loggers. The 4-day period spanned nine high and nine low tide cycles.

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

2.2 ASSESSMENT RESULTS

Fifty-eight (58) soil borings (CNC26-B01 through CNC26-B58) were completed as part of the screening portion of the soil investigation at Site 26. Ten soil samples (including one duplicate sample) were collected from nine soil borings for analysis at a fixed base laboratory to confirm the chemical of concern (CoC). The soil borings for screening evaluation were completed using a DPT rig; and samples were collected to evaluate subsurface soil vapors, soil contaminant concentration (via a mobile laboratory), and groundwater contaminant concentrations (via a mobile laboratory). The soil samples were collected from at depths ranging from 2 to 7 feet bls. The soil and groundwater samples collected for mobile laboratory screening were analyzed for benzene, toluene, ethyl benzene, and total xylenes (BTEX), naphthalene, and diesel range organics (DRO).

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

Groundwater samples were collected from the thirteen newly installed wells and six existing wells from August 21 to September 22, 1999. Groundwater sampling was conducted using a peristaltic pump and low flow, quiescent techniques. The monitoring wells were sampled in accordance with SCDHEC's guidance document "South Carolina Risk-Based Corrective Action for Petroleum Releases" (January 1998). Each well was purged of three to six well volumes or until water quality parameters of pH, temperature, and specific 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), and naphthalene using EPA Method 8260 and PAHs using EPA Method 8270.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Fifty-eight (58) soil borings were completed to evaluate soil vapor concentrations as part of the soil screening assessment at Site 26. Organic vapors were measured from soil samples using a flame ionization detector (FID), and measurements were recorded periodically from land surface to the termination depth of each boring. Each boring was terminated once the water table was encountered. Unfortunately, due to some equipment malfunctions during this assessment, organic vapors were not measured in 12 of the borings. Table 4 summarizes the soil vapor screening results. Figure 3 presents the soil boring locations.

Soil vapor concentrations ranged from non-detect to 1,500 parts per million. Organic vapor concentrations were not measured in soil borings CNC26-B05, CNC26-B16, CNC26-B23, CNC26-B25 through CNC26-B29, CNC26-B40 through CNC26-B42, and CNC26-B48. The highest vapor concentration was detected in soil boring CNC26-B04 at the depth interval of 4 to 8 feet bls, respectively.

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

2.3.2 Soil Mobile Lab Results

One soil sample was collected from each soil boring and analyzed in a mobile laboratory for BTEX, naphthalene and diesel range organics (DRO) using USEPA Method 8020/8015M. 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 soil analytical data from the mobile laboratory.

As indicated in Table 5, none of the constituents analyzed were detected in 34 of the 58 soil samples collected. In the 24 soil samples in which petroleum hydrocarbon constituents were detected, no benzene concentrations were detected in any of the mobile laboratory soil samples. Toluene was detected in only one soil sample, CNC21-B36, at the 5-6 feet (ft.) depth interval at a concentration of 19.5 micrograms per kilogram (μg/kg). Ethylbenzene was detected in five soil samples at concentrations ranging from 30.7 μg/kg to 88.3 μg/kg with the highest concentration detected in soil boring CNC26-B01 at the 4-5 ft. depth interval. Total xylenes were detected in 10 soil samples at concentrations ranging from 31 μg/kg to 599

µg/kg with the highest concentration detected in soil boring CNC26-B34 at the 6-7 ft. depth interval. Napthalene was detected in 13 soil samples at concentrations ranging from 17 µg/kg to 425 µg/kg with the highest concentration detected in soil boring CNC26-B22 at the 3-4 ft. depth interval. DRO was detected in 19 soil samples at concentrations ranging from 65.9 µg/kg to an estimated concentration of 63,000 µg/kg with the highest concentration detected in soil boring
CNC26-B35 at the 5-6 ft. depth interval. The concentration of 63,000 µg/kg is estimated because this concentration exceeded the upper calibration range for the mobile laboratory instrument.

The mobile laboratory soil analyses were used as a screening method to assist in identifying locations for collection of confirmation soil samples to be analyzed by a fixed base laboratory and to assist in determining the locations for permanent groundwater monitoring wells.

2.3.3 Groundwater Mobile Lab Results

A groundwater sample was collected from each of the 26 soil boring locations and was analyzed by a mobile laboratory for BTEX, naphthalene, and DRO using USEPA Method 8020/8015M. Table 6 summarizes the groundwater analytical data from the mobile laboratory.

As shown in Table 6, none of the constituents analyzed were detected in 20 of the 26 groundwater samples collected. In the 6 groundwater samples in which petroleum hydrocarbon constituents were detected, no benzene or toluene concentrations were detected in any of the mobile laboratory groundwater samples. Ethylbenzene was detected in three groundwater samples at concentrations ranging from 13.7 µg/L to 61.8 µg/L with the highest concentration detected in boring CNC21-B05 which was screened from 7-12 ft. bls. Total xylenes were detected in 5 groundwater samples at concentrations ranging from 3.2J µg/L to 279.7 µg/L with the highest concentration detected in boring CNC21-B05 which was screened from 7-12 ft. bls. Napthalene was detected in 30 groundwater samples at concentrations ranging from 18 µg/L to 1,010 µg/L (estimated) with the highest concentration detected in boring CNC26-B33 which was screened from 6-9 ft. bls. DRO was detected in 31 groundwater samples at concentrations ranging from 1.0 µg/L (estimated) to 344 µg/L (estimated) with the highest concentration detected in boring CNC26-B53 which was screened from 6-12 ft. bls.

The mobile laboratory groundwater analyses were used as a screening method to assist in identifying locations for permanent monitoring wells for the collection of groundwater samples to be analyzed by a fixed base laboratory.

2.4 CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

2.4.1 Chemicals of Concern in Soil

Ten subsurface soil samples, including one duplicate sample, were collected at Site 26 for fixed base laboratory analysis. The soil boring locations are shown on Figure 3 and Table 7 summarizes the CoCs detected in the soil samples. As requested by SCDHEC, the naphthalene concentrations detected in the soil samples shown in Table 7 are actually total naphthalene concentrations. The total naphthalene concentration value was derived by adding the naphthalene concentration detected using EPA Method 8260 with the 2-methylnaphthalene concentration detected using EPA Method 8270, regardless of the practical quantification limit for each method. The RBSLs for sandy soils were used based on a grain size analysis completed on sample 26SLB010405 indicating a sandy matrix (Appendix D). The RBSLs were also based on a depth to groundwater equal to or less than 5 ft bls.

As shown in Table 7, no BTEX constituents or dibenzo (a,h) anthracene were detected at the method practical quantification limit in any of the fixed-base laboratory samples. Benzo (a) anthracene, benzo (b) fluoranthene, benzo (k) fluoranthene and chrysene were detected in the soil sample collected from boring CNC26-B18 at a depth of 2-3 ft. bls; however, none of the concentrations detected exceed the respective RBSLs.

Napthalene was detected in four soil samples at concentrations, which exceed naphthalene's RBSL of 210 μg/kg. Naphthalene detected in these soil samples range in concentration from 1,000 μg/kg to 33,087 μg/kg with the highest concentration detected in soil boring CNC26-B36 which was collected from the 4-5 ft. depth interval. Naphthalene was also detected in two other soil samples; however, the concentrations detected in these samples did not exceed naphthalene's RBSL. Figure 9 shows the approximate areal distribution of naphthalene in soil.

2.4.2 Chemicals of Concern in Groundwater

Groundwater samples for fixed base laboratory analysis were collected from the 13 newly installed wells (11 shallow wells and 2 deep wells) and from six existing shallow wells. One duplicate groundwater sample was collected from well CNC26M-07. The monitoring well locations are shown on Figure 4, and Table 8 summarizes the CoCs detected in the groundwater samples. As requested by SCDHEC, the naphthalene concentrations detected in the groundwater samples shown in Table 8 are actually total naphthalene concentrations. The total naphthalene concentration value was derived by adding the

naphthalene concentration detected using EPA Method 8260 with the 2-methylnaphthalene concentration detected using EPA Method 8270, regardless of the practical quantification limit for each method.

As shown in Table 8, no BTEX (by EPA Method 8260), PAHs (by EPA Method 8270), or MTBE (by EPA Method 8260), concentrations were detected at their respective method practical quantification limits in any of the fixed-base laboratory samples.

Napthalene was detected in two groundwater samples analyzed using EPA Method 8260. Naphthalene was detected in the groundwater samples collected from wells CNC26P-12 and CNC26P-13 at concentrations of 31 μg/L and 53 μg/L, respectively. Each of these concentrations exceed the groundwater RBSL for naphthalene of 10 μg/L. Figure 10 shows the approximate areal distribution of naphthalene in groundwater. None of the CoCs were detected above method detection limits in the onsite deep monitoring wells CNC26-M09 and CNC26-M10.

2.5 ANALYTICAL DATA

All analytical data from the 1996 Underground Storage Tank Assessment Report for USTs 6A and 6B is presented in Appendix A. Soil analytical data generated during this RA is summarized in Tables 5 and 7. Groundwater analytical data generated during this RA is summarized in Tables 6 and 8. The soil and groundwater analytical reports for this RA are included in Appendix D.

2.6 AQUIFER CHARACTERISTICS AND EVALUATION

On September 22, 1999, groundwater levels were measured from the site monitoring wells. The groundwater flow direction across the former UST location is to the east-northeast, towards the Cooper River, as illustrated on Figure 8. Based on the September 22, 1999, measuring event, the calculated hydraulic gradient between monitoring wells CNC26X-02 (NBCE542002) and CNC26X-03 (NBCE542003), is 0.001 feet per foot.

As part of the Final RCRA Facility Investigation (RFI) Report for Zone E, rising and falling head slug tests were conducted on 20 shallow monitoring wells throughout Zone E to determine the hydraulic conductivity of the surfical aquifer (E/A&H, 1996). The Final RCRA Facility Investigation Report for Zone E is referenced since Site 26 is located within Zone E. 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 RFI were reviewed to determine which wells were most representative of the conditions present at Site 26. To make this determination the screened interval, lithology, and proximity to the site were evaluated. Based on this evaluation, monitoring well NBCE542002 (CNC26X-02) was selected as the most representative well. NBCE542002 is located approximately 40 feet upgradient of the former location of USTs 6A and 6B and is completed to a depth of approximately 13.5 feet with a 9-foot screened interval. This well was selected because it was one of the existing wells located in the immediate vicinity of the former UST system. The boring log indicates that the lithology consists primarily of sand with a trace of silt; similar to the lithology observed at Site 26 (included in Appendix E). The geometric mean of the rising and falling head conductivities for NBCE542002 was 6.45 feet per day.

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

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

Where:

V	=	average velocity
K	=	hydraulic conductivity = 6.45 ft/day
n	=	effective porosity = 0.48 (from sieve results of 95% sand & 2% clay and Figure C1 in SCDHEC, 1998)
i	=	most recent hydraulic gradient = 0.001 ft/ft

Therefore:

$$V = \left(\frac{6.45\ \text{ft/day}}{0.48}\right) x\, 0.001\ \text{ft/ft}$$

$$V = 0.0134\ \text{ft/day}$$

In summary, the seepage velocity of the surficial aquifer was calculated to be approximately 4.89 feet per year based on a hydraulic conductivity of 6.45 feet per day, a hydraulic gradient of 0.001 feet per foot, and

a porosity of 48% for sand to slightly silty sand. Aquifer characterization graphs are provided in Appendix E.

2.7 FATE AND TRANSPORT

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

The impacted groundwater source area was modeled as 50 feet (15.00 meters) wide and 6.56 feet (2.0 meters) deep; these values are conservative defaults suggested by the American Society for Testing Materials (ASTM) *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (ASTM, 1997). The maximum source concentrations are assumed to exist throughout the source area, further compounding the conservatism of the estimate.

Site-specific data were used for saturated hydraulic conductivity, hydraulic gradient, and fraction of organic carbon in soil (3.70E-05 m/sec, 0.001 ft/ft, and 7.07E-4 g-C/g-soil, respectively). The soil bulk density (1.55 g/cm^3) and porosity (0.48 cm^3/cm^3) were determined using Figures C1 and C3 given in SCDHEC (1998), based on the sieve test results of 95% sand and 2% clay.

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

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

Table 9 summarizes fate and transport parameters used in modeling the SSTLs.

2.8 PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN

Groundwater flow in the vicinity of the former UST system is primarily to the east-northeast, towards the Cooper River. However, a groundwater divide exists along the middle of Building 6, which results in groundwater near the west end of the building flowing to the west, towards Hobson Avenue. The current extent of impact is limited to naphthalene concentrations in wells CNC26-P-12 and CNC26-P13. Figure 10 shows the approximate areal extent of groundwater containing naphthalene at concentrations exceeding the RBSL. Concentrations of compounds of interest in all other monitoring wells were non-detect.

The Domenico Model was used to predict the distance at which the tip of the plume is attenuated to SCDHEC RBSLs in 10 and 20 years without using degradation due to biological decay. This was done by adjusting the time to 10 years (3.15×10^8 sec) and 20 years (6.31×10^8 sec) and solving for distance (x) by trial and error. The source was assumed to be well CNC26-P13. The distance was changed until the required distance that is necessary for the concentration to attenuate to the RBSLs was determined. The model estimates that after 10 years, the concentrations of naphthalene will be 0.01 mg/L (RBSL) at a distance of 23 feet (Figure 11). Furthermore, after 20 years, the concentration of naphthalene is 0.010 mg/L at 43 ft from the source (Figure 11). The Domenico 10-year and 20-year simulation spreadsheets are presented in Appendix F.

3.0 TIER 1 and 2 EVALUATION

3.1 COMPARISON OF ANALYTICAL RESULTS WITH RBSLs

Groundwater concentrations in two samples exceeded the RBSLs. They are tabulated below:

Monitoring Well / Sample No.	Naphthalene (ug/L)
RBSL	10
CNC26P-12 / 26GLP1201	31
CNC26P-13 / 26GLP1301	53

Soil concentrations in three samples exceeded the RBSLs. They are tabulated below:

Soil Boring / Sample No.	Benzene (ug/kg)	Naphthalene (ug/kg)
RBSLs for sandy soil <5 feet	5	210
CNC26B-12 / 26SLB120304	Below RBSL	1000
CNC26B-18 / 26SLB180203	<320	3990
CNC26B-22 / 26SLB220304	Below RBSL	3998

Exceeding the RBSLs for naphthalene in groundwater, and benzene and naphthalene in soil requires performance of a Site Conceptual Model (identification of current and future potential receptors and human exposure pathways) as shown below.

3.2 SITE CONCEPTUAL EXPOSURE MODEL

This section focuses on the current and future land use issues concerning the site. The site is the former Naval Shipyards forge shop. Figure 1 shows that the site is located in and surrounded by the CNC. The area surrounding CNC is "mature urban," having long been developed with commercial, industrial, and residential land use. Commercial areas are primarily west of CNC; industrial areas are primarily to the north of the base along Shipyard Creek. The future use of the property is expected to be industrial or commercial for the foreseeable future after the property is made available for redevelopment as part of the Defense BRAC Act.

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

3.3 EXPOSURE PATHWAY ANALYSIS

This section presents the receptor characterizations of the potentially exposed populations in the vicinity of the site and identifies the potentially complete exposure pathways for those receptors. SCDHEC requires that only those exposure pathways with CoC concentrations exceeding Tier 1 RBSL concentrations are examined in a Tier 2 Risk-Based Corrective Action Report. Tables 10 and 11 present the exposure pathway assessments for current and future use scenarios.

3.3.1 On-Site Commercial/ Industrial Worker

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

3.3.2 On-Site Visitor

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

3.3.3 On-Site Construction Worker

An on-site construction worker is defined as a laborer who would be involved in intrusive activities on or around the site, particularly in the area of subsurface utilities. On-site construction workers could be exposed to constituents in soil by the following pathways: inhalation of volatiles from soil, dermal contact with soil, and incidental ingestion of soil. On-site construction workers could be exposed to constituents in groundwater by the following pathways: inhalation of volatiles from groundwater, dermal contact with groundwater, and incidental ingestion of groundwater. There are several underground utilities adjacent the site; therefore, the point of exposure location for the on-site construction worker was considered to be at the source.

3.3.4 On-Site Resident

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

3.3.5 Off-Site Resident

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

3.3.6 Surface Water

The Cooper River is located approximately 600 feet downgradient, to the east of the site. Since groundwater appears to flow to the river, this exposure pathway was considered for ingestion of surface water.

3.4 IDENTIFICATION OF DATA REQUIREMENTS

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

3.5 SITE-SPECIFIC TARGET LEVELS

The Site Conceptual Model identified two possible future receptors; a construction worker in a utility trench and the Cooper River. Pathways for the construction worker include (1) possibly ingesting, having dermal contact with, or inhaling volatilized vapors from the groundwater in the utility trench and (2) possibly ingesting or having dermal contact with soil within the trench. The pathway for the Cooper River is groundwater migration to the river from the site.

3.5.1 Soil SSTLs Protective of the On-Site Construction Worker

The Site Conceptual Model identified a potential receptor as a construction worker ingesting or dermally contacting soil while working in a utility trench. For ingestion and dermal contact with soil while working in a utility trench, subsurface soil exposure to a construction worker is similar to surface soil exposure. The RBSLs given by SCDHEC for ingestion and dermal contact with surficial soils by a commercial worker are compared to the site soil concentrations in the table below. (RBSLs for commercial workers are conservative for construction workers. See note below [1])

CoC	RBSL	SB-1	SB-1D	SB-3	SB-12	SB-14
Benzene	200	<0.006	<0.006	<0.006	<0.006	<0.005
Toluene	410,000	<0.006	<0.006	<0.006	<0.006	<0.005
Ethylbenzene	200,000	<0.006	<0.006	<0.006	<0.006	<0.005
Xylenes	1,000,000	<0.006	<0.006	<0.006	<0.006	<0.005
Naphthalene	41,000	<0.006	<0.006	0.004	1.0	<0.005
Benzo(a)anthracene	3.9	<0.360	<0.360	<0.360	<0.360	<0.400
Benzo(b)fluoranthene	3.9	<0.360	<0.360	<0.360	<0.360	<.0400
Benzo(k)fluoranthene	39	<0.360	<0.360	<0.360	<0.360	<0.400
Chrysene	390	<0.360	<0.360	<0.360	<0.360	<0.400
Dibenzo(a,h)anthracene	0.39	<0.360	<0.360	<0.360	<0.360	**<0.400**

CoC	RBSL	SB-18	SB-22	SB-26	SB-35	SB-36
Benzene	200	<0.320	<0.005	<0.005	<0.005	<0.005
Toluene	410,000	<0.320	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	200,000	<0.320	<0.005	<0.005	<0.005	<0.005
Xylenes	1,000,000	<0.320	<0.005	<0.005	<0.005	33.100
Naphthalene	41,000	3.990	3.998	0.022	<0.005	0.008 J
Benzo(a)anthracene	3.9	0.700	<3.600	<0.360	<0.360	<2.000
Benzo(b)fluoranthene	3.9	0.730	<.3.600	<0.360	<0.360	<2.000
Benzo(k)fluoranthene	39	0.750	<3.600	<0.360	<0.360	<2.000
Chrysene	390	0.650	<3.600	<0.360	<0.360	<2.000
Dibenzo(a,h)anthracene	0.39	**0.750**	**<3.600**	<0.360	<0.360	**<2.000**

NS = Not Sampled NA = Not Available
All concentrations in mg/kg.

(1) A commercial worker has a typically assumed exposure duration (ED) of 25 years and an exposure frequency (EF) of 250 days/year. A construction worker would be expected to have a much lower exposure duration and exposure frequency based on the nature of utility or construction work. The exposure frequency can be assumed to be 90 days/year and the exposure duration can be assumed to be 1 year. These assumptions are based on the nature of utility work. Therefore, the RBSLs for construction workers are expected to be higher than those for commercial workers.

Soil concentrations in four soil borings for dibenzo(a,h)anthracene exceeded the RBSLs for ingesting or contacting the impacted soil. The RBSLs above were calculated for a commercial worker (see Note 1 above) and are more stringent than what would be expected for a construction worker. None the less, based on the commercial worker RBSLs, a construction worker contacting or accidentally ingesting soil while working below grade on utility lines adjacent Site 26 may be at risk to exposure from dibenzo(a,h)anthracene.

3.5.2 Groundwater SSTLs Protective of the On-Site Construction Worker

Groundwater RBSLs provided by SCDHEC are for ingestion only; therefore, RBSLs were calculated for the additional pathways of dermal contact, incidental ingestion, and inhalation of volatiles.

Groundwater RBSLs for the construction worker in a utility trench were calculated for three pathways: dermal contact, incidental ingestion, and inhalation of volatiles. A target cancer risk of 1×10^{-6} and a target hazard quotient of 1 were used in the calculations. Where possible, site-specific parameters were used for site conditions. Standard defaults were used when available and applicable to a construction worker. When no standard parameters were available, conservative assumptions were used. For all pathways, the exposure frequency was assumed to be 90 days/year and the exposure duration was assumed to be 1 year. These assumptions were considered conservative based on the nature of utility work.

The dermal contact RBSLs were calculated using procedures *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment, Interim Guidance* (USEPA Peer Consultation Workshop Draft, 1998). Based on expected limited contact with groundwater, the event frequency was assumed to be 1 event/day and the event duration was assumed to be 1 hour/event. The skin surface area available for contact was 4500 cm^2, based on one-fourth the skin surface area given in the risk assessment guidance document for a swimming adult. The incidental ingestion RBSLs were calculated using the equation given in *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Interim Final)*, (USEPA 1989). An incidental ingestion rate of 0.01 L/day was assumed based on a fraction (12.5%) of the incidental ingestion rate for a wading adult (0.01 L/hr), considered for an 8-hour work day. The incidental ingestion rate for wading adults is given in *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment* (USEPA Region 4, 1995).

Utility lines in the area are typically 2 to 6 feet deep. The average depth to groundwater at the point of exposure (CNC06-P03) is 6.05 feet bls, with a range of 5 to 7 feet bls. It was assumed that a construction worker might be exposed to chemicals volatilizing from standing groundwater. The inhalation RBSLs were calculated using Henry's Law:

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

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

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

Underground utilities are present in close proximity to the site; therefore the point of exposure location for the on-site construction worker was considered to be at the source, and no fate and transport calculations were performed to determine the SSTL protective of the construction worker. The minimum RBSL for the three pathways was chosen as the SSTL for the construction worker.

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

Chemical of Concern	Dermal	Incidental Ingestion	Inhalation	SSTL	Maximum Concentration found in Monitoring Well CNC26P-13
	RBSL	RBSL	RBSL	(Minimum RBSL)	Source
	mg/L	mg/L	mg/L	mg/L	mg/L
Benzene	0.85	68.52	0.15	**0.15**	**<5**
Naphthalene	1.63	1135.56	2.63	**1.63**	**0.053**

NA = Not Applicable

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

As shown in the above table, the minimum RBSL for naphthalene is greater than the greatest onsite concentration of naphthalene detected in site groundwater. Therefore, a construction worker exposed to groundwater in a utility trench contaminated by the release at Site 26 is not at risk from naphthalene exposure.

3.5.3 Soil SSTLs Protective of a Construction Worker Exposed to Groundwater Leached through Contaminated Soil

An additional pathway considered complete for construction workers was that of leaching to groundwater. The potential construction worker's exposure to groundwater was assumed to consist of three pathways: dermal contact, incidental ingestion, and inhalation of volatiles. Drinking water is provided by the city; therefore, ingestion of groundwater is not a complete pathway.

The SCDHEC Soil Leachability Model was used to calculate a site-specific target level (SSTL) for naphthalene and benzene leaching to the groundwater. Site-specific parameters were input when available, else SCDHEC defaults for sandy soil were used. The minimum calculated groundwater RBSLs for construction worker exposure (1.63 mg/L naphthalene and 0.15 mg/L benzene)(see above table) were used as opposed to the groundwater RBSL for ingestion. The calculated SSTLs as compared to the maximum soil concentration found during the field investigation are shown below.

CoC	Maximum Soil Concentrations (mg/kg)	Soil Leaching SSTL (mg/kg)
Benzene	<0.320	0.609
Naphthalene	3.998	106

The soil leaching SSTLs calculated for benzene and naphthalene are greater than the maximum concentration of each found in the soil during the site assessment. Therefore benzene and naphthalene in the soil are not a risk to a construction worker in a utility trench.

3.5.4 Groundwater SSTLs Protective of Surface Water

SSTLs were developed which would protect the Cooper River from potential impact from discharge of impacted groundwater. The Domenico Model as described in Section 2.7 was used to determine the groundwater SSTLs for naphthalene under steady state conditions. Table 9 provides fate and transport parameters used in the model. The groundwater flow in the vicinity of the former UST system is primarily to the east, towards the Cooper River located approximately 600 feet from Site 26. Based on the limited groundwater elevation data, groundwater west of the middle of Building 6 flows to the west, towards Hobson Avenue. Monitoring Wells CNC26-P12 and CNC26-P13 contained naphthalene concentrations greater than the RBSLs; therefore, the area surrounding these monitoring wells was used as the source for predicted migration.

The dissolved naphthalene concentration in CNC26-P13 was used in the Domenico Model as the source concentration. The distance from CNC26-P13 to the Cooper River, which is the nearest point of exposure other than construction worker was estimated to be 600 feet. Using the RBSL value of 0.01 mg/L for naphthalene at the point of exposure, the SSTL at CNC26-P13 was calculated and compared with the calculated source concentrations in CNC26-P13. The SSTLs at the compliance well were also calculated using the values of the RBSLs at the point of exposure. The distance from the compliance well to the point of exposure was estimated to be 600 feet.

Groundwater SSTLs were determined to be:

Chemical of Concern	Source Concentration at Monitoring Well CNC26-P13 [mg/L]	Source SSTL [mg/L]	Compliance Point SSTL [mg/L]
Naphthalene	0.053	1.347	1.201

As shown in the above table, the current concentration at monitoring well CNC26-P13 is below the calculated SSTL for affecting the Cooper River, therefore the Cooper River is not at risk because of the naphthalene concentrations in groundwater at Site. The Domenico Model calculations generating the SSTLs are included in Appendix F.

3.5.5 Selected SSTLs

The selected SSTLs and the source concentrations are:

Media of Concern	Chemical of Concern	Units	SSTL	Maximum Source Concentration	Above SSTLs
Groundwater	Naphthalene	mg/L	1.347	0.053	no
Soil	Benzene	mg/kg	0.609	<0.320	no
	Naphthalene	mg/kg	106	3.998	no
	Dibenzo(a,h) anthracene	mg/kg	0.39	<3.6	**yes**

Note that the SSTLs for benzene and naphthalene exceed the maximum concentrations found onsite and therefore; do not pose a threat to the identified receptors at the site. The dibenzo(a,h)anthracene SSTL does not exceed the maximum concentrations found on site so may pose a threat to a construction worker in a utility trench exposed to soil.

3.6 RECOMMENDATIONS

Because the concentration of dibenzo(a,h)anthracene in the soil exceeded the SSTL for dermal contact for a commercial worker, Tetra Tech NUS, Inc. recommends that an active Corrective Action Plan be prepared.

4.0 REFERENCES

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TABLE 1

GROUNDWATER ELEVATIONS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
PAGE 1

Well #	Total Depth of Well (ft)	Top of Casing Elevation, ft (MSL)	Date Measured	Depth to Water, ft (BTOC)	Depth to Product, ft (BTOC)	Product Thickness (ft)	Groundwater Elevation (MSL)
CNC26-MW01	12.12	8.78	9/22/1999	5.63	ND	ND	3.15
CNC26-MW02	12.23	8.52	9/22/1999	5.42	ND	ND	3.10
CNC26-MW03	12.28	9.38	9/22/1999	6.21	ND	ND	3.17
CNC26-MW04	12.10	8.98	9/22/1999	5.85	ND	ND	3.13
CNC26-MW05	12.03	8.01	9/22/1999	4.81	ND	ND	3.20
CNC26-MW06	12.15	7.51	9/22/1999	4.45	ND	ND	3.06
CNC26-MW07	12.00	9.12	9/22/1999	NM	ND	ND	NM
CNC26-MW08	12.01	9.21	9/22/1999	NM	ND	ND	NM
CNC26-MW09	33.15	8.74	9/22/1999	5.64	ND	ND	3.10
CNC26-MW10	32.40	8.73	9/22/1999	5.61	ND	ND	3.12
CNC26-MW11	14.00	8.65	9/22/1999	NM	ND	ND	NM
CNC26-MW12	12.90	NM	9/22/1999	NM	ND	ND	NM
CNC26-MW13	11.90	NM	9/22/1999	NM	ND	ND	NM
CNC26-X01	13.00	8.80	9/22/1999	5.53	ND	ND	3.27
CNC26-X02	13.22	8.83	9/22/1999	5.63	ND	ND	3.20
CNC26-X03	13.57	9.24	9/22/1999	6.15	ND	ND	3.09

Notes:
MSL - Mean Sea Level
BTOC - Below Top of Casing
NM - Not Measured
ND- Not Detected
ft - Feet
X - Existing

TABLE 2

GROUNDWATER FIELD MEASUREMENTS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Well I.D.	Date Sampled	Purge method	Volume (gallons)	Temp. (° C)	pH	Specific Conductivity (uMHOS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)
CNC26-MW01	9/22/1999	PP	3.50	29.9	6.37	1.810	7	1.11
CNC26-MW02	9/22/1999	PP	3.30	31.0	5.76	0.249	0	1.8
CNC26-MW03	9/22/1999	PP	3.00	29.6	6.27	2.510	6	1.86
CNC26-MW04	9/22/1999	PP	4.20	28.2	5.91	0.510	0	2.24
CNC26-MW05	9/22/1999	PP	3.42	27.5	5.92	0.419	0	1.26
CNC26-MW06	9/22/1999	PP	3.66	27.4	6.07	0.319	0	0.93
CNC26-MW07	9/22/1999	PP	4.00	26.5	5.87	0.181	0	3.54
CNC26-MW08	9/22/1999	PP	3.30	27.4	5.03	0.138	3	2.34
CNC26-MW09	9/22/1999	PP	13.14	25.7	6.53	0.520	4	0.9
CNC26-MW10	9/22/1999	PP	10.80	27.6	6.83	0.520	13	2.02
CNC26-MW11	9/22/1999	PP	4.00	26.8	5.91	0.100	5	1.3
CNC26-MW12	9/22/1999	PP	2.50	24.3	6.29	0.810	46	0.56
CNC26-MW13	9/22/1999	PP	1.20	24.8	6.66	0.757	319	0.4
CNC26-X01	9/22/1999	PP	6.00	25.3	6.23	6.030	45	1.88
CNC26-X02	9/22/1999	PP	3.63	26.6	6.19	0.686	5	1.96
CNC26-X03	9/22/1999	PP	6.50	25.5	6.25	0.761	6	1.89
CNC26-X04	9/22/1999	PP	4.38	26.0	6.21	0.257	8	1.86
CNC26-X05	9/22/1999	PP	3.39	26.4	6.79	0.194	8	2.32
CNC26-X06	9/22/1999	PP	3.00	26.7	6.14	0.150	13	0.85

Notes.

(°C) - Degrees Celsius
PP - Peristaltic pump, low flow technique
uMHOS/cm - Micro HOS per centimer
NTU - Nephelometric turbidity units
mg/l - milligrams per liter
X - Existing

TABLE 3

GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
SITE 26, BUILDING 6
ZONE E, 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)*
CNC26-MW11	9/22/1999	2.50	24	38.2	0.02	0.03	0.035	0.1	NA	NA
CNC26-X02	9/22/1999	0.00	242	440	0.03	3.30	0.021	18.6	NA	NA
CNC26-X03	9/22/1999	1.00	231	250	0.09	0.98	0.375	0.8	NA	NA

Notes:
mg/l - Milligrams per liter
ug/l - Micrograms per liter
NA - Not Analyzed

TABLE 4

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 26, BUILDING 6
Zone E, Former Charleston Naval Complex
North Charleston, South Carolina

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration
CNC26-B01	26SSB0104	0-4	0
	26SSB0108	4-8	150
CNC26-B02	26SSB0204	0-4	0
CNC26-B03	26SSB0304	0-4	0
CNC26-B04	26SSB0404	0-4	0
	26SSB0408	4-8	1500
CNC26-B05	26SSB0504	0-7	No Recording
CNC26-B06	26SSB0604	0-4	0
CNC26-B07	26SSB0704	0-4	3
CNC26-B08	26SSB0604	0-4	0
CNC26-B09	26SSB0904	0-4	0
CNC26-B10	26SSB1004	0-4	0
CNC26-B11	26SSB1104	0-4	0
CNC26-B12	26SSB1204	0-4	20
CNC26-B13	26SSB1304	0-4	0
CNC26-B14	26SSB1404	0-4	0
CNC26-B15	26SSB1504	0-4	0
CNC26-B16	26SSB1604	0-9	No Recording
CNC26-B17	26SSB1704	0-4	0
CNC26-B18	26SSB1804	0-4	150
CNC26-B19	26SSB1904	0-4	0
CNC26-B20	26SSB2004	0-4	0
CNC26-B21	26SSB2104	0-4	0
CNC26-B22	26SSB2204	0-4	50
CNC26-B23	26SSB2304	0-9	No Recording
CNC26-B24	26SSB2403	3	0
	26SSB2405	5	0
CNC26-B25	26SSB2501	1-12	No Recording
CNC26-B26	26SSB2601	1-12	No Recording
CNC26-B27	26SSB2701	1-12	No Recording
CNC26-B28	26SSB2801	1-8	No Recording
CNC26-B29	26SSB2901	1-12	No Recording
CNC26-B30	26SSB3003	3	0
	26SSB3005	5	0
	26SSB3009	9	70
CNC26-B31	26SSB3103	3	0
	26SSB3107	7	0
CNC26-B32	26SSB3203	3	6
	26SSB3206	6	60
CNC26-B33	26SSB3303	3	0
CNC26-B34	26SSB3403	3	0
	26SSB3406	6	30
CNC26-B35	26SSB3503	3	10
	26SSB3505	5	7

TABLE 4 - Continued

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 26, BUILDING 6
Zone E, Former Charleston Naval Complex
North Charleston, South Carolina

CNC26-B36	26SSB3603	3	0
	26SSB3605	5	0
CNC26-B37	26SSB3703	3	0
	26SSB3705	5	0
CNC26-B38	26SSB3805	5	0
CNC26-B39	26SSB3905	5	0
CNC26-B40	26SSB4001	1-12	No Recording
CNC26-B41	26SSB4101	1-8	No Recording
CNC26-B42	26SSB4201	1-8	No Recording
CNC26-B43	26SSB4305	5	0
	26SSB4308	8	180
CNC26-B44	26SSB4404	4	0
CNC26-B45	26SSB4504	4	0
CNC26-B46	26SSB4604	4	0
CNC26-B47	26SSB4704	4	0
CNC26-B48	26SSB4801	1-12	No Recording
CNC26-B49	26SSB4903	3	9
CNC26-B53	26SSB5304	4	0
	26SSB5307	7	0
CNC26-B54	26SSB5404	4	0
	26SSB5407	7	75
CNC26-B55	26SSB5504	4	0
CNC26-B56	26SSB5604	4	0
CNC26-B57	26SSB5703	3	0
CNC26-B58	26SSB5804	4	0

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

TABLE 5

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data[1]					
			Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	Total Xylenes (µg/Kg)	Naphthalene (µg/Kg)	Diesel Range Organics (mg/Kg)
CNC26-B01	26SFB010405	4-5	ND	ND	88.3	333.3	316	3300
CNC26-B02	26SFB020304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B03	26SFB030304	3-4	ND	ND	ND	ND	ND	189
CNC26-B04	26SFB040304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B05	26SFB050304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B06	26SFB060304	3-4	ND	ND	ND	ND	ND	45.8J
CNC26-B07	26SFB070304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B08	26SFB080304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B09	26SFB090304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B10	26SFB100304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B11	26SFB110304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B12	26SFB120304	3-4	ND	ND	ND	31	256	1330
CNC26-B13	26SFB130304	3-4	ND	ND	ND	ND	17	ND
CNC26-B14	26SFB140304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B15	26SFB150304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B16	26SFB160304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B17	26SFB170304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B18	26SFB180203	2-3	ND	ND	ND	140	135	79
CNC26-B19	26SFB190203	2-3	ND	ND	ND	ND	ND	ND
CNC26-B20	26SFB200304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B21	26SFB210304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B22	26SFB220304	3-4	ND	ND	274	170	425	2860
CNC26-B23	26SFB230304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B24	26SFB240506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B25	26SFB250607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B26	26SFB260607	6-7	ND	ND	30.7	251.2	251	638
CNC26-B27	26SFB270607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B28	26SFB280506	5-6	ND	ND	ND	34.5	99.5	9730
CNC26-B29	26SFB290607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B30	26SFB300607	6-7	ND	ND	ND	19.1J	98.2	3980
CNC26-B31	26SFB310607	6-7	ND	ND	ND	ND	ND	38400E
CNC26-B32	26SFB320607	6-7	ND	ND	ND	ND	ND	1050
CNC26-B33	26SFB330506	5-6	ND	ND	ND	39.2	113	8200E
CNC26-B34	26SFB340607	6-7	ND	21.2J	39.5	599	234	7680E
CNC26-B35	26SFB50506	5-6	ND	18.2J	59.8	467.2	348	63000E
CNC26-B36	26SFB360506	5-6	ND	19.5	ND	590	294	7480E
CNC26-B37	26SFB370506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B38	26SFB380506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B39	26SFB390506	5-6	ND	ND	ND	ND	ND	ND
CNC26-B40	26SFB100405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B41	26SFB410405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B42	26SFB420405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B43	26SFB430405	4-5	ND	ND	ND	ND	52.9	2080
CNC26-B44	26SFB440405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B45	26SFB450405	4-5	ND	ND	ND	ND	ND	65.

TABLE 5 - Continued

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data[1]					
			Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	Total Xylenes (µg/Kg)	Naphthalene (µg/Kg)	Diesel Range Organics (mg/Kg)
CNC26-B46	26SFB460405	4-5	ND	ND	ND	ND	ND	182
CNC26-B47	26SFB470405	4-5	ND	ND	ND	ND	ND	231
CNC26-B48	26SFB480405	4-5	ND	ND	ND	ND	ND	524
CNC26-B49	26SFB490304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B53	26SFB530405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B54	26SFB530405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B55	26SFB550405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B56	26SFB560405	4-5	ND	ND	ND	ND	ND	ND
CNC26-B57	26SFB570304	3-4	ND	ND	ND	ND	ND	ND
CNC26-B58	26SFB580405	4-5	ND	ND	ND	ND	ND	ND

NOTES:
[1] Laboratory screening data was analyzed using USEPA Method 8020/8015M. Compounds not detected are reported as less than the instrument detection limit.
µg/Kg = micrograms per kilogram
mg/Kg = milligrams per kilogram
J = Estimated value-detection was above the instrument minimum detection level, but below the practical quantification limit.
E = Estimated value-detection exceeded the upper calibration range of the instrument.

TABLE 6

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data[1]					
			Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	Diesel Range Organics (mg/L)
CNC26-B01	26GFB010811	8-11	ND	ND	ND	ND	ND	8.00
CNC26-B02	26GFB020407	4-7	ND	ND	ND	ND	18	118
CNC26-B03	26GFB030407	4-7	ND	ND	ND	17	50	137
CNC26-B04	26GFB040609	6-9	ND	ND	ND	ND	19	2.40
CNC26-B05	26GFB050407	4-7	ND	ND	ND	ND	ND	21
CNC26-B06	26GFB060407	4-7	ND	ND	ND	ND	19	ND
CNC26-B07	26GFB070609	6-9	ND	ND	ND	252	262	125
CNC26-B08	26GFB080609	6-9	ND	ND	ND	ND	119	ND
CNC26-B09	26GFB090406	4-6	ND	ND	ND	ND	ND	115
CNC26-B10	26GFB100407	4-7	ND	ND	ND	ND	61	58
CNC26-B11	26GFB110609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B12	26GFB120609	6-9	ND	ND	92	123	418	74
CNC26-B13	26GFB130609	6-9	ND	ND	ND	33	307	ND
CNC26-B14	26GFB140609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B15	26GFB150609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B16	26GFB160609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B17	26GFB170609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B18	26GFB180609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B19	26GFB190912	9-12	ND	ND	ND	ND	ND	ND
CNC26-B20	26GFB200609	6-9	ND	ND	ND	ND	ND	ND
CNC26-B21	26GFB210609	6-9	ND	ND	ND	ND	41.6	12.0
CNC26-B22	26GFB220609	6-9	ND	ND	ND	ND	ND	2.00
CNC26-B23	26GFB230609	6-9	ND	ND	ND	ND	39.7	5.00
CNC26-B24	26GFB240608	6-8	ND	ND	11.9	41.3	269	290E
CNC26-B25	26GFB250712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B26	26GFB260712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B27	26GFB270607	6-7	ND	ND	ND	ND	ND	ND
CNC26-B28	26GFB280608	6-8	ND	ND	ND	ND	38.2	3.99
CNC26-B29	26GFB290708	7-8	ND	ND	ND	ND	90.0	11.7
CNC26-B30	26GFB300712	7-12	ND	ND	17.7	72.7	248	42.5
CNC26-B31	26GFB310708	7-8	ND	ND	ND	18.9	79.4	14.8
CNC26-B32	26GFB320708	7-8	ND	ND	ND	31.1**	198**	62.9
CNC26-B33	26GFB330609	6-9	ND	ND	76.1	577.6**	1010**	43.1
CNC26-B34	26GFB340712	7-12	ND	ND	ND	ND	29.2	1.0J
CNC26-B35	26GFB350609	6-9	ND	ND	ND	7.19J	66.8	ND
CNC26-B36	26GFB360708	7-8	ND	ND	30.3	385	454E	32.7
CNC26-B37	26GFB370708	7-8	ND	ND	15.4J	169	411E	63.8
CNC26-B38	26GFB380708	7-8	ND	ND	31.7	163.13J	425E	32.5
CNC26-B39	26GFB390708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B40	26GFB400712	7-12	ND	ND	ND	ND	ND	ND
CNC26-B41	26GFB410608	6-8	ND	ND	ND	ND	ND	ND
CNC26-B42	26GFB420608	6-8	ND	ND	ND	ND	ND	ND
CNC26-B43	26GFB430712	7-12	ND	ND	9.85J	75.2	225	18.5
CNC26-B44	26GFB440812	8-12	ND	ND	36.0	123	332	92.6
CNC26-B45	26GFB450712	7-12	ND	ND	32.7	208	359	13

TABLE 6 - Continued

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 26, BUILDING 6
ZONE E, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Laboratory Screening Data[1]					
			Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	Diesel Range Organics (mg/L)
CNC26-B46	26GFB460612	6-12	ND	ND	39.2	210	390	140
CNC26-B47	26GFB470712	7-12	ND	ND	20.0	68.6	ND	145
CNC26-B48	26GFB480612	6-12	ND	ND	ND	ND	130	3.24
CNC26-B49	26GFB490508	5-8	ND	ND	ND	ND	ND	ND
CNC26-B50	26GFB500512	5-12	ND	ND	ND	ND	ND	ND
CNC26-B51	26GFB510514	5-14	ND	ND	ND	ND	ND	ND
CNC26-B52	26GFB520512	5-12	ND	ND	ND	ND	ND	ND
CNC26-B53	26GFB530612	6-12	ND	ND	34.3	209.6	346	344E
CNC26-B54	26GFB540508	5-8	ND	ND	9.84J	81.9J	304	43.4
CNC26-B55	26GFB550708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B57	26GFB570508	5-8	ND	ND	ND	ND	ND	ND
CNC26-B58	26GFB580708	7-8	ND	ND	ND	ND	ND	ND
CNC26-B59	26GFB590514	5-14	ND	ND	ND	ND	ND	ND

NOTES:
[1] Laboratory screening data was analyzed using USEPA Method 8020/8015M. Compounds not detected are reported as less than the instrument detection limit.
µg/L = micrograms per liter
mg/L = milligrams per liter
J = Estimated value-detection was above the instrument minimum detection level, but below the practical quantification limit.
E = Estimated value-detection exceeded the upper calibration range of the instrument.

TABLE 7

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
SITE 26, BUILDING 6
ZONE E, 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
CNC26-B01 / 26SLB010405	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B01 / 26SLB010405D	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B03 / 26SLB030304	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	4 [J]
CNC26-B12 / 26SLB120304	28-Jun-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	1000
CNC26-B14 / 26SLB140405	24-Sep-99	< 6	< 6	< 6	< 6	< 400	< 400	< 400	< 400	< 400	< 6
CNC26-B18 / 26SLB180203	24-Jun-99	< 320	< 320	< 320	< 320	700	730	750	650.00	ND	3990.00
CNC26-B22 / 26SLB220304	28-Jun-99	< 5	< 5	< 5	< 5	< 3600	< 3600	< 3600	< 3600	< 3600	3998.00
CNC26-B26 / 26SLB260607	28-Jun-99	< 5	< 5	< 5	< 5	< 360	< 360	< 360	< 360	< 360	22.00
CNC26-B35 / 26SLB350405	23-Sep-99	< 6	< 6	< 6	< 6	< 360	< 360	< 360	< 360	< 360	< 6
CNC26-B36 / 26SLB360405	23-Sep-99	< 6	< 6	< 6	< 6	< 2000	< 2000	< 2000	< 2000	< 2000	33087.00
CNC26-TL [2] / 26TL00101	28-Jun-99	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5
CNC26-TL [2] / 26TL00102	24-Jun-99	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	3 [J]

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] Trip blank

TABLE 8

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E 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)	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)	MTBE (ug/L)
RBSL[1]		5	700	1000	10000	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	40
CNC26M-01 / 26GLM0101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26M-02 / 26GLM0201	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-03 / 26GLM0301	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-04 / 26GLM0401	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-05 / 26GLM0501	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-06 / 26GLM0601	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-07 / 26GLM0701	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-07 / 26GLM0701D	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-08 / 26GLM0801	21-Aug-99	> 5	> 5	> 5	> 5	> 5	< 10	< 10	< 10	< 10	< 10	< 5

All concentrations are in ug/L.

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

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

(3) Trip blank

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

TABLE 8- CONTINUED

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E 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)	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)	MTBE (ug/L)
RBSL[1]		5	700	1000	10000	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	40
CNC26M-09 / 26GLM09D01	23-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-10 / 26GLM10D01	21-Aug-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5
CNC26M-11 / 26GLP1101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26P-12 / 26GLP1201	13-Sep-99	< 5	< 5	< 5	< 5	31	< 10	< 10	< 10	< 10	< 10	< 5
CNC26P-13 / 26GLP1301	13-Sep-99	< 5	< 5	< 5	< 5	53	< 10	< 10	< 10	< 10	< 10	< 5
CNC26X-01 / 26GLX0101	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-02 / 26GLX0201	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-03 / 26GLX0301	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-04 / 26GLX0401	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5

All concentrations are in ug/L.

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

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

(3) Trip blank

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

TABLE 8- CONTINUED

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 26, BUILDING 6
ZONE E 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)	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)	MTBE (ug/L)
RBSL[1]		5	700	1000	10000	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	40
CNC26X-05 / 26GLX0501	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26X-06 / 26GLX0601	22-Sep-99	< 5	< 5	< 5	< 5	< 5	< 11	< 11	< 11	< 11	< 11	< 5
CNC26TL[3] / 26TL00101	23-Aug-99	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5
CNC26TL[3] / 26TL00301	22-Sep-09	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5

NA - Not Analyzed

TABLE 9

FATE AND TRANSPORT INPUT PARAMETERS
SITE26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Parameter	Domenico Dilution/Attenuation Model [1]
Hydraulic Conductivity [m/sec]	2.23E-06
Hydraulic Gradient	0.0144
Porosity [a]	0.48
Estimated Plume Length [ft]	NA
Soil Bulk Density [a] [kg/L]	1.35
Partition Coefficient [L/kg]	chemical specific
Fraction of Organic Carbon in soil [g/g]	7.04E-04
First Order Decay Rate [sec^{-1}]	0
Modeled Plume Length [ft]	NA
Modeled Plume Width [ft]	NA
Source Width [b] [m]	15
Source Thickness [b] [m]	2
Soluble Mass [kg]	Infinite [c]

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

TABLE 10

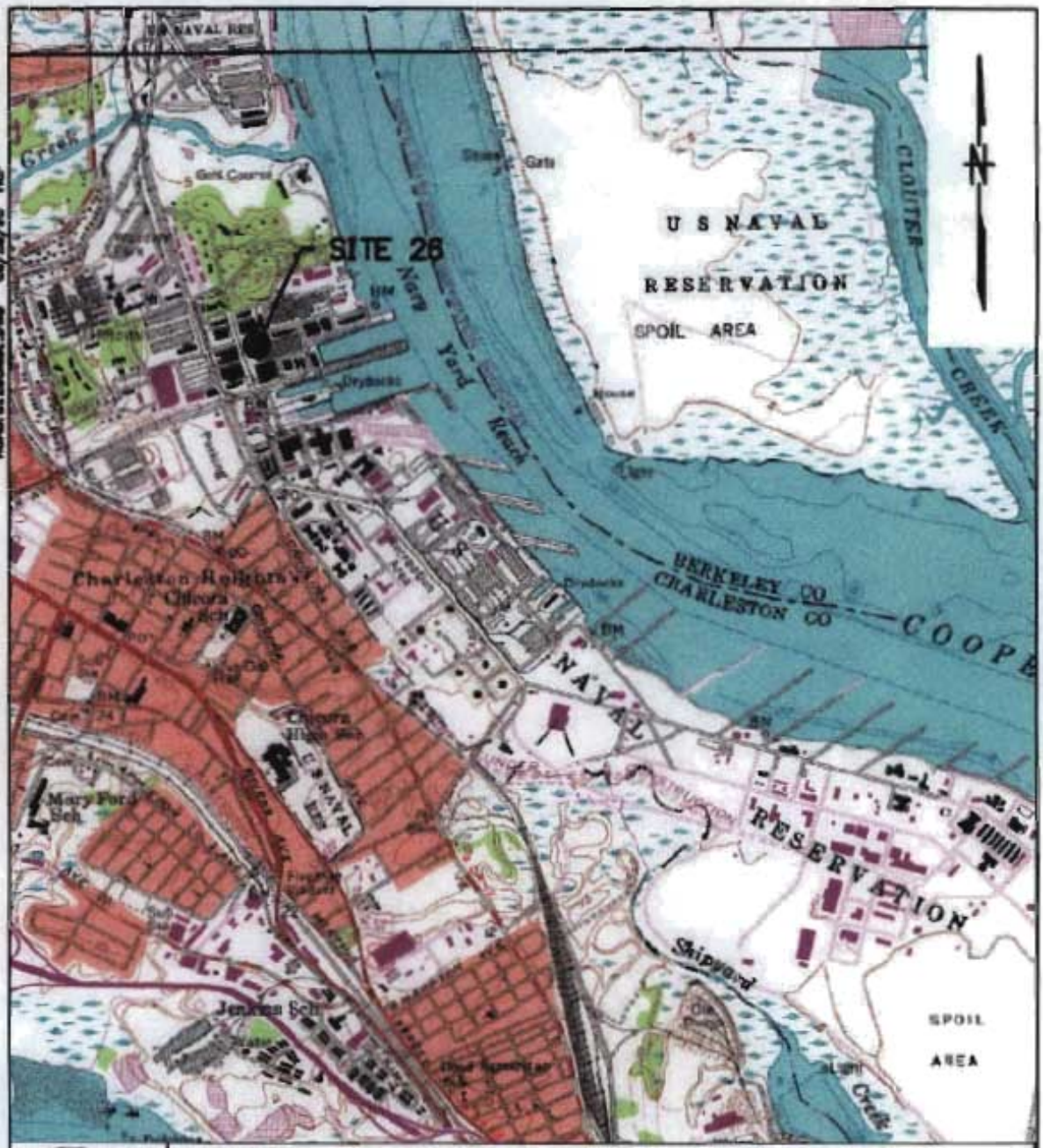
EXPOSURE PATHWAY ASSESSMENT - CURRENT USE
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	No volatilization to enclosed space.	
	Explosion Hazard	No	No explosion hazard.	
Groundwater	Ingestion	No	No water supply well downgradient or residential basements.	
	Dermal contact	No		
	Inhalation	No		
Surface Water	Ingestion	No	Cooper River approximately 600 feet downgradient. No completed pathway.	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No current complete pathway.	
	Dermal contact	No		
	Inhalation	No		

TABLE 11

EXPOSURE PATHWAY ASSESSMENT - FUTURE USE
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Media	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	No volatilization to enclosed space.	
	Explosion Hazard	No	No explosion hazard.	
Groundwater	Ingestion	Yes	Future use of property expected to be industrial or commercial. Underground utility lines are close proximity to the site; therefore, construction worker exposure possible.	
	Dermal contact	Yes		
	Inhalation	Yes		
Surface Water	Ingestion	Yes	Cooper River 600 ft downgradient.	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	Yes	Underground utility lines are in close proximity to the site; therefore, construction worker exposure possible. Inhalation hazard discounted based on low levels of benzene in the soil. Presumed that upon excavating the trench, benzene volatilization from exposed soils will reach equilibrium prior to the construction worker entering the trench.	
	Dermal contact	Yes		
	Inhalation	No		



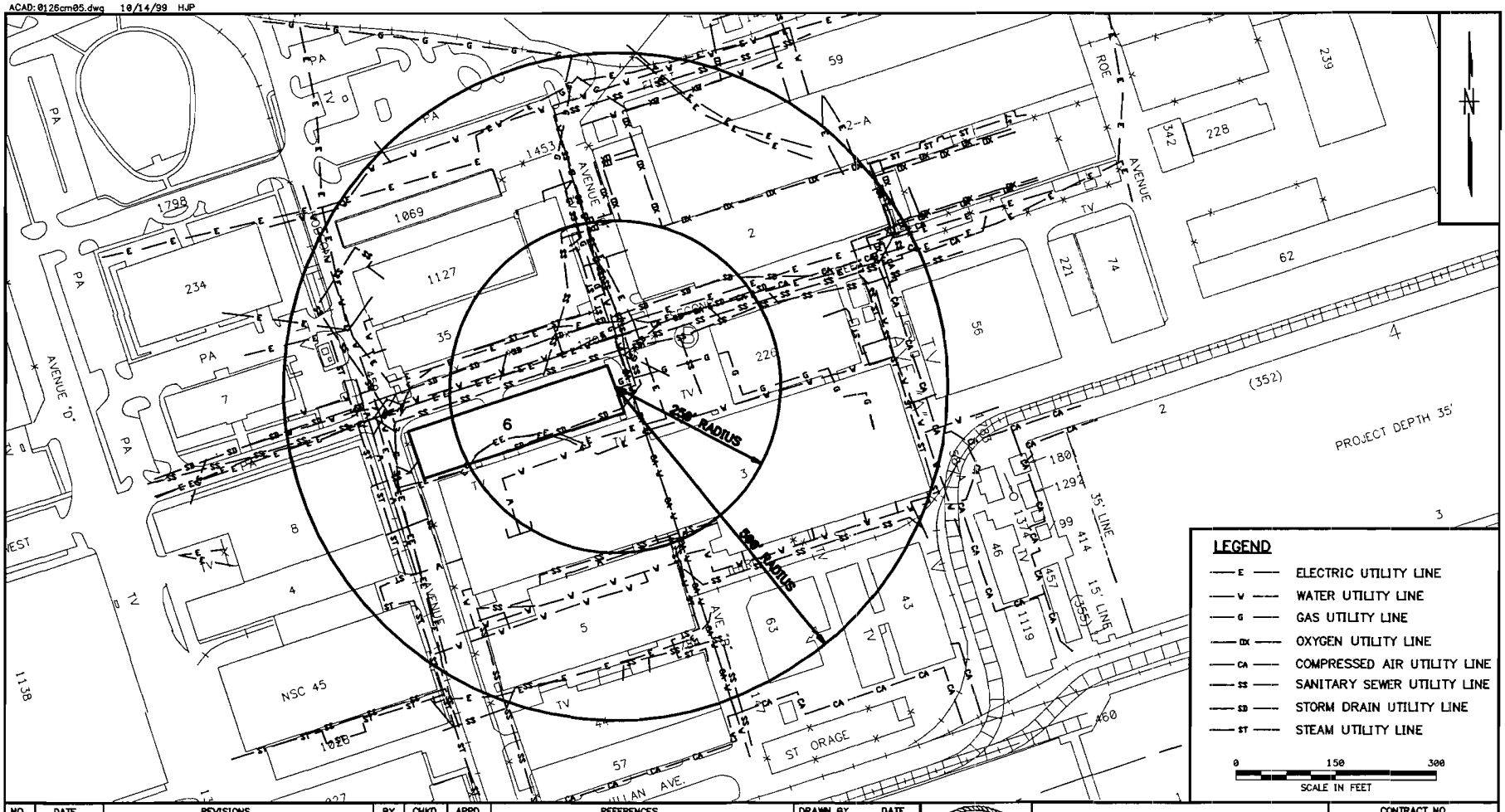
SOURCE: QUADRANGLE MAP SOUTH CAROLINA, REVISED 1979
QUADRANGLE MAP NORTH CHARLESTON REVISED, 1979

0 2000 4000
SCALE IN FEET

DRAWN BY HJP DATE 8/20/99		SITE LOCATION MAP SITE 26, BUILDING 6A & 6B, ZONE E CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO. N0126
CHECKED BY DATE			APPROVED BY DATE
COST/SQ.FT.—AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 REV. 0

FORM CADD NO. SSEV_AV.DWG - REV 0 - 1/28/99

ACAD:0126cm05.dwg 10/14/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

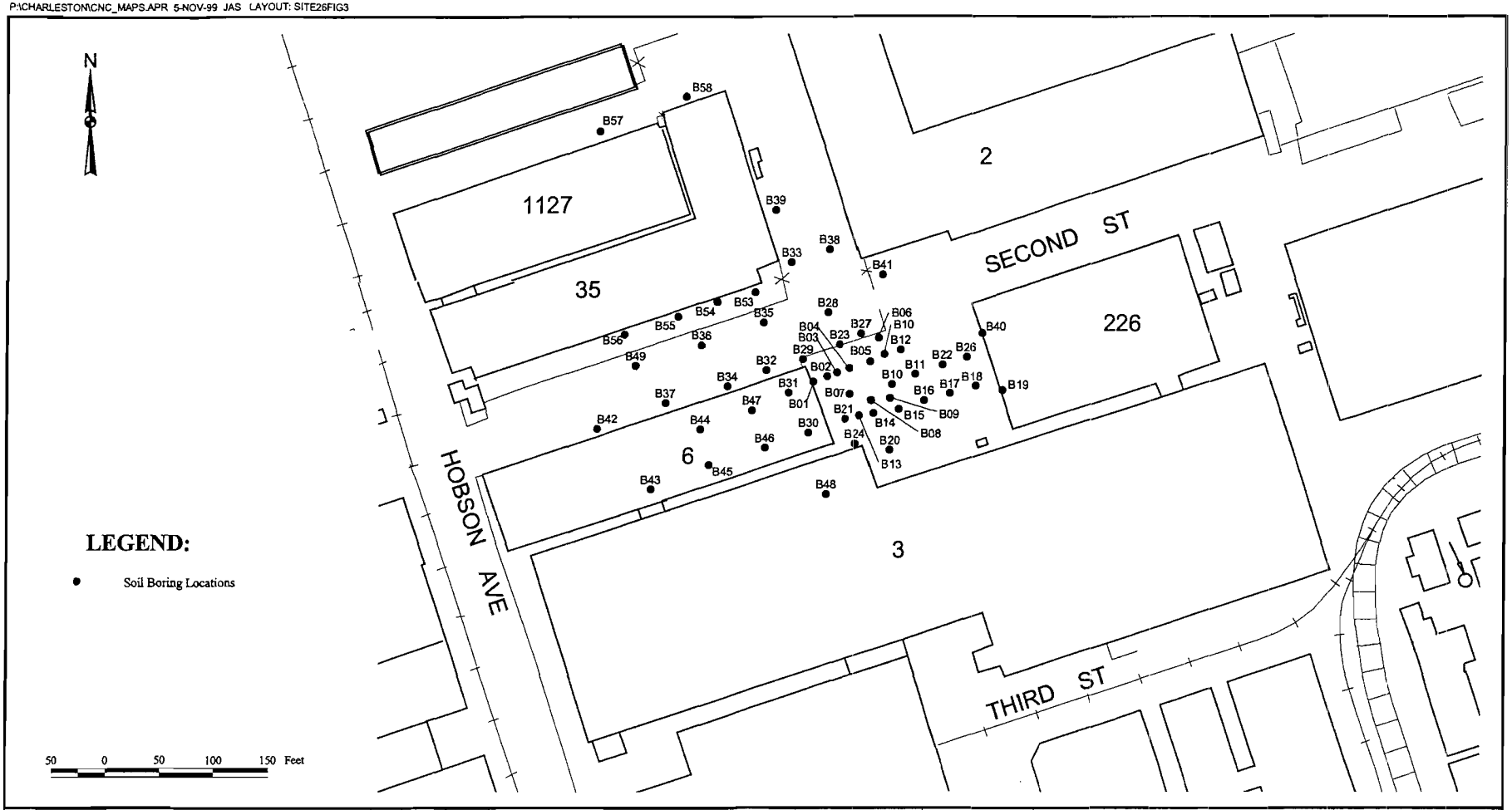
DRAWN BY HJP DATE 10/14/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE VICINITY MAP
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2
REV. 0

FORM CADD NO. SDIV_BHLDWG - REV 0 - 1/20/98

P:\CHARLESTON\CNC_MAPS.APR 5-NOV-99 JAS LAYOUT: SITE26FIG3



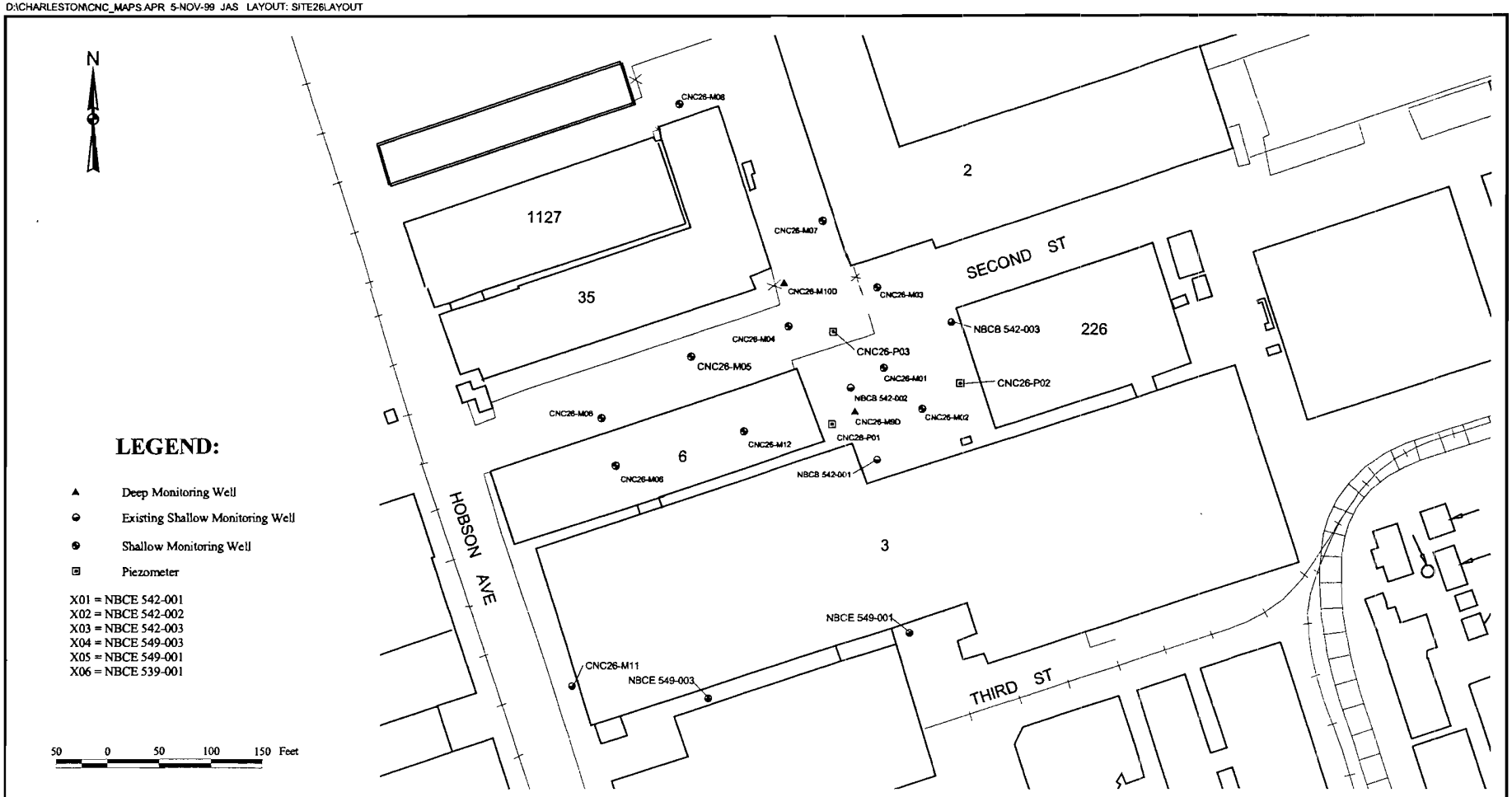
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS	DATE 11-5-99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

SITE MAP SHOWING
FIELD SCREENING SAMPLE LOCATIONS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0128	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3	REV. 0

D:\CHARLESTON\CNC_MAPS.APR 5-NOV-99 JAS LAYOUT: SITE26LAYOUT



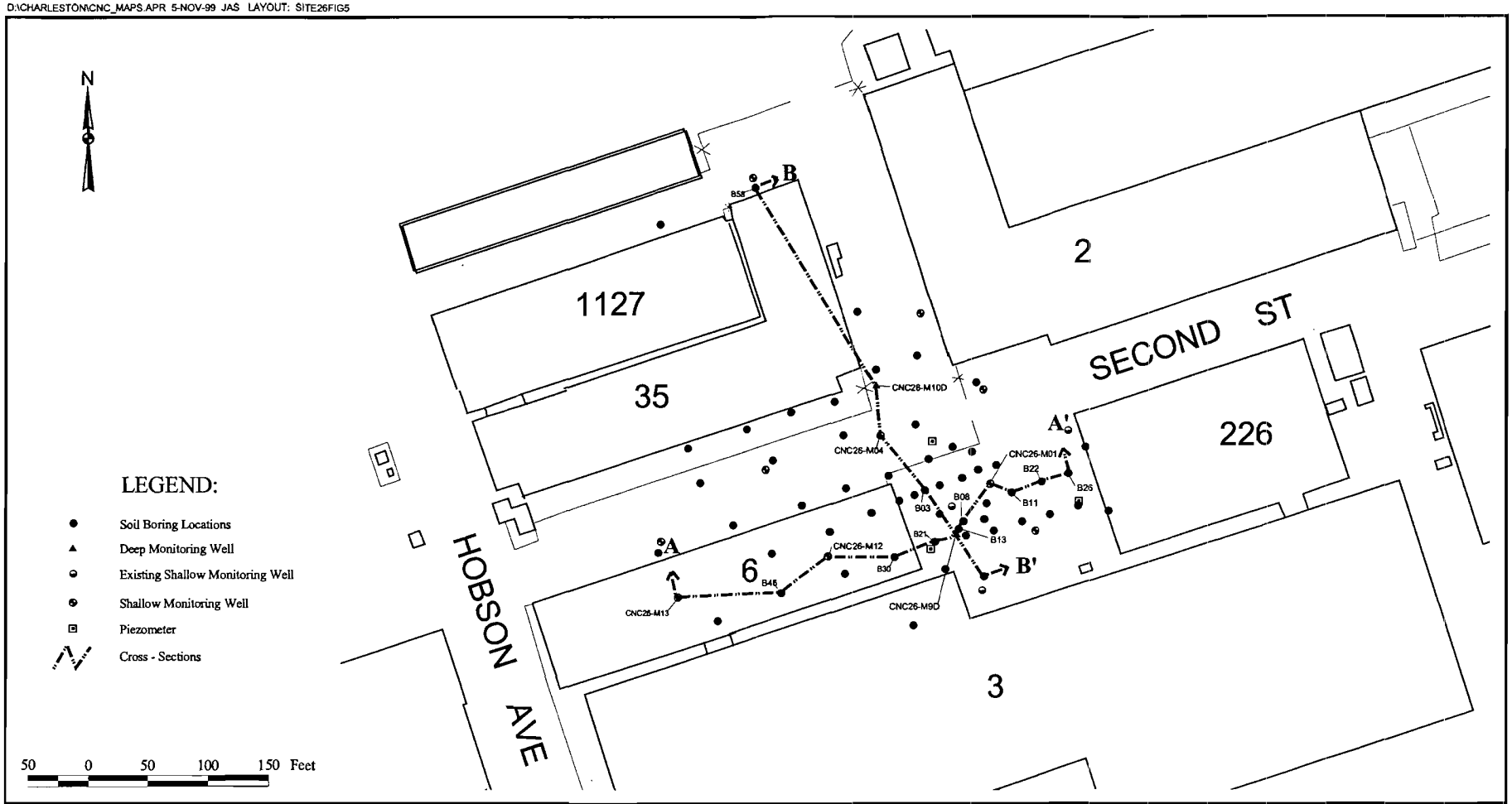
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS	DATE 11-5-1999
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

SITE MAP SHOWING
PERMANENT WELL LOCATIONS
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CARLOINA

CONTRACT NO. 0126	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 4	REV. 0

D:\CHARLESTON\CNC_MAPS.APR 5-NOV-99 JAS LAYOUT: SITE26FIG5



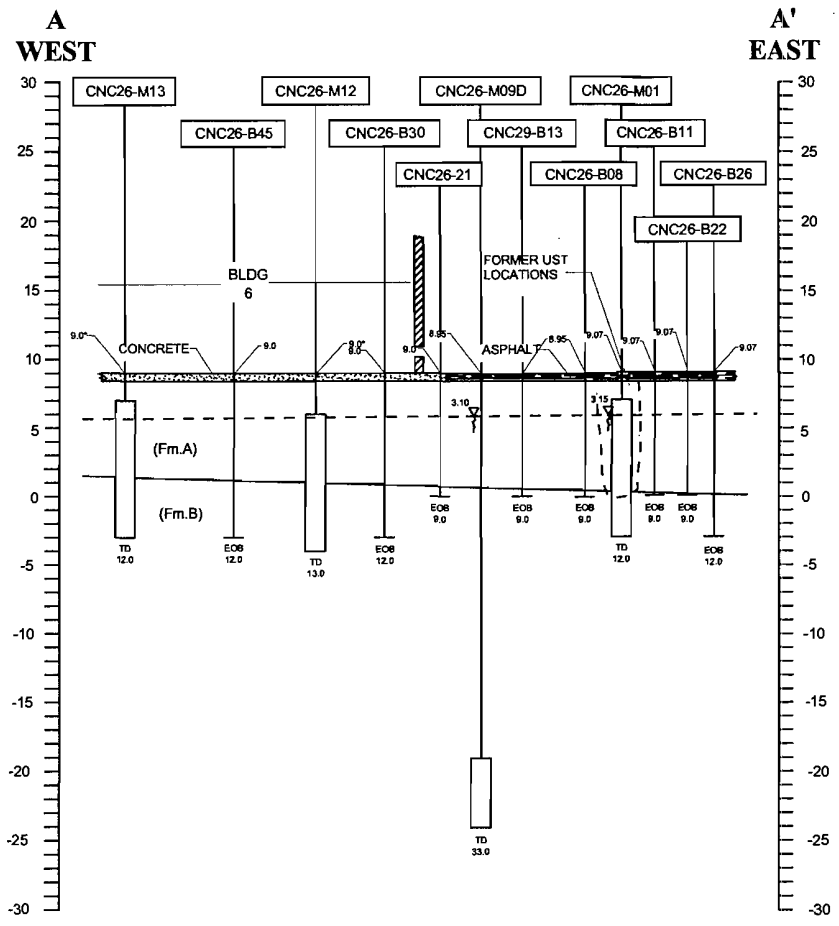
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS	DATE 11-5-99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

SITE MAP SHOWING
LINES OF CROSS-SECTION
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 5	REV. 0

D:\CHARLESTON\CNC_MAPS.APR 9-NOV-99 JAS LAYOUT: SITE26FIG6



LEGEND

SAMPLE LOCATION — CNC26-M13

GROUND SURFACE ELEVATION — 9.0

APPROXIMATE POTENTIOMETRIC SURFACE

TOP OF MONITORED INTERVAL (FT BGS)

BOTTOM OF MONITORED INTERVAL (FT BGS)

TOTAL DEPTH OF BORING (FT BGS) — TD 12.0

NOTES:

FORMATION=(Fm.)=(Fm.A)=TAN TO BROWN SAND, SILTY SAND SANDY CLAY

(Fm.B)=OLIVE,GREY SILTY SAND, SANDY CLAY, CLAY

ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)

* ASSUMED ELEVATION

20 0 20 40
HORIZONTAL SCALE IN FEET

10 0 10 20
VERTICAL SCALE IN FEET

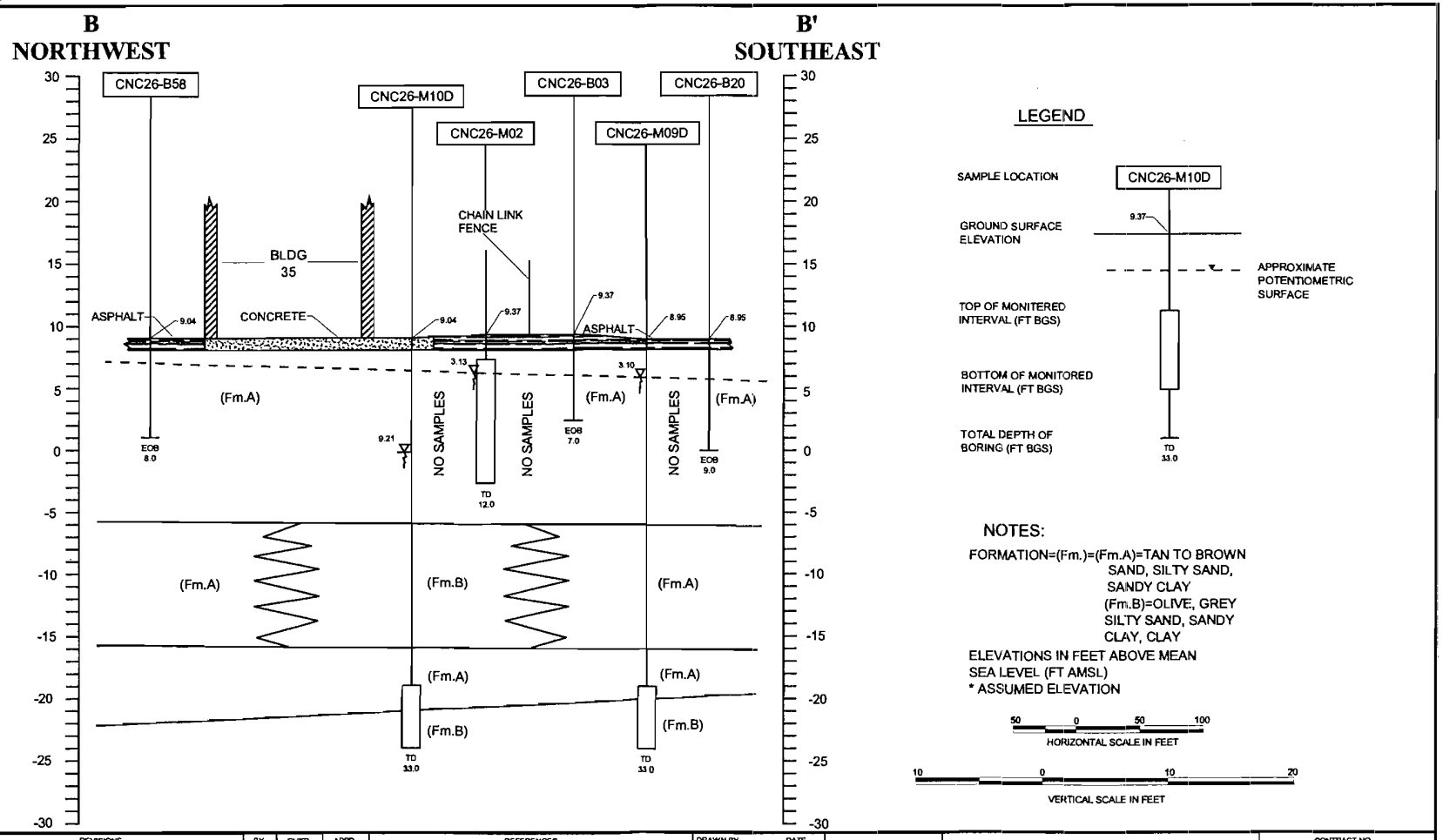
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS — DATE 11-9-99
CHECKED BY — DATE
COST/SCHED-AREA
SCALE AS NOTED

GEOLOGIC CROSS SECTION A - A'
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126
APPROVED BY — DATE
APPROVED BY — DATE
DRAWING NO. FIGURE 6
REV. 0

D:\CHARLESTON\CNC_MAPS.APR 9-NOV-99 JAS LAYOUT: SITE26FIG7



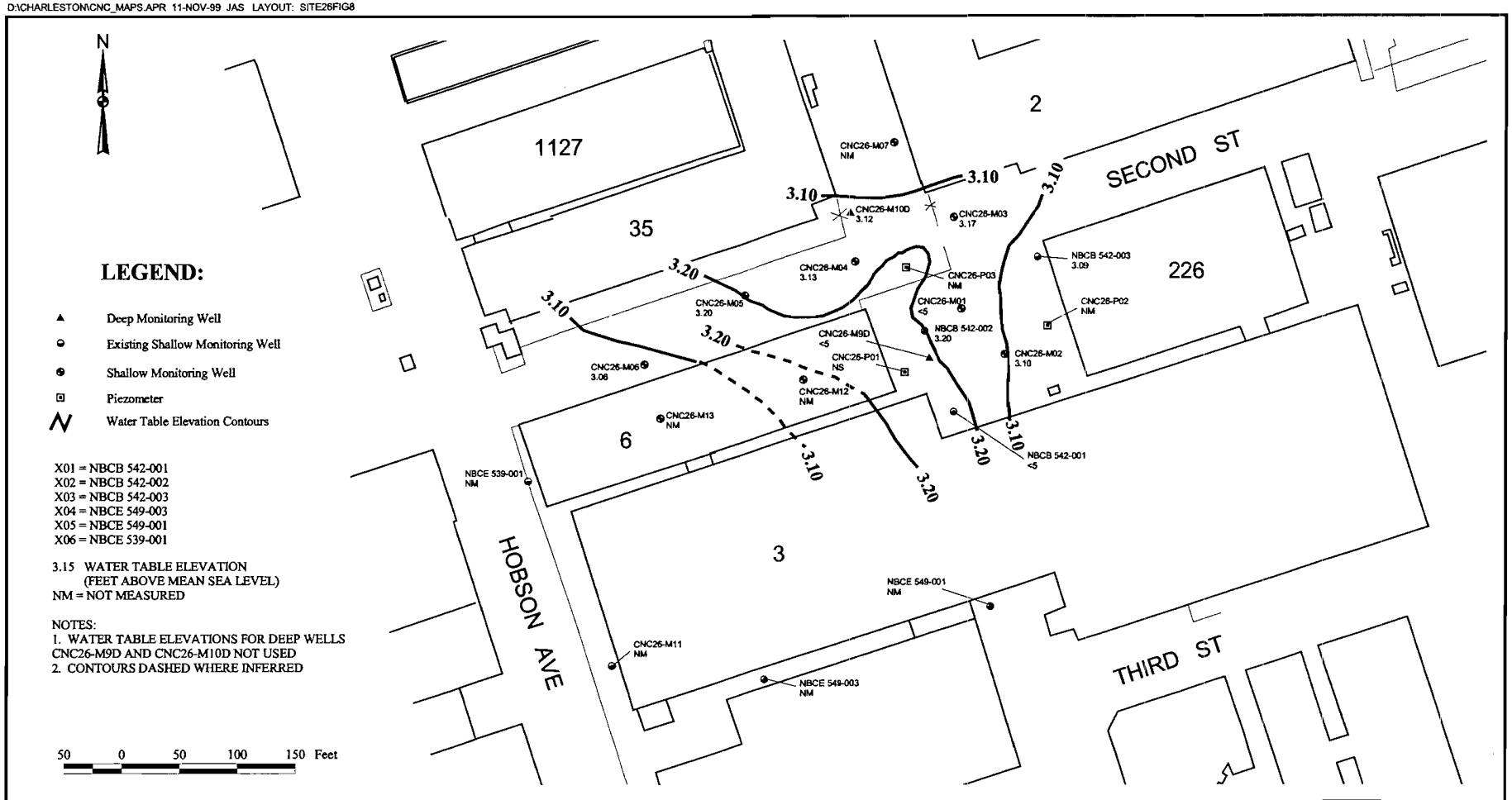
NO	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS	DATE 11-9-99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

GEOLOGIC CROSS SECTION B - B'
SITE 26, BUILDING 35
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 7	REV. 0

D:\CHARLESTON\CNC_MAPS.APR 11-NOV-99 JAS LAYOUT: SITE26FIG8



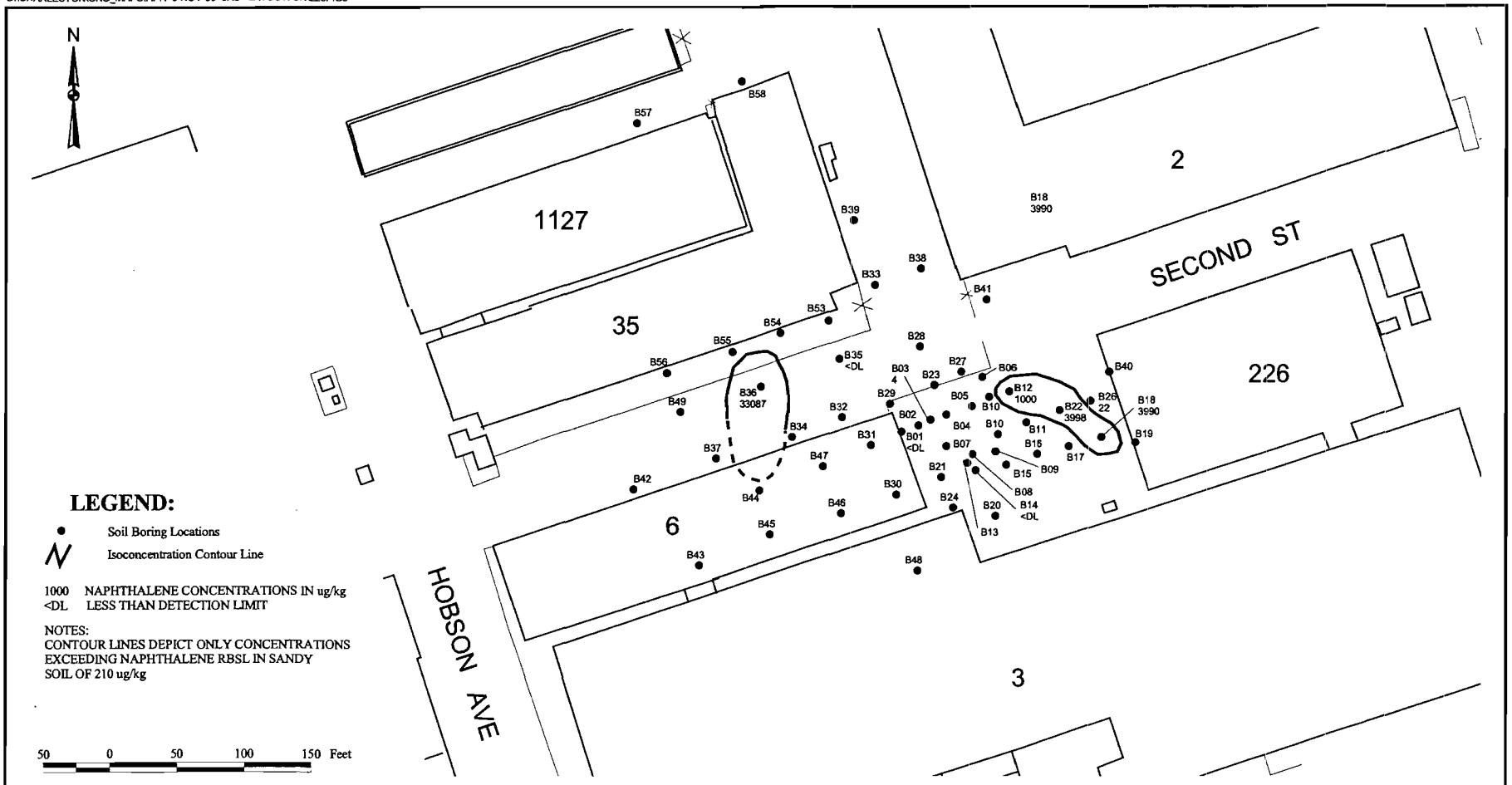
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS DATE 11-8-1999
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

POTENTIOMETRIC SURFACE MAP
(SEPTEMBER 22, 1999)
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 8
REV. 0

D:\CHARLESTON\CNC_MAPS.APR 9-NOV-99 JAS LAYOUT: SITE26FIG9



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS	DATE 11-9-99
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

SOIL NAPHTHALENE CONCENTRATION MAP
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126	
APPROVED BY	DATE
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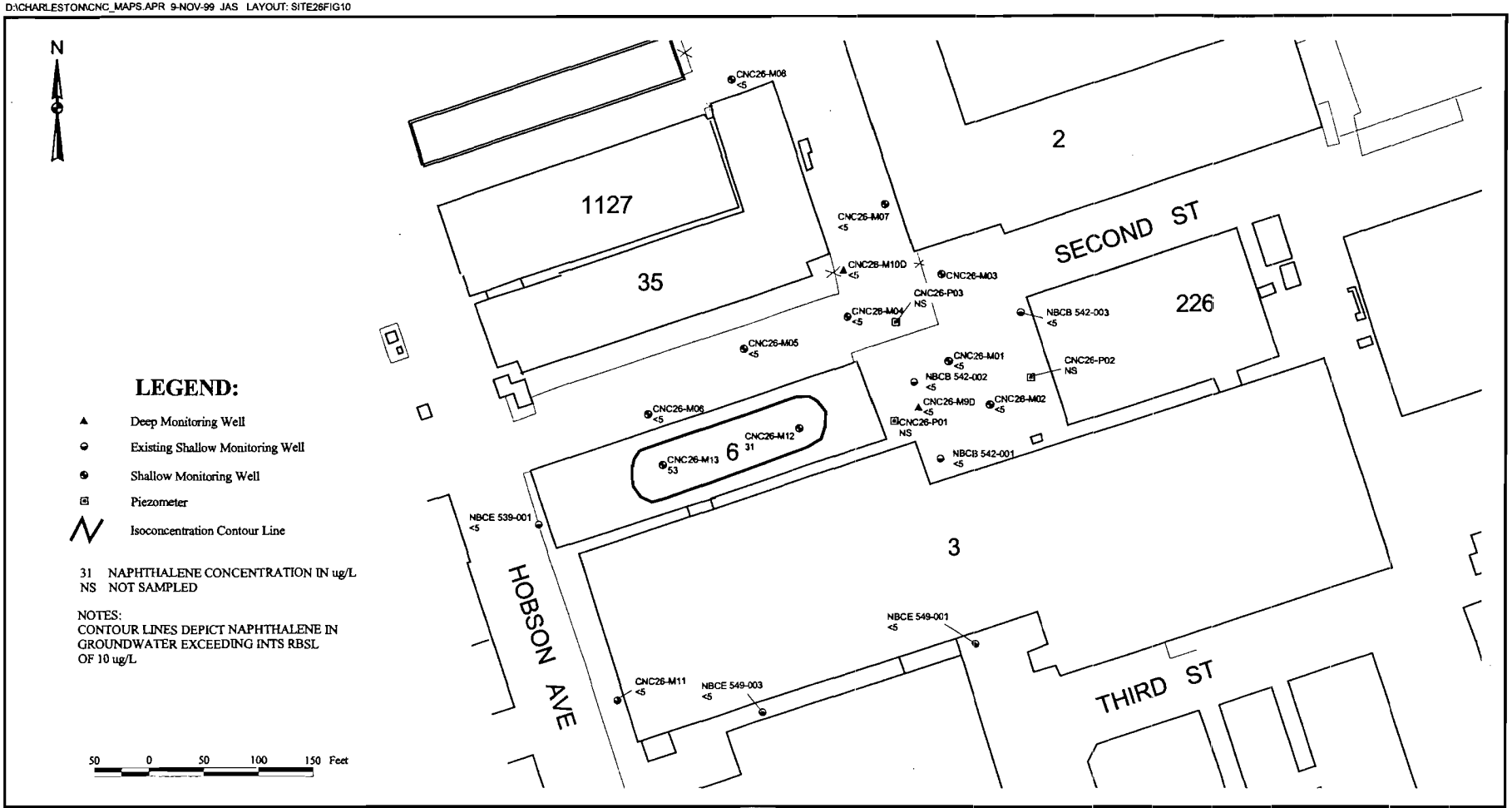
DRAWING NO. FIGURE 9	REV. 0

D:\CHARLESTON\CNC_MAPS.APR 9-NOV-99 JAS LAYOUT: SITE26FIG10



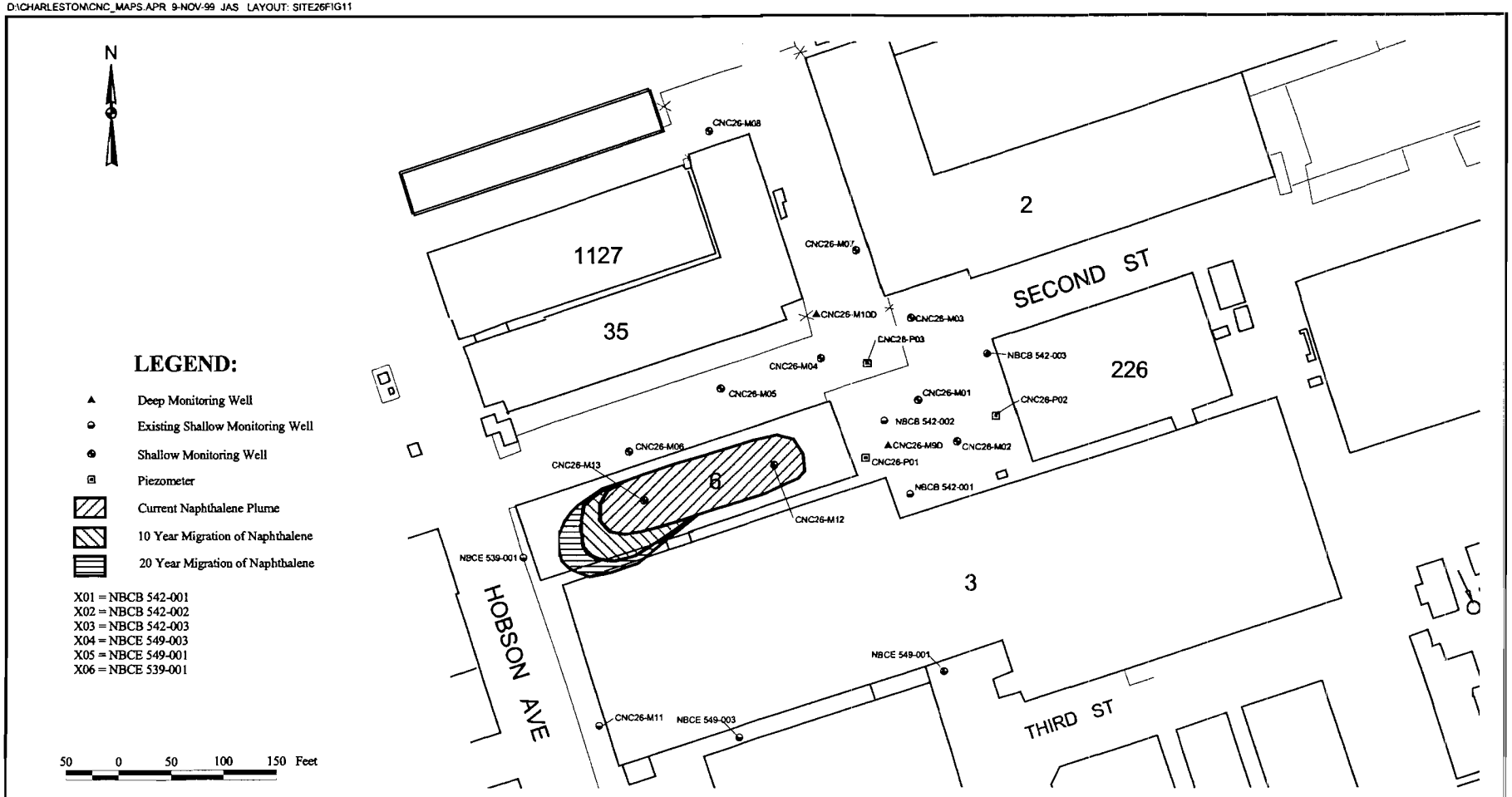
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS DATE 11-9-99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

GROUNDWATER NAPHTHALENE CONCENTRATION MAP
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 10
REV. 0

D:\CHARLESTON\CNC_MAPS.APR 9-NOV-99 JAS LAYOUT: SITE26FIG11



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY JAS DATE 11-9-99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

PREDICTED 10 AND 20 YEAR MIGRATION
SITE 26, BUILDING 6
ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0126
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 11
REV. 0

APPENDIX A

UNDERGROUND STORAGE TANK ASSESSMENT REPORT
UST 6A AND UST 6B

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201-1708

Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman
William M. Hull, Jr., MD, Vice Chairman
Roger Leaks, Jr., Secretary
Richard E. Jabbour, DDS
Cyndi C. Mosteller
Brian K. Smith
Rodney L. Grandy

Promoting Health, Protecting the Environment

Mr. Gabriel L. Magwood
Southern Division NFEC
P.O. Box 190010
2155 Eagle Drive
North Charleston, South Carolina 29419-9010

Re: Assessment Report dated September 30, 1996
Charleston Naval Base Building # 6 UST 6A/6B (GWPD 17626) (Zone E)
Charleston County

Date: November 12, 1996

Dear Mr. Magwood:

The author has completed technical review of the referenced document. As submitted, the report provides analytical results of environmental sampling conducted to determine if releases have occurred from operation of the referenced systems. The results presented indicate elevated levels of polynuclear aromatic hydrocarbons (PAH) and BTEX compounds were detected in areas of the tank pit and piping runs. These results appear to necessitate additional endeavors for remedial actions (soils removal) and contamination characterization (assessment activities, including groundwater investigations), as appropriate. In this regard, assessment/corrective action activities provided in the Tank Management Plan (dated October 18, 1996) should be implemented in an appropriate and timely manner. Please be reminded that groundwater sampling (if necessary) will require construction of sampling points and will need to be submitted for prior review and approval, as appropriate.

Should you have any questions, please contact me at (803) 734-5328.

Sincerely,

Paul L. Bristol, Hydrogeologist
Groundwater Assessment and Development Section
Bureau of Water

cc: Trident District EQC

Zone E

UST ASSESSMENT REPORT
UST 6A and 6B
NAVAL BASE CHARLESTON
CHARLESTON SC

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON SC

Prepared by:

SUPERVISOR OF SHIPBUILDING, CONVERSION
AND REPAIR, USN, PORTSMOUTH DETACHMENT
ENVIROMENTAL CHARLESTON, SC
1899 NORTH HOBSON AVE.
NORTH CHARLESTON SC 29405-2106

September 3, 1996

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. #: 12094 Registered, not regulated

Facility Name: Charleston Naval Base Complex. CNSY Bldg 6

Street Address: South Hobson Avenue

City: North Charleston, 29405-2413 County: Charleston

III CLOSURE INFORMATION

Closure Started: 24 April 1996 Closure Completed: 15 May 1996

Number of USTs Closed: 2

N/A
Consultant

SPORTENVDETCHASN
UST Removal Contractor

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

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

John T Amey
Name (Type or Print)

Signature

V. UST INFORMATION

		Tank 1 6A	Tank 2 6B	Tank 3	Tank 4	Tank 5	Tank 6
A.	Product	Fuel oil	Fuel oil				
B.	Capacity	2500 gal	2500 gal				
C.	Age	1967	1967				
D.	Construction Material	Steel	Steel				
E.	Month/Year of Last Use	Unknown	Unknown				
F.	Depth (ft.) To Base of Tank	7	7				
G.	Spill Prevention Equipment Y/N	N	N				
H.	Overfill Prevention Equipment Y/N	N	N				
I.	Method of Closure Removed/Filled	R	R				
J.	Visible Corrosion or Pitting Y/N	N	N				
K.	Visible Holes Y/N	Y	Y				

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

UST 6A & 6B were removed from the ground, drained, and cleaned. They were then cut-up and recycled as scrap (see Attachment III). Asphalt and concrete removed during the excavation were disposed of as construction debris.

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

Residual waste oil was pumped into 55 gallon drums and disposed of by Chem-Met Services, Inc; 1855 Allen Road; Wyandotte, MI 48192. (See Attachment III, manifest number 13105, paragraph 11b.)

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

Several holes of 1/8" or less diameter were found in the upper portion of tanks 6A and 6B.. The holes were not discernable until the tanks were cut open for cleaning and light was observed penetrating them from inside.

VI. PIPING INFORMATION

	Tank 1 6A	Tank 2 6B	Tank 3	Tank 4	Tank 5	Tank 6
A. Construction Material.....	Steel	Steel				
B. Distance from UST to Dispenser...(See note)....	N/A	N/A				
C. Number of Dispensers.....(See note).....	N/A	N/A				
D. Type of System P/S.....	S	S				
E. Was Piping Removed from the Ground? Y/N....	Y	Y				
F. Visible Corrosion or Pitting Y/N.....	Y	Y				
G. Visible Holes Y/N.....	N	N				
H. Age.....	1967	1967				

Note: UST 6A & 6B supplied fuel oil to the forge shop and Facility 226.

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

Although no holes were found in the pipe runs, they were heavily corroded throughout. Also, portions of pipe run excavation possessed a strong petrolium odor. See Map 3.

VII. BRIEF SITE DESCRIPTION AND HISTORY

Building 6, the Charleston Naval Shipyard's forge shop, was built in 1906 and expanded in 1967. Building 6 is situated inside what was the Controlled Industrial Area of the shipyard. USTs 6A and 6B were 2500 gallon, number two fuel oil tanks which served Building 6 and Facility 226. The tanks were located under a concrete cap in the middle of the asphalt paved parking lot/lay-down area northeast of Building 6.

Tanks 6A and 6B were connected by a 6" spool piece at their bottoms. One set of piping (supply, return, and vent) was routed from the north side of the tanks to Building 6. The piping ran through a pipe vault where it cross-connected with supply and return piping connected to AST 00219 on the west end of Building 226. There was another run of pipe from the south end of the tanks to AST 00219. The reason for the double cross connects is not known. The asphalt covering the pipe runs was patched along its entirety.

VIII. SITE CONDITIONS

		Yes	No	Unk
A.	Were any petroleum-stained or contaminated soils found in the UST excavation, soil borings, trenches, or monitoring wells? If yes, indicate depth and location on the site map.	X		
B.	Were any petroleum odors detected in the excavation, soil borings, trenches, or monitoring wells? If yes, indicate location on site map and describe the odor (strong, mild, etc.)	X		
C.	Was water present in the UST excavation, soil borings, or trenches? If yes, how far below land surface (indicate location and depth)? Less than one inch deep in center of 7' deep excavation.	X		
D.	Did contaminated soils remain stockpiled on site after closure? If yes, indicate the stockpile location on the site map. Name of DHEC representative authorizing soil removal: See Note 1.	X		
E.	Was a petroleum sheen or free product detected on any excavation or boring waters? If yes, indicate location and thickness.		X	

Note 1: The contaminated soil is located at Bldg 6. Per conversation with DHEC, Mr. Tim Mettlen, and SouthDiv, Mr. Gabriel Magwood, the entire naval complex is considered the site.

IX. SAMPLE INFORMATION

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

Sample #	Location	Sample Type (Soil/Water)	Depth*	Date/Time of Collection	Collected By	OVA#
UST 6-1.	Southwest corner of tank pit.	Soil	7'	24 April 96 1400	R. Atkins	Not taken
UST 6-2.	South end, 6B center of tank pit.	Soil	7'	7 May 96 1000	R. Atkins	Not taken
UST 6-2D.	South end, 6B center of tank pit.	Soil	7'	7 May 96 1000	R. Atkins	Not taken
UST 6-3.	Between the tanks in bottom of pit.	Soil	7'	7 May 96 1015	R. Atkins	Not taken
UST 6-4.	North end, 6A center of tank pit.	Soil	7'	7 May 96 1015	R. Atkins	Not taken
UST 6-6.	East end of trough	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-7.	1st turn from east end of trough	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-8.	Mechanical joint in trough	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-9.	Mechanical joint in trough	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-10.	Mechanical joint turn into tank	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-11.	20ft. Mid-ways in trough	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-12.	Mechanical joint	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-13.	Mechanical joint	Soil	3'	15 May 96 1300	R. Atkins	Not taken
UST 6-14.	Mechanical joint	Soil	3'	15 May 96 1300	R. Atkins	Not taken

* = Depth Below the Surrounding Land Surface

X. SAMPLING METHODOLOGY

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

After the removal of USTs 6A and 6B and their associated piping, soil samples were taken. The samples were extracted from the bottom of the UST and the pipe-run excavations from native soils in the locations indicated on Site Maps 2 and 3. 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	UST 6-1	=	SPORT - 0015-2	UST Pit
Soil Sample	UST 6-2	=	SPORT - 0026-1	
Soil Sample	UST 6-2D	=	SPORT - 0026-2	
Soil Sample	UST 6-3	=	SPORT - 0026-3	
Soil Sample	UST 6-4	=	SPORT - 0026-4	
Soil Sample	UST 6-6	=	SPORT - 0038-1	Piping
Soil Sample	UST 6-7	=	SPORT - 0038-2	
Soil Sample	UST 6-8	=	SPORT - 0038-3	
Soil Sample	UST 6-9	=	SPORT - 0038-4	
Soil Sample	UST 6-10	=	SPORT - 0038-5	
Soil Sample	UST 6-11	=	SPORT - 0038-6	
Soil Sample	UST 6-12	=	SPORT - 0038-7	
Soil Sample	UST 6-13	=	SPORT - 0038-8	
Soil Sample	UST 6-14	=	SPORT - 0038-9	

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

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

XI. RECEPTORS

		Yes	No
A.	Are there any lakes, ponds, streams, or wetlands located within 1000 feet of the UST system? [*Cooper River, 620'] If yes, indicate type of receptor, distance, and direction on site map.	X*	
B.	Are there any public, private, or irrigation water supply wells within 1000 feet of the UST system? If yes, indicate type of well, distance, and direction on site map.		X
C.	Are there any underground structures (e.g., basements) located within 100 feet of the UST system? If yes, indicate the type of structure, distance, and direction on site map.		X
D.	Are there any underground utilities (e.g., telephone, electricity, gas, water, sewer, storm drain) located within 100 feet of the UST system that could potentially come in contact with the contamination? [*Sewer & storm drain] If yes, indicate the type of utility, distance, and direction on the site map.	X*	
E.	Has contaminated soil been identified at a depth of less than 3 feet below land surface in an area that is not capped by asphalt or concrete? If yes, indicate the area of contaminated soil on the site map.		X

Attachment I

SITE MAP

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

Site Maps 1, 2, and 3
Photographs

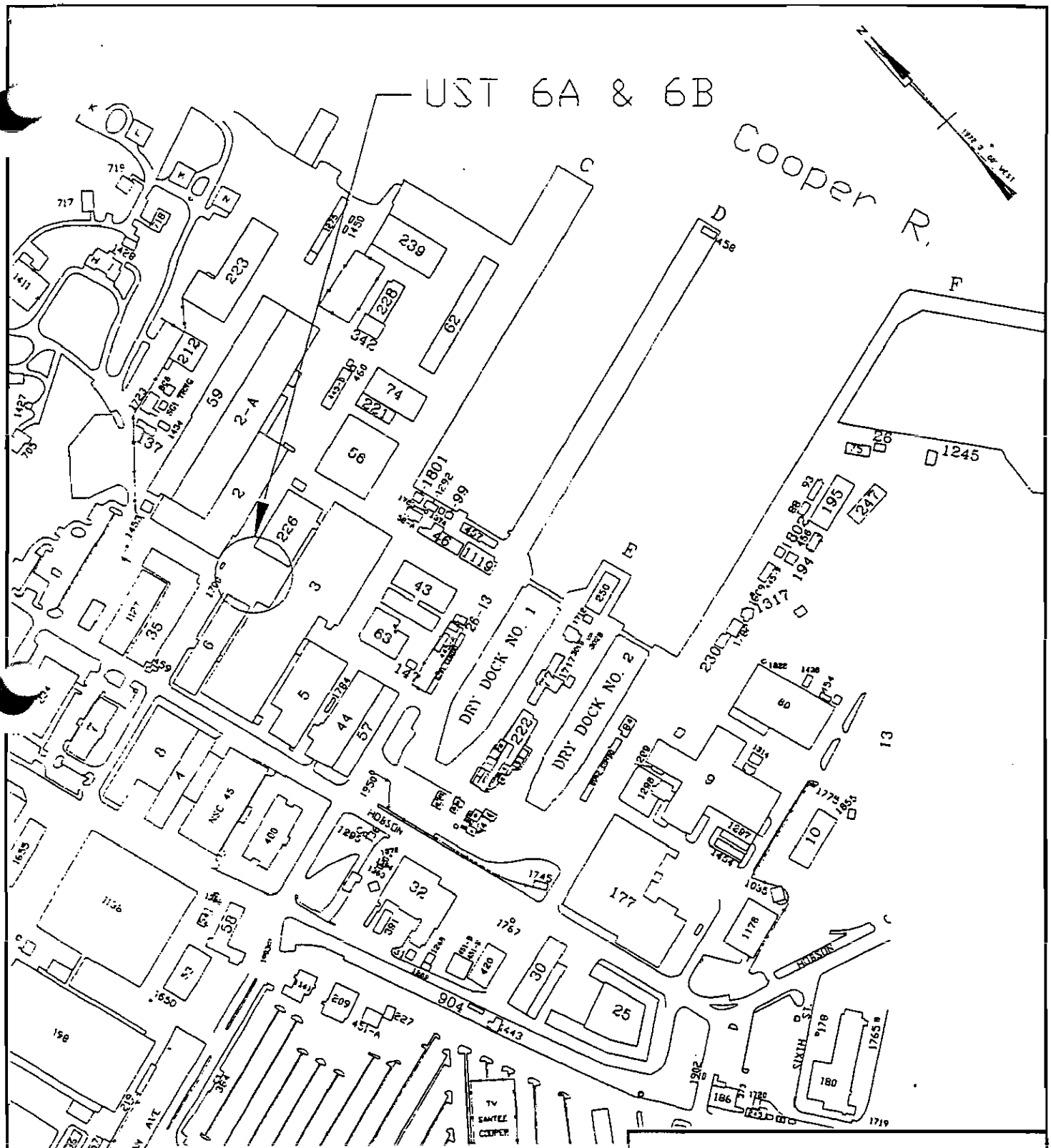


Figure: Site Map 1
UST 6A & 6B
Charleston Naval Base
Charleston, SC

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

DWG DATE: 26 June 96

DWG NAME: CNS_6_1

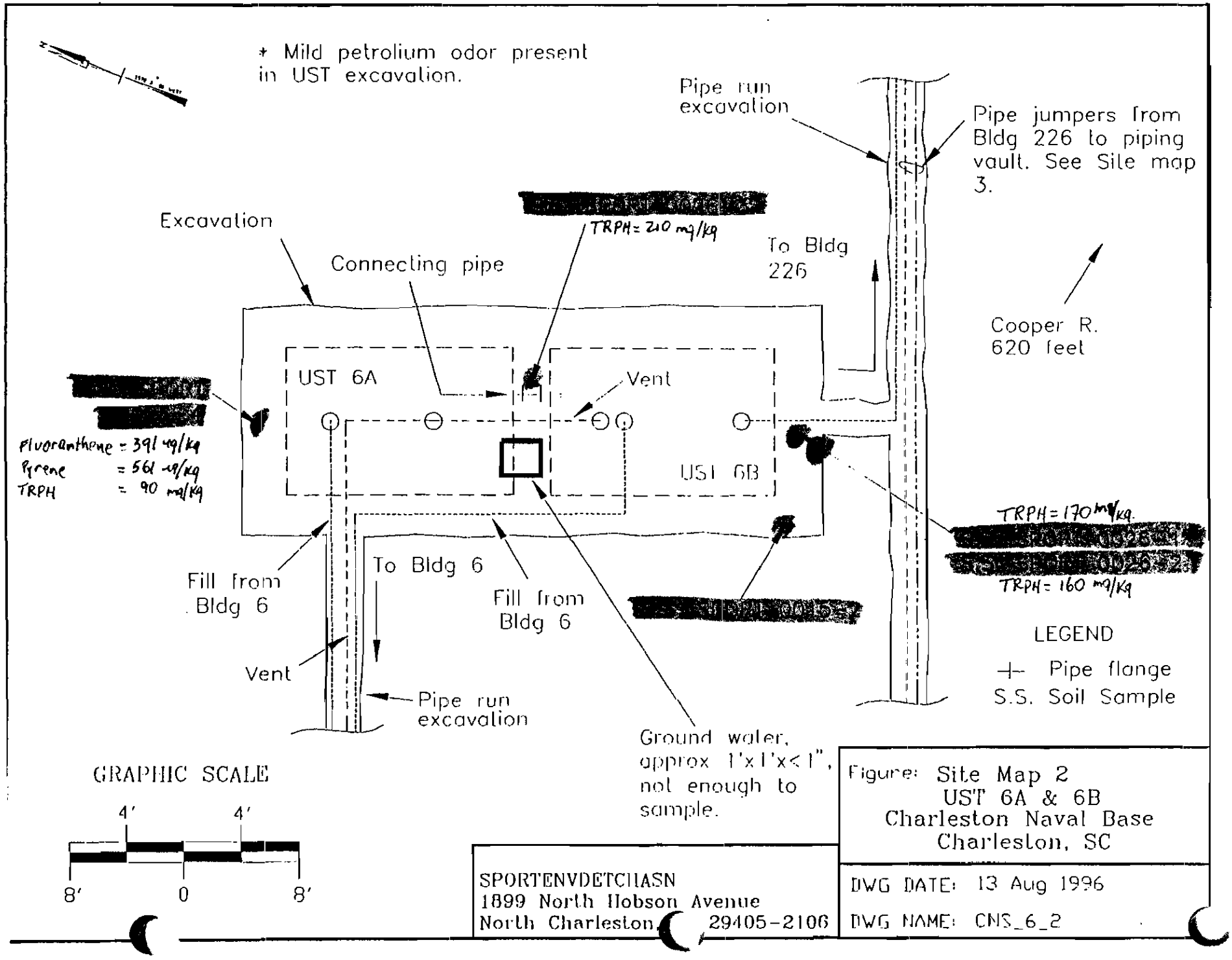


Figure: Site Map 2
UST 6A & 6B
Charleston Naval Base
Charleston, SC

SPORTENVDETCHASN
1899 North Hobson Avenue
North Charleston, 29405-2106

DWG DATE: 13 Aug 1996

DWG NAME: CNS_6_2

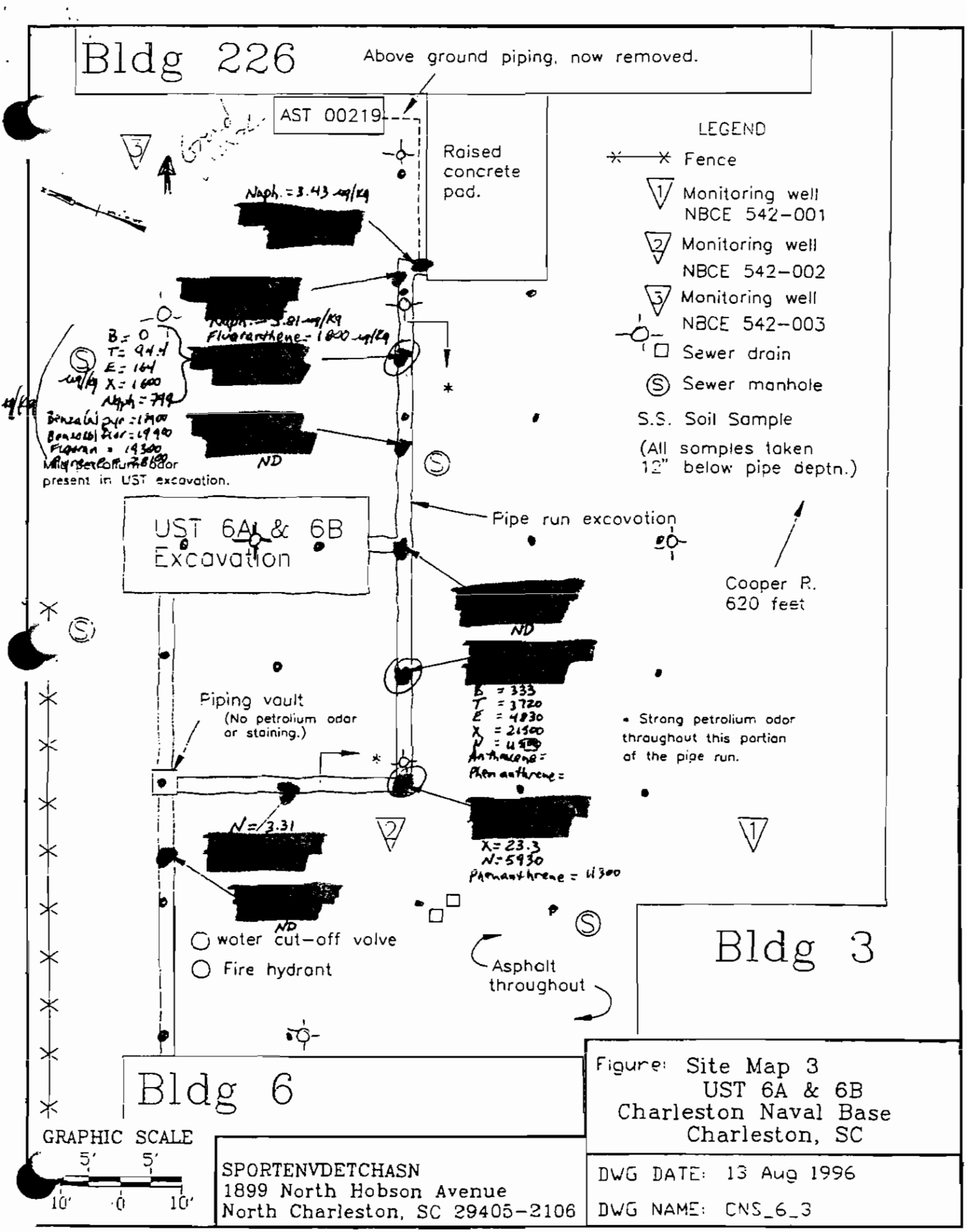
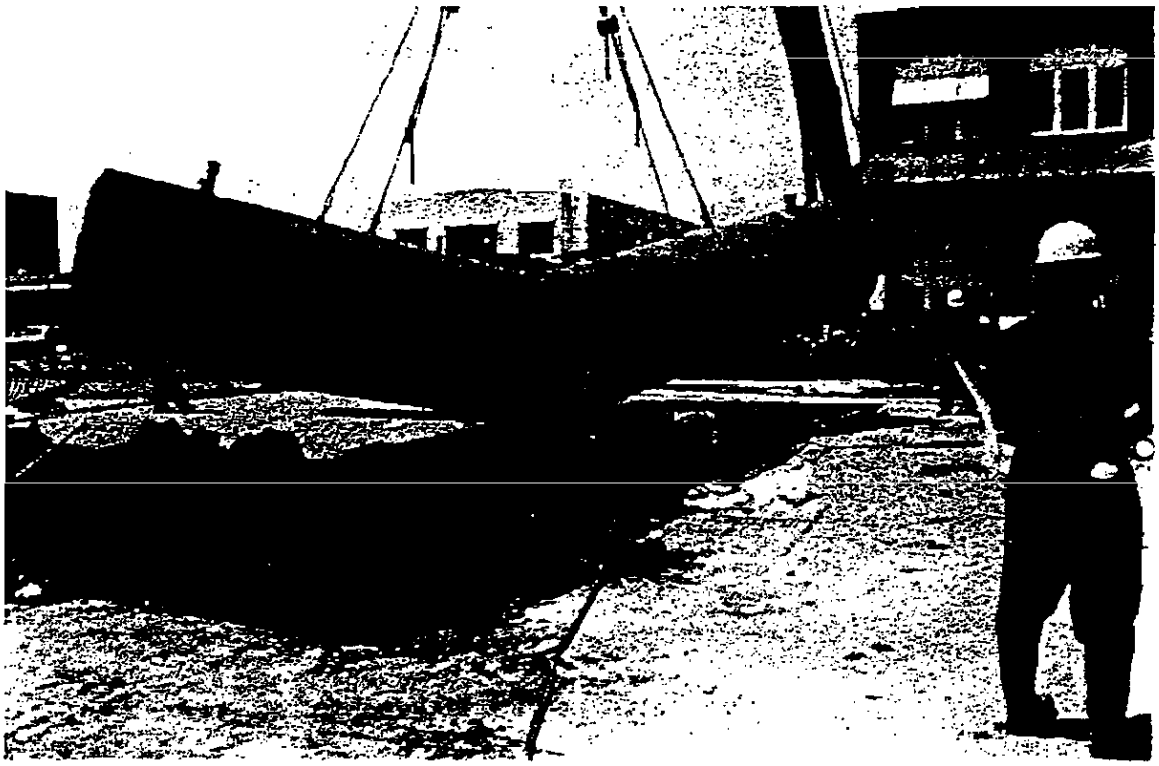


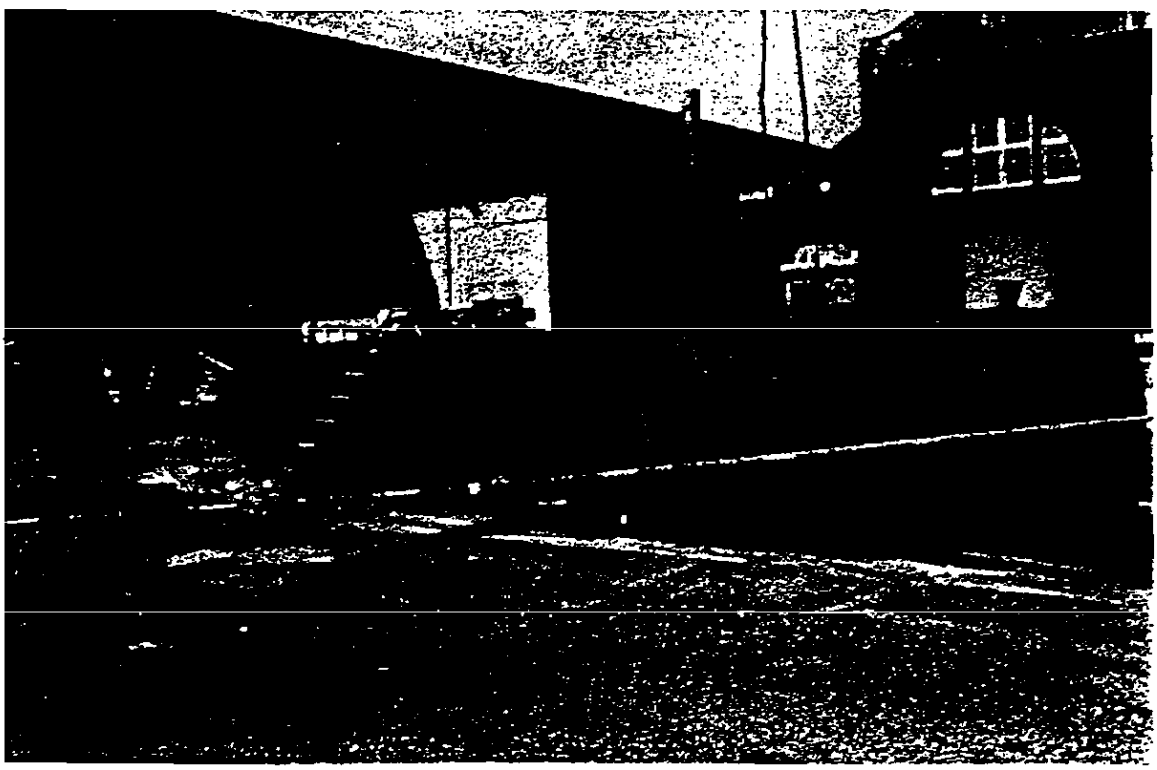
Figure: Site Map 3
UST 6A & 6B
Charleston Naval Base
Charleston, SC

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

DWG DATE: 13 Aug 1996
DWG NAME: CNS_6_3



UST 6A & 6B REMOVAL



UST 6A & 6B LAYOUT FOR INSPECTION

Attachment II

ANALYTICAL RESULTS

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

Certified Analytical Results
Chain-of-Custody

GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

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

set NPWC00196 Report Date: May 01, 1996 Page 1 of 2

Sample ID	: SPORT-0015-2
Lab ID	: 9604464-02
Matrix	: Soil
Date Collected	: 04/24/96
Date Received	: 04/24/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	Units	Method	Analyst	Date	Time	Batch
Extractable Organics								
PCB analysis - 7 items								
PCB-1016	<	41.6	ug/kg	EPA 8080	JLB	04/27/96	0824	83873
PCB-1221	<	41.6	ug/kg	EPA 8080				
PCB-1232	<	41.6	ug/kg	EPA 8080				
PCB-1242	<	41.6	ug/kg	EPA 8080				
PCB-1248	<	41.6	ug/kg	EPA 8080				
PCB-1254	<	41.6	ug/kg	EPA 8080				
PCB-1260	<	41.6	ug/kg	EPA 8080				

The following prep procedures were performed:

PCB's	EPA 3550	TNF	04/25/96	1000	83873

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87284	FL - E87472/87458	ME - 29417
NH - SC012	MS - 10120	NY - 11502	RI - 138

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CERTIFICATE OF ANALYSIS

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

Sample ID : SPORT-0013-2

GEL Laboratory Certifications		EPI Laboratory Certifications	
NC - 233	NY - 11801	SC - 10582	TN - 02934
RI - 155	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C225	PA - 68-485	WV - 235
WI - 999887790			

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7384.

Analytical Report Specialist

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-1
Lab ID : 9605105-01
Matrix : Soil
Date Collected : 05/07/96
Date Received : 05/07/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS	05/08/96	1753	84421	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	166	331	ug/kg	1.0	BDG	05/10/96	2050	84440	2
Acenaphthylene	U	0.00	166	331	ug/kg	1.0					
Anthracene	U	0.00	166	331	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	331	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	331	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	331	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	331	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	331	ug/kg	1.0					
Chrysene	U	0.00	166	331	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	331	ug/kg	1.0					
Fluoranthene	J	179	166	331	ug/kg	1.0					
Fluorene	U	0.00	166	331	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	331	ug/kg	1.0					
Naphthalene	U	0.00	166	331	ug/kg	1.0					
Phenanthrene	U	0.00	166	331	ug/kg	1.0					
Pyrene	J	202	166	331	ug/kg	1.0					
Metals Analysis											
Mercury		0.375	0.00232	0.200	mg/kg	1.0	RMJ	05/10/96	1137	84533	N
Silver	U	27.6	125	500	ug/kg	1.0	WCC	05/10/96	1656	84448	3
Arsenic		4600	93.0	500	ug/kg	1.0					

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

rc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Barium		21000	3.32	500	ug/kg	1.0					
Cadmium		592	4.85	250	ug/kg	1.0	WCC	05/10/96	1656	84448	3
Chromium		7270	29.8	500	ug/kg	1.0					
Lead		87200	56.5	250	ug/kg	1.0					
Selenium		471	71.5	250	ug/kg	1.0					
ineral Chemistry											
Total Rec. Petro. Hydrocarbons		170	10.0	50.0	mg/kg	1.0	SDW	05/09/96	1000	84434	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GWL	05/08/96	2230	84440	5
Mercury	RMJ	05/10/96	1005	84533	6
TRACE	DVW	05/08/96	2000	84448	7

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	98.4	(30.0 - 115.)
Nitrobenzene-d5	M610	95.6	(23.0 - 120.)
p-Terphenyl-d14	M610	105.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	116.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	119.	(74.0 - 128.)
Toluene-d8	BTEX-8260	102.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	116.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	119.	(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 6010A
M 4	EPA 9071
M 5	EPA 3550

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GENERAL ENGINEERING LABORATORIES

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-1

M = Method	Method-Description
M 6	EPA 7471
M 7	EPA 3050

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

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - 1-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-1

GEL Laboratory Certifications EPI Laboratory Certifications

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
Analytical Report Specialist

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: May 14, 1996

Sample ID	: SPORT-0026-2
Lab ID	: 9605105-02
Matrix	: Soil
Date Collected	: 05/07/96
Date Received	: 05/07/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS	05/08/96	1822	84421	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	164	330	ug/kg	1.0	BDG	05/10/96	2123	84440	2
Acenaphthylene	U	0.00	164	330	ug/kg	1.0					
Anthracene	U	0.00	164	330	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	164	330	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	164	330	ug/kg	1.0					
Benzo(b)fluoranthene	J	210	164	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	164	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	164	330	ug/kg	1.0					
Chrysene	U	0.00	164	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	164	330	ug/kg	1.0					
Fluoranthene	J	305	164	330	ug/kg	1.0					
Fluorene	U	0.00	164	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	164	330	ug/kg	1.0					
Naphthalene	U	0.00	164	330	ug/kg	1.0					
Phenanthrene	U	0.00	164	330	ug/kg	1.0					
Pyrene		335	164	330	ug/kg	1.0					
Metals Analysis											
Mercury		0.415 ✓	0.00198	0.200	mg/kg	1.0	RMJ	05/10/96	0943	84483	N
Silver	U	28.3 ✓	116	500	ug/kg	1.0	WCC	05/10/96	1700	84448	3
Arsenic		4660 ✓	86.9	500	ug/kg	1.0					

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-2

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst Date	Time	Batch	M
Barium		34100	3.10	500	ug/kg	1.0				
Cadmium		584	4.53	250	ug/kg	1.0	WCC 05/10/96	1700	84448	3
Chromium		12500	27.8	500	ug/kg	1.0				
Lead		78300	52.8	250	ug/kg	1.0				
Selenium		439	66.8	250	ug/kg	1.0				
General Chemistry										
Total Rec. Petro. Hydrocarbons		160	10.0	50.0	mg/kg	1.0	SDW 05/09/96	1000	84434	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GWL 05/08/96	2230	84440	5
Mercury	RMJ 05/09/96	1300	84483	6
TRACE	DVW 05/08/96	2000	84448	7

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	86.9	(30.0 - 115.)
Nitrobenzene-d5	M610	80.7	(23.0 - 120.)
p-Terphenyl-d14	M610	94.9	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	118.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	116.	(74.0 - 128.)
Toluene-d8	BTEX-8260	104.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	118.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	116.	(74.0 - 128.)
Toluene-d8	NAP-8260	104.	(53.4 - 163.)

M = Method	Method-Description
M1	EPA 8260
M2	EPA 8270
M3	EPA 6010A
M4	EPA 9071
M5	EPA 3550

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-2

M = Method	Method-Description
M 6	EPA 7471
M 7	EPA 3050

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

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

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-2

GEL Laboratory Certifications **EPI Laboratory Certifications**

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

Analytical Report Specialist

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1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-3
Lab ID : 9605105-03
Matrix : Soil
Date Collected : 05/07/96
Date Received : 05/07/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS	05/08/96	1851	84421	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	166	332	ug/kg	1.0	BDG	05/10/96	1945	84440	2
Acenaphthylene	U	0.00	166	332	ug/kg	1.0					
Anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)anthracene	U	0.00	166	332	ug/kg	1.0					
Benzo(a)pyrene	U	0.00	166	332	ug/kg	1.0					
Benzo(b)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	166	332	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	166	332	ug/kg	1.0					
Chrysene	U	0.00	166	332	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	166	332	ug/kg	1.0					
Fluoranthene	U	0.00	166	332	ug/kg	1.0					
Fluorene	U	0.00	166	332	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	166	332	ug/kg	1.0					
Naphthalene	U	0.00	166	332	ug/kg	1.0					
Phenanthrene	U	0.00	166	332	ug/kg	1.0					
Pyrene	U	0.00	166	332	ug/kg	1.0					
Metals Analysis											
Mercury		0.357	0.00189	0.200	mg/kg	1.0	RMJ	05/10/96	0945	84483	N
Silver	U	50.0	118	500	ug/kg	1.0	WCC	05/10/96	1705	84448	3
Arsenic		2300	87.8	500	ug/kg	1.0					

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North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

oc: NPWC00196

Report Date: May 14, 1996

Sample ID : SPORT-0026-3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Barium		20000	3.13	500	ug/kg	1.0					
Cadmium		306	4.58	250	ug/kg	1.0	WCC	05/10/96	1705	84448	3
Chromium		4500	28.1	500	ug/kg	1.0					
Lead		29900	53.3	250	ug/kg	1.0					
Selenium		250	67.5	250	ug/kg	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons		210	10.0	50.0	mg/kg	1.0	SDW	05/09/96	1000	84434	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GWL	05/08/96	2230	84440	5
Mercury	RMJ	05/09/96	1300	84483	6
TRACE	DVW	05/08/96	2000	84448	7

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	89.7	(30.0 - 115.)
Nitrobenzene-d5	M610	85.9	(23.0 - 120.)
p-Terphenyl-d14	M610	96.1	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	113.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	117.	(74.0 - 128.)
Toluene-d8	BTEX-8260	101.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	113.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	117.	(74.0 - 128.)
Toluene-d8	NAP-8260	101.	(53.4 - 163.)

M = Method	Method-Description
M1	EPA 8260
M2	EPA 8270
M3	EPA 6010A
M4	EPA 9071
M5	EPA 3550

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-3

M = Method	Method-Description
M 6	EPA 7471
M 7	EPA 3050

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

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

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-3

GEL Laboratory Certifications EPI Laboratory Certifications

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Karen Blakeney
Analytical Report Specialist

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 14, 1996

Sample ID	: SPORT-0026-4
Lab ID	: 9605105-04
Matrix	: Soil
Date Collected	: 05/07/96
Date Received	: 05/07/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	JGS	05/08/96	1921	84421	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	163	330	ug/kg	1.0	BDG	05/10/96	2155	84440	2
Acenaphthylene	U	0.00	163	330	ug/kg	1.0					
Anthracene	U	0.00	163	330	ug/kg	1.0					
Benzo(a)anthracene	J	205	163	330	ug/kg	1.0					
Benzo(a)pyrene	J	228	163	330	ug/kg	1.0					
Benzo(b)fluoranthene	J	300	163	330	ug/kg	1.0					
Benzo(ghi)perylene	U	0.00	163	330	ug/kg	1.0					
Benzo(k)fluoranthene	U	0.00	163	330	ug/kg	1.0					
Chrysene	U	0.00	163	330	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	0.00	163	330	ug/kg	1.0					
Fluoranthene		391	163	330	ug/kg	1.0					
Fluorene	U	0.00	163	330	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	163	330	ug/kg	1.0					
Naphthalene	U	0.00	163	330	ug/kg	1.0					
Phenanthrene	J	235	163	330	ug/kg	1.0					
Pyrene		561	163	330	ug/kg	1.0					
Metals Analysis											
Mercury		0.279 ✓	0.00200	0.200	mg/kg	1.0	RMJ	05/10/96	0948	84483	N
Silver	U	18.7 ✓	116	500	ug/kg	1.0	WCC	05/10/96	1710	84448	3
Arsenic		3870 ✓	86.9	500	ug/kg	1.0					

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1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-4

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Barium		27700	3.10	500	ug/kg	1.0					
Cadmium		510	4.53	250	ug/kg	1.0	WCC	05/10/96	1710	84448	3
Chromium		7340	27.8	500	ug/kg	1.0					
Lead		61500	52.8	250	ug/kg	1.0					
Selenium		422	66.8	250	ug/kg	1.0					
General Chemistry											
Total Rec. Petro. Hydrocarbons		90.0	10.0	50.0	mg/kg	1.0	SDW	05/10/96	1000	84435	4

The following prep procedures were performed:

GC/MS Base/Neutral Compounds	GWL	05/08/96	2230	84440	5
Mercury	RMJ	05/09/96	1300	84483	6
TRACE	DVW	05/08/96	2000	84448	7

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	94.7	(30.0 - 115.)
Nitrobenzene-d5	M610	80.3	(23.0 - 120.)
p-Terphenyl-d14	M610	118.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	121.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	116.	(74.0 - 128.)
Toluene-d8	BTEX-8260	106.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	121.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	116.	(74.0 - 128.)
Toluene-d8	NAP-8260	106.	(53.4 - 163.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 6010A
M 4	EPA 9071
M 5	EPA 3550

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-4

M = Method	Method-Description
M 6	EPA 7471
M 7	EPA 3050

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

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

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

cc: NPWC00196 Report Date: May 14, 1996

Sample ID : SPORT-0026-4

GEL Laboratory Certifications EPI Laboratory Certifications

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Karen Blakeney
Analytical Report Specialist

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWCD0196 Report Date: May 23, 1996

Sample ID	: SPORT-0038-1
Lab ID	: 9605270-01
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	1638	84833	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		3.43	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	4920	9840	ug/kg	10.	BDG	05/20/96	1543	84824	2
Acenaphthylene	U	0.00	4920	9840	ug/kg	10.					
Anthracene	U	0.00	4920	9840	ug/kg	10.					
Benzo(a)anthracene	U	0.00	4920	9840	ug/kg	10.					
Benzo(a)pyrene	U	0.00	4920	9840	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	4920	9840	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	4920	9840	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	4920	9840	ug/kg	10.					
Chrysene	U	0.00	4920	9840	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	4920	9840	ug/kg	10.					
Fluoranthene	U	0.00	4920	9840	ug/kg	10.					
Fluorene	U	0.00	4920	9840	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	4920	9840	ug/kg	10.					
Naphthalene	U	0.00	4920	9840	ug/kg	10.					
Phenanthrene	U	0.00	4920	9840	ug/kg	10.					
Pyrene	U	0.00	4920	9840	ug/kg	10.					

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

TMK 05/17/96 1230 84824 3

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-1

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

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

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	75.0	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	101.	(74.0 - 128.)
Toluene-d8	BTEX-8260	106.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	75.0	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	101.	(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:
I indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications EPI Laboratory Certifications

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CERTIFICATE OF ANALYSIS

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

oc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-1

GEL Laboratory Certifications		EPI Laboratory Certifications	
AL - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
CA - 2089	CT - PH-0169	CA - 1-1023/2056	CT - PH-0175
DE - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
ME - SC012	MS - 10120	NY - 11502	RI - 138
NC - 233	NY - 11501	SC - 10582	TN - 02934
RI - 135	SC - 10120	UT - E-227	VA - 00111
TN - 02934	UT - E-251	WA - C225	NJ - 79002
VA - 00151	WA - C223	PA - 68-485	WV - 235
WI - 999887790			

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 23, 1996

Sample ID	: SPORT-0038-2
Lab ID	: 9605270-02
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	1120	84833	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)	J	1.29	1.00	4.00	ug/kg	1.0					
Naphthalene		3.81	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	662	1320	ug/kg	4.0	BDG	05/21/96	2330	84824	2
Acenaphthylene	U	0.00	662	1320	ug/kg	4.0					
Anthracene	U	0.00	662	1320	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	662	1320	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	662	1320	ug/kg	4.0					
Benzo(b)fluoranthene	J	993	662	1320	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	662	1320	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	662	1320	ug/kg	4.0					
Chrysene	U	0.00	662	1320	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	662	1320	ug/kg	4.0					
Fluoranthene		1800	662	1320	ug/kg	4.0					
Fluorene	U	0.00	662	1320	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	662	1320	ug/kg	4.0					
Naphthalene	U	0.00	662	1320	ug/kg	4.0					
Phenanthrene	U	0.00	662	1320	ug/kg	4.0					
Pyrene	J	1090	662	1320	ug/kg	4.0					

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

TMK 05/17/96 1230 84824 3

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-2

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	97.4	(30.0 - 115.)
Nitrobenzene-d5	M610	59.1	(23.0 - 120.)
p-Terphenyl-d14	M610	81.4	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	74.3	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	106.	(74.0 - 128.)
Toluene-d8	BTEX-8260	104.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	74.3	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	106.	(74.0 - 128.)
Toluene-d8	NAP-8260	104.	(53.4 - 163.)

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

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

GEL Laboratory Certifications EPI Laboratory Certifications

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-2

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

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: May 23, 1996

Sample ID	: SPORT-0038-3
Lab ID	: 9605270-03
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	5.00	10.0	ug/kg	5.0	RLC	05/17/96	1709	84833	1
Ethylbenzene		164	5.00	10.0	ug/kg	5.0					
Toluene		94.4	5.00	10.0	ug/kg	5.0					
Xylenes (TOTAL)		1600	5.00	10.0	ug/kg	5.0	RLC	05/20/96	1519	84833	1
Naphthalene		799	5.00	10.0	ug/kg	5.0	RLC	05/17/96	1709	84833	1
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	8300	16600	ug/kg	10.	BDG	05/20/96	1648	84824	2
Acenaphthylene	U	0.00	8300	16600	ug/kg	10.					
Anthracene	U	0.00	8300	16600	ug/kg	10.					
Benzo(a)anthracene	J	12100	8300	16600	ug/kg	10.					
Benzo(a)pyrene		17900	8300	16600	ug/kg	10.					
Benzo(b)fluoranthene		19900	8300	16600	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	8300	16600	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	8300	16600	ug/kg	10.					
Chrysene	U	0.00	8300	16600	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	8300	16600	ug/kg	10.					
Fluoranthene		19300	8300	16600	ug/kg	10.					
Fluorene	U	0.00	8300	16600	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	8300	16600	ug/kg	10.					
Naphthalene	U	0.00	8300	16600	ug/kg	10.					
Phenanthrene	U	0.00	8300	16600	ug/kg	10.					
Pyrene		28100	8300	16600	ug/kg	10.					

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

TMK 05/17/96 1230 84824 3

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1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-3

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	101.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	108.	(74.0 - 128.)
Toluene-d8	BTEX-8260	101.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	101.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	108.	(74.0 - 128.)
Toluene-d8	NAP-8260	101.	(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:
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Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

oc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-3

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

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Analytical Report Specialist

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SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: May 23, 1996

Sample ID	: SPORT-0038-4
Lab ID	: 9605270-04
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	1741	84833	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	RLC	05/21/96	1242	84833	1
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0	RLC	05/17/96	1741	84833	1
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	1670	3330	ug/kg	10.	BDG	05/20/96	1720	84824	2
Acenaphthylene	U	0.00	1670	3330	ug/kg	10.					
Anthracene	U	0.00	1670	3330	ug/kg	10.					
Benzo(a)anthracene	U	0.00	1670	3330	ug/kg	10.					
Benzo(a)pyrene	U	0.00	1670	3330	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	1670	3330	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1670	3330	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	1670	3330	ug/kg	10.					
Chrysene	U	0.00	1670	3330	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1670	3330	ug/kg	10.					
Fluoranthene	U	0.00	1670	3330	ug/kg	10.					
Fluorene	U	0.00	1670	3330	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1670	3330	ug/kg	10.					
Naphthalene	U	0.00	1670	3330	ug/kg	10.					
Phenanthrene	U	0.00	1670	3330	ug/kg	10.					
Pyrene	U	0.00	1670	3330	ug/kg	10.					

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

TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

Sample ID : SPORT-0038-4

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

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

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	88.0	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	106.	(74.0 - 128.)
Toluene-d8	BTEX-8260	96.8	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	88.0	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	106.	(74.0 - 128.)
Toluene-d8	NAP-8260	96.8	(53.4 - 163.)

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

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

GEL Laboratory Certifications EPI Laboratory Certifications

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 | Report Date: May 23, 1996 |

Sample ID : SPORT-0038-4

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

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: May 23, 1996

Sample ID	: SPORT-0038-5
Lab ID	: 9605270-05
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	1812	84833	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	0.700	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	3330	6650	ug/kg	10.	BDG	05/20/96	1752	84824	2
Acenaphthylene	U	0.00	3330	6650	ug/kg	10.					
Anthracene	U	0.00	3330	6650	ug/kg	10.					
Benzo(a)anthracene	U	0.00	3330	6650	ug/kg	10.					
Benzo(a)pyrene	U	0.00	3330	6650	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	3330	6650	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	3330	6650	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	3330	6650	ug/kg	10.					
Chrysene	U	0.00	3330	6650	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	3330	6650	ug/kg	10.					
Fluoranthene	U	0.00	3330	6650	ug/kg	10.					
Fluorene	U	0.00	3330	6650	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	3330	6650	ug/kg	10.					
Naphthalene	U	0.00	3330	6650	ug/kg	10.					
Phenanthrene	U	0.00	3330	6650	ug/kg	10.					
Pyrene	U	0.00	3330	6650	ug/kg	10.					

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

TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-5

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

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

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	86.3	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	99.4	(74.0 - 128.)
Toluene-d8	BTEX-8260	99.9	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	86.3	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	99.4	(74.0 - 128.)
Toluene-d8	NAP-8260	99.9	(53.4 - 163.)

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

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

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-5

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

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

Analytical Report Specialist

GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 24, 1996

Sample ID	: SPORT-0038-6
Lab ID	: 9605270-06
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene		333	50.0	100	ug/kg	50.	RLC	05/20/96	1620	84833	1
Ethylbenzene		4830	250	500	ug/kg	250	RLC	05/21/96	1312	84833	1
Toluene		3720	250	500	ug/kg	250					
Xylenes (TOTAL)		21500	250	500	ug/kg	250					
Naphthalene		11500	250	500	ug/kg	250					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	3290	6580	ug/kg	10.	BDG	05/20/96	1825	84824	2
Acenaphthylene	U	0.00	3290	6580	ug/kg	10.					
Anthracene		26500	3290	6580	ug/kg	10.					
Benzo(a)anthracene	U	0.00	3290	6580	ug/kg	10.					
Benzo(a)pyrene	U	0.00	3290	6580	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	3290	6580	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	3290	6580	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	3290	6580	ug/kg	10.					
Chrysene	U	0.00	3290	6580	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	3290	6580	ug/kg	10.					
Fluoranthene	U	0.00	3290	6580	ug/kg	10.					
Fluorene	U	0.00	3290	6580	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	3290	6580	ug/kg	10.					
Naphthalene		27000	3290	6580	ug/kg	10.					
Phenanthrene		24700	3290	6580	ug/kg	10.					
Pyrene	J	6320	3290	6580	ug/kg	10.					

The following prep procedures were performed:
GC/MS Base/Neutral Compounds TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

oc: NPWC00196 Report Date: May 24, 1996

Sample ID : SPORT-0038-6

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	102.	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	108.	(74.0 - 128.)
Toluene-d8	BTEX-8260	94.4	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	102.	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	108.	(74.0 - 128.)
Toluene-d8	NAP-8260	94.4	(53.4 - 163.)

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

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

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

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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: May 24, 1996

Sample ID : SPORT-0038-6

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

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Karen Blakeney

Analytical Report Specialist

GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: May 23, 1996

Sample ID : SPORT-0038-7
Lab ID : 9605270-07
Matrix : Soil
Date Collected : 05/15/96
Date Received : 05/15/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	10.0	20.0	ug/kg	10.	RLC	05/17/96	1912	84833	1
Ethylbenzene	U	5.80	10.0	20.0	ug/kg	10.					
Toluene	U	0.00	10.0	20.0	ug/kg	10.					
Xylenes (TOTAL)		23.3	10.0	20.0	ug/kg	10.					
Naphthalene		5930	50.0	100	ug/kg	50.	RLC	05/20/96	1650	84833	1
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	1660	3310	ug/kg	10.	BDC	05/20/96	1857	84824	2
Acenaphthylene	U	0.00	1660	3310	ug/kg	10.					
Anthracene	U	0.00	1660	3310	ug/kg	10.					
Benzo(a)anthracene	U	0.00	1660	3310	ug/kg	10.					
Benzo(a)pyrene	U	0.00	1660	3310	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	1660	3310	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1660	3310	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	1660	3310	ug/kg	10.					
Chrysene	U	0.00	1660	3310	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1660	3310	ug/kg	10.					
Fluoranthene	U	0.00	1660	3310	ug/kg	10.					
Fluorene	U	0.00	1660	3310	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1660	3310	ug/kg	10.					
Naphthalene		9000	1660	3310	ug/kg	10.					
Phenanthrene		11300	1660	3310	ug/kg	10.					
Pyrene	J	2350	1660	3310	ug/kg	10.					

The following prep procedures were performed:
3C/MS Base/Neutral Compounds

TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-7

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	124.*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	1350*	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	972.*	(74.0 - 128.)
Toluene-d8	BTEX-8260	1000*	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	1350*	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	972.*	(74.0 - 128.)
Toluene-d8	NAP-8260	1000*	(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:
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* indicate that a quality control analyte recovery is outside of specified acceptance criteria.

GEL Laboratory Certifications EPI Laboratory Certifications

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CERTIFICATE OF ANALYSIS

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

oc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-7

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

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Analytical Report Specialist

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SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-8
Lab ID : 9605270-08
Matrix : Soil
Date Collected : 05/15/96
Date Received : 05/15/96
Priority : Routine
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	1942	84833	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		3.31	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	660	1320	ug/kg	4.0	BDG	05/22/96	0003	84824	2
Acenaphthylene	U	0.00	660	1320	ug/kg	4.0					
Anthracene	U	0.00	660	1320	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	660	1320	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	660	1320	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	660	1320	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	660	1320	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	660	1320	ug/kg	4.0					
Chrysene	U	0.00	660	1320	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	660	1320	ug/kg	4.0					
Fluoranthene	U	0.00	660	1320	ug/kg	4.0					
Fluorene	U	0.00	660	1320	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	660	1320	ug/kg	4.0					
Naphthalene	U	0.00	660	1320	ug/kg	4.0					
Phenanthrene	U	0.00	660	1320	ug/kg	4.0					
Pyrene	U	0.00	660	1320	ug/kg	4.0					

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

TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

ec: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-8

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	89.5	(30.0 - 115.)
Nitrobenzene-d5	M610	56.7	(23.0 - 120.)
p-Terphenyl-d14	M610	79.9	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	82.6	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	114.	(74.0 - 128.)
Toluene-d8	BTEX-8260	99.0	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	82.6	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	114.	(74.0 - 128.)
Toluene-d8	NAP-8260	99.0	(53.4 - 163.)

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

Notes:
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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-8

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

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Analytical Report Specialist

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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: May 23, 1996

Sample ID	: SPORT-0038-9
Lab ID	: 9605270-09
Matrix	: Soil
Date Collected	: 05/15/96
Date Received	: 05/15/96
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
BTEX - 4 items											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	RLC	05/17/96	2013	84833	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.560	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	J	1.29	1.00	2.00	ug/kg	1.0					
Extractable Organics											
Polynuclear Aromatic Hydrocarbons - 16 items											
Acenaphthene	U	0.00	656	1310	ug/kg	4.0	BDG	05/22/96	0036	84824	2
Acenaphthylene	U	0.00	656	1310	ug/kg	4.0					
Anthracene	U	0.00	656	1310	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	656	1310	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	656	1310	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	656	1310	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	656	1310	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	656	1310	ug/kg	4.0					
Chrysene	U	0.00	656	1310	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	656	1310	ug/kg	4.0					
Fluoranthene	U	0.00	656	1310	ug/kg	4.0					
Fluorene	U	0.00	656	1310	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	656	1310	ug/kg	4.0					
Naphthalene	U	0.00	656	1310	ug/kg	4.0					
Phenanthrene	U	0.00	656	1310	ug/kg	4.0					
Pyrene	U	0.00	656	1310	ug/kg	4.0					

The following prep procedures were performed:
3C/MS Base/Neutral Compounds

TMK 05/17/96 1230 84824 3

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-9

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

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

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	106.	(30.0 - 115.)
Nitrobenzene-d5	M610	65.6	(23.0 - 120.)
p-Terphenyl-d14	M610	102.	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	84.5	(59.7 - 159.)
Dibromofluoromethane	BTEX-8260	102.	(74.0 - 128.)
Toluene-d8	BTEX-8260	101.	(53.4 - 163.)
Bromofluorobenzene	NAP-8260	84.5	(59.7 - 159.)
Dibromofluoromethane	NAP-8260	102.	(74.0 - 128.)
Toluene-d8	NAP-8260	101.	(53.4 - 163.)

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

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

GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

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

cc: NPWC00196 Report Date: May 23, 1996

Sample ID : SPORT-0038-9

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

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Analytical Report Specialist

SPWC 00196

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

CHAIN OF CUSTODY RECORD

Page 1 of 1 9604464

Client Name/Facility Name: SPORTENVDETCHASN

Collected by/Company: W. T. NESBITT SPORTENVDETCHASN

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

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

CCL 21109

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	RCRA METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Solvent Scan	Flashpoint	Remarks	
SPORT-0015-1	4/24/96	1400				X	2							X									X	X	NS-2-4 (SLUDGE)	1
SPORT-0015-2	4/24/96	1400		X		X	2													X					UST 6A 6B-1 (Soil)	2

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[illegible]	4/24/96	1416	William R. Hiers Jr	William R. Hiers Jr	4/24/96	1518	[illegible]
Rick Kinard	4/24/96	1545	Rick Kinard	Rick Kinard	4/24/96	1545	

Remarks:

Yellow = file Pink = with report

N JC 00196

CHAIN OF CUSTODY RECORD

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

Page 1 of 1 9605105

J.O. 645046CEN99

Client Name/Facility Name: SPORTENVDETCHASN

Collected by/Company: ADKINS SPORT ENV DETCHASN

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

CCL 21290

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

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	~~TPH~~ TPH GRAVIMETRIC	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS (RCRA) - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTEX PLUS NAPTHALENE	PAH	Remarks
SPORT-0026-1	5/7/96	1000		X		X	4			X				X									X	X	UST-6-2
SPORT-0026-2	5/7/96	1000		X		X	4			X				X									X	X	UST-6-2D
SPORT-0026-3	5/7/96	1015		X		X	4			X				X									X	X	UST-6-3
SPORT-0026-4	5/7/96	1015		X		X	4			X				X									X	X	UST-6-4

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	5/7/96	1300	W. R. Hines, Jr.	W. R. Hines, Jr.	5/7/96	1535	[signature]
Relinquished by:	Date:	Time:	Received by lab by: Paige Kinard	Date: 5/8/96	Time: 1630	Remarks:	

White = sample collector Yellow = file Pink = with report

R 00196

CHAIN OF CUSTODY RECORD

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

Page 1 of 1 9605270

Client Name/Facility Name: SPORT ENV DETCHMSN

Collected by/Company: Adkins SPORT ENV DETCHMSN

SAMPLE ANALYSIS REQUIRED (#) - use remarks area to specify specific compounds or method

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

CCL 21409

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTEX PLUS NAPHTHALENE - 8021B/EPA	PAH	Remarks
SPORT-0038-1	5/15/96	1300		X		X	2																X	X	UST-6-6
SPORT-0038-2	5/15/96	1300		X		X	2																X	X	UST-6-7
SPORT-0038-3	5/15/96	1300		X		X	2																X	X	UST-6-8
SPORT-0038-4	5/15/96	1300		X		X	2																X	X	UST-6-9
SPORT-0038-5	5/15/96	1300		X		X	2																X	X	UST-6-10
SPORT-0038-6	5/13/96	1300		X		X	2																X	X	UST-6-11
SPORT-0038-7	5/15/96	1300		X		X	2																X	X	UST-6-12
SPORT-0038-8	5/15/96	1300		X		X	2																X	X	UST-6-13
SPORT-0038-9	5/15/96	1300		X		X	2																X	X	UST-6-14
SPORT-0038-10	5/15/96	1300		X		X	3 (2 WA)																X	X (WA)	TRIP BLANK (VOA)

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	5/15/96	1410	[signature]	[signature]	5/15/96	1549	[signature]
Relinquished by:	Date:	Time:	Received by lab by: Paige Kunard	Date: 5/15/96	Time: 1630	Remarks:	

White = sample collector Yellow = file Pink = with report

Attachment III

Certificate of Disposal (tank)
Disposal Manifest (sludge)

UST Certificate of Disposal

CONTRACTOR

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

Telephone (803) 743-6482

TANK ID & LOCATION

UST 6A, #12094; BLDG 6, CNSY, N. Charleston, SC

DISPOSAL LOCATION

Bldg. 1601 Tank Cleaning
& Disposal Area
Charleston Naval Complex

TYPE OF TANK	SIZE (GAL)
Fuel Oil	2,500 gal.

CLEANING/DISPOSAL METHOD

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

DISPOSAL CERTIFICATION

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

OB Uthem 8/12/96
(Name) (Date)

UST Certificate of Disposal

CONTRACTOR

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

Telephone (803) 743-6482

TANK ID & LOCATION

UST 6B, #12094; BLDG 6, CNSY, N. Charleston, SC

DISPOSAL LOCATION

Bldg. 1601 Tank Cleaning
& Disposal Area
Charleston Naval Complex

TYPE OF TANK	SIZE (GAL)
Fuel Oil	2,500 gal.

CLEANING/DISPOSAL METHOD

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

DISPOSAL CERTIFICATION

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

O.S. Uthem / 8/12/96
(Name) (Date)

PLEASE TYPE OR PRINT CLEARLY USING BALL POINT PEN — PRESS HARD. PLEASE DO NOT FOLD DOCUMENT

READ INSTRUCTIONS ON BACK OF MANIFEST

DNR

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type. Form Approved. OMB No. 2050-0039 Expires 9-30-84

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. S C G 1 7 0 0 2 2 5 6 0 — Manifest Document No. 713105 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
SOUTHDIVNAVFACENGCOM
CARETAKER SITE OFFICE P.O. BOX 190010 N.CHARLESTON,, SC 29
ATTN: Rick Nielson

4. Generator's Phone (803-743-6444 19985 w 3

A. State Manifest Document Number: MI 3530737
B. State Generator's ID

5. Transporter 1 Company Name: TRI-STATE MOTOR TRANSIT, CO.
6. US EPA ID Number: M O D O 9 5 0 3 8 9 9 8
C. State Transporter's ID
D. Transporter's Phone: 800-568-1856

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

9. Designated Facility Name and Site Address
Chem-Met Services,Inc.
1855 Allen Road
Wyandotte, MI 48192
10. US EPA ID Number: M I D O 9 6 9 6 3 1 9 4
G. State Facility's ID
H. Facility's Phone: 313-282-9250

	HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a.	X	(RQ) Hazardous waste,liquid,n.o.s.,9,NA3082, PG III D004,D006,D007,D008 (Fuel Oil Sludge c/w Cadmium,Lead) 36	001	DM	0 10 14 12 14	P	D004	H
b.	X	(RQ) Hazardous waste,liquid,n.o.s.,9,NA3082, PG III D005,D006,D007,D008 (Fuel Oil Sludge c/w Barium,Lead) 18	016	DM	0 12 15 14 12	P	D005	H
c.	X	(RQ) Hazardous waste,solid,n.o.s.,9,NA3077, PG III D004,D005,D006,D008,D009 (PPE c/w Barium,Lead,Paint Chips) 46	002	DM	0 10 11 15 15	P	D004	H
d.								

J. Additional Descriptions for Materials Listed Above
A)CHA56076ERG# 31 ITEM#-10-(D006,D007,D008) 155
B)CHA56076ERG# 31 ITEM#-11-(D006,D007,D008) 8/55
C)CHA56070ERG# 31 ITEM#-12-(D005,D006,D008,D009) 2/55

K. Handling Codes for Wastes Listed Above
a/ T /21
b/ T /21
c/ T /21
d/ /

15. Special Handling Instructions and Additional Information
Forward all invoices and CU's to Tri State Government Services, Inc. SP4400-95-0-0059
24 Hr Emerg.# 1-800-673-6604 P.O.C.Michael Johnson/Agent for Generator Del. Order # 99

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

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

COR 6/26/96

Printed/Typed Name: RICHARD G. NIELSON — Signature — Date: Month Day Year 0 6 2 6 9 6

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: DALLAS PETTEL TCS — Signature — Date: Month Day Year 0 6 2 6 9 6

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

APPENDIX B

GEOLOGIC BORING LOGS

BORING LOG

PROJECT NAME: C.K.C
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT

BORING NUMBER: 26 MW ~~09~~ 12 BH 8/24/99
DATE: 8/10/99
GEOLOGIST:
DRILLER: K. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Concrete						
	2			Hand Auger		Brn	Sand		Moist				
	3												
	4												
	5						—						
	6												
	7												
	8		3/4			Blk	Petroleum odor Stain		Saturated				
	9						—						
	10					Brn							
	11					Gray							
	12		3/4								0	0	0

* rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes X No

Well I.D. #: MW ~~09~~ 12

BORING LOG

PROJECT NAME: CRC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT

BORING NUMBER: 26 MW13 BH
DATE: 5/10/94
GEOLOGIST:
DRILLER: A. Brand

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Concrete						
	2			1 foot thick		Brn	Sand		Moist				
	3												
	4												
	5						—						
	6												
	7								Saturated				
	8		3/4			Blk	Petro odor & stain						
	9												
	10												
	11					Brn							
	12		4/4										
	13												

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes Y No

Well I.D. #: 26 MW13

BORING LOG

Page ___ of ___

PROJECT NAME:
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG:

BORING NUMBER: ~~[illegible]~~ 26P61
DATE:
GEOLOGIST: 7 10 99
DRILLER: R. Bu

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 [redacted]	USCS*	Remarks	PID/FID Reading (ppm) [redacted]
	1				med. blk silty sand		sl moist	
	2				w/ large rocks			
	3			Hand Auger				0 0 0 0
	4							
	5							0 0 0 [illegible]
	6							
	7				DK Petro odor		Saturated	
	8		3/4					

* When rock coring, enter rock brokenness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

Converted to Well: Yes Temp No ___ Well I.D. #:

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER: N0126
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER: CNC 26 B01
DATE: 5-26-99
GEOLOGIST:
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	
							Asphalt 2"							
							Brown Sand & gravel							
				3.0			Brown-Tan fine							
	4						sand Tr. silt		Rec. 2.0'	0	0	0	0	
									Sample soil					Soil Sample
									4.0-5.0					Time: 1400
				7.5			Dark Grey fine		26SFB01040 5					
	8						sand, Moist		Rec. 2.3	50	20	0	20	
							Strong odor							
	11			11.0					Set Screen					
				B.T.					5.0-11.0					
									Sample water					
									8.0-11.0					
									ID 26GFB01081					
									Time: 1410					
							w/L = 3.9'							

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26 BORING NUMBER: CNC26B02
PROJECT NUMBER: NO 126 DATE: 5-26-99
DRILLING COMPANY: GEOLOGIST:
DRILLING RIG: Geoprobe DRILLER: B.L.

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 2"						
				2.0			Sand & Gravel (fill)						
							Brown & tan f. sand						
	4						Moist		Rec. 2.5'	0	0	0	0
5									Soil Sample				
									from 3.0'-4.0'				
				7.0					@ 1428				
	8			BT			Water has odor						
									Set Screen				
									from 4.0-7.0				
							W/L = 6.3'						
									Sampled Water				
									@ 1435				
									#26GFB0204007				

When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER: N0126
DRILLING COMPANY: Target
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B03
DATE: 5-26-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	
							Asphalt - 3"		Sampled soil					
							Sand & Gravel (Fill)		3.0'-4.0'					Soil Sample
							Brown, Tan & Gray		#26SFB03040					Time: 1518
	4						Sand. Moist @		Rec. 2.6'					
							3.5'			0	0	0	0	
	7			7.0			Odor in water		Set Screen					
				B.T					4.0'-7.0'					
							W/L = 6.45		Sampled Water					
									4.0'-7.0'					
									#26GFB03040T					
									Time: 1530					

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER: NØ 126
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CAC26B04
DATE: 5-26-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 3"						
				2.0'			Sand & Gravel (Fill)		Soil Sample				
							Brown & Tan fine		from 3.0'-4.0'				
	4						sand Tr. of gravel		Rec. 2.5'	0	0		0
				5.0			Brown & Tan f.		Strong odor				
							sand. Wet		Strong Odor	50	50		0
	2												
				9.0			↓		↓				
				B.T.					Set Screen				
									6.0'-9.0'				
							W/L = 6.6						
									Sampled Water				
									6.0'-9.0'				
									#26GFB04/0609				
									Time: 1607				

Sample Time 1550 ID # 26SFB04/0304

*When rock coring, enter rock brokeness

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER: N0126
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B05
DATE: 5-26-99
GEOLOGIST:
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 3"						
				2.0			Sand & Gravel (Fill)						
							Brown f. sand w/						
	4			3.5			some gravel & Brick		Rec.				
							(Fill)		Sampled Soil				
							Brown f. sand		from 3.0-4.0				
	7			7.0					Time: 1670				
				B.T					#26SFB050304				
							W/L = 6.8'		Set Screen				
									from 4.0'-7.0'				
									Sampled Water				
									from 4.0-7.0				
									#26GFB050405				
									Time: 1640				

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0ppm

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER: N0126
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B006
DATE: 5-26-99
GEOLOGIST:
DRILLER: B.L.

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
				1.0			Asphalt. 3"		Sampled Soil				
							Lime Rock (Subbase)		from 3.0-4.0				
							Brown & Tan f. sand		FE26SFB006304				
	4			3.5			w/layers of sandy clay		Rec. 2.7'	0	0	0	0
							Brown & Grey f. Sand.						
	7			7.0			Odor in water						
				B.T									
							W/L = 6.7'		Set Screen				
									from 4.0'-7.0'				
									Sampled Water				
									from 4.0'-7.0'				
									FE26GFB006407				

Soil Sample Time: 1653

*When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B07
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				40			Asphalt 3"						
							~~Gray~~ Lime Rock (Sub Base)						
				3.8			Brown & Gray f. Sand						
	4						Trace of gravel or Brick (Possible Fill)		Rec. 2.8	3	0		0
							Dark Brown silty Sand						
							Organic, Odor (Moist)						
									water has odor				
	9			9.0					Set Screen				
				B.T			W/L = 5.8'		from 6.0'-9.0'				
									Sampled water				
									from 6.0'-9.0'				
									# 26GFB070609				
									Time: 0825				

Sampled Soil 3.0'-4.0' ID # 26SFB070304 Time: 0811

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
BORING NUMBER: CNC26B08
PROJECT NUMBER:
DATE: 5-27-99
DRILLING COMPANY:
GEOLOGIST:
DRILLING RIG: Geoprobe
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 4"						
				1.2'			Lime Rock (Subbase)						
				2.5			Dark Brown f. sand						
	4						Trace of gravel & Brick		Rec. 3.4'	0	0	0	0
							Dark Brown & Tan						
							f. Sand.						
									Water Has				
	9			9.0					odor				
				B.T.			W/L = 5.6		Set Screen				
									6.0' - 9.0'				
									Sampled Water				
									# 26GFB080609				

Soil Sample from 3.0' - 4.0 #26SFB08030 Time: 0842

Headspace = 2ppm

*When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNS 26 B09
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 4"		Tank Pit				
				2.0			Lime Rock (Sub base)						
							Brown sandy clay Tr		Soil Sample				
	4		2.5'	3.5			of gravel (Fill)		from 3.0-4.0	0	0	0	0
							Tan & gray f. silty Sand		#26SFB09030				
							(Fill)						
	7			7.0			Refusal		water has				
				B.T.					Product odor				
							W/L = 5.25						
									Set screen				
									from 4.0'-7.0'				
									Sampled water				
									#26GFB09040				
									Time: 0926				

* When rock coring, enter rock brokeness

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

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes ____ No ____ Well ID #: ____

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER: CNO26B1Ø
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt 3"						
							Brown clayey sand w/						
							gravel & Brick.		Fill				
	4		2.4'	3.5			Tan clayey f. sand			0	0	0	0
									Product odor				
									in water				
	7			7.0			Refusal		Set Screen				
				B.T			W/L = 5.0		from 4.0'-7.0'				
									Sample Water				
									# 26GFB1ØØ4Ø7				
									Time: 1015				
							Tank Pit						

Soil Sample from 3.0'-4.0' # 26SFB1ØØ3Ø4 Time: 0942

*When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: CSY - Chas., SC
PROJECT NUMBER: 0126
DRILLING COMPANY: Custom Drilling Co.
DRILLING RIG: ~~CME~~ Mobile B-57

BORING NUMBER: CNC26-MW09D
DATE: 8/18/99
GEOLOGIST: M. Darringsky
DRILLER: R. Fuller

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ**	Borehole BZ**	Driller BZ**
	0-15				No Split Spoon samples - see previous boring logs.								
									Strong petro. odors from soil cuttings				
(1)	15	3/6	18		Firm.	T/Br	Sandy Clay - VF-F grain, well sorted, cohesive, plastic, no fossils, saturated,			2.7	0	66	0.4
		3/6		16									
		4/6			Soft.	T/Br	Clayey sand to sand - VF-M grain, well sorted, no fossils, saturated		no petro. odors	20	0	0	0
	17	5/6											
(2)	17	2/6	24"		Soft.	T/Br	Gy - Silty - sand to sand, VF-M grain, well sorted, friable, no fossils, saturated.	SD	no petro. odors	1.3	0	0	0
		11/6											
		15/6											
	19	20/6											
(3)	23	3	24"		Soft	T/Br	Gy silty sand - sand (as above) saturated, Heavy minerals (Black clasts) throughout.	SD	No petro. odor.	2.2	0	0	0
		3											
		4											
	25	6											
				(4)	23'		Set 6" PVC Surface Casing.						
					(3)		Drums of Soil Cuttings						

Petro. odors.

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ✓ No ___ Well I.D. #: CNC26-MW09D

T = Tan / Br = Brown / Gy = Grey

BORING LOG

PROJECT NAME: CNC - Chas, SC
PROJECT NUMBER: 0126
DRILLING COMPANY: Custom Drilling Co.
DRILLING RIG: Mobile B-57

BORING NUMBER: CNC26 - MW09D
DATE: 8/30/99
GEOLOGIST: M. Darrington
DRILLER: R. Fuller

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
(X)	See	previous			Boring	Log on	8/18/99	by	M. Darrington.				
(1)	25	6/6	6"		Soft/	Tan	Silty sand to sand	SD	No petro. odor	3	0	0	0
	↓	6/6			loose.		VF-M grain, mod.		or discolor.				
		5/6					sorting, loose/flowing,						
	27	7/6					abundant shell debris, saturated.						
(2)	27	6/6	12"		Soft/	Tan	slightly clayey sand	SD	No Petro. Odors	19	0	0	6
	↓	6/6			loose		to sand - Grey clay mixed w/ sand.						
		8/6					Sand = VF-F grain, well						
	29	11/6					sorted, no fossils, saturated						
(3)	29	4/6	24"		Soft/	DK Gray	Slightly clayey sand	SD	No petro. odor	73	0	0	0
	↓	6/6			loose.		to top 3" to sand, VF-F		or discolor.				
		6/6					well sorted, friable,						
	31	6/6					abund. shell debris, saturated.						
(4)	31	4/6	24"		Soft.	DK Gray	top 18" as above.						
	↓	11/6			Soft.	DK Gray	Sand - w/ abund.		No petro. odors	6	0	0	0
	↓	10/6		32.5			shell hash/debris, VF-		or discolor.				
	33	10/6					C-grain, Poorly sorted,						
				EOB			friable, moist-saturated.						
					33'	Boring Terminated							
					33-28'	- Screen Interval.							

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): 0.2

Remarks:

Converted to Well: Yes ✓ No ___ Well I.D. #: CNC26 - MW09D

T = Tan
Gy = Grey

BORING LOG

PROJECT NAME: CSY - Chas. SC
PROJECT NUMBER: 0126
DRILLING COMPANY: Custom Drilling Co.
DRILLING RIG: Mobile B-57

BORING NUMBER: CNC26-MW10D
DATE: 8/18/99
GEOLOGIST: M. Darrington
DRILLER: R. Fuller

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ**	Borehole**	Driller BZ**
	0-5				No split-spoon samples								
					* soil cuttings have								
					petro. odors (0-15 ft)								
(1)	15	8/6	18"	15.5	Firm	Gy	sandy clay - cohesive, non plastic, no fossils						
		13/6			Firm	Gy/O/T	clayey sand to sand VF-m grain, well sorted, friable, noncohesive, non plastic, no fossils, no sat.	SD	No petro. odor.	15	0	0	0
		12/6											
	17	9/6											
(2)	17	5/6	24"		Firm/soft	Gy/O/T	clayey sand to sand (as above) moist to saturated	SD	Mod. Petro. odors	47	0	0	0
		6/6											
		8/6											
	19	7/6											
(3)	23	3/6			Firm/soft	Gy/T/O	clayey sand to sand (as above)	SD	No Petro. odors	5	0	0	0
		5/6											
		8/6											
	25	7/6											
				(4)	To set - 6" Ø PVC surface case to 23' bls.								

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: ___

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ✓ No ___ Well I.D. #: CNC26-MW10D

moist/saturated
Encapsulated

BORING LOG

Page ___ of ___

PROJECT NAME: CNC
PROJECT NUMBER: 0126
DRILLING COMPANY: Custom Drilling
DRILLING RIG: Mobile B-57

BORING NUMBER: CNC26-MW10D (Adj. to B/4.35)
DATE: 8/19/99
GEOLOGIST: Mark Darrington
DRILLER: Rod Fuller

Sample No. and Type or RQD	Depth (Ft) or Run No. (ft)	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole BZ**	Driller BZ**
(4)	See Previous Boring Log on 8/18/99 by M. Darrington.												
(1)	25	3/6	12"		Soft.	dk Tan	b/Brown - silty sand	SP	No petro. odor.	2.6	0	0	0
	↓	4/6					to sand, VF-C grain, mod. to						
		3/6					well sorted, friable, (VF-C grain) mostly VF-F						
	27	4/6					no fossils, no H.M., saturated.						
(2)	27	2/6	24"		Soft. V. loose	T/O	Br. sand (as above)	SP	No petro. odors	2.0	0	0	0
	↓	2/6					w/ abundant H.M.		or discolor.				
		3/6					throughout, saturated.						
	29	5/6											
(3)	29	2/6	18		Soft Firm	T/O	Br Sand (as above)	SP	No petro. odors	—	—	—	—
	↓	4/6					saturated.		or discolor.				
	↓	6/6		30	Soft.	dk Gr	Clayey sand.			2.6	0	0	0
	31	8/6					V-C grain, mod-poorly, no fossils.						
(4)	31	10/6	24"				sorted, friable, slightly cohesive, moist/saturated.						
	↓	6/6			Soft	dk Gr	Clayey sand to sand	SC	No petro. odors	3.8	0	0	0
	↓	13/6					(as above) w/ shell		or discolor.				
	33	17/6					debris, V. moist - saturated,						
				EOB			cohesive & plastic in the						
							32.5 - 32.10.						
				(5)	well	bored	to 33 ft. b/s.						
					S.I	=	28 ft - 33 ft.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 2.5

Converted to Well: Yes ✓ No ___ Well I.D. #: CNC26-MW10D

H.M.: Heavy Minerals (Black clasts)
T = Tan
O = Orange
Gy = Grey

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B11
DATE: 5-27-99
GEOLOGIST:
DRILLER: B. L.

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				5"			Asphalt 5"						
				1.5			Lime Rock (Sub-Base)						
							Brown clayey sand						
	4			3.5			w/Gravel & Brick - (Fill)		Rec. 3.0'	0	0	0	0
							Brown f. sand						
							fr. of silt & clay						
	9			9.0			W/L = 5.4'		Set Screen				
				B.T.					from 6.0'-9.0'				
									Sampled water				
									# 26G110689				
									Time: 1100				
									Odor in Water				

Soil Sample from 3.0'-4.0' # 26SFB110384 Time: 1045

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26 B12
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Asphalt: 4"						
				1.5			Lime Rock (Sub-Base)						
				3.0			Brown clayey f. to coarse						
	4		3.5'				sand w/some Gravel & Brick		(Fill)	20	0	0	0
							Dark Brown & Tan f.						
							silty sand		Gas odor				
	9			9.0									
				B.T			W.L. = 6.0		Set Screen				
									from 6.0-9.0				
									Sampled Water				
									# 26GFB120609				
									Time: 1127				
									Pro. odor in				
									water				

Soil Sample from 3.0'-4.0' # 26SFB120939 Time: 1115

*When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: GNC26B13
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				6"			Asphalt 6"						
				1.5			Lime Rock (Sub-base)						
				3.0			Br. To yellow f. silty						
	4		2.8				Sand.			0	0	0	0
							Dark Br. f. silty Sand						
	9			9.0			W/L = 6.0'		Set Screen				
				B.T.					from 6.0'-9.0'				
									Sampled Water				
									#26GFB13Ø6Ø9				
									Time: 1150				
									Pro. odor				

soil Sample from 3.0 - 4.0 #26SFB13Ø3Ø6 Time: 1143

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNC26B14
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	
							Asphalt 2"							
				2.0			Brown clayey f.sand		Fill					
							Dark Br. f.sand							Sampled Soil from 3.0'-4.0'
	4		3.0'				Tr. of silt			0	0	0	0	#26SFB14Ø3Ø4 Time: 1415
									Set Screen					
	9			9.0			W/L = 6.0'		from 8.0'-9.0'					
				B.T										
									Sample Water					
									#26GFB14Ø6Ø9					
									Time: 1425					

*When rock coring, enter rock brokeness

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

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well: Yes ____ No ____ Well ID #: ____

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG: Geoprobe

BORING NUMBER: CNO 26 B15
DATE: 5-27-99
GEOLOGIST:
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0.6			Asphalt 2"						
							Gravey sand		Fill				
				2.5			Brown f. sand Tr.						
	4		2.8				of gravel		Fill	0	0	0	0
							Brown gray fine						
							sand.						
	9			9.0			w/L = 6.00'		Set Screen				
				B.T					from 6.0-9.0'				
									Sampled water				
									# 26GFB15Ø6Ø9				
									Time: 1448				

Soil Sample from 3.0'-4.0' # 26SFB15Ø3Ø4

* When rock coring, enter rock brokeness

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

Drilling Area Background (ppm): ____

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
BORING NUMBER: CNG26B16
PROJECT NUMBER:
DATE: 5-27-99
DRILLING COMPANY:
GEOLOGIST:
DRILLING RIG: Geoprobe
DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0.0			Asphalt						
				2.0			Sand & Gravel						
							Tan & Gray f. Sand -		F. 11				
	4		2.5				Br. f. to med. sand Tr.						
							of f. gravel & Some Brick						
	9			9.0			w/L = 6.1		Set Screen				
				BT					from 6.0-9.0				
									Sample water				
									# 26G FB16Ø609				
									Time 0/510				

Soil Sampled from 3.0-4.0' # 26SFB16Ø304 Time 0/502

* In rock coring enter rock brokeness

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER: CNC 26 B17
DATE: 5-27-99
GEOLOGIST:
DRILLER: B. L.

Sample No. and Type or RQD	Depth (Ft.) or Run No	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0.3			Asphalt 3"						
							Sand & Gravel						
				2.5			Brown Sand, Clay						
	4		2.5				Gravel, asphalt & Brick		Fill	0	0	0	0
							Br. & Gray f. sand						
							Tr. of silt.						
	9			9.0			W/L = 6.1		Set Well				
				B.T					Screen from				
									6.0'-9.0'				
									Sampled Water				
									# 26GFB17Ø6Ø9				
									Time: 1540				

Soil Sampled from 3.0-4.0 # 26SFB17Ø3Ø4 Time: 1530

* When rock coring, enter rock brokeness

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26 BORING NUMBER: GNC26B18
PROJECT NUMBER: DATE: 5-27-99
DRILLING COMPANY: GEOLOGIST:
DRILLING RIG: Geoprobe DRILLER: B.L.

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Concrete 2"						
							Dark gray To Brown f.		Product odor	150	0	50	0
				3.0			To med. Sand w/some						
	4		2.8'				gravel asphalts						
							Br. f. sand, Trace						
							of silt						
	9			9.0			W/L = 6.1		Set Screen				
				B.T					from 6.0'-9.0'				
									Sampled water				
									#26GFB18060				
									Time: 1610				

Soil Sampled from 2.0'-3.0' #26SFB18020 Time: 1600

*When rock coring, enter rock brokeness

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

Drilling Area Background (ppm): ____

Remarks: ____

Converted to Well. Yes ____ No ____ Well I.D. #. ____

BORING LOG

PROJECT NAME: Zone E Site 26
BORING NUMBER: CNC26B19
PROJECT NUMBER: N0126
DATE: 6 2 99
DRILLING COMPANY: Columbia
GEOLOGIST: RH
DRILLING RIG: geoprobe
DRILLER: Brad Lewis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	
				.5			Concrete							
							Tan & Gray Clay & coarse		Fill					0855 Sampled
				2.5			sand, Tr. silt & gravel							Soil.
	4		1.8'				Dark Br. Silty coarse			0	0	0	0	# 26SFB19020
							sand Trace of clay							
							& gravel		Gravel not					
									letting soil in					
	8		0						Tube.					
	9			9.0			W/L 28.5							
				B.T.										
									Set Screen					
	12			12.0					from ~~6.0'-9.0'~~					
				B.T.					9.0-12.0'					
									Sampled Water					
									~~# 26SFB190609~~					Water Sample
									26GFB190912					Time 0925
									Headspace					
									= 0 ppm					

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

PROJECT NAME: Zone E
BORING NUMBER: CN026B20
PROJECT NUMBER: 0126
DATE: 8 2 99
DRILLING COMPANY: Columbia
GEOLOGIST: PH
DRILLING RIG: Geoprobe
DRILLER: Brad Lewis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				1.0'			Asphalt 4"						
							Lime Rock		Sub-Base				
							Tan f. silty Sand Tr.		Sampled Soil				
	4		2.9	3.5			of clay		# 265FB20030 4	0	0	0	0
							Br. silty f. sand.		Time: 1045				
				9.0			W/L = 6.7'						
				B.T.					Set Screen				
									from 6.0'-9.0'				
									Sample No.				
									26GSL2000604				
									Time: 1105				

* If rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER: CWG26B21
DATE: 6-2-99
GEOLOGIST:
DRILLER: B. Lewis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
							Concrete 0.2'						
							Tan-Gray fine silty						
				3.0			sand.						
	4						Br fine silty Sand		Moist	0	0	0	0
									Set Screen				
									from 6.0-9.0'				
	8			9.0									
				B.T			W/L = 6.2		Sampled water				
									#26GFB21Ø6Ø9				
									Time: 1140				
									HeadSpace				
									= 0 ppm				

Sampled soil from 3.0'-4.0' #26SFB21Ø3Ø Time: 1125

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26 BORING NUMBER: CUG26B22
PROJECT NUMBER: DATE: 6-2-99
DRILLING COMPANY: GEOLOGIST:
DRILLING RIG: DRILLER: B. Lewis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**	
				1.0			Asphalt 4"							
							Sub Base (Lime Rock)							
							Brown f. silty							Sampled Soil
	4		2.8				sand		Product odor	50	5	8	10	from 3.0'-4.0'
														# 26SFB22Ø3
				9.0					set Screen					
				B.T.			W/L = 6.7'		from 6.0-9.0'					
									Time: 1400					
									Sampled Water					
									# 26GFB22Ø6Ø9					
									Time: 1410					
									H.S. = 1200 ppm					

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): ____

Remarks: ____

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

BORING LOG

Page ___ of ___

PROJECT NAME: Site 26
PROJECT NUMBER:
DRILLING COMPANY:
DRILLING RIG:

BORING NUMBER: CNC 26 B23
DATE: 6-2-99
GEOLOGIST:
DRILLER: B. Lewis

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
				0.8			Asphalt 4"						
							Lime Rock (Sub Base)						
				3.0			Tan to gray f. sand		Sampled Soil				
	4						Tr. of Silt		from 3.0'-4.0'				
							Brown & Gray f.		#26SFB23Ø3Ø4				
							silty sand (Moist)		Time: 1436				
				9.0			W/L = 6.70'		set screen				
				B.T.					from 6.0'-9.0'				
									Sample Water				
									#26GFB23Ø6Ø9				
									Time: 1452				
									H.S. = 0 ppm				

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: ZB13 24
DATE: 6/20/99
GEOLOGIST:
DRILLER: R. Brand

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	Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ
	1						Concrete/base						
	2					Lt. Brn	Silty Sand		Dry				
	3						—			0	0	0	0
25	4		22/4				—						
X	5								Moist	0	0	0	0
	6												
	7												
	8		4.5/4			Gray			Saturated				
10.5	9												
	10												
	11												
	12												

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26B25
DATE: 6/20/99
GEOLOGIST:
DRILLER: R. Brand

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	Soil Sz. Density, Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole	Driller BZ
	1						Asphalt w/base						
	2					Brn	Silty Sand		Dry				
	3						↓		↓				
32	4		4.5/4			Brn	↓		Moist				
	5						—						
X	6					Tan	Silty Sand		Moist				
	7					↓	↓		↓				
	8		2/4				—						
36	9						—						
	10						↓		Saturated				
	11					Grey	Clayey Sand		↓				
	12		1.8/4				—						
01													

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): 0

Remarks:

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

BORING LOG

PROJECT NAME: Cve
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Strato Probe
BORING NUMBER: 26B26
DATE: 6/20/99
GEOLOGIST:
DRILLER: R. Brand

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: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample**	Sampler BZ	Borehole**	Driller BZ
	1						Asphalt w/fill						
	2					Blk	Silty Sand w/Gravel		Dry				
	3					↓	↓		↓				
15	4		2/4				—						
	5					↓	↓		↓				
X	6					Olive	Sandy Clay		Moist				
	7					↓	↓		↓				
25	8		4/4			Gray	↓		↓				
	9					—	—						
	10					↓	Silty Clay		Saturated				
	11					↓	Silty Sand - Odor		↓				
33	12		2/4				—						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: ZBZ7
DATE: 6/20/99
GEOLOGIST:
DRILLER: R. Brand

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	Soil Density/Consistancy or Rock Hardness	Color	Material Classification*	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Asphalt w/base		Dry				
	2					Brn	Silty Sand		↓				
	3						—		↓				
1235	4		2 1/4				—						
	5												
X	6					Brn	Silty Sand		Saturated				
	7					↓	↓		↓				
	8		2.1/4				—						
1242	9												
	10												
	11												
	12		4										

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: 2 B 128
DATE: 6/20/99
GEOLOGIST:
DRILLER: K Brand

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistancy or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample Bag	Excavator	Driller Bag
	1												
	2					Brn	Silty Sand		Dry				
	3												
	4		3/4				—						
34	5						—						
	6								Moist				
	7												
	8		2/4				—						
334													

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stone to Garden
BORING NUMBER: 26 B29
DATE: 6/20/99
GEOLOGIST:
DRILLER: R. Brand

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sample Bag	Borehole	Driller Bag
		1						Concrete w/Fill		Dry				
		2					Brn	Silty Sand						
		3						—						
		4		1.9/4				—						
HL		5					Brn	Silty Sand		Moist				
		6												
		7												
		8		2.5/4										
RH		9												
		10												
		11												
		12												

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CNC Zone E
BORING NUMBER: 26B30
PROJECT NUMBER:
DATE: 6/29/99
DRILLING COMPANY: Columbia
GEOLOGIST:
DRILLING RIG: Stratoprobe
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole	Driller BZ
	1												
	2					Red Brown	Clay = 2" Silty Sand		Dry				
	3									0	0	0	0
26	4		2/4										0
	5					Brn.	Silty Sand		Moist	0	0	0	0
	6												
	7												
29	8		2/4										
	9					Gray	Silty Sand		Moist	70	0	0	0
	10								Saturated				
	11												
134	12		3.4/4										

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CNC Zone E
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26B31
DATE: 6/29/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample Zone	Sample Bz	Borehole**	Drill Bz
	1												
	2					Red Brn	6"- Clay / Silty Sand		Dry				
	3									0			
3,4	4		1/4										
	5					Brn			Moist				
	6								Saturated				
	7					Red Brn	Petro odor			0			
2	8		3/4										
	9												
	10												
	11												
	12		1/4										

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

Page ___ of ___

PROJECT NAME: Zone E
PROJECT NUMBER: Site 26
DRILLING COMPANY: Columbia
DRILLING RIG: hand auger / Shaker
BORING NUMBER: 26B 32 34 32
DATE: 7 8 99
GEOLOGIST:
DRILLER: R Brand

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: Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sampler*	Sampler BZ**	Borehole**	Driller BZ**
	1			hand auger			6" Concrete						
	2				lt br		Silty Sand		dry			0	
	3								to	0	0	0 50	0
	4				br.				moist				
	5				br.				moist				
X	6									40	0	50	0
	7												
	8		4/3				Petro odor		Saturated				

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes Temp No ___ Well I.D. #: ___

BORING LOG

PROJECT NAME: Zone E
PROJECT NUMBER: Site 2C
DRILLING COMPANY: Columbia
DRILLING RIG: hand auger/stratoprobe
BORING NUMBER: 26B33
DATE: 7-8-99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler Bz	Borehole Bz	Driller Bz
	1				fine	br	sand		dry				
	2								to				
	3								moist	0	0	0	0
	4												
	5						silty sand		moist				
	6												
	7												
	8								wet/saturated				

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

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

Hand Auger

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26B34
DATE: 7/9/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness*	Color	Material Classifications	USCS	Remarks	PID/FID Reading (ppm): Sample	Sample Bz	Backgrd	Drill Bz
	1						Concrete & Gravel						
	2				med.	br.	silty sand		dry				
	3				lt	br.			damp	0		0	0
	4			Hand Auger					moist				
	5												
	6				dk	gr.			wet	30	0		0
	7				grayish				Saturated				
	8				brown				Petrol odor				
	9								Saturated				
	10												
	11					Brn	w/Gravel						
	12		3/3			Gray							

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

Page ___ of ___

PROJECT NAME:
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratiprobe (hand)

BORING NUMBER: 26B ~~34~~ 35
DATE: 7.9.99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness*	Color	Material Classification**	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample Bag	Background	Cutting Bag
	1				med	br.	sand		damp				
	2					lt	silty sand		damp				
	3					dkgr			moist	10	0	0	0
	4								moist				
	5								moist	7	0	0	0
	6								wet				
	7								saturated				
	8												
	9												
	10												
	11												
	12												

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): 0

Remarks:

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

Hand Auger

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Geoconsia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26 B36
DATE: 7/14/99
GEOLOGIST:
DRILLER: J. Bennett

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Drilling BZ
	1			Hand Auger			Asphalt w/Base		Dry				
	2					Brn	Silty Sand						
	3									0	0	0	0
	4								Moist				
X	5					BLK			Petro odor & stain	0	0	0	0
	6												
	7						Petro odor		Saturated				
	8		3/3			Gry							

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

Page ___ of ___

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT

BORING NUMBER: 26B37
DATE:
GEOLOGIST: 7 10 99
DRILLER: R. Bu

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample Bz	Borehole	Driller Bz
	1				Med	dkb	Silty sand		sl moist				
	2						w/ large rocks						
	3									0	0	0	0
	4			Total Temp									
	5									0	0	0	0
	6												
	7					Blk	Petro odor		Saturated				
	8		3/4										

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes Temp No ___ Well I.D. #:

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Hand Auger
BORING NUMBER: 26B38
DATE: 7/1/94
GEOLOGIST:
DRILLER: R. Brown

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample #	Sampler BZ	Borehole	Driller BZ
	1						Asphalt w/ Base						
	2					Blk	Fill Material (Ballast)		Dry				
	3					Brn	Silty Sand		Moist				
	4												
X	5									0	0	0	0
	6												
	7					Blk	Petroleum		Saturated				
	8						Extract						

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

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

BORING LOG

PROJECT NAME: Zone E
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: CNC 26B39
DATE: [redacted] 7 11 99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Drill Rig	Borehole	Driller Breathing
	1			hand auger	fine to med.	br	sand		sl moist				
	2					lt br			sl moist				
	3												
	4												
X	5					b			moist	0	0	0	0
X	6					dk br							
	7					tan							
	8					tan			wet				

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): Ø

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26B4D
DATE: 7/13/99
GEOLOGIST:
DRILLER: R.B. and

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			USCS*	Remarks	PID/FID Reading (ppm)
	1			Hand Augur			Asphalt w/base			
	2					Brn	Silty Sand		Dry	
	3								Moist	
	4									
	5									
	6					Dk Brn	Sandy Clay			
	7									
	8		3/3			Brn	Silty Sand		Saturated	
	9						Sandy Clay			
	10					Gray	Silty Sand			
	11									
	12		4/4				Sandy Clay			

* When rock coring, enter rock brokenness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: 26B41
DATE: 7/13/99
GEOLOGIST:
DRILLER: R. Brand

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			USCS*	Remarks	PID/FID Reading (ppm)
	1			Hand Auger			Asphalt, heavy brick		Dry	
	2					Brn	Silty Sand			
	3									
X	4									
	5								Moist	
	6								Sat	
	7								Saturated	
	8		3/3							

* When rock coring, enter rock brokeness.

** Include monitor reading in 8 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 26 B ~~39~~ 42
DATE: 7/13/99
GEOLOGIST:
DRILLER: L. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample (Ft.)	Sample (Ft.)	Borehole	Drill Bit
	1			Hand Auger			Concrete & gravel		Dry				
	2					Brn	Silty Sand						
	3												
	4												
	5								Moist				
	6												
	7					Gray	Silty Clay		Saturated				
	8		3/3										

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

, NAME: CNC
.ECT NUMBER:
.RILLING COMPANY: Columbia
DRILLING RIG: DPT

BORING NUMBER: 26 B43
DATE: 7/22/94
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			Hand Auger		Br	Coarse Sand w/Clay & Gravel		Dry				
	2												
	3												
X	4												
	5									0	0	0	0
	6								Dry				
	7												
	8		4/4				Petroleum odor & stain		Saturated	180	0	71	0
	9												
	10												
	11					Gray							
	12		4/4										

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): 0

Remarks:

ted to Well: Yes Temp No Well I.D. #:

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT
BORING NUMBER: ZG B44
DATE: 7/22/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			Stud Strip		Brn	Coarse Sand		Dry				
	2												
	3												
X	4									0	0	0	0
	5												
	6					Tan			Moist				
	7												
	8		4.5/4			Blk	Petroleum Odor & Stain		Saturated				
	9												
	10												
	11			No Recovery									
	12		6/4										

When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT
BORING NUMBER: ZG1345
DATE: 7/22/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			1 foot Hyp		Tan	Coarse Sand		Dry				
	2												
	3												
	4								Moist	0	0	0	0
X	5												
	6												
	7					PK Brn			Saturated				
	8		2/4			PK	Petroleum Estain						
	9												
	10												
	11			No Recovery									
	12		0/4										

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT

BORING NUMBER: 26B46
DATE: 7/22/99
GEOLOGIST:
DRILLER: R. Brand

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1			1 foot deep		Red Brown	Clay		Dry				
	2					Tan	Sand						
	3												
X	4									0	0	0	0
	5												
	6												
	7					Brn			Moist				
	8		2/4			Tan			Saturated				
	9												
	10												
	11												
	12		1.5/4			Blk	Peat Stain odor						

When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): Ø

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT
BORING NUMBER: 26 B47
DATE: 7/22/99
GEOLOGIST:
DRILLER: R. Franklin

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1			Hard Auger		Brn	Sand & Gravel		Dry				
	2					↓	↓		↓				
	3					Brn	Sand						
X	4			↓		↓	↓		↓	0	0	0	•
	5						—						
	6						—						
	7					Brn	Sand		Moist				
	8		2/4			↓	↓ Petro odor		↓				
	9												
	10												
	11												
	12		0.5/4			L	↓ Petro odor		Saturated				

* When rock coring, enter rock brokeness.

** Include monitor reading in 8 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: DPT
BORING NUMBER: 26B48
DATE: 7/22/99
GEOLOGIST:
DRILLER: G. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Driller BZ**
	1			Hard		Brn	Sand		Dry				
	2												
	3			Art									
	4								Moist				
	5												
	6												
	7												
	8		4/4				Petro Odor						
	9								Saturated				
	10												
	11												
	12		4/4										

*When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Strataprobe
BORING NUMBER: 261344
DATE: 7/26/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Silty S Cement						
	2												
	3					Brn	Silty Sand		Moist	0	0	0	0
X	4		2/4			↓	↓		↓				
	5					↓	↓		↓				
	6					↓	Silty Clay		Saturated				
	7					↓	↓		↓				
	8		3/4			↓	Silty Sand		↓				
	9												
	10												
	11												
	12												

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): Ø

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Colony Site
DRILLING RIG: Stratoprobe

BORING NUMBER: 26B53
DATE: 8/5/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistancy or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Tan	Sand		Dry				
	2												
	3			Hand Auger									
	4								Moist	0	0	0	0
X	5												
	6												
	7									0	0	0	0
	8		9/4						Petro Odor & Product				
	9					Dk	Sand		Saturated				
	10												
	11					Green	Clayey Sand		Petro Odor & Product				
	12		4/4										

*When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Colyan Sia
DRILLING RIG: ~~Stee~~ DPT

BORING NUMBER: Z6155-4
DATE: 8/5/98
GEOLOGIST:
DRILLER: R. Brand

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	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1			Hand Auger		Tan	Sand		Dry				
	2												
	3												
X	4									0	0	0	0
	5								Moist				
	6												
	7						Petro Odor Stain		Saturated	75	0	0	0
	8		3/3			Gray	Clayey Sand						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CRC
PROJECT NUMBER:
DRILLING COMPANY: Colorado
DRILLING RIG: DPT
BORING NUMBER: 26B55
DATE: 8/5/94
GEOLOGIST:
DRILLER: A. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Tan	Sand		Dry				
	2												
	3												
X	4					OK Brn			Moist	0	0	0	0
	5												
	6												
	7								Saturated				
	8		1.5/3										

* With rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CKC
PROJECT NUMBER:
DRILLING COMPANY: Colum Site
DRILLING RIG: DPT

BORING NUMBER: 26B56
DATE: 8/5/99
GEOLOGIST:
DRILLER: A. Brand

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: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			Fill		Brn	Sand		Dry				
	2												
	3			Fill									
Fill	4									0	0	0	0
	5								Moist				

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Cedar Sid
DRILLING RIG: DPT
BORING NUMBER: ZCBS 7
DATE: 8/5/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Asphalt w/base						
	2					Brn	Clayey Sand		Dry				
R	3									0	0	0	0
	4												
	5						Sand		Moist				
	6					Reddish Brown	Clayey Sand		Saturated				
	7												
	8												

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm): 0

Remarks:

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Colemsin
DRILLING RIG: DPT
BORING NUMBER: 26B58
DATE: 8/5/99
GEOLOGIST:
DRILLER: A. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistancy or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1						Asphalt						
	2					Brn	Sand		Dry				
	3												
X	4								Moist	0	0	0	0
	5												
	6												
	7												
	8												

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

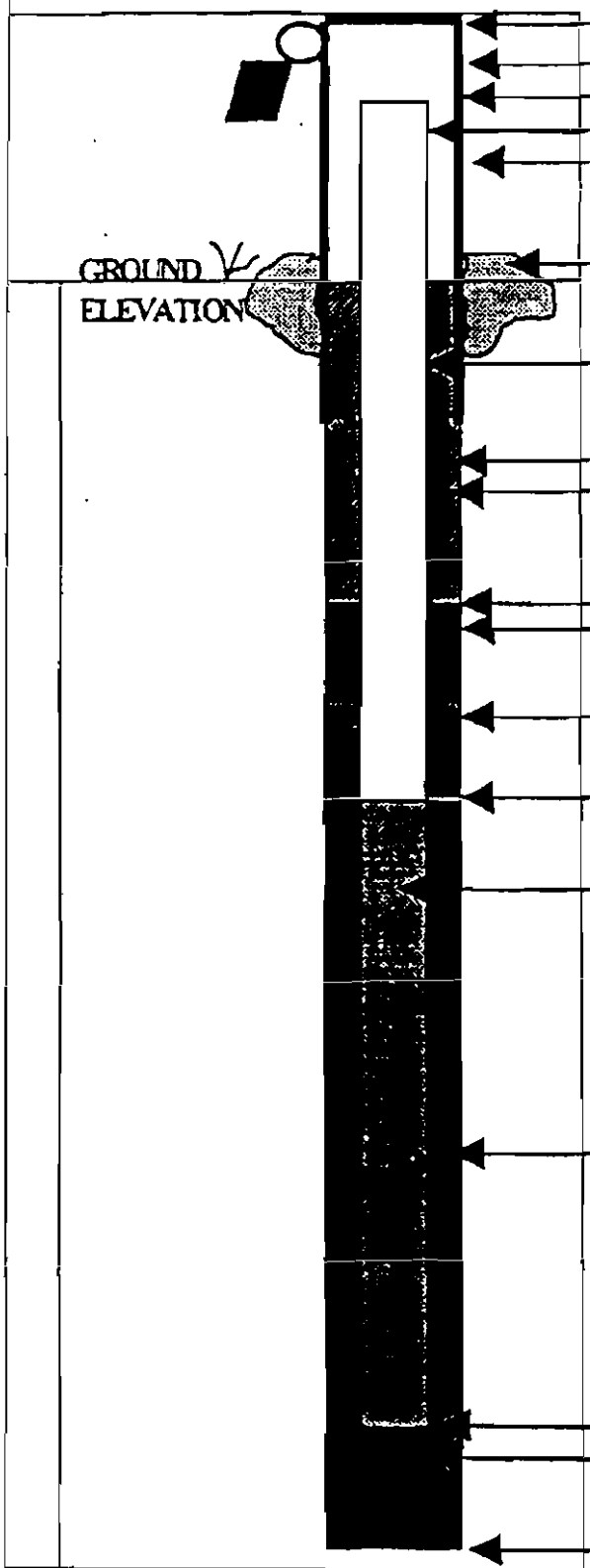
Remarks:

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

BORING NO.: P01

OVERBURDEN MONITORING WELL SHEET

PROJECT CWC	LOCATION: Site 26	DRILLER P. Brand
PROJECT NO.	BORING P01	METHOD: DPT
ELEVATION	DATE 8/4/94	DRILLING
FIELD GEOLOGIST		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL: Concrete - Soil Flush

RISER PIPE I.D.: 40 PVC

TYPE OF RISER PIPE:

BOREHOLE DIAMETER:

TYPE OF SEAL:

ELEVATION / DEPTH OF SEAL: 10.5'

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 1.0'

ELEVATION / DEPTH TOP OF SCREEN: 13.0'

TYPE OF SCREEN: 40 PVC

SLOT SIZE X LENGTH: 0.01" X 10'

I.D. OF SCREEN: 1.25"

TYPE OF SAND PACK: Medium

ELEVATION / DEPTHBOTTOM OF SCREEN: 113.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 113.0'

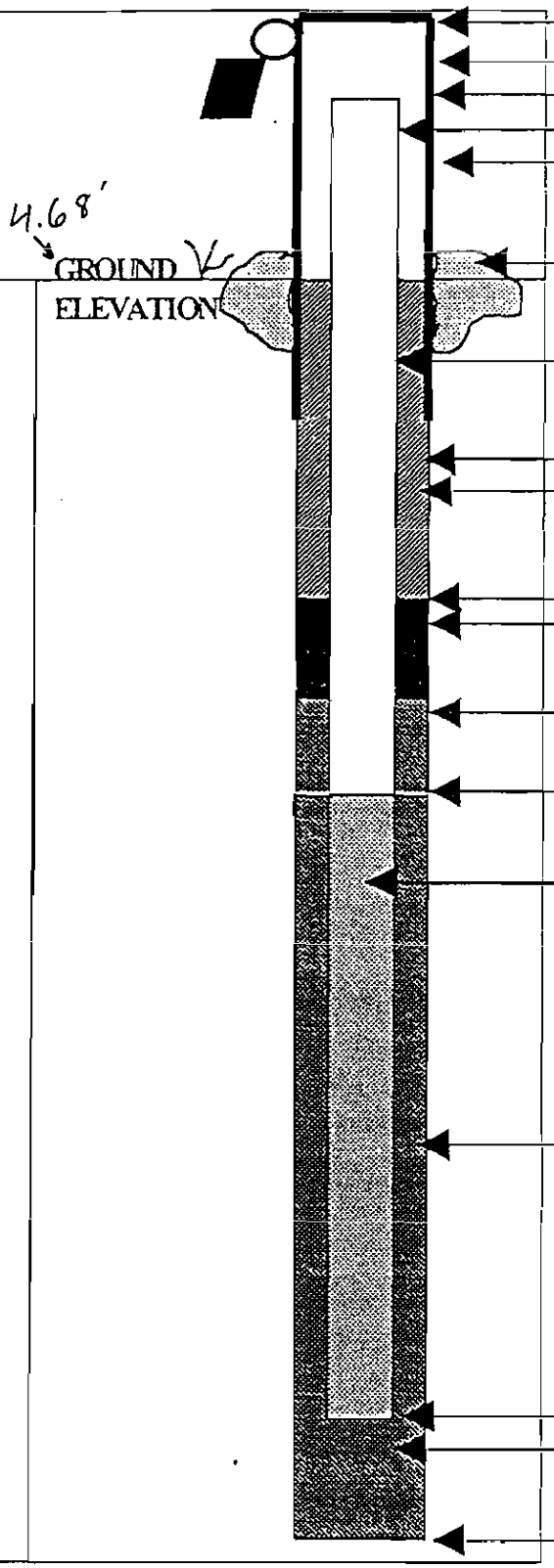
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 113.0'

BORING NO.: P Ø2

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC	LOCATION: Site 26	DRILLER R. Brand
PROJECT NO.	BORING PØ2	METHOD: DPT
ELEVATION	DATE 8/4/99	DRILLING
FIELD GEOLOGIST		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING: 1.97'

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL: Concrete flush

RISER PIPE I.D.: 40 PVC

TYPE OF RISER PIPE:

BOREHOLE DIAMETER:

TYPE OF SEAL:

ELEVATION / DEPTH OF SEAL: 10.5'

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 1.0'

ELEVATION / DEPTH TOP OF SCREEN: 13.0'

TYPE OF SCREEN: 40 PVC

SLOT SIZE X LENGTH: 0.01" X 10'

I.D. OF SCREEN: 1.25"

TYPE OF SAND PACK: medium

ELEVATION / DEPTHBOTTOM OF SCREEN: 113.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 113.0'

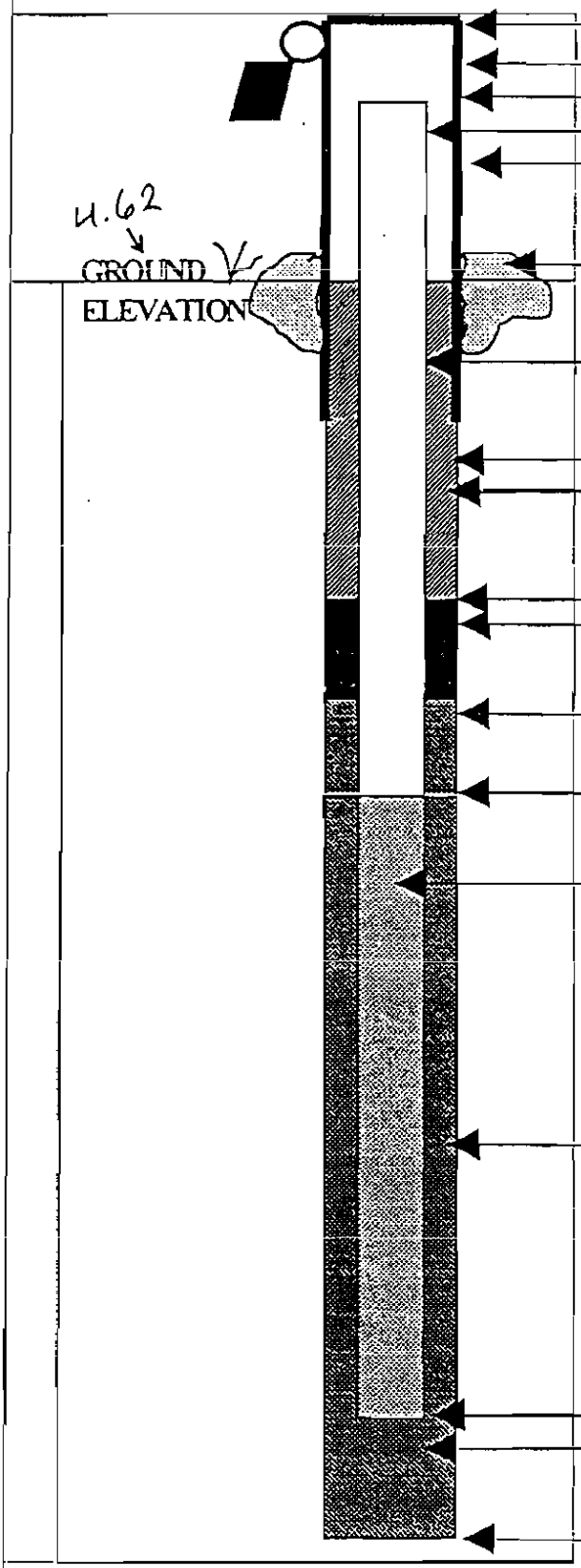
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 113.0'

BORING NO.: P Ø 3

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC	LOCATION: Site 26	DRILLER R. Brand
PROJECT NO.	BORING P Ø 3	METHOD: DPT
ELEVATION	DATE 8/4/99	DRILLING
FIELD GEOLOGIST		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING: 4.54'

ELEVATION OF TOP OF RISER PIPE:

STICK -UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL: Concrete flush

RISER PIPE I.D.: 40 PVC

TYPE OF RISER PIPE:

BOREHOLE DIAMETER:

TYPE OF SEAL:

ELEVATION / DEPTH OF SEAL: 1.05'

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 1.0'

ELEVATION / DEPTH TOP OF SCREEN: 13.0'

TYPE OF SCREEN: 40 PVC

SLOT SIZE X LENGTH: 0.01" X 10'

I.D. OF SCREEN: 1.25"

TYPE OF SAND PACK: Medium

ELEVATION / DEPTHBOTTOM OF SCREEN: 13.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13.0'

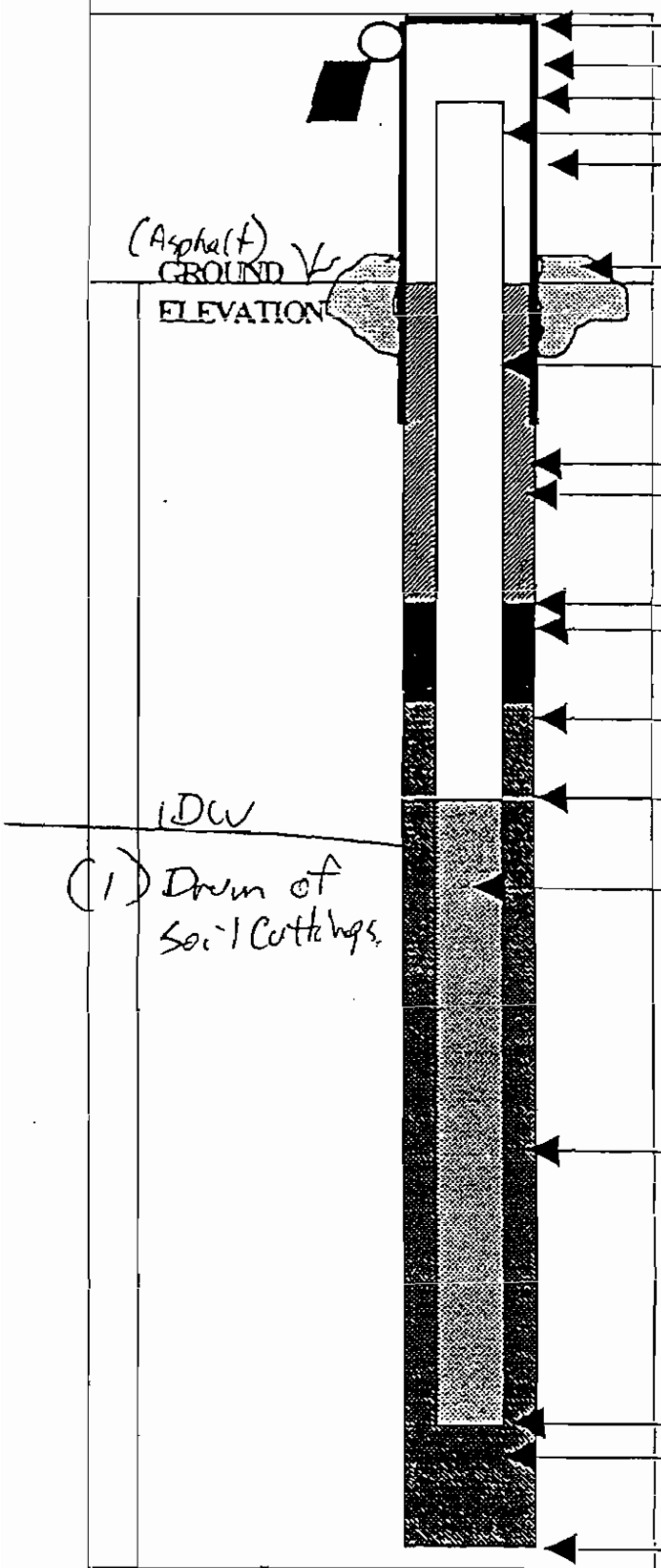
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 13.0'

BORING NO. CNC26-MW01

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC - Chas., SC	LOCATION:	S. Yard 26/Bldg. 6	DRILLER	Custom Drilling
PROJECT NO.	0126	BORING	CNC26-MW01	METHOD:	~~DPT~~ 4.25" HSA
ELEVATION		DATE	8/17/99	DRILLING	Rod Fuller
FIELD GEOLOGIST	M. Carrington			DEVELOPMENT:	NA



ELEVATION OF TOP OF SURFACE CASING: ____

ELEVATION OF TOP OF RISER PIPE: ____

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" ID x 10" OD Flush

TYPE OF SURFACE CASING: Flush Mount Steel Cover (round) w/ bolt-on lid.

TYPE OF SURFACE SEAL: Concrete Pad (Quikcrete) 2ft x 2ft x 6 in.

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: PVC Sch. 40, Flush Threaded (F.T.)

BOREHOLE DIAMETER: 8.25 in.

TYPE OF SEAL: Portland Cement Type I

ELEVATION / DEPTH OF SEAL: 11.0'

TYPE OS SEAL: "Choke" Sand, VF Qtz Sand (30/65) (3 50 lb. bag)

DEPTH TOP OF SAND PACK: 1.5'

ELEVATION / DEPTH TOP OF SCREEN: 12'

TYPE OF SCREEN: PVC, Sch. 40, F.T.

SLOT SIZE X LENGTH: 0.010 in x 10 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. Sand (20/30) (6-7 50 lb. bags)

ELEVATION / DEPTHBOTTOM OF SCREEN: 112'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112'

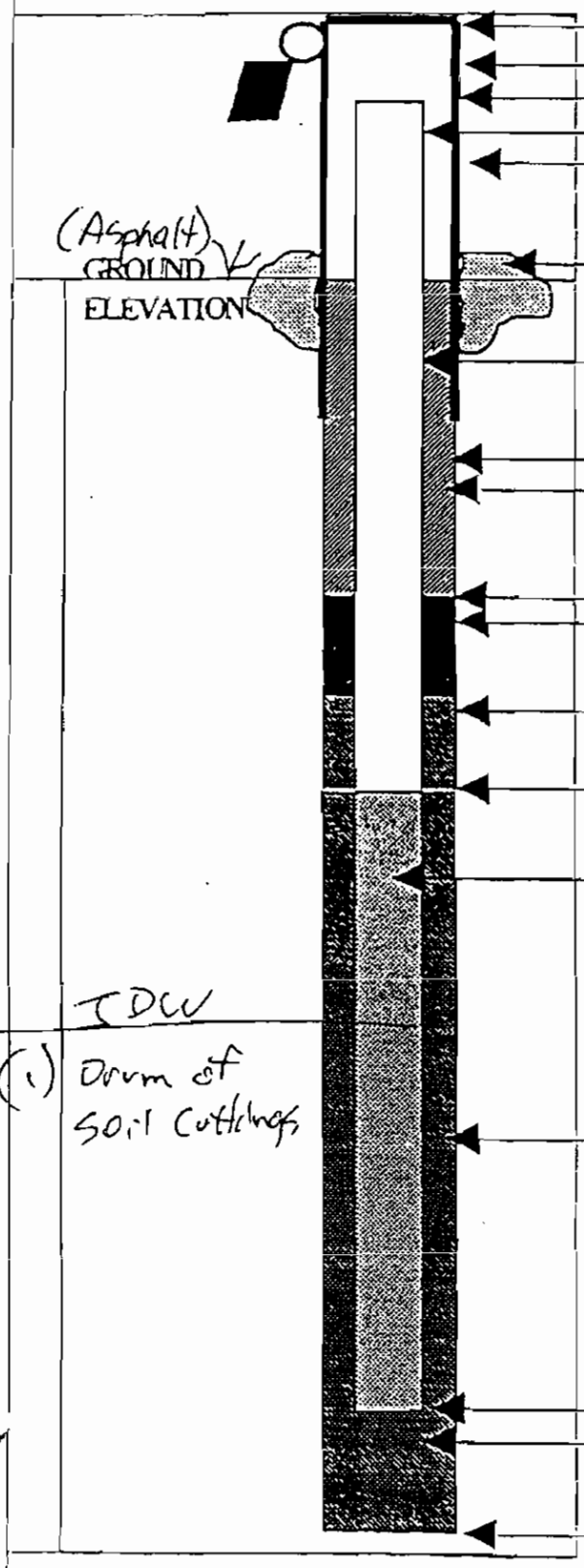
TYPE OF BACKFILL BELOW OBSERVATION WELL: (20/30) Qtz. Sand.

ELEVATION / DEPTH OF HOLE: 112'

BORING NO. CNC26-MW02

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC - Chas SC	LOCATION: Bldg 6/Site 26	DRILLER Custom Drilling
PROJECT NO. 0126	BORING CNC26-MW02	METHOD: ~~DPT~~ 4.25" HSA
ELEVATION	DATE 8/17/99	DRILLING Rod Fulton
FIELD GEOLOGIST M. Darrington		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" ID x 10" OD (Flush

TYPE OF SURFACE CASING: Flush Mount Steel Cover w/ Bolt-on Lid (PEMCO)

TYPE OF SURFACE SEAL: Concrete Pad (Quickcrete) 2x2x6"

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: PVC Sch. 40, Flush Threaded (F.T.)

BOREHOLE DIAMETER: 8.25 in (4.25 in HSA)

TYPE OF SEAL: Portland Cement Grout Type I

ELEVATION / DEPTH OF SEAL: 11.0'

TYPE OS SEAL: "Choke" Sand, Very Fine Sand (30/65) (13 50lb. bag)

DEPTH TOP OF SAND PACK: 1.5'

ELEVATION / DEPTH TOP OF SCREEN: 12.0

TYPE OF SCREEN: PVC, Sch. 40, F.T.

SLOT SIZE X LENGTH: 0.010 in x 10 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. Sand (20/30) (7 50lb. bags)

ELEVATION / DEPTHBOTTOM OF SCREEN: 112.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112.0'

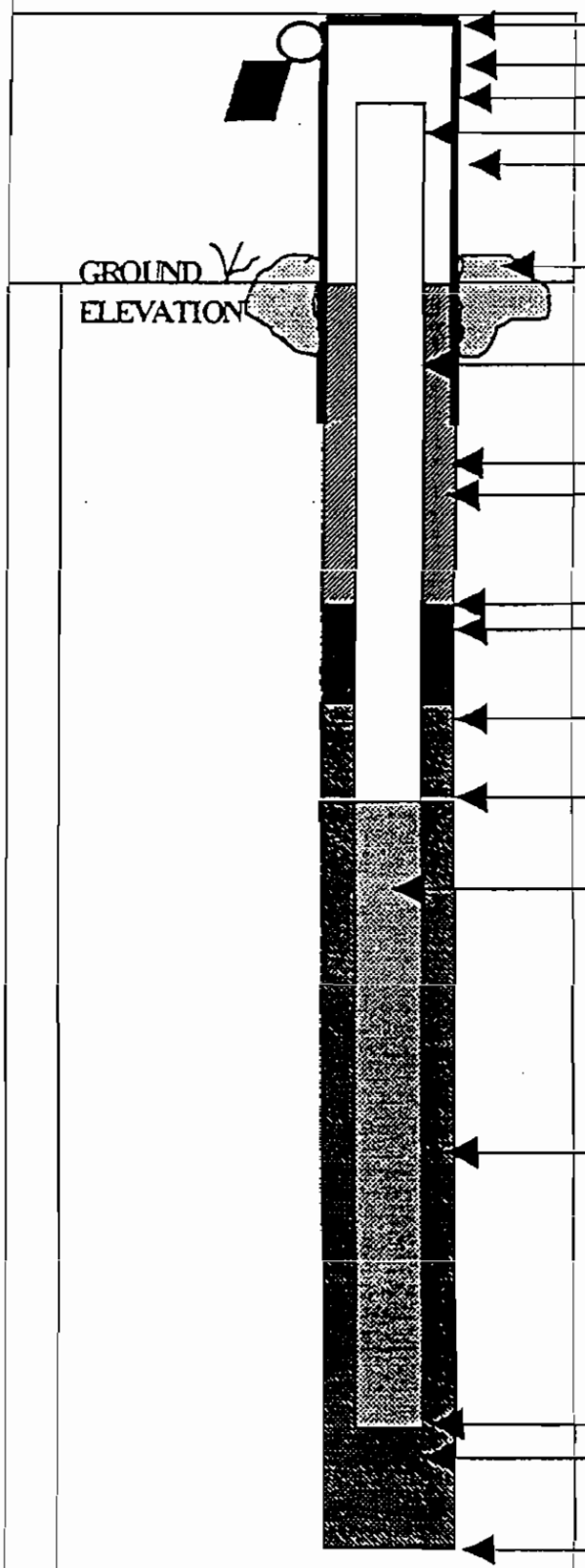
TYPE OF BACKFILL BELOW OBSERVATION WELL: Fine Qtz. sand (20/30)

ELEVATION / DEPTH OF HOLE: 112.0'

BORING NO.: MW-3

OVERBURDEN MONITORING WELL SHEET

PROJECT Zone E GNC	LOCATION: Site 26	DRILLER
PROJECT NO.	BORING MW-3	METHOD: ~~DPT~~
ELEVATION	DATE 8-8-99	DRILLING Auger
FIELD ~~GEOLOGIST~~ Tech R. Nill		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8" Manhole Cover

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL:

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: P.V.C.

BOREHOLE DIAMETER: 8"

TYPE OF SEAL: Grout, Concrete

ELEVATION / DEPTH OF SEAL: Fine Sand 1.0'

TYPE OS SEAL: ~~Grout, Concrete~~

DEPTH TOP OF SAND PACK:

ELEVATION / DEPTH TOP OF SCREEN: 10.0'

TYPE OF SCREEN: P.V.C.

SLOT SIZE X LENGTH: .010 x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 7 50lb. Bags 20/30 silica

ELEVATION / DEPTHBOTTOM OF SCREEN: 12.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5'

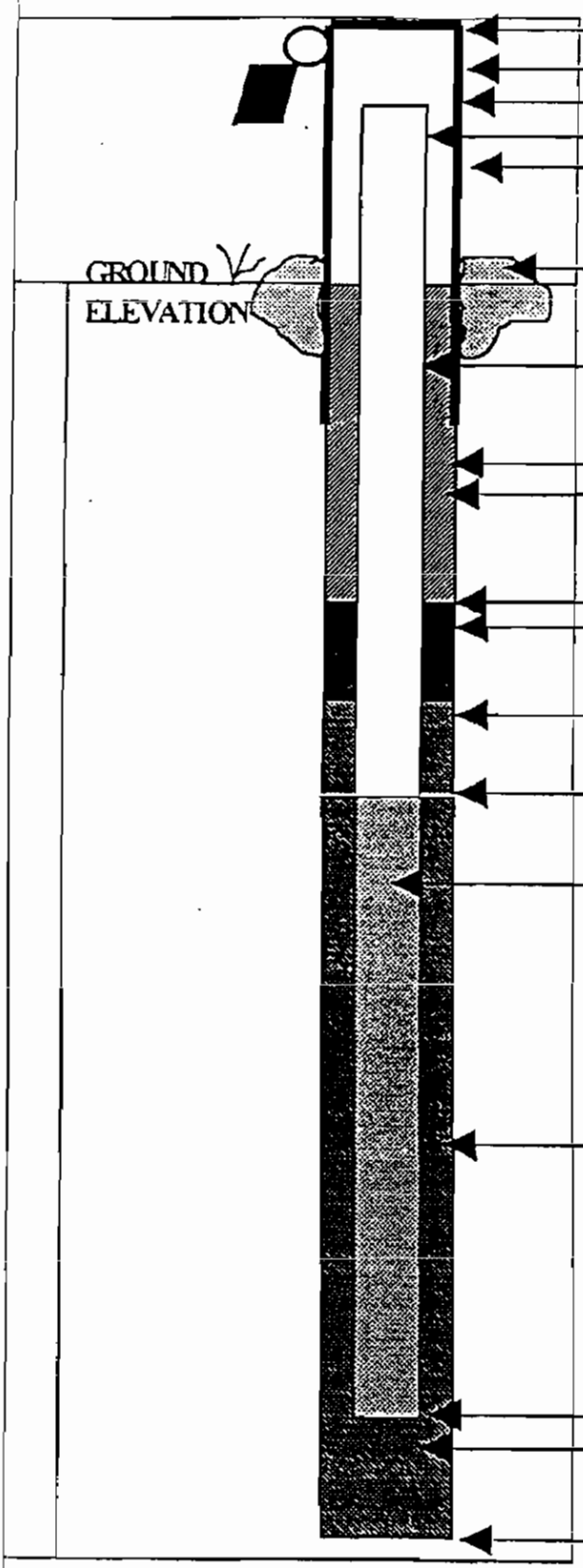
TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 1

BORING NO.: MW-4

OVERBURDEN MONITORING WELL SHEET

PROJECT Zone E CNC	LOCATION: Site 36	DRILLER H.S.
PROJECT NO.	BORING MW-4	METHOD: ~~DPT~~ Auger
ELEVATION	DATE 8-8-99	DRILLING
FIELD ~~GEOLOGIST~~ Tech R. Hill / TENUS.		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8" manhole

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL:

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: P.V.C.

BOREHOLE DIAMETER: 8"

TYPE OF SEAL: Grout

ELEVATION / DEPTH OF SEAL: /

TYPE OS SEAL: ~~Grout~~ Fine Sand

DEPTH TOP OF SAND PACK: ~~4~~ 1.5'

ELEVATION / DEPTH TOP OF SCREEN: 10' ~~7.0'~~

TYPE OF SCREEN: .010

SLOT SIZE X LENGTH: .010 X 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30 Silica Sand 7 50lb Bags.

ELEVATION / DEPTHBOTTOM OF SCREEN: 12.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5'

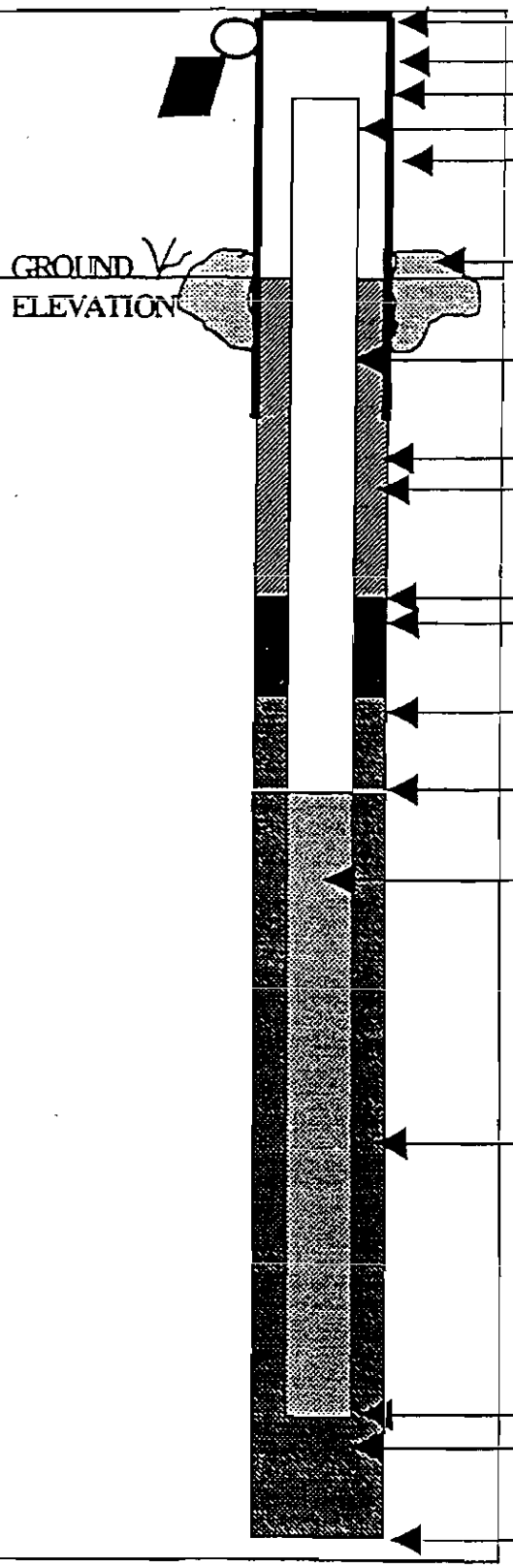
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 Sand

ELEVATION / DEPTH OF HOLE: /

BORING NO.: MW-5

OVERBURDEN MONITORING WELL SHEET

PROJECT Zone E GNC	LOCATION: Site 26	DRILLER R.
PROJECT NO.	BORING MW-5	METHOD: ~~DPT~~ Auger
ELEVATION	DATE 8-8-99	DRILLING
FIELD ~~GEOLOGIST~~ Tech R. Hill / THUS		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING: 8" Manhole Cover

TYPE OF SURFACE SEAL: Concrete

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC.

BOREHOLE DIAMETER: 8"

TYPE OF SEAL: Grout & Concrete.

ELEVATION / DEPTH OF SEAL: 1.5'

TYPE OS SEAL: Fine sand

DEPTH TOP OF SAND PACK: 2'

ELEVATION / DEPTH TOP OF SCREEN: 1

TYPE OF SCREEN:

SLOT SIZE X LENGTH: .010 X

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30 silica > 50 lb. Bags

ELEVATION / DEPTHBOTTOM OF SCREEN: 1

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5'

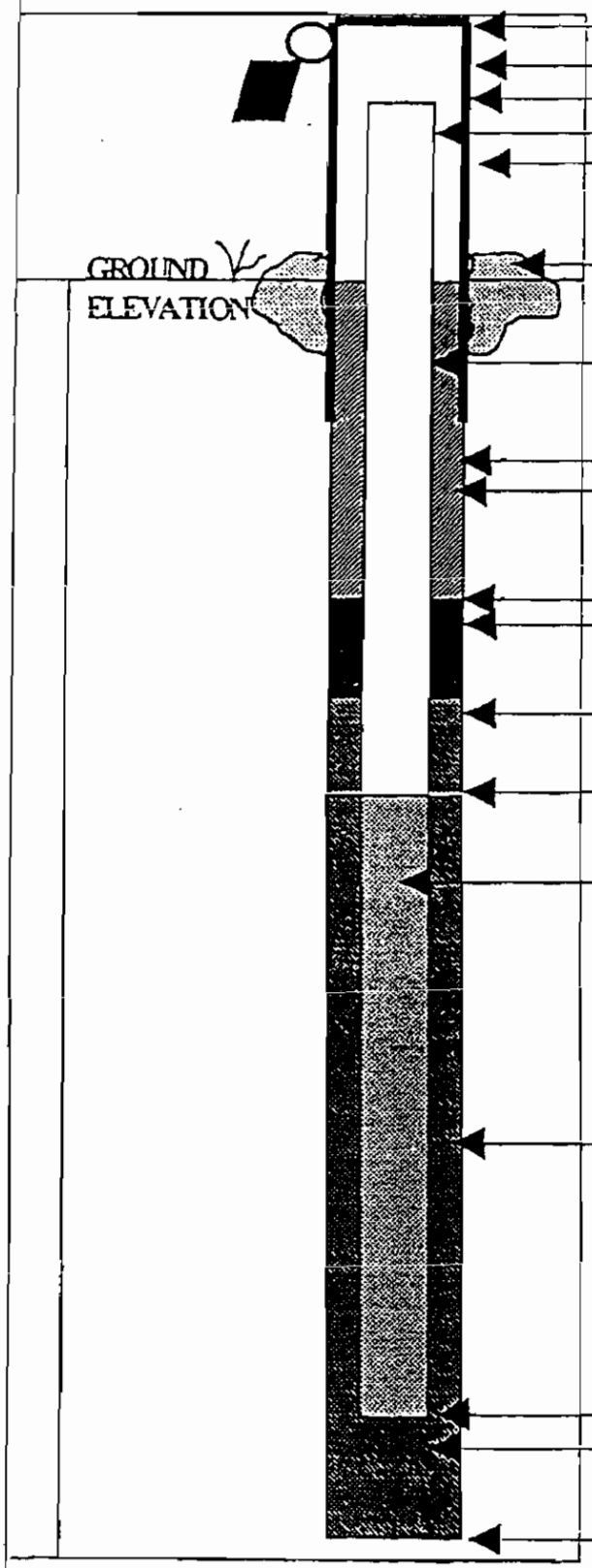
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 Sand.

ELEVATION / DEPTH OF HOLE: 1

BORING NO.: MW-6

OVERBURDEN MONITORING WELL SHEET

PROJECT	Zone E CNC	LOCATION:	Site 26	DRILLER	
PROJECT NO.		BORING	MW-6	METHOD: ~~DPT~~	Auger
ELEVATION		DATE	8-8-99	DRILLING	
FIELD ~~GEOLOGIST~~ Tech	R. Hill			DEVELOPMENT: NA	



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING: 8" Manhole Cover

TYPE OF SURFACE SEAL: Concrete.

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: P.V.C.

BOREHOLE DIAMETER: 8"

TYPE OF SEAL: Grout, Concrete

ELEVATION / DEPTH OF SEAL: 1.0'

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: 10'

TYPE OF SCREEN: P.V.C.

SLOT SIZE X LENGTH: .010 X 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 6 50lb Bags 20/30 Silica

ELEVATION / DEPTHBOTTOM OF SCREEN: 12.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 12.5'

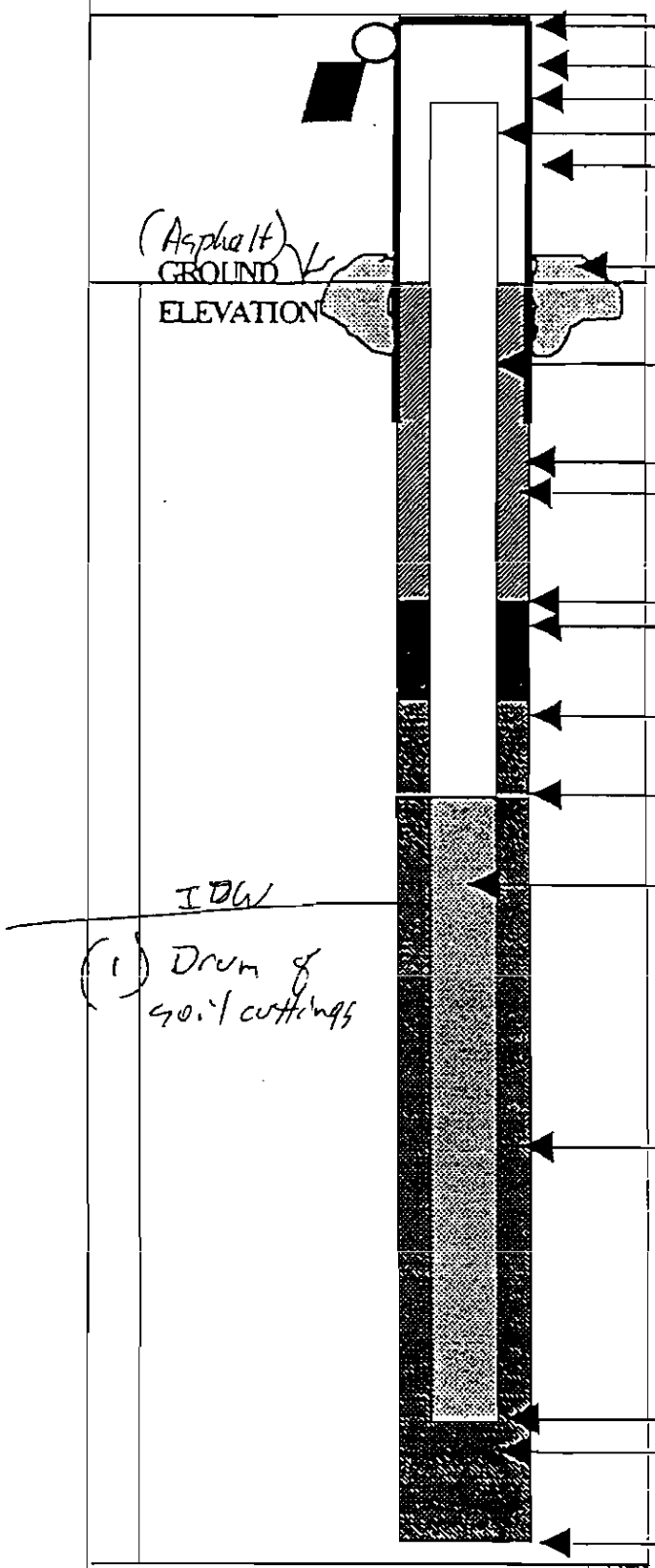
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 Sand

ELEVATION / DEPTH OF HOLE: 1

BORING NO.: CNC26 - MW07

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC - Chas, SC	LOCATION:	Site 26 / Zone E, Bldg. 6	DRILLER	Custom Drilling
PROJECT NO	0126	BORING	CNC26-MW07	METHOD:	~~DPT~~ 4.25 HSA
ELEVATION		DATE	8/17/99	DRILLING	Rod Fuller
FIELD GEOLOGIST	Mark Darrington			DEVELOPMENT:	NA



ELEVATION OF TOP OF SURFACE CASING: _____

ELEVATION OF TOP OF RISER PIPE: _____

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" ID x 10" OD

TYPE OF SURFACE CASING: Flush Mount Steel Cover w/ bolt-on lid.

TYPE OF SURFACE SEAL: Concrete Pad (Quikcrete) 2ft x 2ft. x 6in.

RISER PIPE I.D.: 2in.

TYPE OF RISER PIPE: PVC, sch. 40, Flush Threaded (F.T.)

BOREHOLE DIAMETER: 8.25 in

TYPE OF SEAL: Portland Cement Type I

ELEVATION / DEPTH OF SEAL: 11.0'

TYPE OS SEAL: "Choke" Sand. VF Qtz. sand (30/65)

DEPTH TOP OF SAND PACK: 1.5'

ELEVATION / DEPTH TOP OF SCREEN: 12'

TYPE OF SCREEN: PVC, Sch. 40, F.T.

SLOT SIZE X LENGTH: 0.010 in x 10 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. sand (20/30)

ELEVATION / DEPTHBOTTOM OF SCREEN: 112'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112'

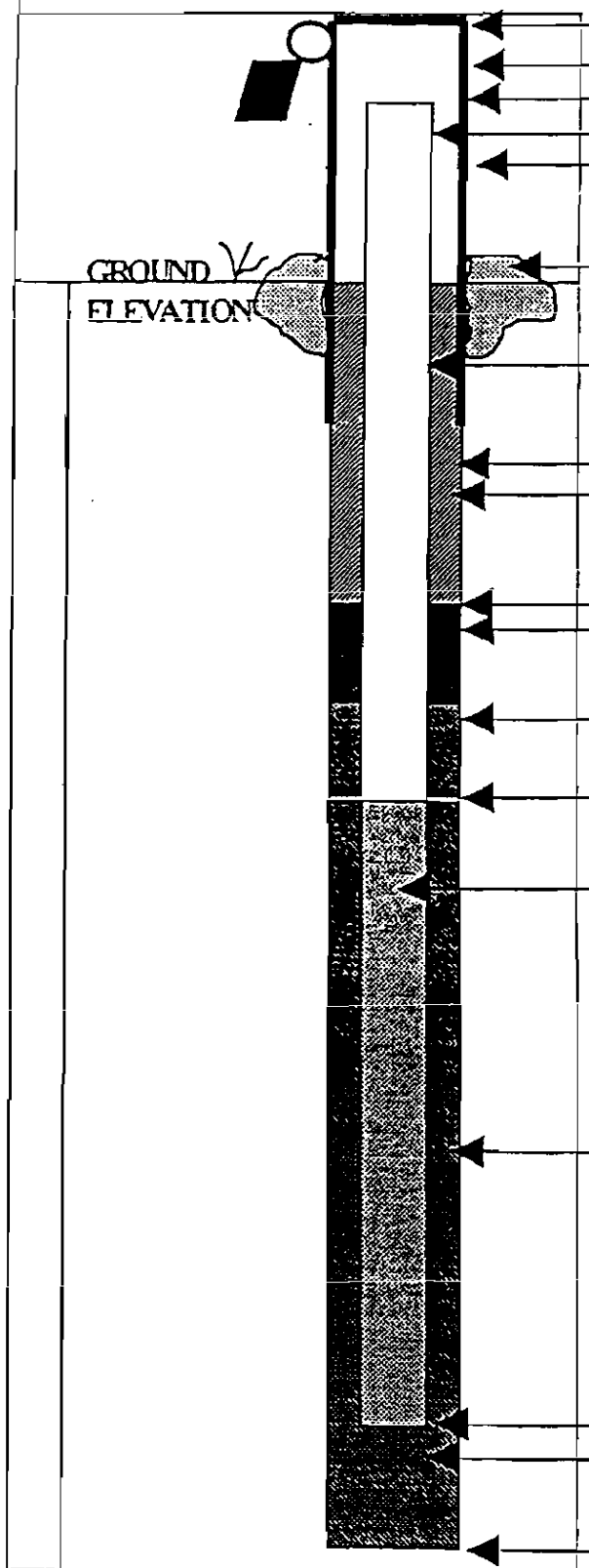
TYPE OF BACKFILL BELOW OBSERVATION WELL: Fine Qtz. sand (20/30)

ELEVATION / DEPTH OF HOLE: 112'

BORING NO.: MW-8

OVERBURDEN MONITORING WELL SHEET

PROJECT Zone E CNC	LOCATION: Site 26	DRILLER
PROJECT NO.	BORING MW-8	METHOD: ~~DPT~~
ELEVATION	DATE 8-8-99	DRILLING Auger
FIELD ~~GEOLOGIST~~ Tech. R. Hill		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8" Manhole Cover

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL: Concrete.

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: P.V.C.

BOREHOLE DIAMETER: 8"

TYPE OF SEAL: Grout, Concrete

ELEVATION / DEPTH OF SEAL: 2.0'

TYPE OS SEAL: Fine Sand.

DEPTH TOP OF SAND PACK: 3.0'

ELEVATION / DEPTH TOP OF SCREEN: 3.5'

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: .010 x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 8 50 lb. Bags. 20/30 Silica

ELEVATION / DEPTHBOTTOM OF SCREEN: 13.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13.0'

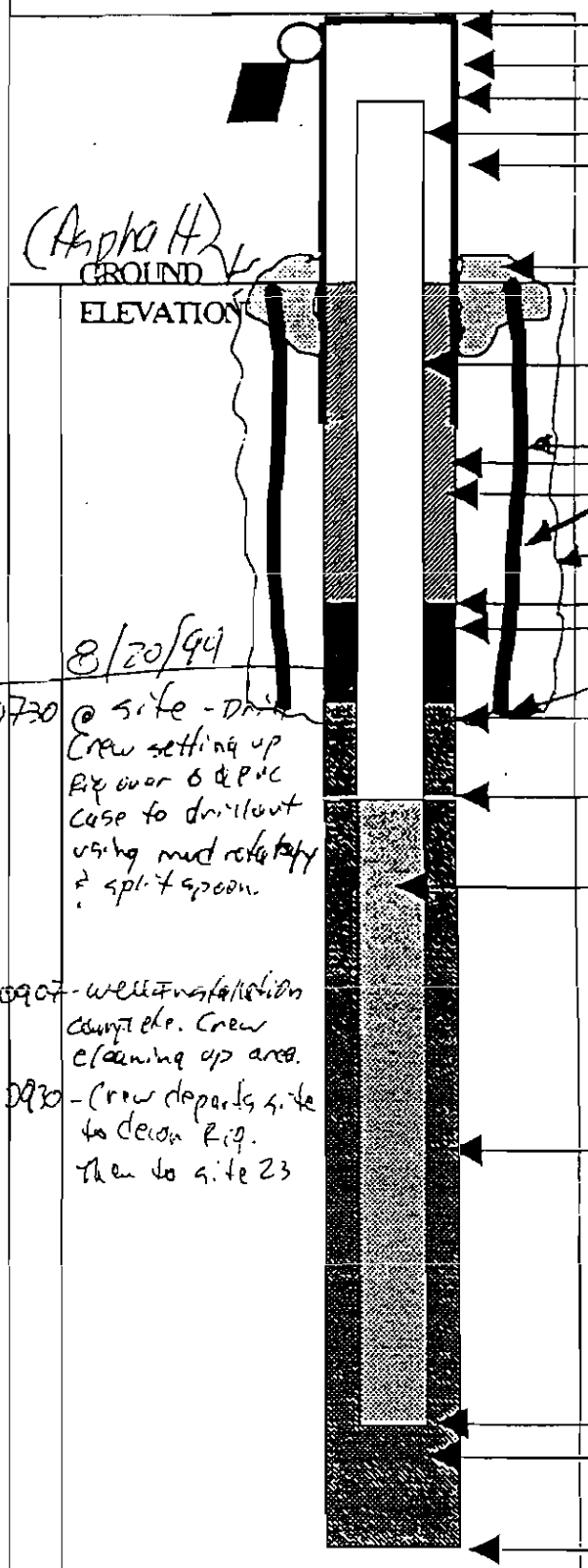
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 Sand

ELEVATION / DEPTH OF HOLE: /

BORING NO. CNC26-MW09D

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC - Chas, SC	LOCATION	Site 26/Bldg. 6	DRILLER	Custom Drilling
PROJECT NO.	0126	BORING	CNC26-MW09D	METHOD:	~~DPT~~ 8.25" HSA &
ELEVATION		DATE	8/20/99 & 8/18/99	DRILLING	5 7/8" Roller cone/Mud Rotary
FIELD GEOLOGIST	Mark Denington			DEVELOPMENT: NA	



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" ID x 10" OD

TYPE OF SURFACE CASING: Flush mount Steel cover w/ bolt-on lid.

TYPE OF SURFACE SEAL: Concrete Pad (2ft x 2ft x 6in.)

Type of RISER PIPE ~~NO.~~: PVC, Sch. 40, Flush Threaded (F.T.)

~~TYPE OF~~ RISER PIPE ID 2 in.

Type of Surface Case: PVC, Sch. 40 F.T. (6 in dia.)

BOREHOLE DIAMETER: 5 7/8" - 6 in.

TYPE OF SEAL: Portland Cement Type I

Borehole Dia. 12.25 in

ELEVATION / DEPTH OF SEAL: 123

TYPE OS SEAL: 3/8" Bentonite Plug

Depth of Surf. Case: 23 ft.

DEPTH TOP OF SAND PACK: 26

ELEVATION / DEPTH TOP OF SCREEN: 128

TYPE OF SCREEN: PVC, Sch. 40, F.T.

SLOT SIZE X LENGTH: 0.010 in x 5 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. sand (20/30)

ELEVATION / DEPTHBOTTOM OF SCREEN: 133

ELEVATION / DEPTH BOTTOM OF SAND PACK: 133

TYPE OF BACKFILL BELOW OBSERVATION WELL: Fine Qtz. sand (20/30)

ELEVATION / DEPTH OF HOLE: 133'

8/20/99

0730 @ site - Drill Crew setting up Rig over 6 PVC case to drill out using mud rotary & split spoon.

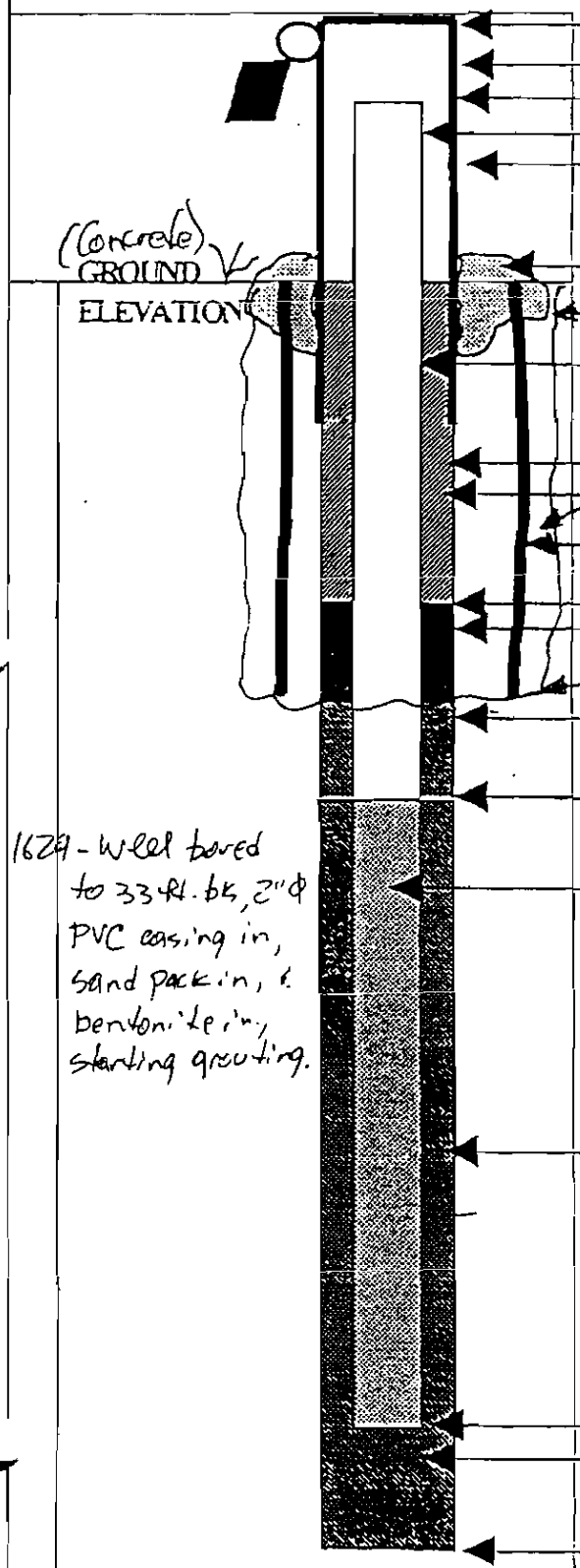
0907 - well installation complete. Crew cleaning up area.

0930 - Crew departs site to decon Rig. Then to site 23

BORING NO.: CNC26 - MW10D

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC - Chas. SC.	LOCATION:	Site 26	DRILLER	Custom Drilling
PROJECT NO.	0126	BORING	CNC26 - MW10D	METHOD:	~~DPT~~ Mud Rotary
ELEVATION		DATE	8/19/99 - 8/18/99	DRILLING	8.25" HSA
FIELD GEOLOGIST	Mark Darrington			DEVELOPMENT:	NA



1629 - Well bored to 33 ft. bls, 2" ϕ PVC casing in, sand pack in, & bentonite in, starting grouting.

ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" ID x 10" OD

TYPE OF SURFACE CASING: Flush mount Steel cover w/ bolt-on lid.

TYPE OF SURFACE SEAL: Concrete Pad (2'x2'x6")

Borehole diam.: 12 in.

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: PVC, Sch. 40, Flush Threaded (F.T.)

BOREHOLE DIAMETER: 5 7/8" - 6"

TYPE OF SEAL: Portland Cement Type I

Surface Case Type: PVC, Sch. 40, Flush Thread

ELEVATION / DEPTH OF SEAL: 124'

TYPE OS SEAL: 3/8 Bentonite Plug

Depth of Surface Case: 23 ft.

DEPTH TOP OF SAND PACK: 26'

ELEVATION / DEPTH TOP OF SCREEN: 128'

TYPE OF SCREEN: PVC, Sch. 40, Flush Threaded

SLOT SIZE X LENGTH: 0.010 in. x 5 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. sand (20/30) (3 1/2 bags @ 50 lbs./ea.)

ELEVATION / DEPTH BOTTOM OF SCREEN: 133'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 133'

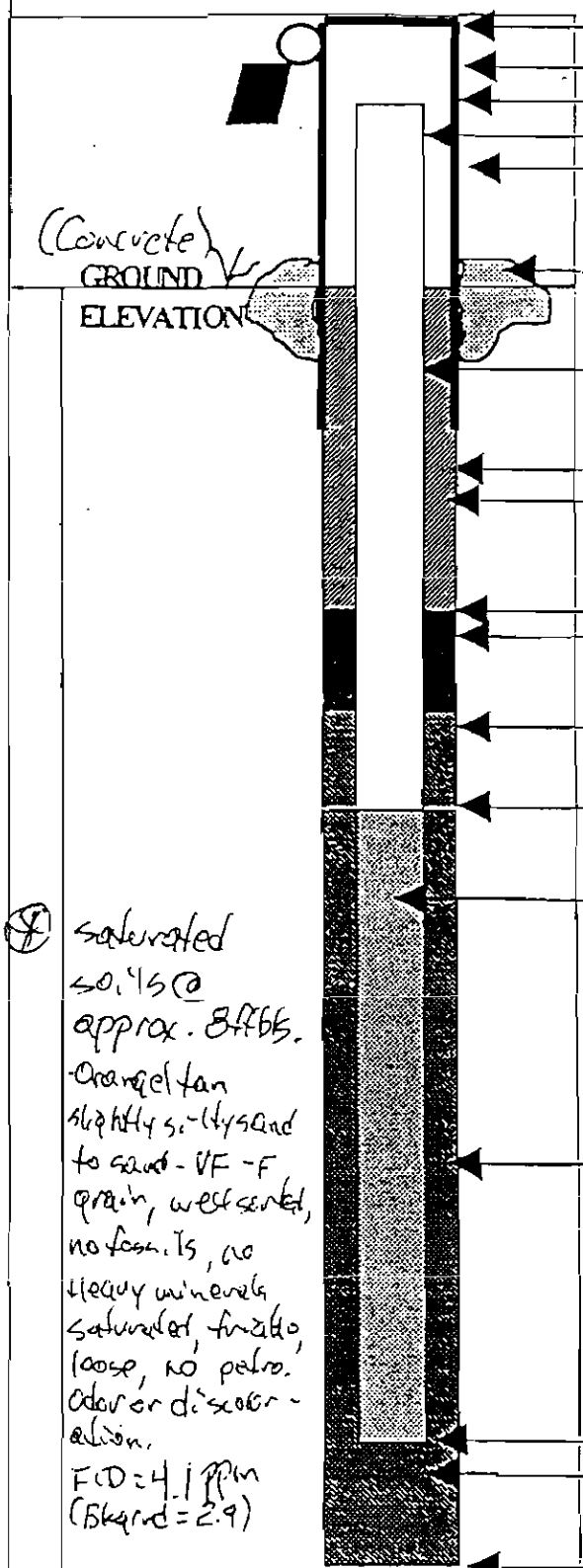
TYPE OF BACKFILL BELOW OBSERVATION WELL: (20/30) Fine Qtz. sand

ELEVATION / DEPTH OF HOLE: 133'

BORING NO. CNC26-MW11
(Adj. to Hobson Ave.)

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC - Chas., SC	LOCATION	Site 26	DRILLER	Custom Drilling
PROJECT NO.	0126	BORING	CNC26-MW11	METHOD:	~~DPT~~ 4.25" HSA
ELEVATION		DATE	8/20/99	DRILLING	Rod Fuller.
FIELD GEOLOGIST	Marie Barrington			DEVELOPMENT: NA	



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

I.D. OF SURFACE CASING: 8" IDX 10" OD

TYPE OF SURFACE CASING: Flush Mount steel cover w/ bolt-on lid

TYPE OF SURFACE SEAL: Concrete Pad (Quickcrete) 2ft x 2ft x 6in.

RISER PIPE I.D.: 2 in.

TYPE OF RISER PIPE: PVC, Sch. 40, Flush Threaded (F.T.)

BOREHOLE DIAMETER: 8.25 in

TYPE OF SEAL: Portland Cement Type I

ELEVATION / DEPTH OF SEAL: 12

TYPE OS SEAL: "Choke Sand" VF Qtz. sand (30/65)

DEPTH TOP OF SAND PACK: 3

ELEVATION / DEPTH TOP OF SCREEN: 14

TYPE OF SCREEN: PVC, Sch. 40, F.T.

SLOT SIZE X LENGTH: 0.010 in x 10 ft.

I.D. OF SCREEN: 2 in.

TYPE OF SAND PACK: Fine Qtz. sand (20/30)

ELEVATION / DEPTH BOTTOM OF SCREEN: 114

ELEVATION / DEPTH BOTTOM OF SAND PACK: 114

TYPE OF BACKFILL BELOW OBSERVATION WELL: Fine Qtz. sand (20/30)

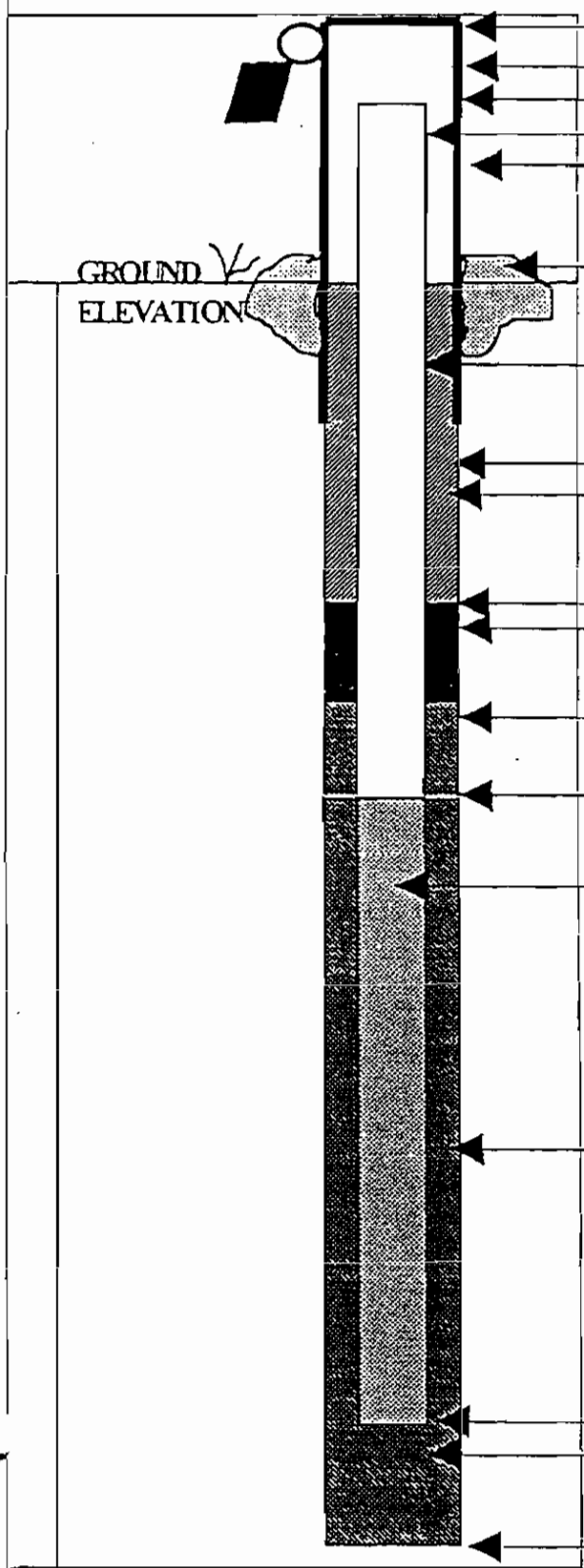
ELEVATION / DEPTH OF HOLE: 114

(*) saturated soils @ approx. 8 ft bgs. Orange/tan slightly silty sand to sand - VF - F grain, well sorted, no fossils, no heavy minerals saturated, friable, loose, no petro. odor or discoloration. FID = 4.1 ppm (Bkgrnd = 2.9)

BORING NO.: _____

OVERBURDEN MONITORING WELL SHEET

PROJECT	CRC	LOCATION:	Site 26 Building 6	DRILLER	A. Brand
PROJECT NO.		BORING	MW#41,12	METHOD:	DPT
ELEVATION		DATE	8/10/99	DRILLING	
FIELD GEOLOGIST				DEVELOPMENT: NA	



ELEVATION OF TOP OF SURFACE CASING: _____

ELEVATION OF TOP OF RISER PIPE: _____

STICK-UP TOP OF SURFACE CASING: _____

STICK-UP RISER PIPE: _____

I.D. OF SURFACE CASING: _____

TYPE OF SURFACE CASING: _____

TYPE OF SURFACE SEAL: Concrete - Flush

RISER PIPE I.D.: 4 PVC

TYPE OF RISER PIPE: _____

BOREHOLE DIAMETER: _____

TYPE OF SEAL: _____

ELEVATION / DEPTH OF SEAL: 11.3

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 14'

ELEVATION / DEPTH TOP OF SCREEN: 12.9'

TYPE OF SCREEN: 4 PVC

SLOT SIZE X LENGTH: 0.01" x 10'

I.D. OF SCREEN: 1.25"

TYPE OF SAND PACK: Medium

ELEVATION / DEPTHBOTTOM OF SCREEN: 112.9'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112.9'

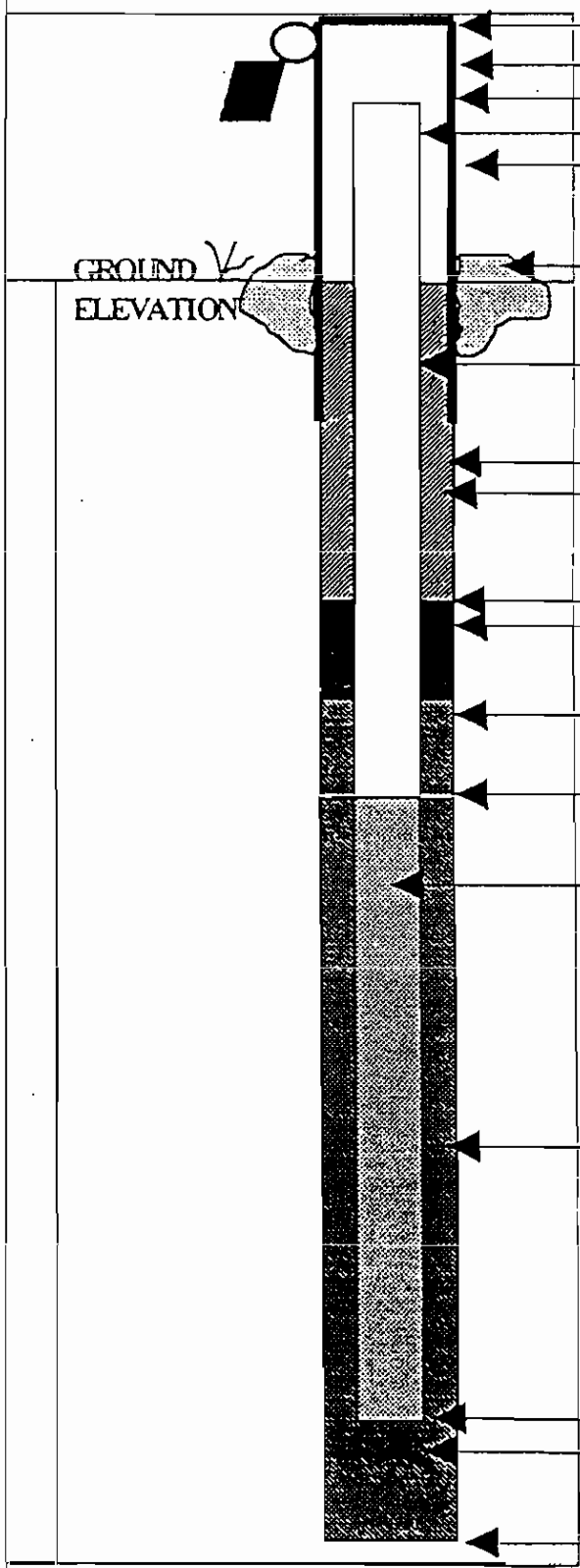
TYPE OF BACKFILL BELOW OBSERVATION WELL: _____

ELEVATION / DEPTH OF HOLE: 112.9'

BORING NO.: MW10

OVERBURDEN MONITORING WELL SHEET

PROJECT	CUC	LOCATION:	Site 26	DRILLER	R. Brunel
PROJECT NO.		BORING	MW10 13 BH	METHOD:	DPT
ELEVATION		DATE	8/10/91	DRILLING	
FIELD GEOLOGIST				DEVELOPMENT:	NA



ELEVATION OF TOP OF SURFACE CASING:

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING:

TYPE OF SURFACE CASING:

TYPE OF SURFACE SEAL: Concrete - Flush

RISER PIPE I.D.:

TYPE OF RISER PIPE: 40 PVC

BOREHOLE DIAMETER:

TYPE OF SEAL:

ELEVATION / DEPTH OF SEAL: 10.5'

TYPE OS SEAL: Fine Sand

DEPTH TOP OF SAND PACK: 1'

ELEVATION / DEPTH TOP OF SCREEN: 12'

TYPE OF SCREEN: 40 PVC

SLOT SIZE X LENGTH: 0.01" x 10'

I.D. OF SCREEN: 1.25"

TYPE OF SAND PACK: Medium

ELEVATION / DEPTHBOTTOM OF SCREEN: 11.7'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 11.9'

TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 11.9'

APPENDIX C

FIELD SAMPLING DATA SHEETS

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CNC Zone 6
Project No.:

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

Sample ID No.: 26SLB01045
Sample Location: 26B01
Sampled By: R. Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99 Time: 1435 Method: DPT Monitor Reading (ppm): 0	4-5	Brown	Silty Sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX/EDB	5g Encore		
PAH	4 oz		
TPH	8 oz		
Grain Size	16 oz		

OBSERVATIONS / NOTES:

~~TPH duplicate only~~ N

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	26SLB01045D

Signature(s): R. Franklin

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CWC Zone E
Project No.:

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

Sample ID No.: 26SLB03030 4
Sample Location: 26B03
Sampled By: L. Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99 Time: 1430 Method: DPT Monitor Reading (ppm): 0	3-4'	Brown	Silty Sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX	5 g Encore		
PAH	4 oz		
TOC/FOC	8 oz		

OBSERVATIONS / NOTES:

Only TOC duplicated.

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	26SLB03030 4D

Signature(s): [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CWC Zone G
Project No.:

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

Sample ID No.: ZGSLB12Ø3Ø4
Sample Location: ZGB Ø3
Sampled By: E. Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99	3-4'	Brown	Silty Sand
Time: 1505			
Method: DPT			
Monitor Reading (ppm): Ø			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX TEDB	5 g Encore		
PAH	4 oz		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CNC Zone E
Project No.:

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

Sample ID No.: 26SLB18Ø2Ø3
Sample Location: 26B18
Sampled By: R-Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99			
Time: 0815	2-3'	Brown	Clayey Sand
Method: DPT			
Monitor Reading (ppm): 9			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX/EDB	5 g Encore		
PAH	4 oz		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Cut Zone
Project No.:

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

Sample ID No.: Z6SLB22Ø3Ø4
Sample Location: Z6B22
Sampled By: R. Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99	3-4'	Brown	Silty Sand
Time: 1610			
Method: DPT			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX/EDB	5 g Encore		
DRH	~~4 oz~~ 4 oz		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CDC Zone E
Project No.:

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

Sample ID No.: 2C SL B2 Ø6Ø7
Sample Location: 2C B26
Sampled By: R. Franklin
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/99 Time: 1625 Method: DPT Monitor Reading (ppm): 0	6-7'	Brown	Silty Sand

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX/EDB	5g Encore		
PAH	4 oz		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): R. Franklin

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CVC26MW4
Site:
Date Installed: 8/8/99
Date Developed: 8/19/99
Dev. Method: Trash Pump
Pump Type:

Depth to Bottom (ft.): 11.69
Static Water Level Before (ft.): 5.99
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1522		~~10~~ 5		~~6~~ 33.5	6.06	432	999	Heavy Silt → FP
								Medium Choc. Color
1529		10		34.1	6.19	.445	965	Rusty Brown H_2O
1535		15		33.1	6.14	.486	999	
1546		20		34.5	6.07	.499	342	
1555		25		34.8	6.15	.493	282	
1627		45		34.9	6.21	.474	379	
1644		52		35.0	6.21	.471	383	
1646		55		34.7	6.17	.477	339	
1650		60		34.7	6.11	.480	39	Recalibrating Horiba
~~1711~~ 1659		66		34.9	6.04	.486	318	H_2O bright brown Orange
1714		70		34.9	6.16	.474	329	
1722		75		3.43	6.14	.477	363	

MONITORING WELL DEVELOPMENT RECORD

Well: CNCZ6 MW9D
Site:
Date Installed:
Date Developed: 8/20/99
Dev. Method: Trash Pump
Pump Type: "

Depth to Bottom (ft.):
Static Water Level Before (ft.):
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.:
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1554		10		28.0	6.65	.594	999	
1557		15		27.6	6.44	.580	809	
1558		20		27.4	6.39	.577	370	
1600		30		27.1	6.40	.574	117	
1603		40		27.0	6.41	.574	10	

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC 26 MW 8
Site:
Date Installed: 8/8/99
Date Developed: 8/19/99
Dev. Method: Trash Pump
Pump Type: "

Depth to Bottom (ft.): 12.82
Static Water Level Before (ft.): 6.46
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D Adkison
Drilling Co.: Cushman
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1121		10		28.5	6.86	.187	999	
1123		20		27.7	5.05	.158	77	
								1116 Arrive
								1119 Dev.
								1150 Depart

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC26 MW7
Site:
Date Installed: 8/17/99
Date Developed: 8/19/99
Dev. Method: Trash Pump
Pump Type:

Depth to Bottom (ft.): 12.02
Static Water Level Before (ft.): 6.06
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thicknees (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1145		5		28.3	5.62	.221	999	Milky Opaque
1147		10		28.1	5.79	.192	999	
1149		20		28.11	6.05	.145	999	
1151		25		28.6	6.11	.141	451	
1158		30		30.3	6.16	.136	102	New Drum *
1159		32		29.1	6.07	.141	999	
1203		40		28.5	6.17	.131	561	
1205		45		28.6	6.16	.131	270	
1207		55		28.6	6.17	.131	58	
								1133 Set up
								1212 Depart

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC26MW6
Site:
Date Installed:
Date Developed: 8/19/99
Dev. Method: Trash Pump
Pump Type:

Depth to Bottom (ft.): 11.98
Static Water Level Before (ft.): 4.64
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1413		10		28.7	6.18	.413	999	Milky Brown
1419		25		28.5	6.17	.335	605	
1420		~~50~~ 35		28.4	6.16	.315	539	
1422		45		28.2	6.20	.298	56	
								1406 Arrived
								1410 Dev.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CMC26 MW5
Site:
Date Installed:
Date Developed: 8/19/99
Dev. Method: ~~[illegible]~~ Trash Pump
Pump Type: "

Depth to Bottom (ft.): 11.81
Static Water Level Before (ft.): 5.06
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1443		8		29.6	6.10	.527	999	Milky / Product Odor
1450		25		29.2	6.11	.464	491	
1452		370 DA		29.3	6.10	.459	542	
1454		475 DA		29.5	6.12	.460	130	
1456		585 DA		29.3	6.12	.459	20	
								1436 ~~[illegible]~~ Set up
								1444 Dev.
								1458 End Dev

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC 26 MW1
Site:
Date Installed: 8/17/99
Date Developed: 8/20/99
Dev. Method: Trash Pump
Pump Type: "

Depth to Bottom (ft.): 12.16
Static Water Level Before (ft.): 5.79
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0823		5		29.3	6.08	2.46	999	Choc. Gray
0825		15		29.9	6.13	2.24	999	
0826		20		29.8	6.19	2.25	504	
0828		25		29.3	6.19	2.23	115	
0830		30		29.9	6.19	2.23	25	
								0815 Set up
								0821 Dev.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC 26MW2
Site:
Date Installed: 8/17/99
Date Developed: 8/20/99
Dev. Method: Trash Pump
Pump Type: "

Depth to Bottom (ft.): 12.20
Static Water Level Before (ft.): 5.56
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0851		5		30.2	6.12	.289	999	
0853		8		31.1	6.08	.295	999	
0855		12		31.5	6.09	.285	727	
0856		15		31.5	6.10	.275	183	
0858		20		31.5	6.11	.264	10	
		~~Sest~~						
								0842 Set up
								0845 Dev.

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___.

Well: CNC26 MW10D
Site:
Date Installed: 8/19/99
Date Developed: 9/20/99
Dev. Method: Trash Pump
Pump Type: /

Depth to Bottom (ft.): 32.35
Static Water Level Before (ft.): 5.94
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1534		15		28.6	7.18	.641	999	
1537		25		27.5	6.62	.553	10	
								1525 Accum
								1530 Dev
								1640 Depart

MONITORING WELL DEVELOPMENT RECORD

Page ___ of ___

Well: CNC26MW3
Site:
Date Installed: 8/9/99
Date Developed: 8/20/99
Dev. Method: Trash Pump
Pump Type: "

Depth to Bottom (ft.): 12.25
Static Water Level Before (ft.): 6.36
Static Water Level After (ft.):
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: D. Anderson
Drilling Co.: Custom
Project Name:
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0759		10		28.4	6.10	3.11	999	grey
0802		18		28.6	6.05	3.38	734	
0804		25		28.7	6.03	3.40	168	
0805		38		28.3	6.00	3.37	21	
								0750 Set up / Arrival
								0756 Dev.
								0806 End

MONITORING WELL DEVELOPMENT RECORD

Well: MW-11
Site: Site 26
Date Installed: 8-20-99
Date Developed: 8-25-99
Dev. Method: Pump
Pump Type:

Depth to Bottom (ft.): 14
Static Water Level Before (ft.): 5.90'
Static Water Level After (ft.):
Screen Length (ft.): 10'
Specific Capacity: 1.4 gal
Casing ID (in.): 2"

Responsible Personnel: R. Hill
Drilling Co.: Custom
Project Name: CAX 26
Project Number:

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.) DO
0850		2		26.2	5.35	.145	999	4.60
0853		15		26.4	5.51	.110	26	5.80
0856		55		26.2	5.64	.099	19	4.09

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: Zone
Project No.: 0126

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

Sample ID No.: 26GW MW101
Sample Location: Site 26 MW1
Sampled By: JA/JF
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9-22-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1100	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Peristaltic	clear	6.37	1.81	29.9	7	1.11	—	—

PURGE DATA:

Date: 9-22-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Flow Rate Other
Method: Peristaltic	Initial	6.20	1.95	28.9	37	0.92	—	~600 mL/min
Monitor Reading (ppm): —	1	6.33	1.85	29.6	14	1.09	—	
Well Casing Diameter & Material	2	6.36	1.82	29.8	11	1.28	—	
Type: 2" PVC	3	6.37	1.81	29.9	7	1.11	—	
Total Well Depth (TD): 22.0' TOC								
Static Water Level (WL): 5.63' TOC								
One Casing Volume(gal/L): 1.05 gal								
Start Purge (hrs): 1030								
End Purge (hrs): 1051								
Total Purge Time (min): 21 min								
Total Vol. Purged (gal/L): ~3.5 gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatiles	HCl/4°C	(3) 40 mL vials	yes
PAHs	4°C	(2) 1 L Ambers	↓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC26
Project No.:

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

Sample ID No.: 26GLMØ2Ø1
Sample Location: MW-2
Sampled By:
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-23-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1520	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method:								

PURGE DATA:

Date: 8-23-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.04	.245	30.4	0	2.46		
Monitor Reading (ppm):	1	5.66	.295	30.5	4	1.31		
Well Casing Diameter & Material	2	5.71	.255	30.8	1	1.16		
Type: 2" PVC	3	5.76	.249	31.0	Ø	1.80		
Total Well Depth (TD):	12.24							
Static Water Level (WL):	5.61							
One Casing Volume(gal/L):	1.1							
Start Purge (hrs):	1413							
End Purge (hrs):	1508							
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CAC 26
Project No.:

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

Sample ID No.: 26GLM030
Sample Location: MW-3
Sampled By: EH / RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-23-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1515	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: slow flow	clear	6.27	2.51	29.6	6	1.86		

PURGE DATA:

Date: 8-23-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.27	2.09	29.5	36	2.29		
Monitor Reading (ppm):	1	6.28	2.29	29.8	3	1.91		
Well Casing Diameter & Material	2	6.29	2.42	29.7	3	2.05		
Type:	3	6.27	2.51	29.6	6	1.86		
Total Well Depth (TD):	12.29							
Static Water Level (WL):	6.38							
One Casing Volume(gal/L):	1.0							
Start Purge (hrs):	1421							
End Purge (hrs):	1615							
Total Purge Time (min):	54							
Total Vol. Purged (gal/L):	3.0							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, Naph	HCl	3x 40 mL vial	8/23/99
PAH	—	2x 1L amber	8/23/99

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): E. J. Hanson

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC 26
Project No.:

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

Sample ID No.: 26GLM0401
Sample Location: MW-4
Sampled By: RH/EH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-21-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0945	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: slow purge		5.91	.510	28.2	0	2.24		

PURGE DATA:

Date: 8-21-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	5.83	.487	27.2	13	.80		
Monitor Reading (ppm):	1	5.90	.485	28.1	3	2.47		
Well Casing Diameter & Material	2	5.92	.498	28.3	3	2.43		
Type: PVC 2"	3	5.91	.510	28.2	0	2.24		
Total Well Depth (TD):	12.10							
Static Water Level (WL):	6.03							
One Casing Volume(gal/L):	1.0							
Start Purge (hrs):	0831							
End Purge (hrs):	0940							
Total Purge Time (min):	69							
Total Vol. Purged (gal/L):	4.2gal							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
PAH	—	- 2 x 1L AMBER	8/21/99
BTEX, EDB, naph, MTBE	HCl	- 3 x 40mL vial	8/21/99

OBSERVATIONS / NOTES:

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

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC26
Project No.:

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

Sample ID No.: 26GLM05Ø1
Sample Location: MW-5
Sampled By: RH/EH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-21-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 0945	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method:		5.92	.419	27.5	0	1.26		

PURGE DATA:

Date: 8-21-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	5.85	.380	26.7	15	2.34		
Monitor Reading (ppm):	1	5.85	.391	27.4	0	.87		
Well Casing Diameter & Material	2	5.87	.391	27.5	3	1.30		
Type: PVC 2"	3	5.92	.419	27.5	0	1.26		
Total Well Depth (TD):	12.03							
Static Water Level (WL):	5.10'							
One Casing Volume(gal/L):	1.14							
Start Purge (hrs):	0836							
End Purge (hrs):	0942							
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, Naph	HCl	3x40ml Vial	8/21/99
PAH	—	2x1L amber	8/21/99

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: CNC26
Project No.:

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

Sample ID No.: 26GLM06001
Sample Location: MW-6
Sampled By: EH / RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-21-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1005	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method:		6.07	.319	27.4	0	.93		

PURGE DATA:

Date: 8-21-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.03	.484	27.2	27	2.10		
Monitor Reading (ppm):	1	6.07	.374	27.5	1	1.10		
Well Casing Diameter & Material	2	6.12	.336	27.2	0	1.11		
Type: 2" PVC	3	6.07	.319	27.4	0	.93		
Total Well Depth (TD): 12.15	~~4.70~~							
Static Water Level (WL):	4.70							
One Casing Volume(gal/L):	1.22							
Start Purge (hrs):	0839							
End Purge (hrs):	0944							
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, Naph.	HCl	3 x 40 ml Vials	8-21-99
PAH	—	2 x 1 L amber	"

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Jam R. Hd

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: CNC 26
Project No.:

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

Sample ID No.: 26GLM0701
Sample Location: MW-7
Sampled By: EH / RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-21-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1155	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: slow purge	clear	5.87	0.181	26.5	0	3.54		

PURGE DATA:

Date: 8-21-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.01	.184	26.6	4	3.69		
Monitor Reading (ppm):	1	5.93	.180	26.6	0	4.03		
Well Casing Diameter & Material	2	5.93	0.181	26.6	0	3.60		
Type: 2" PVC.	3	5.87	0.181	26.5	0	3.54		
Total Well Depth (TD):	12.11							
Static Water Level (WL):	6.09							
One Casing Volume(gal/L):	1.02							
Start Purge (hrs):	1105							
End Purge (hrs):	1155							
Total Purge Time (min):	50							
Total Vol. Purged (gal/L):	4 gal							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, EDB, MTBE, naph	HCl	3x 40mL vial	8-21-99
PAH	—	2x 1L Amber	8-21-99

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.: 26GLM0701D

Signature(s): Eric J. Harrison

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: CNC 26
Project No.:

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

Sample ID No.: 26GLM0801
Sample Location: MW-D8
Sampled By: RH/EH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/21/99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1513	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: slow flow	clear	5.03	.138	27.4	3	2.34		

PURGE DATA:

Date: 8/21/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: slow purge	Initial	5.66	.143	29.1	43	2.94		
Monitor Reading (ppm):	1	5.28	.157	27.6	3	3.00		
Well Casing Diameter & Material	2	5.08	.137	27.5	5	2.39		
Type:	3	5.03	.138	27.4	3	2.34		
Total Well Depth (TD):	13.06							
Static Water Level (WL):	6.55							
One Casing Volume(gal/L):	1.1 gal							
Start Purge (hrs):	1430							
End Purge (hrs):	1513							
Total Purge Time (min):	43							
Total Vol. Purged (gal/L):	3.3 gal							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, EDB, MTBE, Naph	HCl	3 x 40 ml vial	8/21/99
PAH	—	2 x 1L amber	8/21/99

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: CUC26
Project No.:

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

Sample ID No.: 26GLM09D01
Sample Location: MW-9D
Sampled By: EH / R.H
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-23-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1445	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method:								

PURGE DATA:

Date: 8-23-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.51	.710	25.9	42	2.70		
Monitor Reading (ppm):	1	6.36	.541	26.7	6	0.98		
Well Casing Diameter & Material	2	6.32	.519	26.2	3	1.20		
Type: 2" P.V.C.	3	6.53	.520	25.7	4	.90		
Total Well Depth (TD):	33.31							
Static Water Level (WL):	6.72							
One Casing Volume(gal/L):	4.38							
Start Purge (hrs):	1406							
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, naph	HCl	3 x 40mL vial	8/23/99
PAH	—	2 x 1L amber	8/23/99

OBSERVATIONS / NOTES:

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

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CUC 26
Project No.:

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

Sample ID No.: 26GLM10D01
Sample Location: MW1-10D
Sampled By: EH/RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-21-99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1240	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: slow flow	clear	6.83	.520	27.6	13	2.02		

PURGE DATA:

Date: 8-21-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: Slow Purge	Initial	6.77	.546	28.9	8	1.81		
Monitor Reading (ppm):	1	6.86	.556	28.0	9	1.61		
Well Casing Diameter & Material	2	6.85	.544	27.8	14	1.59		
Type: 2" PVC	3	6.83	.520	27.6	13	2.02		
Total Well Depth (TD):	32.40							
Static Water Level (WL):	5.98							
One Casing Volume(gal/L):	3.6							
Start Purge (hrs):	11:07							
End Purge (hrs):	1240							
Total Purge Time (min):	93							
Total Vol. Purged (gal/L):	10.8							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, Naph.	HCl	3 x 40 ml vials	8-21-99
PAH	—	2 x 1 L. ambers	"

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD Duplicate ID No.: MS/MSD
26GLM10D01M

Signature(s): James R Hill

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC Site 26
Project No.: 0126
Sampled By: JG
Field Analyst: JJM + JA
Field Form Checked as per QA/QC Checklist (initials): JM

Sample ID No.: 26GLM1101
Sample Location: 26 MW11
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 9-22-99								
Time: 1640								
Method: Low flow	Clear	—	0.100	26.8	5	1.30	—	5.91

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 1-12 mg/L)) Analysis Time: 17:02

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

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 2.5 mg/L

Notes:

Alkalinity:

Analysis Time: 17:03

Equipment: (HACH Digital Titrator AL-DT) CHEMetrics (Range: _____ mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☑	10-40 mg/L	100 ml	0.1600 N	0.1	0 & 240	x 0.1	= 24 mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	24

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: 17:11

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

Titration Count		Concentration
382	x 0.1	= 38.2 mg/L
	x 0.2	= mg/L
	x 1.0	= mg/L
	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.

Project Site Name: site 26
Sample ID No.: 26GLM1141
Project No.: 0126
Sample Location: 26 MW11
Sampled By: JA/JE
Duplicate: ☐
Field Analyst: JA/JM
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JA

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 __ HS-C Color Chart HS-WR Color Wheel Analysis Time: 1630

Program/Module: 610nm 93 Other: _____

Concentration: 0.02 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ 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 (NO_2^--N): Analysis Time: 1705

Equipment: DR-700 DR-8 __ Other: _____ Filtered: ☐

Program/Module: 60

Concentration: 0.035 mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N): Analysis Time: _____

Equipment: DR-700 DR-8 __ Other: _____ Filtered: ☐

Program/Module: 55

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

Tetra Tech NUS, Inc.

Project Site Name: Site 26
Project No.: 0126
Sampled By: JA/JE
Field Analyst: JA/JE JM
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 26GLM1101
Sample Location: 26 MW11
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-890 HACH MN-5 Other: _____ Analysis Time: 1640

Program/Module: 525nm 41

Concentration: 0.1 mg/L

Filtered: ☐

Digestion: ☐

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

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

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8__ IR-18C Color Wheel Other: _____ Analysis Time: 1636

Program/Module: 500nm 33

Concentration: 0.03 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 1650

Concentration: 0.0 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: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly 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 Ckecklist: ☑

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name:	CNC Site 26	Sample ID No.:	26 GLX0201
Project No.:	0126	Sample Location:	X02
Sampled By:	JA	Duplicate: ☐	NBCE542-002
Field Analyst:	JJM & JA	Blank: ☐	
Field Form Checked as per QA/QC Checklist (initials):	JM		

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 9-22-99								
Time: 1035								
Method: Low Flow	Clear	—	0.686	26.6	5	1.96	—	6.19

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 0-1 mg/L)) Analysis Time: 1105

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

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 0 mg/L

Notes:

Alkalinity:

Analysis Time: 11:44

Equipment: (HACH Digital Titrator AL-DT) CHEMetrics (Range: _____ mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	= mg/L
☑	100-400 mg/L	100 ml	1.600 N	1.0	0 & 242	x 1.0	= 242 mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	242

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: 11:54

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

Titration Count		Concentration
	x 0.1	= mg/L
	x 0.2	= mg/L
	x 1.0	= mg/L
220	x 2.0	= 440 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.

Project Site Name: Site 26
Project No.: 0126
Sampled By: JA/JM
Field Analyst: JE/JA
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 26GLX0201
Sample Location: Site 26 X02
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 90 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1145
Program/Module: 610nm 93 Other:

Concentration: 0.03 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ 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 (NO_2^--N):

Analysis Time: 1225
Equipment: DR-700 DR-8 __ Other: Filtered: ☐
Program/Module: 60
Concentration: 0.021 mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

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

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: Site 26
Project No.: 01260
Sampled By: JA/JM
Field Analyst: JE/JA
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 26GLX0201
Sample Location: Site 26 X 62
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 90 HACH MN-5 Other: _____ Analysis Time: 1205
Program/Module: 525nm 41
Concentration: 18.6 mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other: _____ Analysis Time: 1155
Program/Module: 500nm 33
Concentration: 3.30 mg/L
Filtered: ☐
Notes: LIMIT

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: _____
Concentration: 0.1 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: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly 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 Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC Site 26
Project No.: 0126
Sampled By: JE
Field Analyst: JJM & JA
Field Form Checked as per QA/QC Checklist (initials): JJM

Sample ID No.: 26GLX0301
Sample Location: ~~X03~~ NBCE542 003
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 9-22-99								
Time: 1130								
Method: Low Flow	Clear	—	0.761	25.5	6	1.89	—	6.75

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 0-1 mg/L)) Analysis Time: 12:05

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

Titration Count	Multiplier	Concentration
_____	x 0.01	= mg/L
_____	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: 11:49

Equipment: (HACH Digital Titrator AL-DT) CHEMetrics (Range: _____mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	_____ & _____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	_____ & _____	x 0.4	= mg/L
☑	100-400 mg/L	100 ml	1.600 N	1.0	0 & 231	x 1.0	= 231 mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	_____ & _____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	_____ & _____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	231

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: 11:56

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

Titration Count		Concentration
_____	x 0.1	= mg/L
_____	x 0.2	= mg/L
_____	x 1.0	= mg/L
125	x 2.0	= 250 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.

Project Site Name: Site 26
Project No.: 0126
Sampled By: JB/JE
Field Analyst: JB
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 26GLX0301
Sample Location: SNC 26 X03
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 90 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1146
Program/Module: 610nm 93 Other:

Concentration: 0.09 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ 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 (NO_2^--N): Analysis Time: 1226

Equipment: DR-700 DR-8 __ Other: Filtered: ☐
Program/Module: 60
Concentration: 0.375 mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes: LIMIT

Nitrate (NO_3^--N): Analysis Time:

Equipment: DR-700 DR-8 __ Other: Filtered: ☐
Program/Module: 55
Concentration: mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: Site 26
Project No.: 0126
Sampled By: JA/JE
Field Analyst: JA
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 26GLX0301
Sample Location: 26NC26X03
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: _____ Analysis Time: 1207
Program/Module: 525nm 41
Concentration: 0.8 mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: _____ Analysis Time: 1156
Program/Module: 500nm 33
Concentration: 0.98 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 1210
Concentration: 0 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: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly 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 Ckecklist: ☑

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: Site 26 **Project No.:** 0126
Location: CNC26 **Personnel:** Jason McGann/Jeff Alexander
Weather Conditions: Cool, breezy **Measuring Device:** "Slope Indicator"
Tidally Influenced: Yes ___ No ___ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Readin (feet)*	Thickness of Free Produc (feet)*	Groundwater Elevation (feet)*	Comments
BCE542-002 X02	9.22	0956		13.22	5.63			
MW9D	9.22	0952		33.15	5.64			
BCE542-001 X01		0956		13.00	5.53			
MW2		0958		12.23	5.42			
MW1		1000		12.12	5.63			
BCE542-003 X03		1002		13.57	6.15			
MW3		1005		12.28	6.21			
10D		1012			5.81			
MW4		1025			5.85			
MW5		1028		[illegible]	4.81			
MW6		1030			4.45			
Missing Data:								
11, 12, 13, ~~14~~								
7, 8								
PZ -								
(X) = Piezometer -								

* All measurements to the nearest 0.01 foot

APPENDIX D

SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3079-2
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 93
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405	SL	6/28/99	6/29/99	6/30/99	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	86	%	1.3		
2-DICHLOROETHANE-D4	90	%	1.3		
TOLUENE-D8	72	%	1.3		
P-BROMOFLUOROBENZENE	$60	%	1.3		

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: WP3079-2RE
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 93
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405	SL	6/28/99	6/29/99	6/30/99	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	98	%	1.2		
1,2-DICHLOROETHANE-D4	107	%	1.2		
TOLUENE-D8	80	%	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: WP3079-2
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 93
Method: EPA 8270
Date Analyzed: 7/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	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	58	%	1.1		
2-FLUOROBIPHENYL	59	%	1.1		
TERPHENYL-D14	73	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3079-2
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB010405	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	93.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29TSS6
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: July 20, 1999

Sample ID	: 26SLB010405D
Lab ID	: 9906925-07
Matrix	: Soil
Date Collected	: 06/28/99
Date Received	: 06/28/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		224	104	208	mg/kg	1.0	AAT	07/19/99	1000	153636	1
Evaporative Loss @ 105 C		4.00	1.00	1.00	wt%	1.0	GJ	06/29/99	1540	152349	2

M = Method	Method-Description
M 1	SW846 9071A
M 2	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.

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

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

Reviewed By

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: WP3079-12RE
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: SW8260
Date Analyzed: 7/2/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405D	SL	6/28/99	6/29/99	7/2/99	DJP	5030	DJP

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	#31	%	1.3		
1,2-DICHLOROETHANE-D4	#31	%	1.3		
TOLUENE-D8	#31	%	1.3		
P-BROMOFLUOROBENZENE	#26	%	1.3		

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: WP3079-12
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405D	SL	6/28/99	6/29/99	6/30/99	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	89	%	1.2		
TOLUENE-D6	#60	%	1.2		
P-BROMOFLUOROBENZENE	#44	%	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: WP3079-12
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: EPA 8270
Date Analyzed: 7/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB010405D	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	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	70	%	1.1		
2-FLUOROBIPHENYL	71	%	1.1		
TERPHENYL-D14	79	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-3079-12
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

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

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB010405D	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	94.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29TSS6
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

540 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

http://katahdinlab.com

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: July 20, 1999

Sample ID	: 26SLB030304
Lab ID	: 9906925-08
Matrix	: Soil
Date Collected	: 06/28/99
Date Received	: 06/28/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Evaporative Loss @ 105 C		7.00	1.00	1.00	wt%	1.0	GJ	06/29/99	1540	152349	1
Total Organic Carbon		707	43.1	100	mg/kg	1.0	LIB	07/07/99	1909	152551	2

M = Method	Method-Description
M 1	EPA 3550
M 2	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'.

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

Reviewed By

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number:	WP3079-4
SDG:	WP3079
Report Date:	8/18/99
PO No. :	N7912-P99264
Project:	CTO #68
% Solids:	94
Method:	SW8260
Date Analyzed:	6/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB030304	SL	6/28/99	6/29/99	6/29/99	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	J4	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	110	%	1.2		
-DICHLOROETHANE-D4	121	%	1.2		
OLUENE-D8	94	%	1.2		
P-BROMOFLUOROBENZENE	93	%	1.2		

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: WP3079-4
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: EPA 8270
Date Analyzed: 7/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB030304	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	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	56	%	1.1		
2-FLUOROBIPHENYL	56	%	1.1		
TERPHENYL-D14	71	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-3079-4
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

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

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB030304	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	94.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	JF	1
Total Combustible Organics	1.2	wt %	1.0	0.1	ASTM D2974-8	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29VSS7
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: July 20, 1999

Sample ID	: 26SLB030304D
Lab ID	: 9906925-09
Matrix	: Soil
Date Collected	: 06/28/99
Date Received	: 06/28/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Evaporative Loss @ 105 C		6.00	1.00	1.00	wt%	1.0	GJ	06/29/99	1540	152349	1
Total Organic Carbon		610	43.1	100	mg/kg	1.0	LIB	07/07/99	1932	152551	2

M = Method	Method-Description
M 1	EPA 3550
M 2	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'.

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

Reviewed By

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3079-11
SDG: WP3079
Report Date: 8/18/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 94
Method: SW8260
Date Analyzed: 6/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB120304	SL	6/28/99	6/29/99	6/29/99	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	26	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	#36	%	1.2		
?-DICHLOROETHANE-D4	#47	%	1.2		
OLUENE-D8	#14	%	1.2		
P-BROMOFLUOROBENZENE	#6	%	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: WP3079-11RE
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB120304	SL	6/28/99	6/29/99	6/30/99	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	20	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	83	%	1.2		
1,2-DICHLOROETHANE-D4	92	%	1.2		
TOLUENE-D8	$58	%	1.2		
P-BROMOFLUOROBENZENE	$39	%	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: WP3079-11
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 94
Method: EPA 8270
Date Analyzed: 7/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB120304	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	980	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	77	%	1.1		
2-FLUOROBIPHENYL	76	%	1.1		
TERPHENYL-D14	86	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3079-11
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB120304	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	94.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29TSS6
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: WP4075-34
SDG: WP4075
Report Date: 10/18/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 85
Method: SW8260
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB140405	SL	9/24/99	9/25/99	10/1/99	HMP	5030	HMP

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	123	%	1.1		
1,2-DICHLOROETHANE-D4	118	%	1.1		
TOLUENE-D8	111	%	1.1		
P-BROMOFLUOROBENZENE	72	%	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: WP4075-34
SDG: WP4075
Report Date: 10/9/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 85
Method: EPA 8270
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB140405	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	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	97	%	1.2		
2-FLUOROBIPHENYL	105	%	1.2		
TERPHENYL-D14	112	%	1.2		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-34
Report Date: 10/27/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB140405	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	85.	wt %	1.0	0.10	CLP/CIP SOW	10/02/99	DA	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 10/01/99 by BAD

10/27/99

LJO/baeajc(dw)/msm
PJ01TSS0
CC: MS. LEE LECK
TETRATECH 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: WP3107-1RA
SDG: WP3107
Report Date: 8/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: SW8260
Date Analyzed: 7/2/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB180203	SL	6/29/99	6/30/99	7/2/99	DJP	5030	DJP

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	39	ug/Kg	1.2	6	5
NAPHTHALENE	E560	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	34	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	11	%	1.2		
1,2-DICHLOROETHANE-D4	22	%	1.2		
TOLUENE-D8	2	%	1.2		
P-BROMOFLUOROBENZENE	64	%	1.2		

Report Notes: E

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: WP3107-1
SDG: WP3107
Report Date: 8/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: SW8260
Date Analyzed: 7/2/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB180203	SL	6/29/99	6/30/99	7/2/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	8	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	26	ug/Kg	1.2	6	5
NAPHTHALENE	E320	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	0	%	1.2		
1,2-DICHLOROETHANE-D4	25	%	1.2		
TOLUENE-D8	20	%	1.2		
P-BROMOFLUOROBENZENE	58	%	1.2		

Report Notes: E

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: WP3107-1RE
SDG: WP3107
Report Date: 8/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 88
Method: SW8260
Date Analyzed: 7/2/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB180203	SL	6/29/99	6/30/99	7/2/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<320	ug/Kgdrywt	65	320	5
TOLUENE	<320	ug/Kgdrywt	65	320	5
1,2-DIBROMOETHANE	<320	ug/Kgdrywt	65	320	5
ETHYLBENZENE	<320	ug/Kgdrywt	65	320	5
NAPHTHALENE	990	ug/Kgdrywt	65	320	5
MTBE	<320	ug/Kgdrywt	65	320	5
TOTAL XYLENES	<320	ug/Kgdrywt	65	320	5
DIBROMOFLUOROMETHANE	93	%	65		
1,2-DICHLOROETHANE-D4	84	%	65		
TOLUENE-D8	104	%	65		
P-BROMOFLUOROBENZENE	102	%	65		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3107-1
SDG: WP3107
Report Date: 8/19/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 88
Method: EPA 8270
Date Analyzed: 7/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB180203	SL	6/29/99	6/30/99	7/2/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	1500	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	3000	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	1000	ug/Kg	1.1	360	330
FLUORENE	1100	ug/Kg	1.1	360	330
PHENANTHRENE	2700	ug/Kg	1.1	360	330
ANTHRACENE	510	ug/Kg	1.1	360	330
FLUORANTHENE	2100	ug/Kg	1.1	360	330
RENE	2300	ug/Kg	1.1	360	330
NZO[A]ANTHRACENE	700	ug/Kg	1.1	360	330
CHRYSENE	650	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	730	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	750	ug/Kg	1.1	360	330
BENZO[A]PYRENE	450	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	J320	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	370	ug/Kg	1.1	360	330
NITROBENZENE-D5	96	%	1.1		
2-FLUOROBIPHENYL	66	%	1.1		
TERPHENYL-D14	79	%	1.1		

Report Notes: J

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-3107-1
Report Date: 08/20/99
PO No. : N7912-P99264
Project : CTO #68

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

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB180203	Solid	R. FRANKLIN	06/29/99	06/30/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	88.	wt %	1.0	0.10	CLP/CIP SOW	07/02/99	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 07/01/99 by JF

08/20/99

LJO/baeajc(dw)/msm

CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

560 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

http://katahdinlab.com

210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3079-10
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 91
Method: SW8260
Date Analyzed: 6/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB220304	SL	6/28/99	6/29/99	6/29/99	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	100	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	#22	%	1.2		
DICHLOROETHANE-D4	#36	%	1.2		
LUENE-D6	#2	%	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: WP3079-10RE
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 91
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB220304	SL	6/28/99	6/29/99	6/30/99	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	98	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	113	%	1.0		
1,2-DICHLOROETHANE-D4	124	%	1.0		
TOLUENE-D8	75	%	1.0		
P-BROMOFLUOROBENZENE	$54	%	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: WP3079-10
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 91
Method: EPA 8270
Date Analyzed: 8/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB220304	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<3600	ug/Kg	11	3600	330
2-METHYLNAPHTHALENE	3900	ug/Kg	11	3600	330
ACENAPHTHYLENE	<3600	ug/Kg	11	3600	330
ACENAPHTHENE	J1900	ug/Kg	11	3600	330
FLUORENE	J2100	ug/Kg	11	3600	330
PHENANTHRENE	4500	ug/Kg	11	3600	330
ANTHRACENE	<3600	ug/Kg	11	3600	330
FLUORANTHENE	3600	ug/Kg	11	3600	330
PYRENE	J3100	ug/Kg	11	3600	330
BENZO[A]ANTHRACENE	<3600	ug/Kg	11	3600	330
CHRYSENE	<3600	ug/Kg	11	3600	330
BENZO[B]FLUORANTHENE	<3600	ug/Kg	11	3600	330
BENZO[K]FLUORANTHENE	<3600	ug/Kg	11	3600	330
BENZO[A]PYRENE	<3600	ug/Kg	11	3600	330
INDENO[1,2,3-CD]PYRENE	<3600	ug/Kg	11	3600	330
DIBENZ[A,H]ANTHRACENE	<3600	ug/Kg	11	3600	330
BENZO[G,H,I]PERYLENE	<3600	ug/Kg	11	3600	330
NITROBENZENE-D5	105	%	11		
2-FLUOROBIPHENYL	90	%	11		
TERPHENYL-D14	87	%	11		

Report Notes: J, O-1

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-3079-10
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

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

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB220304	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	91.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29TSS6
CC: MS. LEE LECK
TETRA TECH NUS
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210 West Road No. 5, Portsmouth, NH 03801
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KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Lab Number: WP3079-9
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 92
Method: SW8260
Date Analyzed: 6/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB260607	SL	6/28/99	6/29/99	6/29/99	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	18	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	#2	%	1.2		
1,2-DICHLOROETHANE-D4	#28	%	1.2		
TOLUENE-D8	#7	%	1.2		
4-BROMOFLUOROBENZENE	#5	%	1.2		

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: WP3079-9RE
SDG: WP3079
Report Date: 8/18/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 92
Method: SW8260
Date Analyzed: 6/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB260607	SL	6/28/99	6/29/99	6/30/99	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	22	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	$37	%	1.0		
1,2-DICHLOROETHANE-D4	122	%	1.0		
TOLUENE-D8	$66	%	1.0		
P-BROMOFLUOROBENZENE	$42	%	1.0		

Report Notes: $

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: PAUL CALLIGAN
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1401 Oven Park Dr.
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Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP3079-9
SDG: WP3079
Report Date: 8/18/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 92
Method: EPA 8270
Date Analyzed: 7/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB260607	SL	6/28/99	6/29/99	6/30/99	GST	SW3550	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	54	%	1.1		
2-FLUOROBIPHENYL	55	%	1.1		
TERPHENYL-D14	73	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3079-9
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB260607	Solid	R.FRANKLIN	06/28/99	06/29/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	92.	wt %	1.0	0.10	CLP/CIP SOW	06/30/99	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 06/29/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF29TSS6
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: October 18, 1999

Sample ID	: 26SLB350405
Lab ID	: 9909740-10
Matrix	: Soil
Date Collected	: 09/23/99
Date Received	: 09/25/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		400	116	232	mg/kg	1.0	AAT	09/30/99	1140	159321	1
Evaporative Loss @ 105 C		14.0	1.00	1.00	wt%	1.0	GJ	09/28/99	1550	159267	2

M = Method	Method-Description
M 1	SW846 9071A
M 2	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.

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

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

Reviewed By

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: WP4075-21
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: -
Method: SW8260
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB350405	SL	9/23/99	9/25/99	9/29/99	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	118	%	1.3		
1,2-DICHLOROETHANE-D4	112	%	1.3		
TOLUENE-D8	112	%	1.3		
P-BROMOFLUOROBENZENE	116	%	1.3		

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: WP4075-13
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 87
Method: EPA 8270
Date Analyzed: 10/5/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB350405	SL	9/23/99	9/24/99	9/29/99	DPD	SW3550	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	92	%	1.1		
2-FLUOROBIPHENYL	95	%	1.1		
TERPHENYL-D14	94	%	1.1		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-13
Report Date: 10/27/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB350405	Solid	CLIENT	09/23/99	09/24/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	87.	wt %	1.0	0.10	CLP/CIP SOW	10/02/99	DA	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 10/01/99 by BAD

10/27/99

LJO/baeajc(dw)/msm
RJ01TSS0
CC: MS. LEE LECK
TETRATECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: October 18, 1999

Sample ID	: 26SLB360405
Lab ID	: 9909740-12
Matrix	: Soil
Date Collected	: 09/23/99
Date Received	: 09/25/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		7820	120	240	mg/kg	1.0	AAT	09/30/99	1140	159321	1
Evaporative Loss @ 105 C		17.0	1.00	1.00	wt%	1.0	GJ	09/28/99	1550	159267	2

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550

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

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

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

Reviewed By

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: WP4075-22
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: -
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB360405	SL	9/23/99	9/25/99	9/30/99	KMC	5030	KMC

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	87	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	115	%	1.1		
1,2-DICHLOROETHANE-D4	117	%	1.1		
TOLUENE-D6	96	%	1.1		
P-BROMOFLUOROBENZENE	96	%	1.1		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

Client: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr.
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Tallahassee, FL 32308

Proj. ID: CNC CHARLESTON

Lab Number: WP4075-14DL
SDG: WP4075
Report Date: 10/9/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 82
Method: EPA 8270
Date Analyzed: 10/5/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB360405	SL	9/23/99	9/24/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<4000	ug/Kg	12	4000	330
2-METHYLNAPHTHALENE	33000	ug/Kg	12	4000	330
ACENAPHTHYLENE	<4000	ug/Kg	12	4000	330
ACENAPHTHENE	<4000	ug/Kg	12	4000	330
FLUORENE	J3500	ug/Kg	12	4000	330
PHENANTHRENE	6600	ug/Kg	12	4000	330
ANTHRACENE	<4000	ug/Kg	12	4000	330
FLUORANTHENE	<4000	ug/Kg	12	4000	330
PYRENE	<4000	ug/Kg	12	4000	330
BENZO[A]ANTHRACENE	<4000	ug/Kg	12	4000	330
CHRYSENE	<4000	ug/Kg	12	4000	330
BENZO[B]FLUORANTHENE	<4000	ug/Kg	12	4000	330
BENZO[K]FLUORANTHENE	<4000	ug/Kg	12	4000	330
BENZO[A]PYRENE	<4000	ug/Kg	12	4000	330
INDENO[1,2,3-CD]PYRENE	<4000	ug/Kg	12	4000	330
DIBENZ[A,H]ANTHRACENE	<4000	ug/Kg	12	4000	330
BENZO[G,H,I]PERYLENE	<4000	ug/Kg	12	4000	330
NITROBENZENE-D5	108	%	12		
2-FLUOROBIPHENYL	95	%	12		
TERPHENYL-D14	85	%	12		

Report Notes: J, O-2

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: WP4075-14
SDG: WP4075
Report Date: 10/9/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 82
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26SLB360405	SL	9/23/99	9/24/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	2000	ug/Kg	6.1	2000	330
2-METHYLNAPHTHALENE	E46000	ug/Kg	6.1	2000	330
ACENAPHTHYLENE	<2000	ug/Kg	6.1	2000	330
ACENAPHTHENE	J1100	ug/Kg	6.1	2000	330
FLUORENE	4200	ug/Kg	6.1	2000	330
PHENANTHRENE	8500	ug/Kg	6.1	2000	330
ANTHRACENE	<2000	ug/Kg	6.1	2000	330
FLUORANTHENE	<2000	ug/Kg	6.1	2000	330
PYRENE	<2000	ug/Kg	6.1	2000	330
BENZO[A]ANTHRACENE	<2000	ug/Kg	6.1	2000	330
CHRYSENE	<2000	ug/Kg	6.1	2000	330
BENZO[B]FLUORANTHENE	<2000	ug/Kg	6.1	2000	330
BENZO[K]FLUORANTHENE	<2000	ug/Kg	6.1	2000	330
BENZO[A]PYRENE	<2000	ug/Kg	6.1	2000	330
INDENO[1,2,3-CD]PYRENE	<2000	ug/Kg	6.1	2000	330
DIBENZ[A,H]ANTHRACENE	<2000	ug/Kg	6.1	2000	330
BENZO[G,H,I]PERYLENE	<2000	ug/Kg	6.1	2000	330
NITROBENZENE-D5	241	%	6.1		
2-FLUOROBIPHENYL	118	%	6.1		
TERPHENYL-D14	111	%	6.1		

Report Notes: J, E, O-1

Katahdin
ANALYTICAL SERVICES

CLIENT: Paul Calligan
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1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308

Lab Number : WP-4075-14
Report Date: 10/27/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26SLB360405	Solid	CLIENT	09/23/99	09/24/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	82.	wt %	1.0	0.10	CLP/CIP SOW	10/02/99	DA	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 10/01/99 by BAD

10/27/99

LJO/baeajc(dw)/msm
PJ01TSS0
CC: MS. LEE LECK
TETRATECH 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: WP3079-13
SDG: WP3079
Report Date: 8/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: -
Method: SW8260
Date Analyzed: 6/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26TL00101	SL	6/28/99	6/29/99	6/29/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kgdrywt	1.0	5	5
TOLUENE	<5	ug/Kgdrywt	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kgdrywt	1.0	5	5
ETHYLBENZENE	<5	ug/Kgdrywt	1.0	5	5
NAPHTHALENE	<5	ug/Kgdrywt	1.0	5	5
MTBE	<5	ug/Kgdrywt	1.0	5	5
TOTAL XYLENES	<5	ug/Kgdrywt	1.0	5	5
DIBROMOFLUOROMETHANE	105	%	1.0		
1,2-DICHLOROETHANE-D4	102	%	1.0		
TOLUENE-D8	104	%	1.0		
P-BROMOFLUOROBENZENE	96	%	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: WP3107-2
SDG: WP3107
Report Date: 6/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: -
Method: SW8260
Date Analyzed: 7/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26TL00102	SL	6/29/99	6/30/99	7/1/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kgdrywt	1.0	5	5
TOLUENE	<5	ug/Kgdrywt	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kgdrywt	1.0	5	5
ETHYLBENZENE	<5	ug/Kgdrywt	1.0	5	5
NAPHTHALENE	J3	ug/Kgdrywt	1.0	5	5
MTBE	<5	ug/Kgdrywt	1.0	5	5
TOTAL XYLENES	<5	ug/Kgdrywt	1.0	5	5
DIBROMOFLUOROMETHANE	94	%	1.0		
1,2-DICHLOROETHANE-D4	87	%	1.0		
TOLUENE-D8	104	%	1.0		
P-BROMOFLUOROBENZENE	97	%	1.0		

Report Notes: J

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 06/30/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

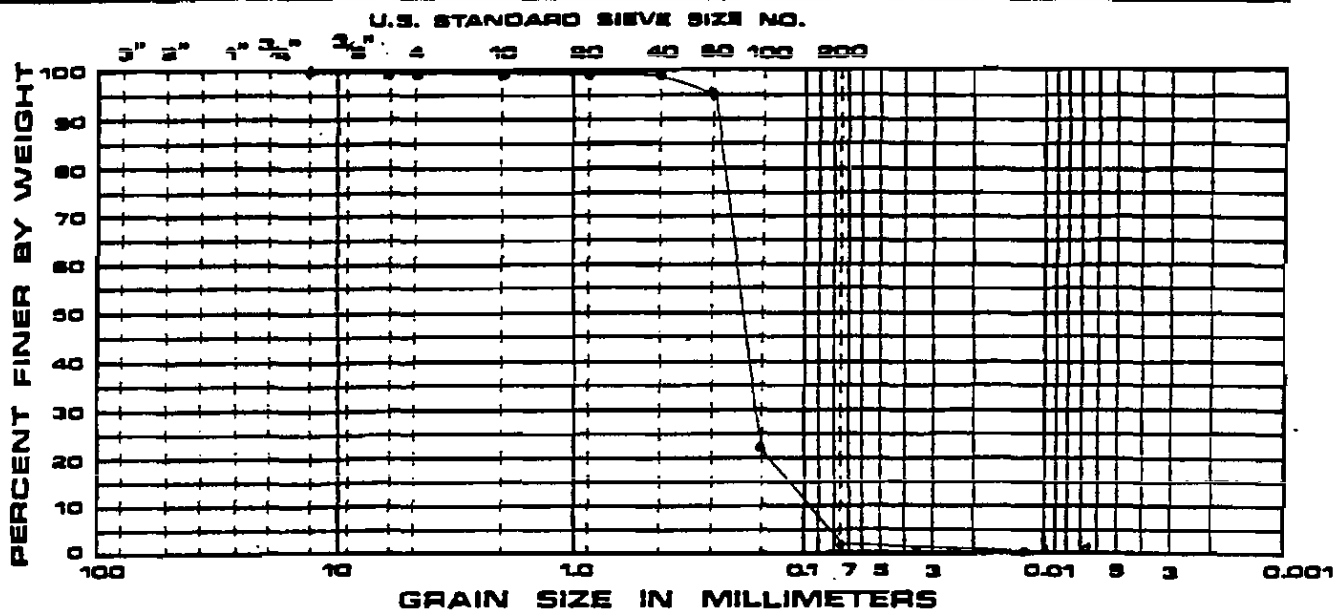
Sample No. 33, SAND, WP3079-2, 265LB01046S

Sieve Size	Percent Passing	PROJECT Specifications %
1/4 "	100.0	
# 4	99.9	
# 10	99.9	
# 20	98.9	
# 40	95.0	
# 60	83.5	
# 100	20.8	
# 200	5.3	

JOB NO: 77-008

GRAIN SIZE ANALYSIS

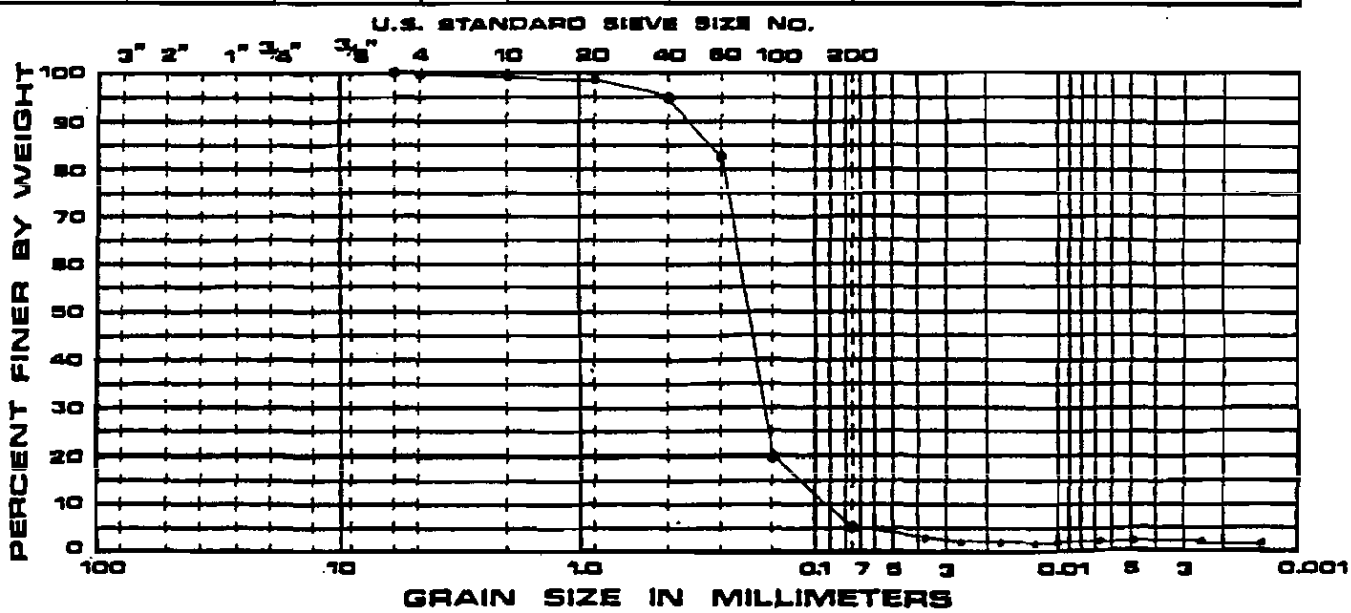
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WP8079-1	C32				

GRAIN SIZE ANALYSIS

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WP8079-2	C33				

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04092
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Page ____ of ____

Client: TETRA TECH NUS
Contact: Paul Calligan
Phone #: (850) 385-9899
Fax #: ( )
Address: 1401 OVEN PARK DR 1401
City: Tallahassee
State: FL
Zip Code:
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): TNT / Thomas Thompson
Copies To:

LAB USE ONLY
WORK ORDER #: WP4075
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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX, MTBE, EDB, Total Naphthalene (Filt. ☐Y☐N)	8270 (Filt. ☐Y☐N)	Total Lead (Filt. ☐Y☐N)	TPH PAH (Filt. ☐Y☐N)	TOC Anions (Filt. ☐Y☐N)	Grain Size (Filt. ☐Y☐N)	FOC (Filt. ☐Y☐N)	Metals (Filt. ☐Y☐N)	Dissolved Methane (Filt. ☐Y☐N)	(Filt. ☐Y☐N)
	23SLB080203	9-24-99/0900	S	6	4	1	1							
	23SLB010203	9-24-99/0925	S	6	4	1	1							
	23SLB130203	9-24-99/1010	S	6	4	1	1				✓			
	23SLB030203	9-24-99/1110	S	7	4	1	1			1				
	23SLB030203D	9-24-99/0000	S	6	4	1	1							
	36SLB060304	9-24-99/1649	S	7 (8)	4	1				1		1		
	23SLB040203	9-24-99/1730	S	6	4	1	1							
	26SLB140405	9-24-99/0845	S	5	4	1								
	42SLB090304	9-24-99/1035	S	1						1				
	42SLB200203	9-24-99/1050	S	1						1				
	42SLB410304	9-24-99/1120	S	1						1				
	42SLB270304	9-24-99/1140	S								1			
	28GLM0101	9-24-99/0840	GW	9	3			2	1				3	
	28TL00201	9-24-99/~~0840~~ 1115	aq	2										
		/					Cooler temp 3 (BR)				3 of 5			
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/24/99 1800	8134583692 82	~~10~~ (BR)	9-25-99 1050	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04092
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: CT NUS
Contact: Paul Calligan
Phone #: (843) 554-4985
Fax #: ( )
Address: NH-21 Ave H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.: Charleston Naval Complex
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Jennifer Elliott
Copies To:

LAB USE ONLY
WORK ORDER #: WP4075
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	Date / Time coll'd	Matrix	No. of Cntrs.	8260 BTEX, EDB, Naphthalene	Filt. ☐Y☒N Dissolved Methane	Filt. ☐Y☒N PAHs	Filt. ☐Y☒N Metals	Filt. ☐Y☒N Anions	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	27GLM01 01	9-23/1050	GW		3	3	2	1	1					
	27GLX03 01	9-23/1010			3		2	1						
	27GLX04 01	9-23/1010			3		2	1						
	27GLX40 01	9-23/1012			3		2	1						
	27GLX05 01	9-23/1100			3	3	2	1	1					
	27GLX07 01	9-23/1120			3	3	2	1	1					
	27GLM01 01D	9-23/—			3	3	2	1	1					
	28GLM03 01	9-23/1645			3	3	2	1	1					
	28GLM02 01	9-23/1640			3	3	2	1	1					
	28GLM02 01D	9-23/—			3	3	2	1	1					
	28TL00 01 01	9-23/			2									
		/												
		/												
		/												
		/												
		/												

COMMENTS: ~~2 of 3~~ 4 of 5 — p. cooler (BA)

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/23/1850	Fed-Ex 813458369293		9-25-99 (08)	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Paul Calligan
Phone #: (843) 554-4425
Fax #: ( )
Address: NH-21, Ave H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.: Charleston Naval Complex
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Roger Franklin
Copies To:

LAB USE ONLY
WORK ORDER #: WP4075
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	Date / Time coll'd	Matrix	No. of Cntrs.	(8260) BTEX Naphthalene	EDB	PAH (8270)	TAL Metals	Total Lead					EZD
	26SLB35Ø4Ø5	9/23/99/1635	S	5	X	X	X							2
	26SLB36Ø4Ø5	9/23/99/1610	S	5	X	X	X							42
	36SLBØ7Ø3Ø4	9/23/99/1210	S	6	X		X	X						46
	36SLBØ4Ø3Ø4	9/23/99/0900	S	6	X		X	X						
	23SLBØ5Ø2Ø3	9/23/99/1620	S	6	X	X	X		X					
	23SLBØ6ØØØ1	9/23/99/1715	S	6	X	X	X		X					
		/												
		/												
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		/												
		/						Cooler 2 of 3 (BR)			4 of 5			
		/												
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	9/23/99 1900	Fed-Ex 8134585609293		9-25-99 1054	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

General Engineering Labor[illegible]s, Inc.
2040 Savage Road
Charleston, South Carolina [illegible]407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9909740%

Client Name/Facility Name: Katahdin / Charleston Naval Complex

Collected by/Company: Roger Franklin / Tetra Tech NUS

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

Q = 42726

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TPH		Remarks	
42SLB090304	9/24/99	1035		X		X																	X			.1
42SLB200203	9/24/99	1050		X		X																	X			.1
42SLB410304	9/24/99	1120		X		X																	X			.1
42SLB270304	9/24/99	1140		X		X			X									--								.2
23SLB130203	9/24/99	1010		X		X			X																	.2
23SLB030203	9/24/99	1110		X		X																	X			.1
23SLB030203D	9/24/99	0000		X		X																	X			.1
36SLB040304	9/23/99 ~~9/24/99~~	0900		X		X																	X			.1
36SLB070304	9/23/99	1210		X		X																	X			.1
26SLB350405	9/23/99	1635		X		X																	X			.1
36SLB060304	9/24/99	1649		X		X																	X			.1
26SLB360405	9/23/99	1610		X		X																	X			.1

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	9.25.99	11:05					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[signature]	9/[illegible]	1165	

White = sample collector Yellow = file Pink = with report

Katahdin
ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryan Howze
Phone #: (843) 554-4925 ( )
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): Roger Franklin / [signature]
Copies To:

LAB USE ONLY
WORK ORDER #: WP3107
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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX/EDB	PAH								FID
	26 SL B18 Φ2Φ3	6/24/99 0815	Soil	5	X	X								9
	26 TL ΦΦ1 Φ2	6/24/99 —	H_2O	2	X									
		/												
		/												
		/												
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		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/24/99 1430	Fed-Ex			[signature] 6-25-99 1000
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
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: Bryan Howze
Phone #: ( )
Fax #: ( )
Address: N421 Ave H
City: N. Charleston
State: SC
Zip Code: 29405
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Roger Franklin
Copies To:

LAB USE ONLY
WORK ORDER #: WP3079
KATAHDIN PROJECT MANAGER:
REMARKS:
SHIPPING INFO: ☑ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO: 8134029 04657
TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd (14q)	Matrix	No. of Cntrs.	BTEX/EDB (Filt. O Y O N)	PAH (Filt. O Y O N)	FOC (Filt. O Y O N)	Grain size (Filt. O Y O N)	(Filt. O Y O N)	(Filt. O Y O N)	(Filt. O Y O N)	(Filt. O Y O N)	(Filt. O Y O N)	FID (Filt. O Y O N)
	30SLB01 07 08	6/28 / 0850	sn	5	X	X								0
	30SLB05 07 08	6/28 / 0915	"	6	X	X		X						0
	30SLB14 05 07 04	6/28 / 1040	"	5	X	X	X	X						0
	SLB14 03 04 MS	6/28 / —	"	5	X	X	X			MS/MSD				0
	30SLB16 07 08	6/28 / 0950	"	5	X	X								0
	30SLB17 09 10	6/28 / 1140	"	5	X	X								0
	30SLB17 09 10 D	6/28 / —	"	5	X	X								0
	~~30SLB01 07 08~~	~~/ 0950~~	~~"~~											0
	26SLB26 06 07	6/28 / 1625	"	5	X	X								0
	26SLB22 03 04	6/28 / 1610	"	5	X	X								0
	26SLB12 03 04	6/28 / 1610	"	5	X	X								0
	26SLB03 03 04	6/28 / 1450	"	5	X	X	X							0
	26SLB01 04 05	6/28 / 1435	"	6	X	X		X (Sample No. 33, WP3079-2)						0
	26SLB01 04 05 D	6/28 / 1435	"	5	X	X								0
	26TL 01 01	6/28 / —	H_2O	2	X									0
		/												

COMMENTS
FID readings suspect.

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	6/29/99 1800	8134029 04657		06/29/99 0945	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

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

CHAIN OF CUSTODY RECORD

9906925%

Page_____ of _____

Client Name/Facility Name: Katahdin

Collected by/Company: Tetratech

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

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

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TPH		Remarks
01	3ØSLB14Ø3Ø4M	6/28	—		X			2		X														X		Matrix Spike
02	3ØSLB14Ø3Ø4D	"	104Ø		X			1		X																
03	3ØSLB14Ø3Ø4	"	1Ø4Ø		X			1		X														X		
04	3ØSLB17Ø91Ø	"	11ØØ		X			1																X		
05	3ØSLB17Ø91ØD	"	11ØØ		X			1																X		
06	26SLBØ1Ø4Ø5	"	1435		X			1																X		
07	26SLBØ1Ø4Ø5D	"	1435		X			1																X		
08	26SLBØ3Ø3Ø4	"	145Ø		X			1		X																
09	26SLBØ3Ø3Ø4D	"	145Ø		X			1		X																

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	6289c	1800					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[signature]	6/28/99	1809	

White = sample collector Yellow = file Pink = with report

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: WP4048-9
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/23/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0101	AQ	9/22/99	9/23/99	9/23/99	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	81	%	1.0		
1,2-DICHLOROETHANE-D4	86	%	1.0		
TOLUENE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	87	%	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: WP4048-9
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0101	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	50	%	1.1		
2-FLUOROBIPHENYL	54	%	1.1		
TERPHENYL-D14	72	%	1.1		

Report Notes: A-1

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP4048-5
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0101	AQ	9/22/99	9/23/99	9/29/99	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	112	%	1.0		
DICHLOROETHANE-D4	101	%	1.0		
UENE-D8	103	%	1.0		
P-BROMOFLUOROBENZENE	88	%	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: WP4048-5
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0101	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	51	%	1.1		
2-FLUOROBIPHENYL	55	%	1.1		
TERPHENYL-D14	77	%	1.1		

Report Notes: A-1

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: WP3703-17
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0201	AQ	8/23/99	8/24/99	8/26/99	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	95	%	1.0		
1,2-DICHLOROETHANE-D4	93	%	1.0		
TOLUENE-D8	105	%	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: WP3703-17
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/9/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0201	AQ	8/23/99	8/24/99	8/26/99	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	70	%	1.0		
TERPHENYL-D14	70	%	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: WP4048-10
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0201	AQ	9/22/99	9/23/99	9/25/99	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	124	%	1.0		
1,2-DICHLOROETHANE-D4	117	%	1.0		
TOLUENE-D8	108	%	1.0		
P-BROMOFLUOROBENZENE	103	%	1.0		

Report Notes:

0000028

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: WP4048-10
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0201	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	60	%	1.1		
2-FLUOROBIPHENYL	65	%	1.1		
TERPHENYL-D14	82	%	1.1		

Report Notes: A-1

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4048-10
Report Date: 10/20/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26GLX0201	Aqueous	R. FRANKLIN	09/22/99	09/23/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	<0.050	mg/L	1.0	0.050	353.2	09/23/99	KW	
Sulfate	58.	mg/L	10	1.0	300.0	09/24/99	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.

10/20/99

LJO/ejnajc(dw)/bad/msm
PI23NOW2
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: WP3703-16
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0301	AQ	8/23/99	8/24/99	8/26/99	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	94	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	100	%	1.0		
P-BROMOFLUOROBENZENE	103	%	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: WP3703-16RE
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0301	AQ	8/23/99	8/24/99	9/10/99	DS	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	77	%	1.0		
2-FLUOROBIPHENYL	83	%	1.0		
TERPHENYL-D14	59	%	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: WP3703-16
SDG: WP3703
Report Date: 9/24/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0301	AQ	8/23/99	8/24/99	8/25/99	DS	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	#27	%	1.0		
2-FLUOROBIPHENYL	#28	%	1.0		
TERPHENYL-D14	#34	%	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: WP4048-11
SDG: WP4048
Report Date: 10/7/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0301	AQ	9/22/99	9/23/99	9/25/99	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	122	%	1.0		
1,2-DICHLOROETHANE-D4	117	%	1.0		
TOLUENE-D8	109	%	1.0		
P-BROMOFLUOROBENZENE	104	%	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: WP4048-11
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0301	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	56	%	1.1		
2-FLUOROBIPHENYL	59	%	1.1		
TERPHENYL-D14	67	%	1.1		

Report Notes: A-1

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-4048-11
Report Date: 10/20/99
PO No. : N7912-P99264
Project : CTO #68

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

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26GLX0301	Aqueous	R. FRANKLIN	09/22/99	09/23/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	<0.050	mg/L	1.0	0.050	353.2	09/23/99	KW	
Sulfate	160.	mg/L	10	1.0	300.0	09/24/99	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.

10/20/99

LJO/ejnajc(dw)/bad/msm
PI23NOW2
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: WP3703-3
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0401	AQ	8/21/99	8/24/99	8/25/99	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	105	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	92	%	1.0		
P-BROMOFLUOROBENZENE	91	%	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: WP3703-3
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0401	AQ	8/21/99	8/24/99	8/25/99	DS	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	#7	%	1.0		
2-FLUOROBIPHENYL	98	%	1.0		
TERPHENYL-D14	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: WP4048-6
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/23/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0401	AQ	9/22/99	9/23/99	9/23/99	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	87	%	1.0		
1,2-DICHLOROETHANE-D4	83	%	1.0		
TOLUENE-D8	97	%	1.0		
P-BROMOFLUOROBENZENE	102	%	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: WP4048-6
SDG: WP4048
Report Date: 10/9/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 10/5/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0401	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	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	84	%	1.0		
2-FLUOROBIPHENYL	84	%	1.0		
TERPHENYL-D14	104	%	1.0		

Report Notes:

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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: WP3703-5
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0501	AQ	8/21/99	8/24/99	8/25/99	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	98	%	1.0		
TOLUENE-D8	90	%	1.0		
P-BROMOFLUOROBENZENE	91	%	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: WP3703-5
SDG: WP3703
Report Date: 9/24/99
PD No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0501	AQ	8/21/99	8/24/99	8/25/99	DS	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	82	%	1.0		
2-FLUOROBIPHENYL	84	%	1.0		
TERPHENYL-D14	96	%	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: WP4048-7
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/23/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0501	AQ	9/22/99	9/23/99	9/23/99	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	87	%	1.0		
1,2-DICHLOROETHANE-D4	83	%	1.0		
TOLUENE-D8	99	%	1.0		
P-BROMOFLUOROBENZENE	102	%	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: WP4048-7
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0501	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	53	%	1.1		
2-FLUOROBIPHENYL	59	%	1.1		
TERPHENYL-D14	78	%	1.1		

Report Notes: A-1

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: WP3703-4
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0601	AQ	8/21/99	8/24/99	8/25/99	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	104	%	1.0		
1,2-DICHLOROETHANE-D4	102	%	1.0		
TOLUENE-D8	92	%	1.0		
P-BROMOFLUOROBENZENE	92	%	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: WP3703-4
SDG: WP3703
Report Date: 9/24/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0601	AQ	8/21/99	8/24/99	8/25/99	DS	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	80	%	1.0		
2-FLUOROBIPHENYL	81	%	1.0		
TERPHENYL-D14	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: WP4048-8
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/23/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0601	AQ	9/22/99	9/23/99	9/23/99	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	86	%	1.0		
1,2-DICHLOROETHANE-D4	80	%	1.0		
TOLUENE-D8	101	%	1.0		
P-BROMOFLUOROBENZENE	98	%	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: WP4048-8
SDG: WP4048
Report Date: 10/9/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLX0601	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	49	%	1.1		
2-FLUOROBIPHENYL	52	%	1.1		
TERPHENYL-D14	58	%	1.1		

Report Notes: A-1

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: WP3703-6
SDG: WP3703
Report Date: 9/24/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0701	AQ	8/21/99	8/24/99	8/25/99	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	104	%	1.0		
1,2-DICHLOROETHANE-D4	99	%	1.0		
TOLUENE-D8	92	%	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: WP3703-6
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0701	AQ	8/21/99	8/24/99	8/25/99	DS	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	88	%	1.0		
2-FLUOROBIPHENYL	90	%	1.0		
TERPHENYL-D14	116	%	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: WP3703-7
SDG: WP3703
Report Date: 9/24/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0701D	AQ	8/21/99	8/24/99	8/25/99	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	101	%	1.0		
1,2-DICHLOROETHANE-D4	98	%	1.0		
TOLUENE-D8	92	%	1.0		
P-BROMOFLUOROBENZENE	91	%	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: WP3703-7
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0701D	AQ	8/21/99	8/24/99	8/25/99	DS	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	86	%	1.0		
2-FLUOROBIPHENYL	88	%	1.0		
TERPHENYL-D14	116	%	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: WP3703-1
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0801	AQ	8/21/99	8/24/99	8/25/99	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	105	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	91	%	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: WP3703-1
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM0801	AQ	8/21/99	8/24/99	8/25/99	DS	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	81	%	1.0		
2-FLUOROBIPHENYL	83	%	1.0		
TERPHENYL-D14	99	%	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: WP3703-15
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM09D01	AQ	8/23/99	8/24/99	8/26/99	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	91	%	1.0		
TOLUENE-D8	99	%	1.0		
P-BROMOFLUOROBENZENE	101	%	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: WP3703-15
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM09D01	AQ	8/23/99	8/24/99	8/25/99	DS	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	83	%	1.0		
2-FLUOROBIPHENYL	84	%	1.0		
TERPHENYL-D14	99	%	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: WP3703-2
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM10D01	AQ	8/21/99	8/24/99	8/25/99	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	105	%	1.0		
1,2-DICHLOROETHANE-D4	105	%	1.0		
TOLUENE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	92	%	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: WP3703-2
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM10D01	AQ	8/21/99	8/24/99	8/25/99	DS	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	72	%	1.0		
2-FLUOROBIPHENYL	74	%	1.0		
TERPHENYL-D14	78	%	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: WP4048-12
SDG: WP4048
Report Date: 10/7/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM1101	AQ	9/22/99	9/23/99	9/25/99	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	122	%	1.0		
1,2-DICHLOROETHANE-D4	117	%	1.0		
TOLUENE-D8	113	%	1.0		
P-BROMOFLUOROBENZENE	100	%	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: WP4048-12
SDG: WP4048
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLM1101	AQ	9/22/99	9/23/99	9/24/99	LAP	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<11	ug/L	1.1	11	10
2-METHYLNAPHTHALENE	<11	ug/L	1.1	11	10
ACENAPHTHYLENE	<11	ug/L	1.1	11	10
ACENAPHTHENE	<11	ug/L	1.1	11	10
FLUORENE	<11	ug/L	1.1	11	10
PHENANTHRENE	<11	ug/L	1.1	11	10
ANTHRACENE	<11	ug/L	1.1	11	10
FLUORANTHENE	<11	ug/L	1.1	11	10
PYRENE	<11	ug/L	1.1	11	10
BENZO[A]ANTHRACENE	<11	ug/L	1.1	11	10
CHRYSENE	<11	ug/L	1.1	11	10
BENZO[B]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[K]FLUORANTHENE	<11	ug/L	1.1	11	10
BENZO[A]PYRENE	<11	ug/L	1.1	11	10
INDENO[1,2,3-CD]PYRENE	<11	ug/L	1.1	11	10
DIBENZ[A,H]ANTHRACENE	<11	ug/L	1.1	11	10
BENZO[G,H,I]PERYLENE	<11	ug/L	1.1	11	10
NITROBENZENE-D5	72	%	1.1		
2-FLUOROBIPHENYL	78	%	1.1		
TERPHENYL-D14	90	%	1.1		

Report Notes: A-1

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4048-12
Report Date: 10/20/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
26GLM1101	Aqueous	R. FRANKLIN	09/22/99	09/23/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	1.2	mg/L	1.0	0.050	353.2	09/23/99	KW	
Sulfate	14	mg/L	1.0	1.0	300.0	09/24/99	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.

10/20/99

LJO/ejnajc(dw)/bad/msm
PI23NOW2
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: WP3906-48
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/17/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLP1201	AQ	9/13/99	9/14/99	9/17/99	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	96	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	98	%	1.0		
P-BROMOFLUOROBENZENE	107	%	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: WP3906-48
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLP1201	AQ	9/13/99	9/14/99	9/20/99	DS	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	31	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	79	%	1.0		
2-FLUOROBIPHENYL	102	%	1.0		
TERPHENYL-D14	111	%	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: WP3906-49
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/17/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLP1301	AQ	9/13/99	9/14/99	9/17/99	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	92	%	1.0		
1,2-DICHLOROETHANE-D4	85	%	1.0		
TOLUENE-D8	96	%	1.0		
P-BROMOFLUOROBENZENE	103	%	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: WP3906-49
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26GLP1301	AQ	9/13/99	9/14/99	9/20/99	DS	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	53	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	70	%	1.0		
2-FLUOROBIPHENYL	84	%	1.0		
TERPHENYL-D14	84	%	1.0		

Report Notes:

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 16, 1999

Sample ID	: 01E00101
Lab ID	: 9905826-01
Matrix	: Water
Date Collected	: 05/24/99
Date Received	: 05/24/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	1.20	1.22	5.00	mg/l	1.0	AAT	06/14/99	1130	151317	1

M = Method	Method-Description
M 1	EPA 9070A

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

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

Reviewed By

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: WP2595-1
SDG: WP2595
Report Date: 6/28/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
01E00101	AQ	5/24/99	5/25/99	5/29/99	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	85	%	1.0		
1,2-DICHLOROETHANE-D4	85	%	1.0		
TOLUENE-D8	90	%	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: WP2595-1
SDG: WP2595
Report Date: 7/17/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 7/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
01E00101	AQ	5/24/99	5/25/99	5/27/99	GST	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/Kg	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/Kg	1.0	10	10
ACENAPHTHYLENE	<10	ug/Kg	1.0	10	10
ACENAPHTHENE	<10	ug/Kg	1.0	10	10
FLUORENE	<10	ug/Kg	1.0	10	10
PHENANTHRENE	<10	ug/Kg	1.0	10	10
ANTHRACENE	<10	ug/Kg	1.0	10	10
FLUORANTHENE	<10	ug/Kg	1.0	10	10
PYRENE	<10	ug/Kg	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/Kg	1.0	10	10
CHRYSENE	<10	ug/Kg	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/Kg	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/Kg	1.0	10	10
BENZO[A]PYRENE	<10	ug/Kg	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/Kg	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/Kg	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/Kg	1.0	10	10
NITROBENZENE-D5	73	%	1.0		
2-FLUOROBIPHENYL	68	%	1.0		
TERPHENYL-D14	73	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID: 01E00101**

Matrix: WATER **SDG Name: WP2595**

Percent Solids: 0.00 **Lab Sample ID: WP2595-001**

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7429-90-5	ALUMINUM	18.6	B		P	1
7440-36-0	ANTIMONY	2.6	B		P	1
7440-38-2	ARSENIC	2.07	U		P	1
7440-39-3	BARIUM	0.63	B		P	1
7440-41-7	BERYLLIUM	0.33	U		P	1
7440-43-9	CADMIUM	0.26	U		P	1
7440-70-2	CALCIUM	27.4	B		P	1
7440-47-3	CHROMIUM	4.31	U		P	1
7440-48-4	COBALT	4.45	U		P	1
7440-50-8	COPPER	1.62	U		P	1
7439-89-6	IRON	12.30	U		P	1
7439-92-1	LEAD	1.09	U		P	1
7439-95-4	MAGNESIUM	17.16	U		P	1
7439-96-5	MANGANESE	0.97	U		P	1
7439-97-6	MERCURY	0.04	B		CV	1
7440-02-0	NICKEL	13.21	U		P	1
7440-09-7	POTASSIUM	449.54	U		P	1
7782-49-2	SELENIUM	2.57	U		P	1
7440-22-4	SILVER	2.54	U		P	1
7440-23-5	SODIUM	80.2	B		P	1
7440-28-0	THALLIUM	5.7	B		P	1
7440-62-2	VANADIUM	3.58	U		P	1
7440-66-6	ZINC	2.2	B		P	1

Color Before: COLORLESS Clarity Before: CLEAR

Color After: COLORLESS Clarity After: CLEAR

Comments:

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 16, 1999

Sample ID	: 01F00101
Lab ID	: 9905826-02
Matrix	: Water
Date Collected	: 05/24/99
Date Received	: 05/24/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	1.73	1.22	5.00	mg/l	1.0	AAT	06/14/99	1130	151317	1

M = Method	Method-Description
M 1	EPA 9070A

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

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

Reviewed By

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: WP2595-2
SDG: WP2595
Report Date: 6/28/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
01F00101	AQ	5/24/99	5/25/99	5/29/99	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	84	%	1.0		
1,2-DICHLOROETHANE-D4	83	%	1.0		
TOLUENE-D8	90	%	1.0		
P-BROMOFLUOROBENZENE	81	%	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: WP2595-2
SDG: WP2595
Report Date: 7/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 7/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
01F00101	AQ	5/24/99	5/25/99	5/27/99	GST	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/Kg	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/Kg	1.0	10	10
ACENAPHTHYLENE	<10	ug/Kg	1.0	10	10
ACENAPHTHENE	<10	ug/Kg	1.0	10	10
FLUORENE	<10	ug/Kg	1.0	10	10
PHENANTHRENE	<10	ug/Kg	1.0	10	10
ANTHRACENE	<10	ug/Kg	1.0	10	10
FLUORANTHENE	<10	ug/Kg	1.0	10	10
PYRENE	<10	ug/Kg	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/Kg	1.0	10	10
CHRYSENE	<10	ug/Kg	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/Kg	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/Kg	1.0	10	10
BENZO[A]PYRENE	<10	ug/Kg	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/Kg	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/Kg	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/Kg	1.0	10	10
NITROBENZENE-D5	79	%	1.0		
2-FLUOROBIPHENYL	75	%	1.0		
TERPHENYL-D14	65	%	1.0		

Report Notes:

0000006

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services
Client Field ID: 01F00101
Matrix: WATER
SDG Name: WP2595
Percent Solids: 0.00
Lab Sample ID: WP2595-002

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7429-90-5	ALUMINUM	66.4	B		P	1
7440-36-0	ANTIMONY	1.81	U		P	1
7440-38-2	ARSENIC	2.07	U		P	1
7440-39-3	BARIUM	0.69	B		P	1
7440-41-7	BERYLLIUM	0.33	U		P	1
7440-43-9	CADMIUM	0.26	U		P	1
7440-70-2	CALCIUM	14.65	U		P	1
7440-47-3	CHROMIUM	4.31	U		P	1
7440-48-4	COBALT	4.45	U		P	1
7440-50-8	COPPER	1.62	U		P	1
7439-89-6	IRON	38.2	B		P	1
7439-92-1	LEAD	1.09	U		P	1
7439-95-4	MAGNESIUM	17.16	U		P	1
7439-96-5	MANGANESE	0.97	U		P	1
7439-97-6	MERCURY	0.04	B		CV	1
7440-02-0	NICKEL	13.21	U		P	1
7440-09-7	POTASSIUM	449.54	U		P	1
7782-49-2	SELENIUM	2.57	U		P	1
7440-22-4	SILVER	2.54	U		P	1
7440-23-5	SODIUM	57.2	B		P	1
7440-28-0	THALLIUM	4.49	U		P	1
7440-62-2	VANADIUM	3.58	U		P	1
7440-66-6	ZINC	2.8	B		P	1

Color Before: COLORLESS
Clarity Before: CLEAR
Color After: COLORLESS
Clarity After: CLEAR
Comments:

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: WP2595-3
SDG: WP2595
Report Date: 6/28/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
GCTL00204	AQ	5/24/99	5/25/99	5/29/99	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	84	%	1.0		
1,2-DICHLOROETHANE-D4	84	%	1.0		
TOLUENE-D8	88	%	1.0		
P-BROMOFLUOROBENZENE	80	%	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: WP3703-22
SDG: WP3703
Report Date: 9/24/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 8/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26TL00101	AQ	8/23/99	8/24/99	8/27/99	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	93	%	1.0		
1,2-DICHLOROETHANE-D4	91	%	1.0		
TOLUENE-D8	103	%	1.0		
P-BROMOFLUOROBENZENE	105	%	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: WP4048-13
SDG: WP4048
Report Date: 10/7/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
26TL00301	AQ	9/22/99	9/23/99	9/25/99	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	119	%	1.0		
1,2-DICHLOROETHANE-D4	114	%	1.0		
TOLUENE-D8	115	%	1.0		
P-BROMOFLUOROBENZENE	98	%	1.0		

Report Notes:

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
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: Bryn Howze
Phone #: (423) 483 9900
Fax #: ( )
Address: NH21 Ave H
City: N. 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 #: WP2595 -
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	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N PAH Naph 8270C	Filt. ☐Y☐N TAL metals 6010B	Filt. ☐Y☐N BTEX/EDB 8260B	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	Ø1EØØ1Ø1	5/24/99 1330	W	6	2	1	3							
	Ø1FØØ1Ø1	5/24/99 1340	W	6	2	1	3							
	~~GCTLØØ1Ø1~~	~~5/24/99 1540~~	~~W~~											
	GCTLØØ2Ø4	5/24/99 1500	W	3			3				TRIP BLANK			
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COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Sig
[signature]	5/24/99 1530	8096096502 65		5-25-99 1015	Shelley Wilkins
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					0000006

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

Page 1 of 1

CHAIN OF CUSTODY RECORD

9905826%

Client Name/Facility Name: Katahdin

Collected by/Company: Tetra Tech NUS

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

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

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TPH	Remarks
01	Ø1EØØ1Ø1	52499	1330					2																2	* unpreserved
02	Ø1FØØ1Ø1	52499	1340					2																2	* unpreserved

Relinquished by: [signature] Date: 52499 Time: 1613 Received by: Relinquished by: Date: Time: Received by:

Relinquished by: Date: Time: Received by lab by: [signature] Date: 5/24/99 Time: 1613 Remarks:

White = sample collector Yellow = file Pink = with report

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryn Howze
Phone #: (843) 554-4925
Fax #: ( )
Address: NH-21 Ave. H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign):
Copies To:

LAB USE ONLY
WORK ORDER #: WP3703
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	Date / Time coll'd	Matrix	No. of Cntrs.	Filt. ☐Y☐N BTEX, MTBE, EDB, Naph	Filt. ☐Y☐N PAH	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	26GLMØ8Ø1	8/21/99/1513	aq	5	3	2								
	26GLM1ØDØ1M	8/21/99/1240	aq	5	3	2					←	MS/MSD		
	26GLM1ØDØ1	8/21/99/1240	aq	5	3	2								
	26GLMØ4Ø1	8/21/99/0945	aq	5	3	2								
	26GLMØ6Ø1	8/21/99/1005	aq	5	3	2								
	26GLMØ5Ø1	8/21/99/0945	aq	5	3	2								
	26GLMØ7Ø1	8/21/99/1155	aq	5	3	2								
	26GLMØ7Ø1D	8/21/99/	aq	5	3	2								
	13GLMØ6Ø1	8/21/99/1140	aq	5	3	2								
	32GLMØ6Ø1	8/21/99/1557	aq	5	3	2								
	21GLMØ3Ø1	8/22/99/1152	aq	5	3	2								
	21GLMØ2Ø1	8/22/99/0955	aq	5	3	2								
	21GLMØ2Ø1D	8/22/99	aq	5	3	2								
	21GLMØ7DØ1	8/22/99/1430	aq	5	3	2								
	21GLMØ8Ø1	8/22/99/1500	aq	5	3	2								
	24SLBØ7Ø4Ø5	8/23/99/0915	soil	5	4	1							4ppm	

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
E. J. Haim	8/27/99 1830	8134Ø2681727		8-24-99 0880	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryn Honze
Phone #: (843) 554-4925
Fax #: ( )
Address: NH-21 Ave. H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign):
Copies To:

LAB USE ONLY
WORK ORDER #: WP3703 -
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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX, MTBE, EDB, Naph	PAH	TAL Metals	Grain Size	Dissolved Methane	Anions					FID Rdg
					Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	
*	24SLB02Ø2Ø3	8/23/99 1045	soil	5	4	1	1								60ppm
*	24SLBØ4Ø3Ø4	8/23/99 0950	soil	6	4	1	1	+	X Run	Foc.	from	PAH	jar		50pp
*	24SLBØ4Ø3Ø4D	8/23/99	soil	5	4	1	1		X	Run	Foc	from	PAH	jar	5pp
	GLMØ9DØ1	8/23/99 1645	aq	5	3	2									
	26GLMØ3Ø1	8/23/99 1515	aq	5	3	2									
	26GLMØ2Ø1	8/23/99 1520	aq	5	3	2									
	3ØGLMØ1Ø1	8/22/99 1810	aq	9	3	2			3	1					
	3ØGLMØ3Ø1	8/22/99 1610	aq	5	3	2									
	3ØGLMØ5Ø1	8/22/99 1225	aq	9	3	2			3	1					
	3ØGLMØ7Ø1	8/22/99 1515	aq	5	3	2									
	42SLP200304	8/23/99 1400	soil	5	4	1	← 48 hour turn around								3.2p
	42SLP210304	8/23/99 1415	soil	5	4	1	← 48 hour turn around								2.6ppm
	26TL00101	8/23/99	aq	2	2										
		/													
		/													
		/													

COMMENTS
* Do TAL metals analysis from PAH jar.

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	8-24-99 0850				
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Paul Calligan
Phone #: ( )
Fax #: ( )
Address: UH-21 Ave H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.: Charleston Naval Complex
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Roger Franklin
Copies To:

LAB USE ONLY
WORK ORDER #: WP4048-
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	Date / Time coll'd	Matrix	No. of Cntrs.	TOC	(4260) BTEX, Naphthalene	(8270) PAH	THL Metals						FID
	36SLB12Ø3Ø4	9/22/99 1600	S	1	X	X								Ø
*	36SLB12Ø3Ø4D	9/22/99 160	S	1	X	X								
	36SLBØ1Ø3Ø4	9/22/99 1530	S	6	X	X	X	X						Ø
*	36SLBØ1Ø3Ø4D	9/22/99 1530	S	6		X	X	X						

COMMENTS
* Duplicate

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (S
	9/22/99 1500	Fed-Ex		09-23-99 0900	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
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	Contact	Phone #	Fax #
TETRA TECH NUS	PAUL CALLIGAN	(850) 385-9899	( )

Address: 1401 OVEN PARK DR 102 City: TALLAHASSEE State: FL Zip Code: 32308

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

Bill (if different than above) Address

Sampler (Print / Sign) T. Thompson / [signature] Copies To:

LAB USE ONLY WORK ORDER #: WP 4048 -

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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX, MTBE, EDB, Total Naph. (Filt. ☐Y☐N)	PAH (Filt. ☐Y☐N)	Dissolved Methane (Filt. ☐Y☐N)	Anions (Filt. ☐Y☐N)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	26GLX0101	9-22-99 1142	GW	5	3	2								
	26GLX0201	/1035		10	3	2	3	2						
	26GLX0301	/1130		10	3	2	3	2						
	26GLX0401	/1550		5	3	2								
	26GLX0501	/1548		5	3	2								
	26GLX0601	/1620		5	3	2								
	26GLM0101	/1100		5	3	2								
	26GLM1101	/1640		10	3	2	3	2						
	26TL00301	9-22-99 —	H_2O ~~GW~~	2	2									
		/												
		/												
		/												
		/												
		/												
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9-22-99 1830	8127924316 46		09-23-99 0900	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
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 Inc
Contact: Paul Galligan
Phone #: (843)554-4925T
Fax #:
Address: NH 21 AVE H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Jerry Kruger / Jerry Kruger
Copies To:

LAB USE ONLY
WORK ORDER #: WP3906
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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX, MTBE, EDB	NAPH	PAH	Total Lead	Anions Nitrate, Sulfate	Dissolved Methane					
	23GLM0401	9/10/99/1517	GW	6	3	2	1								
	23GLX0301	9/10/99/1535	GW	6	3	2	1								
	23GLX0401	9/10/99/1540	GW	6	3	2	1								
	23GLX0401D	9/10/99/0000	GW	6	3	2	1								
	23GLM05D01	9/10/99/1600	GW	6	3	2	1								
	23GLM0101	9/10/99/1630	GW	6	3	2	1								
	23TL00201	9/10/99/0800	GW	1	1										
	16GLM7D01	9/12/99/0755	GW	5	3	2									
	25GLM0301	/1510	GW	6	3	2	1								
	25GLM0801	/1555	GW	6	3	2	1								
	25GLM0601	/1620	GW	6	3	2	1								
	25GLM0701	9/13/99/1115	GW	10	3	2	1	1	3						
	25GLM0401	/1140	GW	5	3	2	1								
	26GLP1201	/1345	GW	5	3	2									
	26GLP1301	/1355	GW	5	3	2									
		/													

Cooler 2 of 2

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
J. Kruger	9/13/99 1900	FedEx		9-14-99 0900	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

FORMSOURCE INC. ☎ (207) 782-3311
FORM # CHN-OF-CSTDY

ORIGINAL

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: TETRA TECH NUS
Contact: PAUL CALLIGAN
Phone #: (850) 385-9899
Fax #: (850) 350-9860
Address: 1401 OVEN PARK DR 102
City: TALLAHASSEE
State: FL
Zip Code: 32308
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): T. Thompson Thomas Thompson
Copies To:

LAB USE ONLY
WORK ORDER #: WP3906
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	Date / Time coll'd	Matrix	No. of Cntrs.	BTEX, MTBE, EDB, TOTAL NAPH. (HCl)	PAH (None)	Metals (HNO3)	Dissolved Methane (HCl)	Anions (None)					
					Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	36GLM0601	91399/1015	GW	10	3	2	1	3	1					
	36GLM0201	91399/1055	GW	10	3	2	1	3	1					
	36GLM0301	91399/1131	GW	10	3	2	1	3	1					
	1GLM0201D	91399/0000	GW	6	3	2	1							
	22GLM0101	91099/1130	GW	6	3	2	1							
	22GLM0201	91099/1110	GW	6	3	2	1							
	22GLM0501	91099/1418	GW	6	3	2	1							
	22GLM0701	91099/1420	GW	6	3	2	1							
	~~22GLM0201D~~	~~91099/0000~~	~~GW~~	~~6~~	~~3~~	~~2~~	~~1~~	BR						
		/												
		/												
		/												
		/												
		/												
		/												
		/												

Cooler 1 of 1 BR
All Three C.O.C

COMMENTS
Placed on ice.

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/13/99 1700	8134583693 3		9-14-99 0900	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Paul Calligan
Phone #: (850) 385-9899
Fax #: (850)
Address: 1401 Oven Park Dr 102
City: Tallahassee
State: FL
Zip Code: 32308
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): P. Halverson
Copies To:

LAB USE ONLY
WORK ORDER #: WP 3906
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	Date / Time coll'd	Matrix	No. of Cntrs.	Metals (HNO3) Filt. ☐Y☐N	BTEX, EDB, MTBE, Total Naph. (HCl) Filt. ☐Y☐N	PAH (None) Filt. ☐Y☐N	Dissolved Methane (HCl) Filt. ☐Y☐N	Anions (None) Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	42GLM1001	91299/0941	GW	6	1	3	2							
	42GLM0701	91299/1000	GW	9	1	3	2	3						
	42GLM1201	91299/~~1000~~ 1030	GW	6	1	3	2							
	42GLM0901	91299/1030	GW	~~6~~ 9	1	3	2	3						
	42GLM0801	91299/1057	GW	6	1	3	2							
	42GLM1101	91299/1106	GW	9	1	3	2	3						
	42GLM0101	91299/1435	GW	10	1	3	2	3	1					
	42GLM1301	91299/1449	GW	10	1	3	2	3	1					
	42GLM0601	91299/1535	GW	6	1	3	2							
	42GLM0701	91299/1202	GW	1					1					
	42GLM0901	91299/1206	GW	1					1					
	42GLM1101	91299/1204	GW	1					1					
	42GLM0701D	91299/0000	GW	6	1	3	2							
	42GLM0101D	91299/0000	GW	6	1	3	2							
	42GLM1001M	91299/0941	GW	6	1	3	2							
	42GLM1801	91399/0842	GW	6	1	3	2							

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/13/99 1700	8134583693 3Φ		9-14-99 0900	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: TETRA TECH NUS
Contact: PAUL CALLIGAN
Phone #: (850) 385-9899
Fax #: (850)
1401 OVEN PARK DR. 102
City: TALLAHASSEE
State: FL.
Zip Code: 32308

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

Bill (if different than above):
Address:

Sampler (Print / Sign): P. HALVERSON
Copies To:

LAB USE ONLY
WORK ORDER #: WP3906
KATAHDIN PROJECT MANAGER:

REMARKS:

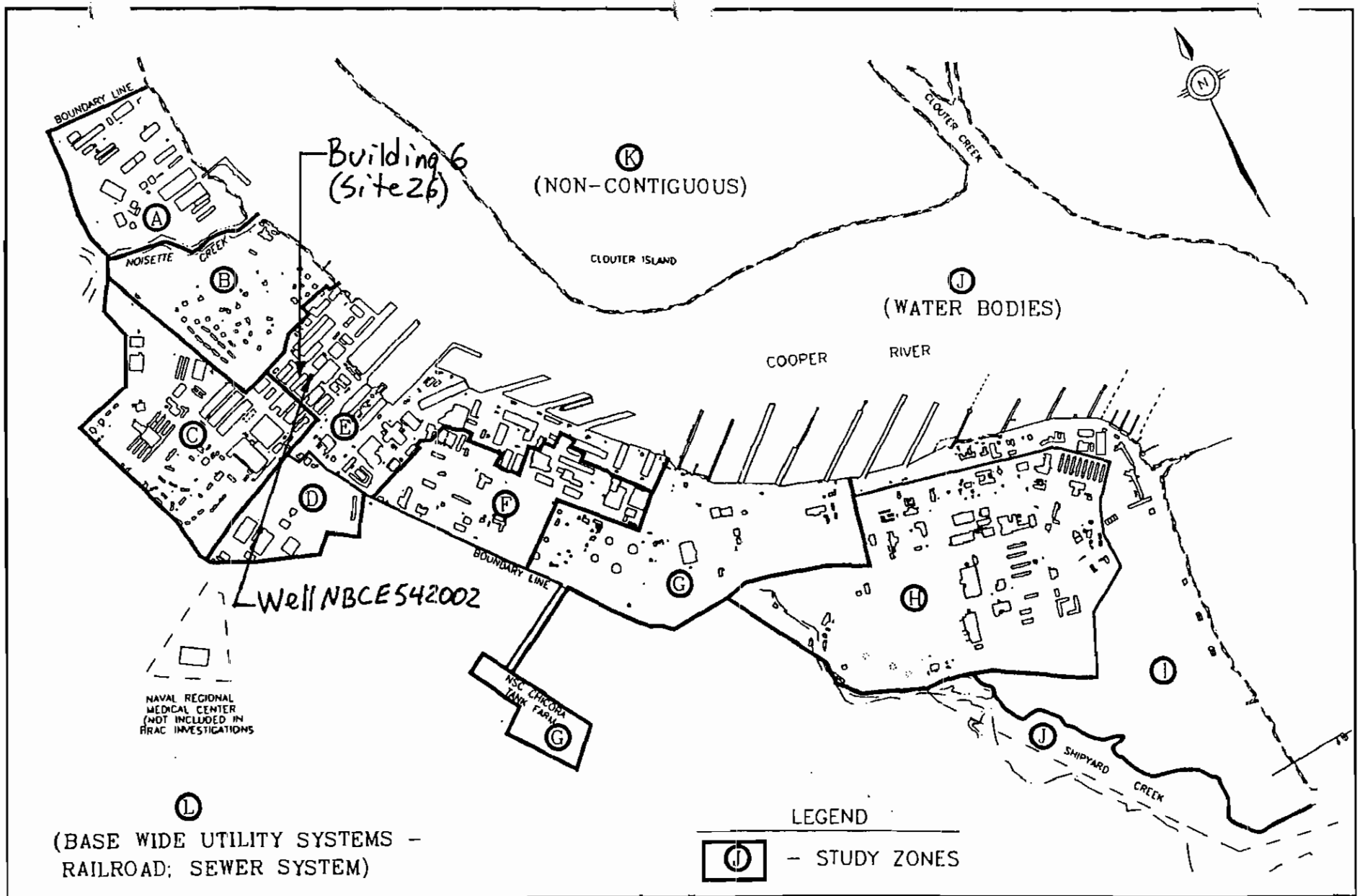
SHIPPING INFO: ☒ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C: ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	METALS HNO3 (Filt. ☐Y ☒N)	REV/MTBE, EDB TPH-L VOCs (Filt. ☐Y ☒N)	PAH (Filt. ☐Y ☒N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	36GLM0101	91099/1110	GW	1	1									
	36GL0680004	91099/1115	GW	1	1									
	36GLM0701	91099/1120	GW	6	1	3	2							
	36GLM0401	91099/1510	GW	6	1	3	2							
	36GLM0501	91099/1515	GW	6	1	3	2							
	42GLM0401	91199/1055	GW	6	1	3	2							
	42GLM0301	91199/1050	GW	6	1	3	2							
	42GLM0201	91199/1045	GW	6	1	3	2							
	42GLM0501	91199/1035	GW	6	1	3	2							
✓	42GLM1401	91199/1125	GW	6	1	3	2							
✓	42GLM1701	91199/1110	GW	6	1	3	2							
✓	42GLM1501	91199/1110	GW	6	1	3	2							
✓	42GLM1601	91199/1125	GW	6	1	3	2							
	42TL0001	9/13/99	99	2		2								
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	9/14/99 1700	8134583693 3 0		9-14-99 0900	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)



ZONE E
RCRA FACILITY
INVESTIGATION REPORT
NAVAL BASE CHARLESTON
CHARLESTON, S.C.

FIGURE 1.1
INVESTIGATIVE
ZONE BOUNDARIES

DWG DATE: 09/29/97 | DWG NAME: ZEZMAP

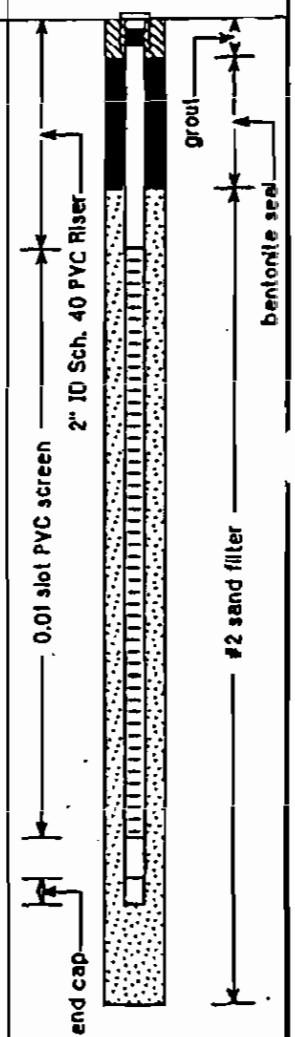
EnSafe/Allen & Hoshall

Monitoring Well NBCE542002

Project: *ZONE E - Naval Base Charleston*	Coordinates: *231678.24 E, 377028.93 N*
Location: *Charleston, SC*	Surface Elevation: *9.0 feet msl*
Started at *1025 on 10-03-95*	TOC Elevation: *8.79 feet msl*
Completed at *1545 on 10-03-95*	Depth to Groundwater: *6.31 feet TOC* Measured: *3/13/96*
Drilling Method: *4.25" ID (7.5" OD) HSA with split spoon*	Groundwater Elevation: *2.48 feet msl*
Drilling Company: *Atlantic Drilling (SC cert #1210)*	Total Well Depth: *13.5 feet bgs*
Geologist: *P. Bayley*	Well Screen: *3.5 to 12.5 feet bgs*

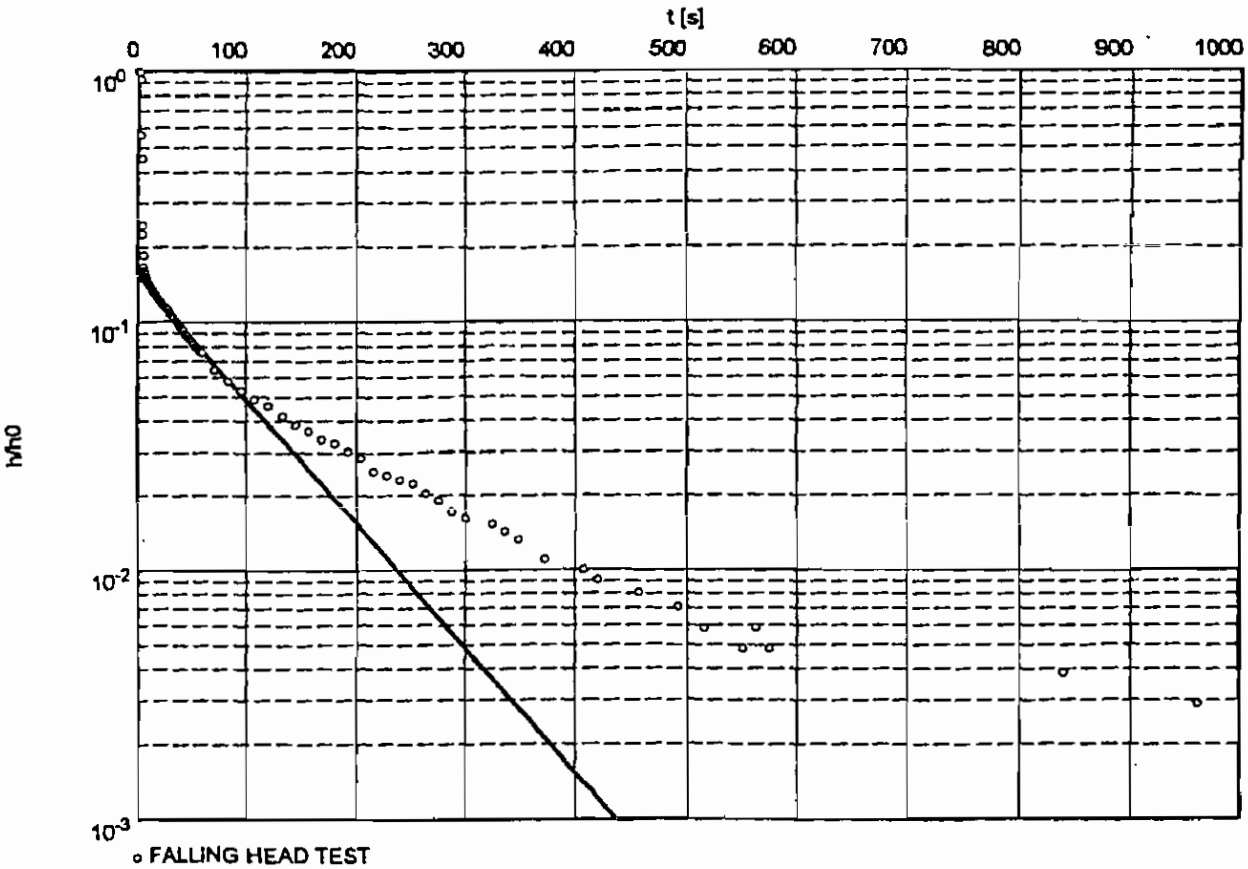
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface conditions: asphalt parking lot.	
5			1	73	123		SP	Sand: light brown-gray, very fine to fine, trace silt, loose, wet, *hydrocarbon or solvent odor.*	4.5 3.4
10			2	100	55.7		SP	Sand: light brown-gray with occasional brown mottling, very fine to fine, trace silt, loose, wet.	1 1
15								Due to non-cohesive, saturated sands, unable to obtain additional lithologic samples. Drilled to depth and installed well.	
20									

WELL DIAGRAM



EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	



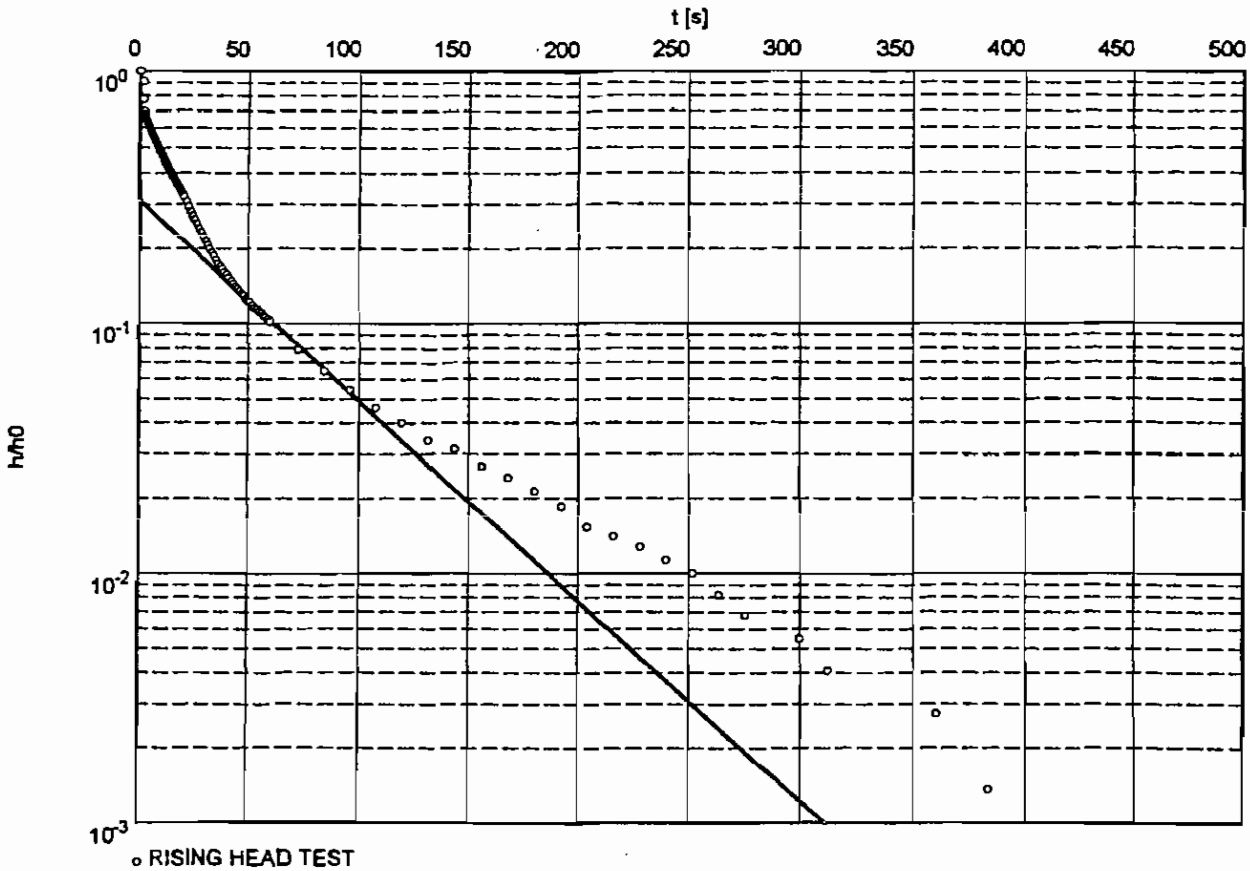
Hydraulic conductivity [ft/s]: 9.35×10^{-5}

Hydraulic conductivity [ft/day]: 8.08

L = 7.0 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
Reff = 0.195 ft

EnSafe/Allen & Hoshall 935 Houston Northcutt Blvd. Suite 113 Mt. Pleasant, SC 29464 (803)-884-0029	slug/bail test analysis BOUWER-RICE's method	Appendix C, Page 1 Project: ZONE E–NAVBASE CHARLESTON Evaluated by: TKK — Date: 14.11.96

Slug Test No. 1	Test conducted on: 19.10.96
NBCE-542-002	



Hydraulic conductivity [ft/s]: 1.49×10^{-4}

Hydraulic conductivity [ft/day]: 12.9

L = 7.0 ft
b = 9.5 ft
D = 9.5 ft (full penetration)
Reff = 0.195 ft

APPENDIX F

RBCA CALCULATIONS

SITE 26, BUILDING 6, ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
SCDHEC UST ID No. 09868

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Site-Specific Target Level Calculations for Groundwater Possibly Impacting the Cooper River

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

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

Dilution & Attenuation without Biological Decay

Constituent	X_{POI} ft	X_{POI} m	Y m	Z m	t sec	K_s m/sec	i m/m	θ cm^3/cm^3	ρ_s g/cm^3	α_X m	α_Y m	α_Z m	f_{OC} g-C/g-soil	k_{OC} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-s	V m/sec	R_C	C_{POI}/C_{SOURCE}
Naphthalene	600	182.882	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.55	27.13	9.04	1.36	7.07E-04	1543	1.090901	6.69E-08	4.523	7.424E-03

Constituent	X_{COMP} ft	X_{COMP} m	Y m	Z m	t sec	K_s m/sec	i m/m	θ cm^3/cm^3	ρ_s g/cm^3	α_X m	α_Y m	α_Z m	f_{OC} g-C/g-soil	k_{OC} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-s	V m/sec	R_C	C_{POI}/C_{COMP}
Naphthalene	550	167.642	15	2	1.00E+13	2.23E-06	0.0144	0.48	1.55	26.37	8.79	1.32	7.07E-04	1543	1.090901	6.69E-08	4.523	8.328E-03

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

DOMENICO DILUTION/ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

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

Constituent	POE RBSL mg/L	$SSTL_{SOURCE}$ mg/L	$SSTL_{COMP}$ mg/L
Naphthalene	0.010	1.347	1.201

Prepared By _____

Reviewed By _____

SITE 26, BUILDING 6, ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Predicted 10-year Migration of Constituents in Groundwater

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

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{OC} = Fraction Organic Carbon in Soil	g-C/g-soil
α_x = Longitudinal Dispersivity = x/10	m
α_y = Transverse Dispersivity = $\alpha_x/3$	m
α_z = Vertical Dispersivity = $\alpha_x/20$	m
k_{OC} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_p = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_C = Constituent Retardation Factor	
V/R_C = Maximum Transport Rate of Dissolved Constituent = $(K_s i)/(\theta R_C)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE} ft	X_{POE} m	Y m	Z m	t sec	K_s m/sec	i m/m	θ cm^3/cm^3	ρ_s g/cm^3	α_x m	α_y m	α_z m	f_{OC} g-C/g-soil	k_{OC} cm^3-H_2O/g-C	k_p cm^3-H_2O/g-soil	V m/sec	R_C	C_{POE}/C_{SOURCE}
Naphthalene	23	7.01049	15	2	3.15E+08	2.23E-06	0.0144	0.48	1.65	0.70	0.23	0.04	7.04E-04	1543	1.086272	6.69E-08	4.508	1.807E-01

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

DOMENICO DILUTION ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

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

Constituent	C_{SOURCE} mg/L	C_x mg/L
Naphthalene	0.053	0.010

Prepared By _____

Reviewed By _____

SITE 26, BUILDING 6, ZONE E, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Predicted 20-year Migration of Constituents in Groundwater

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

Parameter Descriptions:	Units
ρ_B = Soil Bulk Density	g/cm^3
f_{OC} = Fraction Organic Carbon in Soil	g-C/g-soil
α_x = Longitudinal Dispersivity = x/10	m
α_y = Transverse Dispersivity = $\alpha_x/3$	m
α_z = Vertical Dispersivity = $\alpha_x/20$	m
k_{OC} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_C = Constituent Retardation Factor	
V/R_C = Maximum Transport Rate of Dissolved Constituent = $(K_s I)/(\theta R_C)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POI} ft	X_{POI} m	V m	Z m	t sec	K_s m/sec	i m/m	θ cm^3/cm^3	ρ_B g/cm^3	α_x m	α_y m	α_z m	f_{OC} g-C/g-soil	k_{OC} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-soil	V m/sec	R_C	C_{POI}/C_{SOURCE}
Naphthalene	43	13.1066	15	2	8.31E+08	2.23E-06	0.0144	0.48	1.55	1.31	0.44	0.07	7.04E-04	1543	1.086272	6.89E-08	4.508	1.910E-01

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

DOMENICO DILUTION ATTENUATION MODEL WITHOUT BIOLOGICAL DECAY

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

Constituent	C_{SOURCE} mg/L	C_x mg/L
Naphthalene	0.053	0.010

Prepared By _____

Reviewed By _____

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #	17626	COUNTY	Columbia
FACILITY NAME	Site 26, Building 6		
STREET ADDRESS	Charleston Naval Complex, North Charleston, SC		

Soil Risk Evaluation Data

					Figure
TPH		7820	mg/kg		
Soil % SAND (Estimated)		95	%		
Soil % CLAY (Estimated)		2	%		
Worst Case	Benzene	0.32	mg/kg	Cs	
Soil Analyses	Toluene		mg/kg	Cs	
	Ethylbenzene		mg/kg	Cs	
	Xylenes		mg/kg	Cs	
	Naphthalene	3.998	mg/kg	Cs	
	MTBE		mg/kg	Cs	
Natural Organic Carbon Content		707	mg/kg	TOC	
Average Annual Recharge		25	cm	Hw	
Distance from highest Soil Impact to water table		91	cm	L	
Bulk Density of Soil		1.55	g/cc	Bd	1
Wetting Front Suction		-10	cm	Hf	2
Soil Hydraulic Conductivity		5.60E-04	cm/sec	Kf	3
Porosity		0.45	decimal %	Φ	4
Residual Water Content		0.04	decimal %	Wr	5

List possible human exposure pathways from surface soil.
Soil leaching to groundwater -construction worker in a utility trench.

IN-SITU SOIL RISK EVALUATION

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17626
FACILITY NAME Site 26, Building 6

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: BENZENE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	16	days	t 1/2	1
Soil/water partitioning coefficient	81	ml/g	K oc	1

Results

				Equation Set	Step
Total Organic Carbon Content	0.0052	decimal %	f cs	I	1
Leachate Concentration	0.643	mg/l	Cw	I	2
Air Filled Porosity	0.41	decimal %	f	II	1
Infiltration Rate Time	33,801	seconds	t	II	2
Velocity of Water	2,782	ft/year	V w	II	3
Soil/Water Distribution Coefficient	0.0573	ml/g	K d	III	1
Contaminant Percolation Rate	2,324	ft/year	V c	III	2
Time to Reach Groundwater	0.47	days	T c	IV	1
Concentration reaching Groundwater	0.1531	mg/l	C p	IV	2
Site Specific Target Level	0.6092	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ YES X NO

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR BENZENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 26, Building 6

Location: Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

COC	Chemical of Concern		BENZENE
Bd	Soil Bulk Density (1)	g/cm3	1.55
Crsbl	Risk Based Screening Level	mg/L	0.15
Cs	Concentration of COC in soil	mg/kg	0.32
DAF	Dilution/Attenuation Factor (2)	unitless	8
foc	Organic Carbon Content in Soil (3)	mg/kg	707
H'	Henry's Law Constant (4)	unitless	0.23
Hf	Wetting front suction head (always negative) (5)	cm	-10
Hw	Average Annual Recharge (3)	cm	25.00
Kf	Soil Hydraulic Conductivity (6)	cm/s	5.60E-04
Koc	Soil/Water Partioning Coefficient (2)	ml/g	81
L	Depth between soil sample with greatest COC concentration to groundwater.	cm	91
Φ	Porosity (7)	unitless	0.45
t1/2	Biodegradation "half life" (2)	days	16
TPH	Total Petroleum Hydrocarbons, EPA Method 3550	mg/kg	7820
Wr	Residual Water Content (8)	volume fraction	0.04

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1,724)*1E-6 = 0.0052 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0.6433 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.41 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-((Hw-Hf)*(ln((Hw + L-Hf)/(Hw-Hf))))) = 33,801 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 2,782 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 0.057267 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw/(1 + ((Bd*Kd)/ø)) = 2,324 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 0.47 days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = 0.1531 mg/l

COC concentration in soil pore water (Cw) is less than concentration necessary to protect groundwater (Cp). Not necessary to calculate SSTL

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for BENZENE in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H''')/(Wr*1g/cc + Bd)) = 0.609161 mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17626
FACILITY NAME Site 26, Building 6

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: NAPHTHALENE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	48	days	t 1/2	1
Soil/water partitioning coefficient	1543	ml/g	K oc	1

Results

				Equation Set	Step
Total Organic Carbon Content	0.0052	decimal %	f cs	I	1
Leachate Concentration	0.020	mg/l	Cw	I	2
Air Filled Porosity	0.41	decimal %	f	II	1
Infiltration Rate Time	33,801	seconds	t	II	2
Velocity of Water	2,782	ft/year	V w	II	3
Soil/Water Distribution Coefficient	1.09	ml/g	K d	III	1
Contaminant Percolation Rate	585	ft/year	V c	III	2
Time to Reach Groundwater	2	days	T c	IV	1
Concentration reaching Groundwater	1.67	mg/l	C p	IV	2
Site Specific Target Level	**106**	mg/kg	C ssti	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ YES X _____ NO

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR NAPHTHALENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 26, Building 2

Location: Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

COC	Chemical of Concern		NAPHTHALENE
Bd	Soil Bulk Density (1)	g/cm3	1.55
Crsbl	Risk Based Screening Level	mg/L	1.63
Ce	Concentration of COC in soil	mg/kg	3.998
DAF	Dilution/Attenuation Factor (2)	unitless	8
foc	Organic Carbon Content in Soil (3)	mg/kg	707
H'	Henry's Law Constant (4)	unitless	0.002
Hf	Wetting front suction head (always negative) (5)	cm	-10
Hw	Average Annual Recharge (3)	cm	25
Kf	Soil Hydraulic Conductivity (6)	cm/s	0.0006
Koc	Soil/Water Partioning Coefficient (2)	ml/g	1543
L	Depth between soil sample with greatest COC concentration to groundwater.	cm	91
ø	Porosity (7)	unitless	0.45
t1/2	Biodegradation "half life" (2)	days	48
TPH	Total Petroleum Hydrocarbons, EPA Method 3550	mg/kg	7820
Wr	Residual Water Content (8)	volume fraction	0.04

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)* 1E-6 = 0.0052 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0.02 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.41 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw + ((L-Hf)/(Hw-Hf)))) = 33,801 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 2782 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 1.090901 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1 + ((Bd*Kd)/ø)) = 585 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 1.86 days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = 1.67 mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for **APHTHALENE** in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H''')))/(Wr*1g/cc + Bd)) = 105.989532 mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date