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RAPID ASSESSMENT REPORT FOR SITE 23 BUILDING 1175 ZONE F CNC CHARLESTON SC

02/01/2002

TETRA TECH INC

Rev.1
02/11/00

Rapid Assessment Report for Site 23, Building 1175

Zone F
Charleston Naval Complex

North Charleston, South Carolina

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0097

February 2000

Rev.1
02/14/00

RAPID ASSESSMENT REPORT
FOR
SITE 23, BUILDING 1175

ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
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Naval Facilities Engineering Command
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CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0097

FEBRUARY 2000

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CERTIFICATION PAGE

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

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TABLE OF CONTENTS

SECTION		PAGE
1.0	**INTRODUCTION**	**1-1**
1.1	SITE DESCRIPTION	1-1
1.2	SITE HISTORY	1-2
1.3	RECEPTOR SURVEY RESULTS	1-2
1.4	REGIONAL GEOLOGY AND HYDROGEOLOGY	1-3
2.0	**ASSESSMENT INFORMATION**	**2-1**
2.1	SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY	2-1
2.1.1	Site Geology	2-1
2.1.2	Site Hydrogeology	2-1
2.2	ASSESSMENT RESULTS	2-2
2.3	FIELD SCREENING ASSESSMENT	2-3
2.3.1	Soil Vapor Assessment	2-3
2.3.2	Soil Mobile Laboratory Results	2-4
2.3.3	Groundwater Mobile Laboratory Results	2-4
2.4	CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER	2-5
2.4.1	Chemicals of Concern in Soil	2-5
2.4.2	Chemicals of Concern in Groundwater	2-5
2.5	ANALYTICAL DATA	2-5
2.6	AQUIFER CHARACTERISTICS AND EVALUATION	2-5
2.7	FATE AND TRANSPORT	2-7
2.8	PREDICTED MIGRATION AND ATTENUATION OF CHEMICALS OF CONCERN	2-8
3.0	**TIER 1 AND 2 EVALUATION**	**3-1**
3.1	COMPARISON OF ANALYTICAL RESULTS WITH RBSLs	3-1
3.2	SITE CONCEPTUAL EXPOSURE MODEL	3-1
3.3	EXPOSURE PATHWAY ANALYSIS	3-2
3.3.1	On-Site Commercial/Industrial Worker	3-2
3.3.2	On-Site Visitor	3-2
3.3.3	On-Site Construction Worker	3-2
3.3.4	On-Site Resident	3-3
3.3.5	Off-Site Resident	3-3
3.3.6	Surface Water	3-3
3.4	IDENTIFICATION OF DATA REQUIREMENTS	3-3
3.5	SITE-SPECIFIC TARGET LEVELS	3-4
3.5.1	SSTLs Protective of the On-Site Construction Worker	3-4
3.5.2	SSTLs Protective of Surface Water	3-5
3.5.3	Selected SSTLs	3-6
3.6	RECOMMENDATIONS	3-7
4.0	**REFERENCES**	**4-1**

TABLE OF CONTENTS (Continued)

TABLES

1 GROUNDWATER ELEVATIONS
2 GROUNDWATER FIELD MEASUREMENTS
3 GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
4 SUMMARY OF OVA SOIL SCREENING RESULTS
5 SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
6 SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
7 SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN SOIL
8 SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
9 FATE AND TRANSPORT INPUT PARAMETERS
10 COMPARISON OF MAXIMUM CONCENTRATIONS TO RBSLs
11 EXPOSURE PATHWAY ASSESSMENT – CURRENT USE
12 EXPOSURE PATHWAY ASSESSMENT – FUTURE USE
13 COMPARISON OF MAXIMUM GROUNDWATER CONCENTRATIONS TO SSTLs

FIGURES

1 SITE LOCATION MAP
2 SITE VICINITY MAP
3 SITE MAP AND SAMPLING LOCATIONS
4 GEOLOGIC CROSS SECTION A TO A'
5 GEOLOGIC CROSS SECTION B TO B'
6 GROUNDWATER POTENTIOMETRIC MAP, SEPTEMBER 09, 1999
7 GROUNDWATER BENZENE CONCENTRATION MAP
8 GROUNDWATER MTBE CONSENTRATION MAP
9 PREDICTED 10-YEAR MIGRATION OF BENZENE
10 PREDICTED 20-YEAR MIGRATION OF BENZENE
11 PREDICTED 10-YEAR MIGRATION OF MTBE
12 PREDICTED 20-YEAR MIGRATION OF MTBE

APPENDICES

A GEOLOGIC BORING LOGS
B FIELD SAMPLING DATA SHEETS
C SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA
D AQUIFER CHARACTERIZATION GRAPHS
E RBSL CALCULATIONS
F RBCA CALCULATIONS

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 23 which includes an underground storage tank (UST) system for Building 1175 at Charleston Naval Complex (CNC) Zone F, in North Charleston, South Carolina. The UST system consists of three tanks, 1175-1, 1175-2 and 1175-3, that provide unleaded and diesel fuel to the Building 1175 service station. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control's (SCDHEC's) Rapid Assessment Plan approval letter dated November 4, 1998.

TtNUS performed the following actions during the RA:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, to evaluate public and private potable wells, to locate utility line areas, to locate nearby surface water bodies, and to determine surface hydrology and drainage.
- Reviewed a previously prepared Evaluation of Baseline Environmental Conditions Report for Building 1175 to determine boring locations and monitoring well placements.
- Conducted site survey to identify utilities and to construct a site plan.
- Performed direct push investigation, collected soil and groundwater samples for field screening of total petroleum hydrocarbons using an organic vapor analyzer.
- Collected groundwater samples from direct push borings for mobile laboratory screening analysis for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and diesel range organics.
- Installed shallow, permanent monitoring wells to approximately 14 feet below land surface (bls) and a vertical delineation well to approximately 30 feet bls.
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260, target analyte list (TAL) metals using USEPA Method 6010B, and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270.
- Collected soil samples for laboratory analysis of the for BTEX, and naphthalene using USEPA Method 8260, PAHs using USEPA Method 8270, total organic carbon (TOC) using USEPA Method 415.1, total recoverable petroleum hydrocarbon (TRPH) using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods; and

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

Conclusion

Groundwater samples were collected from the five newly installed and three existing monitoring wells on September 9-10, 1999. Benzene, ethylbenzene, toluene, xylenes, and MTBE constituents were the only groundwater chemicals of concern (CoCs) detected above reporting limits in the groundwater samples. The benzene concentration of 0.140 mg/L detected in the sample collected from monitoring well CNC23-M04 exceeds the risk based screening level (RBSL) of 0.005 mg/L. MTBE concentrations exceed the RBSL of 0.040 mg/L in the sample from monitoring well CNC23-M04 (4.10 mg/L) and the duplicate sample from monitoring well CNC23-X04 (0.050 mg/L). No other CoCs detected in groundwater exceeded RBSLs.

Seven soil samples were collected on September 24, 1999, and were analyzed for BTEX and PAHs by a fixed base laboratory. Soil concentrations were reported below SCDHEC's Risk-Based Screening Levels for clay-rich soils.

The downgradient extent of hydrocarbon impact to groundwater has been delineated. Construction worker and Cooper River Scenario site-specific target levels (SSTLs) were calculated to evaluate the exposure pathway for groundwater CoCs. The concentrations of benzene (0.14 mg/L) and MTBE (4.10 mg/L) in groundwater do not exceed the minimum site SSTLs (0.15 mg/L for benzene and 8.16 mg/L for MTBE). No concentrations of any other CoCs in the compliance well (CNC23-X04) exceeded their SSTLs.

Recommendation

Since the dissolved hydrocarbon concentrations at the source well are above the RBSLs but below the SSTLs, an intrinsic corrective action is required according to SCDHEC guidelines. It is recommended a short-term monitoring plan be developed to monitor benzene and MTBE parameters in groundwater over time.

1.0 INTRODUCTION

Site 23 is a closed underground storage tank (UST) system at the Charleston Naval Complex (CNC), Zone F in Charleston, South Carolina. This Rapid Assessment (RA) was performed by Tetra Tech NUS, Inc.'s (TtNUS's) Tallahassee, Florida, office, located at 1401 Oven Park Drive, Suite 102, Tallahassee, Florida 32312 (telephone number 850-385-9899) on behalf of the U.S. Navy Southern Division (SOUTHDIV) Naval Facilities Engineering Command (NAVFAC), 2155 Eagle Drive, North Charleston, South Carolina 29419-9010 (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 on June 8, July 7, August 7 and 16-20, and September 9-11 and 21-24, 1999, by TtNUS.

1.1 SITE DESCRIPTION

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

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

As described in the *Evaluation of Baseline Environmental Conditions at Proposed CPW Lease Areas* (GEL, 1996), Building 1175 was a single story structure which was built in 1942 and originally used as a restroom for Navy personnel. This building was eventually converted to a maintenance shed for storage of old tires, forklifts, concrete and petroleum products, and mechanical equipment and parts. The UST system associated with the building consists of two 10,000-gallon unleaded gasoline tanks and one 10,000-gallon diesel tank located to the west of Building 1175. The system was installed in the late 1980s and was still in use at the time of this investigation.

1.2 SITE HISTORY

In 1901, the U.S. Navy acquired 2,250 acres near Charleston to build a shipyard and the first naval officer was assigned duty in early 1902. Subsequently, buildings and a dry dock were constructed in the Naval Yard. The dry dock was completed in 1909 along with several other brick buildings and the main power plant, which is still in operation today. The first ship was placed in dry dock and work began on fleet vessels in 1910. World War I brought about an expansion of the yards, facilities, land area, and work force. The yard built two gunboats, several submarine chasers, and tugs in addition to performing repairs and other services to the fleet. In 1933, building activity had increased principally in the construction of several Coast Guard tugs, a Coast Guard cutter, and a Navy gunboat, creating the need for more facilities and a much larger work force. In 1943 civilian work force peaked with almost 26,000 employees divided among three daily shifts. In 1956, construction began on piers, barracks, and buildings for mine warfare ships and personnel. Later in the decade, the facility became a major home port for combat ships and submarines of the U.S. Atlantic Fleet [Ensafe/Allan & Hoshall, Inc. (E/A&H), 1999].

In 1993, major cuts in defense spending, as a result in part to the end of the Cold War, caused CNC to be added to the list of bases scheduled for closure under the Defense Base Realignment and Closure Act (BRAC). BRAC regulates the closure and transition of property back to the community (E/A&H, 1999). With the scheduled closure of the base, operations were scaled back and environmental cleanup proceeded to make the property available for redevelopment after closure. The USTs associated with Building 1175 were transferred as part of the BRAC process.

This UST system was investigated as part of the *Evaluation of Baseline Environmental Conditions for the Proposed CPW Lease Areas* (GEL, 1999). During this investigation, soil samples from the vicinity were found to contain concentrations of PAHs below regulatory criteria. A sheen was also observed from groundwater removed from existing monitoring well CNC23-X04. This report recommended that the USTs and their associated piping be tested for tightness to detect any possible leaks.

1.3 RECEPTOR SURVEY RESULTS

A survey of the site vicinity was conducted by TtNUS personnel to identify potential receptors for petroleum hydrocarbon contamination. The site plan (Figure 2) depicts the public utilities located within 250 feet of the Building 1175 study area. Specific information concerning the depth of utilities below land surface is currently unavailable. However, according to facility personnel, utility lines are typically located approximately 2 to 6 feet below land surface (bls) (SPORTENVDETCHASN, 1999). The following utility receptors were located:

- Sanitary sewer, water utility: Sanitary sewer lines originate on the southeast and northeast sides of Building 1175. The line originating on the southeast side of Building 1175 extends toward the southwest along Ramsey Street connecting to a sanitary sewer line, which borders the north side of 11th Street. A sanitary sewer is also located to the northeast of Building 1175 and runs to the northwest, connecting with a sewer line from Building 242, and continuing with lines to the northeast and northwest. No water mains are located within the 250-foot radius of the Building 1175 study area.

- Electrical utility, gas utility: A gas utility line runs parallel to the northeast side of Building 1175, approximately 20 feet from the building.

- Compressed Air utility: A compressed air utility runs along the northeast side of Building 1175 approximately 20 to 25 feet from the building extending past Building 1172 to the northwest, and crossing 11th Street to the southeast.

According to the *Final RCRA Facility Investigation Report for Zone F* (E/A&H, 1999) 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 Building 1175 is the Cooper River located approximately 900 feet to the north-northeast.

There are no city, county, or state zoning ordinances as the property (CNC) is currently owned by the federal government. Information concerning zoning ordinances was obtained from the SOUTHDIV Remedial Project Manager located at 2155 Eagle Drive, North Charleston, South Carolina 29419-9010 (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, 1999).

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, 1999). Underlying the Wando Formation, increasing with age, are the Oligocene-age Cooper Group and the Eocene-age Santee Limestone. The Cooper Group is comprised of the Ashley, Parkers 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 including the Ashley Formation, a pale green to olive-brown, sandy phosphoric limestone or marl, which is locally muddy and/or sandy. The Ashley Formation in the vicinity of Charleston is encountered at a depth of approximately 30 to 70 feet bls. The top of the Ashley Formation has been reported to be associated with an erosional basin and the entire Cooper Unit, including the Ashley Formation, is indicated to be approximately 300 feet thick (E/A&H, 1999).

Groundwater occurs under water table or poorly confined conditions within the recent or Pleistocene deposits overlying the Ashley Formation of the Cooper Group. Transmissivity in the Pleistocene aquifer is generally less than 1,000 feet per day and well yields are variable, ranging from 0 to 200 gallons per minute (gpm). This groundwater contains high concentrations of iron and is commonly acidic at shallow depths (E/A&H, 1999).

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, 1999).

2.0 ASSESSMENT INFORMATION

2.1 SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

2.1.1 Site Geology

Fourteen direct push soil borings (CNC23-B01 through CNC23-B14) were advanced at Site 23 under the supervision of a TtNUS geologist on June 8 and July 7, 1999 (Figure 3). These borings ranged in depth from 5 to 12 feet bls and provided soil samples to characterize the subsurface lithology. From August 7 through August 17, four shallow monitoring wells (CNC23-M01 through CNC23-M04) were installed to depths of 12 to 14 feet bls. Monitoring well locations are presented in Figure 3. During installation, soil grab samples were collected to describe the subsurface lithology. On August 19 and 20, 1999, a vertical delineation monitoring well (CNC23-M05D) was installed to a depth of 30 feet bls. During the drilling process, lithologic samples were collected using split-spoon samplers to characterize the subsurface lithology from 15 to 32 feet bls.

Based on lithologic descriptions from the soil borings and monitoring wells, the subsurface soil generally consists of an olive-green silty clay with abundant organic material to a depth of approximately 22 feet. A gray sandy clay was encountered from 22 to 26 feet bls, with an olive-green to brown sandy silt encountered from 26 to 30 feet bls. Geologic cross sections for this site are presented in Figures 4 and 5. Boring logs are presented in Appendix A.

2.1.2 Site Hydrogeology

There were three existing shallow water table monitoring wells at the site: MW1175-2, MW1175-3, and MW1175-4, referred to as CNC23-X02, CNC23-X03, and CNC23-X04 during this investigation. Four additional shallow water table monitoring wells, CNC23-M01, CNC23-M02, CNC23-M03, and CNC23-M04, and one deep vertical delineation monitoring well, CNC23-M05D, were installed as part of this RA investigation (see Figure 3). The shallow monitoring wells were completed to a depth of 12 to 14 feet bls. Each shallow monitoring well was completed using 10 feet of 2-inch diameter 0.01-inch machine-slotted Schedule 40 polyvinyl chloride (PVC) screen that bracketed the water table. Monitoring well CNC23-M05D was completed as a Type III monitoring well with 6-inch-diameter PVC surface casing grouted to a depth of 20 feet bls. After the grout for the surface casing cured for 24 hours, the borehole was advanced to a depth of 30 feet and a 2-inch-diameter PVC monitoring well was installed with a 5-foot, 0.01-inch machine-slotted PVC screen. Well construction logs for the RA monitoring wells are presented in

Appendix A. At the completion of the well installations, a South Carolina registered professional surveyor surveyed each monitoring well location and the top of casing elevation.

Groundwater elevation measurements were recorded from the site monitoring wells on September 9, 1999. Groundwater in shallow wells at Site 23 was encountered at depths ranging from approximately 1.81 to 4.42 feet bls during the RA investigation. The recorded water-level data collected during the RA are presented in Table 1. Figure 6 presents the groundwater potentiometric data recorded during the field event on September 9, 1999. The potentiometric surface map depicts a groundwater flow direction toward the northeast.

As part of the *RCRA Facility Investigation (RFI) Report for Zone F* (E/A&H, 1999), water level measurements were collected at high and low tides in 37 shallow monitoring wells. The objective of the investigation was to determine the effects of the tidal fluctuation on wells and groundwater flow throughout Zone F. During the tidal study, water levels were recorded over a period of one day.

Results of the tidal survey identified the maximum fluctuation in shallow monitoring wells to be 3.64 feet, with an average fluctuation of 0.26 foot. The monitoring wells located closer to the tidal source were more influenced by tidal changes than wells on the peninsula. The heterogeneity of the aquifer material may limit or accentuate the tidal response in some wells. The report concluded that the minimal fluctuations in the groundwater levels were not expected to play a significant role in directing contaminant transport in any direction other than that determined by the natural groundwater gradient (E/A&H, 1999).

2.2 ASSESSMENT RESULTS

Fourteen soil borings were completed using a direct push technology (DPT) rig as part of the screening portion of the soil investigation at Site 23. The soil borings for screening evaluation were completed using a DPT rig. Samples were collected to evaluate subsurface soil vapors, soil contaminant concentration (via a mobile laboratory), and groundwater contaminant concentrations (via a mobile laboratory). The soil samples were collected from a maximum depth of 11 feet bls. The soil and groundwater samples collected for mobile laboratory screening were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), naphthalene, and diesel range organics.

Seven soil borings were completed to collect soil samples for analysis at a fixed base laboratory to confirm the Chemicals of Concern (CoC). Soil samples for CoC evaluation were collected on August 18, 1999, and were analyzed for BTEX and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260 and PAHs using USEPA Method 8270. One sample was collected for total organic

carbon (TOC) analysis using USEPA Method 415.1, total recoverable petroleum hydrocarbons (TRPH) analysis using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods. The sample collection was conducted in accordance with the SCDHEC guidance document *"Standard Limited Assessment"* (June 1997). Lithologic logs for each soil boring are presented in Appendix A. The soil boring locations are shown on Figure 3 and the assessment results are presented in Section 2.3.1.

A comprehensive groundwater monitoring event was conducted on September 9 and 10, 1999. Groundwater sampling was conducted using a peristaltic pump and low flow, quiescent techniques. The monitoring wells were sampled in accordance with SCDHEC's guidance document *"South Carolina Risk-Based Corrective Action for Petroleum Releases"* (January 1998). Each well was purged of three to six well volumes or until water quality parameters of pH, temperature, and conductivity stabilized. The field data sheets are included in Appendix B. A summary of the field parameter measurements is presented in Table 2. Groundwater samples were analyzed for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using USEPA Method 8260, PAHs using USEPA Method 8270, and target analyte list (TAL) metals using USEPA Method 6010B. Three of the groundwater samples were also analyzed for the following natural attenuation parameters: dissolved oxygen, alkalinity, carbon dioxide, sulfide, ferrous iron, nitrite, manganese, and hydrogen sulfide. Groundwater natural attenuation data are summarized on Table 3.

2.3 FIELD SCREENING ASSESSMENT

2.3.1 Soil Vapor Assessment

Fourteen soil borings were completed to evaluate for soil vapors as part of the soil screening assessment at Site 23. OVA headspace measurements were recorded at various intervals using a flame ionization detector (FID). Each sample was split to fill two mason jars halfway and then covered with aluminum foil. The sample was screened with the FID and if a reading was detected from the first sample jar, the second was read using a charcoal filter to screen out methane. Table 4 summarizes the soil vapor filtered screening results. Figure 3 presents the soil boring locations.

Soil vapor concentrations ranged from 4 parts per million (ppm) to to 2,400 ppm. Soil samples from eight soil boring locations contained vapor concentrations ranging from 4 ppm to 100 ppm. Vapor concentrations of 100 ppm to 1,000 ppm were detected from five soil boring locations. Three soil borings contained vapor concentrations in excess of 1,000 ppm. The highest soil vapor concentrations varied in depth from 2 feet bls to 7 feet bls.

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

2.3.2 Soil Mobile Laboratory Results

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

As indicated in Table 5, BTEX and naphthalene constituents were not detected in any of the mobile laboratory soil samples. Diesel range organics were detected at a concentration of 102 mg/kg in the sample collected from boring CNC23-B03. The mobile laboratory soil analysis was used as a screening method to assist in identifying locations for collection of soil samples for fixed base laboratory analysis and locations for groundwater monitoring wells. Soil sample and monitoring well locations were determined in part based on these data.

2.3.3 Groundwater Mobile Laboratory Results

A groundwater sample was collected from each of the 14 soil boring locations near UST 1175. Each groundwater sample was analyzed by a mobile laboratory for BTEX, naphthalene, and diesel range organics using USEPA Method 8260. Table 6 presents a summary of the analytical data from the mobile laboratory.

As indicated in Table 6, no BTEX constituents were detected by the mobile laboratory other than total xylenes at a concentration of 32.3 μg/L in the sample collected from boring CNC23-B01. Diesel range organics were also detected in this sample at an estimated concentration of 1170 mg/L. The mobile laboratory groundwater analysis was used as a screening method to assist in identifying locations for permanent groundwater monitoring wells.

2.4 CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

2.4.1 Chemicals of Concern in Soil

Seven subsurface soil samples and one duplicate were collected from the Site 23 area and sent to a fixed-base laboratory for determination of CoCs. The soil boring locations are shown on Figure 3, and Table 7 summarizes the CoCs detected in the soil samples. All CoCs in soil at the site were below the reporting limits and below the soil leaching RBSLs, except for benzene. There were no detections of benzene above the method detection limits, therefore all the samples are considered to be below the soil leaching RBSL for benzene. Soil analytical data sheets and grain size analysis reports are provided in Appendix C.

2.4.2 Chemicals of Concern in Groundwater

Eight groundwater samples were collected from the five newly installed and three existing monitoring wells, with one duplicate. Table 8 presents the analytical results for CoCs detected in the groundwater samples. Groundwater analytical data sheets for the September 9 and 10, 1999, field event are presented in Appendix C. Benzene, ethylbenzene, toluene, xylenes, naphthalene and MTBE constituents were the only groundwater CoCs detected above reporting limits in the groundwater samples. The benzene concentration of 140 μg/L detected in the sample collected from monitoring well CNC23-M04 exceeds the RBSL of 5 μg/L. MTBE concentrations exceeded the RBSL in the sample from monitoring well CNC23-M04 (4100 μg/L). The sample collected from monitoring well CNC23-X04 contained an MTBE concentration of 28 μg/L, while the duplicate of this sample contained a concentration 50 μg/L. Figures 7 and 8 illustrate the groundwater areal distribution of benzene and MTBE, respectively, for the September 9 and 10, 1999, sampling event.

2.5 ANALYTICAL DATA

Soil analytical data generated during this RA are summarized in Table 7. Groundwater analytical data generated during this RA are summarized in Table 8. The soil and groundwater laboratory analytical data for this RA are included in Appendix C.

2.6 AQUIFER CHARACTERISTICS AND EVALUATION

Groundwater levels were measured from the site monitoring wells on September 9, 1999. The groundwater flow direction across the site is toward the northeast as illustrated on Figure 6. The hydraulic

gradient between monitoring wells CNC23-M04 and CNC23-X04 on September 9, 1999 was found to be 0.0023 feet per foot (ft/ft). This hydraulic gradient is most representative of the site, since gradients calculated using CNC23-M03 differed from regional hydraulic gradients by a factor of ten (E/A &H, 1999).

As part of the Final RFI Report for Zone F (E/H&A, 1999), rising and falling head slug tests were conducted on four shallow monitoring wells throughout Zone F to determine the hydraulic conductivity of the surficial aquifer. Slug tests were conducted by instantaneously adding (falling head) or removing (rising head) a volume (slug) of water from the well and measuring the recovering water level with a data logger. A hydraulic conductivity value was then calculated for the rising head test and for the falling head test. The average hydraulic conductivity for each well was determined by calculating the geometric mean of the rising and falling head values. Because hydraulic conductivity data are lognormally distributed, the geometric mean was determined to be the most representative measure of central tendency.

The well construction details and boring logs for each well tested during the RCRA investigation were reviewed to determine which wells were most representative of the conditions present at Site 5. To make this determination the screened interval and proximity to the site were evaluated. Based on this evaluation, monitoring well NBCF613001 was selected as the most representative well. NBCF613001 is approximately 210 feet northwest of the site and is completed to a depth of approximately 13.3 feet with a 10-foot screened interval. The geometric mean of the rising and falling head conductivities for NBCF613001 was 1.0 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. Using Darcy's Law may be expressed as:

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

where:

V = average velocity

K = hydraulic conductivity = 1.0 ft/day

n = effective porosity = 0.55
(from sieve results of 18% sand and 20% clay and Figure C1 in SCDHEC, 1998)

i = most recent hydraulic gradient measurement = 0.0023 ft/ft

therefore:

$$V = \frac{(1.0 \text{ ft/day})}{0.55} \times 0.0023 \text{ ft/ft}$$

$$V = 0.0042 \text{ ft/day}$$

In summary, the seepage velocity of the surficial aquifer was calculated to be approximately 1.53 feet per year based on a hydraulic conductivity of 1.0 feet per day, a hydraulic gradient of 0.0023 feet per foot, and a porosity of 55% for clay rich soil. Aquifer characterization graphs are provided in Appendix D.

2.7 FATE AND TRANSPORT MODEL DESCRIPTION

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

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

Site-specific data were used for saturated hydraulic conductivity, hydraulic gradient, and fraction of organic carbon in soil (1.0 ft/day, 0.0023 ft/ft, and 0.0179 g-C/g-soil, respectively). The soil bulk density (1.20 g/cm^3) and porosity (0.55 cm^3/cm^3) were determined using Figures C1 and C3 given in SCDHEC (1998), based on the sieve test results for sample 23SLB030304, 18% sand and 20% 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

The most recent groundwater-gauging event shows that groundwater flow is primarily toward the northeast. The current extent of impact is limited to monitoring wells CNC23-M04, CNC23-M01 and CNC23-X04 that contained benzene and MTBE during the last sampling event. Figure 7 shows the areal extent of benzene and Figure 8 shows the areal extent of MTBE. Concentrations of compounds of interest in all other monitoring wells have been below RBSLs.

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 sources were assumed to be the monitoring wells with the greatest concentration of benzene and MTBE. Only the calculated concentrations of benzene and MTBE at the source were greater than their respective RBSLs; therefore, these were the only chemicals for which plume distances were calculated. The distance was changed separately for benzene and MTBE 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 benzene will be 0.005 mg/L (RBSL) at a distances of 8.0 feet (Figure 9) and the concentration of MTBE will be 0.040 mg/L at a distance of 28.5 feet (Figure 11). Furthermore, after 20 years, the concentrations of benzene will be 0.005 mg/L (RBSL) at a distance of 15.5 feet (Figure 10) and the concentration of MTBE will be 0.040 at a distance of 73.8 feet (Figure 12). The Domenico 10-year and 20-year simulation spreadsheets are presented in Appendix E.

3.0 TIER 1 AND 2 EVALUATION

3.1 COMPARISON OF ANALYTICAL RESULTS WITH RBSLs

Soil grab samples collected on September 24, 1999, were analyzed for BTEX, MTBE, and PAH constituents. No CoC was detected above the reporting limit in any of these soil samples, therefore none were detected above the soil leaching RBSLs.

Groundwater samples were collected on September 9 and 10, 1999, and were analyzed for BTEX, MTBE, PAH, and metals. Benzene and MTBE constituents were the only CoCs detected in the groundwater at the site. Benzene was detected at a concentration of 140 μg/L in the sample collected from monitoring well CNC23-M04. MTBE was also detected at in this monitoring well at a concentration of 4,100 μg/L. The benzene and MTBE concentrations are above their respective SCDHEC RBSLs. A comparison of soil and groundwater concentrations to RBSLs is summarized in Tables 7 and 8.

3.2 SITE CONCEPTUAL EXPOSURE MODEL

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

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

Groundwater flows to the northeast toward the Cooper River, which discharges into Charleston Harbor. Surface water drains into the storm sewer drainage system located on the northeast portion of the site. The nearest sewer line is located approximately 100 feet to the northwest of the USTs associated with

Building 1175. There are no city, county, or state zoning ordinances, as the federal government currently owns the CNC.

3.3 EXPOSURE PATHWAY ANALYSIS

This section presents the receptor characterizations of the potentially exposed populations in the vicinity of the site and identifies the potentially complete exposure pathways for those receptors. SCDHEC requires that only those exposure pathways with CoC concentrations exceeding Tier 1 RBSL concentrations are examined in a Tier 2 Risk-Based Corrective Action Report. Tables 11 and 12 present the exposure pathway assessments for current and future use scenarios, respectively.

3.3.1 On-Site Commercial/ Industrial Worker

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

3.3.2 On-Site Visitor

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

3.3.3 On-Site Construction Worker

An on-site construction worker is defined as a laborer who would be involved in intrusive activities on or around the site, particularly in the area of subsurface utilities. On-site construction workers could be exposed to constituents in soil by the following pathways: inhalation of volatiles from soil, dermal contact

with soil, and incidental ingestion of soil. Inhalation of vapors from soil typically occurs while the soil is being removed by a backhoe that enhances volatilzation. Therefore soil volatilzation would occur before the construction worker enters the utility trench, thereby removing inhalation as a receptor. BTEX, Naphthalene and PAH constituent concentrations in soil are not above their RBSL for ingestion or dermal contact. On-site construction workers could be exposed to constituents in groundwater by the following pathways: inhalation of volatiles from groundwater, dermal contact with groundwater, and incidental ingestion of groundwater. There is a water line and a storm sewer within 100 feet of the impacted area; 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 900 feet to the northeast of the site. Groundwater flows to the northeast, toward the river. This exposure pathway was therefore 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

No soil concentrations were detected above detection limits; therefore, SSTLs for soil were not calculated. Two future scenarios were considered to calculate groundwater SSTLs: on-site construction worker exposure to groundwater and the groundwater flow into the Cooper River. The minimum SSTL for the two scenarios was selected as the site SSTL for each CoC.

3.5.1 SSTLs Protective of the On-Site Construction Worker

Groundwater RBSLs provided by SCDHEC are calculated for ingestion only; therefore RBSLs were calculated for the additional pathways of dermal contact, incidental ingestion, and inhalation of volatiles. Municipal water is supplied to the base, so shallow groundwater is not used for drinking water. A target cancer risk of 1×10^{-6} and a target hazard quotient of one 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 one year. These assumptions were considered conservative based on the nature of utility work.

The dermal contact RBSLs were calculated using the procedures in *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment, Interim Guidance* (USEPA Peer Consultation Workshop Draft, 1998). Based on expected limited contact with groundwater, the event frequency was assumed to be one event/day and the event duration was assumed to be one 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 (CNC23-M04) is 2.64 feet BTOC, with a range of 1.81 to 4.42 feet below top of casing (BTOC).

It was assumed that a construction worker might be exposed to chemicals volatilizing from standing groundwater. The inhalation RBSLs were calculated using Henry's Law:

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

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

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

A water line and a storm sewer are located within 100 feet of the impacted area. The point of exposure location for the on-site construction worker was considered to be at the source, and no fate and transport calculations were performed to determine the SSTL protective of the construction worker. The minimum RBSL for the three pathways was chosen as the SSTL for the construction worker.

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

Chemical of Concern	**Dermal**	**Incidental Ingestion**	**Inhalation**	**SSTL**
	RBSL	**RBSL**	**RBSL**	**(Minimum RBSL)**
	(mg/L)	**(mg/L)**	**(mg/L)**	**(mg/L)**
Benzene	0.85	68.52	0.15	**0.15**
MTBE	25.90	141.944	293.443	**25.90**

Based on the above table, the construction worker in a utility trench is not at risk if exposed to groundwater at the site. Appendix E provides the parameters and results of the RBSL and SSTL calculations.

3.5.2 SSTLs Protective of Surface Water

SSTLs were developed which would protect the Cooper River from potential impact from discharge of impacted groundwater. The Domenico model as described in Section 2.7 was used to determine the groundwater SSTLs for benzene and MTBE under steady state conditions. Table 9 provides fate and transport parameters used in the model. The groundwater flow at Site 23 is to the northeast toward the Cooper River, approximately 900 feet from USTs associated with Building 1175 (Figure 6). CNC23-M04 contained benzene and MTBE concentrations exceeding RBSLs; therefore, the area surrounding this

monitoring well was used as the source for predicted migration. All other wells had no CoC concentrations above detection limits.

The distance from CNC23-M04 to the Cooper River (Figure 1), which is the nearest point of exposure other than construction worker, was estimated to be approximately 900 feet. Using the values of RBSLs (0.005 mg/L for benzene and 0.040 mg/L for MTBE) and at the point of exposure, the SSTLs at CNC23-M04 were calculated and compared with the source concentrations in CNC23-M04. The SSTLs at the compliance well (CNC23-X04) 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 860 feet (214 meters).

Groundwater SSTLs were determined to be:

Chemical of Concern	Source SSTL [mg/L]	Compliance Point SSTL [mg/L]	Source Concentrations [mg/L]
Benzene	1.02	0.93	0.14
MTBE	8.16	7.45	4.10

Based on the above table, the Cooper River is not at risk because the CoC concentrations on-site are less that the Site SSTLs. Appendix F provides the Domenico model calculations generating SSTLs.

3.5.3 Selected SSTLs

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

Chemical of Concern	SSTL (mg/L)	Source Concentration (mg/L)
Benzene	0.15	0.14
MTBE	8.16	4.10

3.6 RECOMMENDATIONS

It is proposed that Intrinsic Corrective Action be implemented at Site 23 based on the following:

- Groundwater is not used as a drinking water source in the immediate area of Site 23.
- On-site construction worker (utility worker) and the Cooper River were the only exposure pathways identified.
- Benzene and MTBE were the only groundwater CoCs reported above RBSLs, but were below SSTLs protective of the construction worker and the Cooper River Scenario.
- No CoCs were detected in the soil above their RBSLs.

The Intrinsic Corrective Action should develop a short-term groundwater-monitoring program to monitor benzene and MTBE parameters in the groundwater over time.

4.0 REFERENCES

ASTM (American Society for Testing and Materials), 1997. *Standard Guide for Risk Based Corrective Action Applied at Petroleum Release Sites.*

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USEPA (United States Environmental Protection Agency), 1989. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Interim Final).*

USEPA (United States Environmental Protection Agency), 1995. *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment.*

USEPA (United States Environmental Protection Agency), 1998. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment, Interim Guidance.*

TABLES

TABLE 1

GROUNDWATER ELEVATIONS
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL BASE COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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)
CNC23-M01	12.50	9.43	9/9/99	3.05	ND	ND	6.38
CNC23-M02	12.37	9.38	9/9/99	2.85	ND	ND	6.53
CNC23-M03	11.70	8.90	9/9/99	4.42	ND	ND	4.48
CNC23-M04	12.21	8.56	9/9/99	1.85	ND	ND	6.71
CNC23-M05D	30.06	8.97	9/9/99	9.89	ND	ND	-0.92
CNC23-X02	14.15	8.78	9/9/99	2.46	ND	ND	6.32
CNC23-X03	13.25	8.39	9/9/99	1.81	ND	ND	6.58
CNC23-X04	13.35	7.90	9/9/99	2.05	ND	ND	5.85

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

TABLE 2

GROUNDWATER FIELD MEASUREMENTS
SITE 23, BUILDING 1175
ZONE F, 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)
CNC23-M01	9/10/99	PP	9.00	31.5	6.53	2.41	94	0.44
CNC23-M02	9/10/99	PP	6.00	29.7	7.35	11.90	8	0.58
CNC23-M03	9/10/99	PP	5.00	28.8	8.70	6.20	103	3.21
CNC23-M04	9/10/99	PP	10.00	28.3	6.62	5.46	31	0.53
CNC23-M05	9/10/99	PP	17.00	27.7	6.65	0.0	161	7.67
CNC23-X02	9/10/99	PP	10.00	29.2	7.69	8.10	26	1.51
CNC23-X03	9/10/99	PP	10.00	29.9	6.90	1.21	37	0.51
CNC23-X04	9/10/99	PP	10.00	28.1	6.76	2.95	47	0.96

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

TABLE 3

GROUNDWATER NATURAL ATTENUATION FIELD MEASUREMENTS
SITE 23, BUILDING 1175
ZONE F, 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)*
CNC23-M02	9/10/99	0.40	1,440	940	0.04	5.10	NA	4.8	NA	NA
CNC23-M03	9/10/99	3.00	1,134	580	0.04	2.39	NA	2.3	NA	NA
CNC23-X02	9/10/99	NA	1,510	990	0.11	5.10	NA	11.7	NA	NA

Notes:

mg/l - Milligrams per liter

E- Estimated Concentration

NA - Not Analyzed

* Fixed base laboratory analysis

TABLE 4

SUMMARY OF OVA SOIL SCREENING RESULTS
SITE 23, BUILDING 1175
ZONE F, FORMER CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Sample Location	Sample Identification	Sample Depth (feet)	Total Organic Vapor Headspace Concentration (ppm)
CNC23-B01	23SSB0105	5	1000
	23SSB0107	7	1300
CNC23-B02	23SSB0205	5	896
	23SSB0207	7	130
CNC23-B03	23SSB0302	2	2400
CNC23-B04	23SSB0405	5	70
	23SSB0407	7	1180
CNC23-B05	23SSB0507	7	6
	23SSB0510	10	130
CNC23-B06	23SSB0602	2	4
CNC23-B07	23SSB0703	3	770
	23SSB0710	10	580
CNC23-B08	23SSB0802	2	8
CNC23-B09	23SSB0903	3	70
CNC23-B10	23SSB1003	3	60
CNC23-B11	23SSB1103	3	270
CNC23-B12	23SSB1204	4	190
CNC23-B13	23SSB1303	3	71
CNC23-B14	23SSB1404	4	21

Notes:
OVA - organic vapor analyzer equipped with a flame ionization detector and charcoal filter when necessary

TABLE 5

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR SOIL
SITE 23, BUILDING 1175
ZONE F, 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)
CNC23-B01	23SFB010506	5-6	ND	ND	ND	ND	ND	ND
CNC23-B02	23SFB020506	5-6	ND	ND	ND	ND	ND	ND
CNC23-B03	23SFB030203	2-3	ND	ND	ND	ND	ND	102
CNC23-B04	23SFB040812	8-12	ND	ND	ND	ND	ND	ND
CNC23-B05	23SFB051011	10-11	ND	ND	ND	ND	ND	ND
CNC23-B06	23SFB060203	2-3	ND	ND	ND	ND	ND	ND
CNC23-B07	23SFB070203	2-3	ND	ND	ND	ND	ND	ND
CNC23-B08	23SFB080203	2-3	ND	ND	ND	ND	ND	ND
CNC23-B09	23SFB090304	3-4	ND	ND	ND	ND	ND	ND
CNC23-B10	23SFB100304	3-4	ND	ND	ND	ND	ND	ND
CNC23-B11	23SFB110304	3-4	ND	ND	ND	ND	ND	ND
CNC23-B12	23SFB120405	4-5	ND	ND	ND	ND	ND	ND
CNC23-B13	23SFB130304	3-4	ND	ND	ND	ND	ND	ND
CNC23-B14	23SFB140304	3-4	ND	ND	ND	ND	ND	ND

NOTES:
[1] Laboratory screening data were 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
* Soil samples collected above water table at time of boring installation.

TABLE 6

SUMMARY OF MOBILE LABORATORY SCREENING RESULTS FOR GROUNDWATER
SITE 23, BUILDING 1175
ZONE F, 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)
CNC23-B01	23GFB010712	7-12	ND	ND	ND	32.3	ND	1170E
CNC23-B02	23GFB020712	7-12	ND	ND	ND	ND	ND	ND
CNC23-B03	23GFB030308	3-8	ND	ND	ND	ND	ND	ND
CNC23-B04	23GFB040812	8-12	ND	ND	ND	ND	ND	ND
CNC23-B05	23GFB050820	8-20	ND	ND	ND	ND	ND	ND
CNC23-B06	23GFB060308	3-8	ND	ND	ND	ND	ND	ND
CNC23-B07	23GFB070312	3-12	ND	ND	ND	ND	ND	ND
CNC23-B08	23GFB080308	3-8	ND	ND	ND	ND	ND	ND
CNC23-B09	23GFB090305	3-5	ND	ND	ND	ND	ND	ND
CNC23-B10	23GFB100305	3-5	ND	ND	ND	ND	ND	ND
CNC23-B11	23GFB110305	3-5	ND	ND	ND	ND	ND	ND
CNC23-B12	23GFB120405	4-5	ND	ND	ND	ND	ND	ND
CNC23-B13	23GFB130305	3-5	ND	ND	ND	ND	ND	ND
CNC23-B14	23GFB140305	3-5	ND	ND	ND	ND	ND	ND

NOTES:
[1] Laboratory screening data were 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
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 23, BUILDING 1175
ZONE F, 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	478	364	11119	17687	7042	55930	3146	21265	52
CNC23-B01 / 23SLB010203	24-Sep-99	< 10	< 10	< 10	< 10	< 560	< 560	< 560	< 560	< 560	< 10
CNC23-B03 / 23SLB030203	24-Sep-99	< 10	< 10	< 10	< 10	< 530	< 530	< 530	< 530	< 530	< 10
CNC23-B03 / 23SLB030203D[2]	24-Sep-99	< 9	< 9	< 9	< 9	< 530	< 530	< 530	< 530	< 530	< 9
CNC23-B04 / 23SLB040203	24-Sep-99	< 7	< 7	< 7	< 7	< 500	< 500	< 500	< 500	< 500	< 7
CNC23-B05 / 23SLB050203	24-Sep-99	< 10	< 10	< 10	< 10	< 560	< 560	< 560	< 560	< 560	< 10
CNC23-B06 / 23SLB060001	24-Sep-99	< 5	< 5	< 5	< 5	< 400	< 400	< 400	< 400	< 400	< 5
CNC23-B08 / 23SLB080203	24-Sep-99	< 8	< 8	< 8	< 8	< 430	< 430	< 430	< 430	< 430	< 8
CNC23-B13 / 23SLB130203	24-Sep-99	< 11	< 11	< 11	< 11	< 590	< 590	< 590	< 590	< 590	< 11

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 clay-rich soils; depth to groundwater less than 5 feet.

[2] Duplicate

TABLE 8

SUMMARY OF FIXED-BASE LABORATORY ANALYTICAL RESULTS FOR CHEMICALS OF CONCERN IN GROUNDWATER
SITE 23, BUILDING 1175
ZONE F, 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)	EDB (ug/L)	Lead (ug/L)
RBSL[1]		5	700	1000	10000	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	10 [2]	40	5	15
CNC23M-01 / 23GLM0101	10-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	38	< 5	< 1.2
CNC23M-02 / 23GLM0201	09-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5	< 5	< 1.09
CNC23M-03 / 23GLM0301	09-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	10	< 5	< 1.3
CNC23M-04 / 23GLM0401	10-Sep-99	140	5 [J]	11	3 [J]	< 5	< 10	< 10	< 10	< 10	< 10	4100	< 5	< 4.8
CNC23M-05D / 23GLM05D01	10-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5	< 5	< 1.09
CNC23M-02 / 23GLX0201	09-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5	< 5	< 1.09
CNC23M-03 / 23GLX0301	10-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 5	< 5	< 1.7
CNC23M-04 / 23GLX0401	10-Sep-99	3 [J]	< 5	< 5	< 5	3 [J]	< 10	< 10	< 10	< 10	< 10	28	< 5	< 1.2
CNC23M-04 / 23GLX0401D	10-Sep-99	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 10	< 10	50	< 5	<1.9
CNC23TL / 23TL00201 [4]	10-Sep-99	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5	< 5	NA
CNC23TL / 23TL00101 [4]	09-Sep-99	< 5	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA	< 5	< 5	NA

All concentrations are in ug/L.

NA - Not analyzed

(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) Duplicate

(4) Trip Blank

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

TABLE 9

FATE AND TRANSPORT INPUT PARAMETERS
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Parameter	Domenico Dilution/Attenuation Model [1]
Hydraulic Conductivity [m/sec]	3.52E-06
Hydraulic Gradient	0.0023
Porosity [a]	0.55
Estimated Plume Length [ft]	NA
Soil Bulk Density [a] [kg/L]	1.2
Partition Coefficient [L/kg]	chemical specific
Fraction of Organic Carbon in soil [g/g]	1.79E-02
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

COMPARISON OF MAXIMUM CONCENTRATIONS TO RBSLs
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Chemical of Concern	Maximum Concentration Soil (mg/kg)	Soil Leaching RBSLs (mg/kg) [(a)]	Maximum Concentration GW (mg/L)	Tier 1 RBSLs GW (mg/L) [(b)]	Minimum Site RBSL [(c)]
Benzene	ND	0.005	**0.14**	0.005	0.15
Toluene	ND	0.478	0.011	1	5.38
Ethylbenzene	ND	0.364	0.005	0.7	6.05
Xylenes	ND	1.119	0.003 (J)	10	102.33
Benzo(a)anthracene	ND	17.687	ND	0.010	-
Benzo(b)fluoranthene	ND	7.042	ND	0.010	-
Benzo(k)fluoranthene	ND	5.593	ND	0.010	-
Chrysene	ND	3.146	ND	0.010	-
Dibenzo(a,h)anthracene	ND	21.265	ND	0.010	-
MTBE	NA	NA	**4.1**	0.400	5.23
Naphthalene	ND	0.052	0.003 (J)	0.010	1.63

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

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

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

GW - Groundwater

J - Estimated value detection was above instrument minimum detecton limit, but below the practical quantification limit.

RBSLs - Risk-Based Screening Levels

ND - Not detected

NA - Not analyzed

Shaded cell indicates the concentration exceeded one of the RBSLs.

TABLE 11

EXPOSURE PATHWAY ASSESSMENT - CURRENT USE
SITE 23, BUILDING 1175
ZONE F, 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 900 feet downgradient	
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No impacted subsurface soil	
	Dermal contact	No		
	Inhalation	No		

TABLE 12

EXPOSURE PATHWAY ASSESSMENT - FUTURE USE
SITE 23, BUILDING 1175
ZONE F, 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. Utility located within 100 feet; therefore, construction worker exposure possible.	No additional data required
	Dermal contact	Yes		
	Inhalation	Yes		
Surface Water	Ingestion	Yes	Cooper River 900 feet downgradient	No additional data required
	Dermal contact	No		
	Inhalation	No		
Surficial Soil	Ingestion	No	No impacted surface soil	
	Dermal contact	No		
	Inhalation	No		
Subsurface Soil	Ingestion	No	No impacted subsurface soil	
	Dermal contact	No		
	Inhalation	No		

TABLE 13

COMPARISON OF MAXIMUM GROUNDWATER CONCENTRATIONS TO SSTLs
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

Chemical of Concern	Source Area Concentration (mg/L)	SSTLs Protective of Surface Water (Cooper River)		SSTLs Protective of Construction Workers	Minimum On-Site SSTLs [(a)]
		$SSTL_{SOURCE}$ (mg/L)	$SSTL_{COMP}$ (mg/L)	$SSTL_{SOURCE}$ (mg/L)	(mg/L)
Benzene	0.14	1.02	0.93	0.15	0.15
MTBE	4.10	8.161	7.454	25.9	8.161

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

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

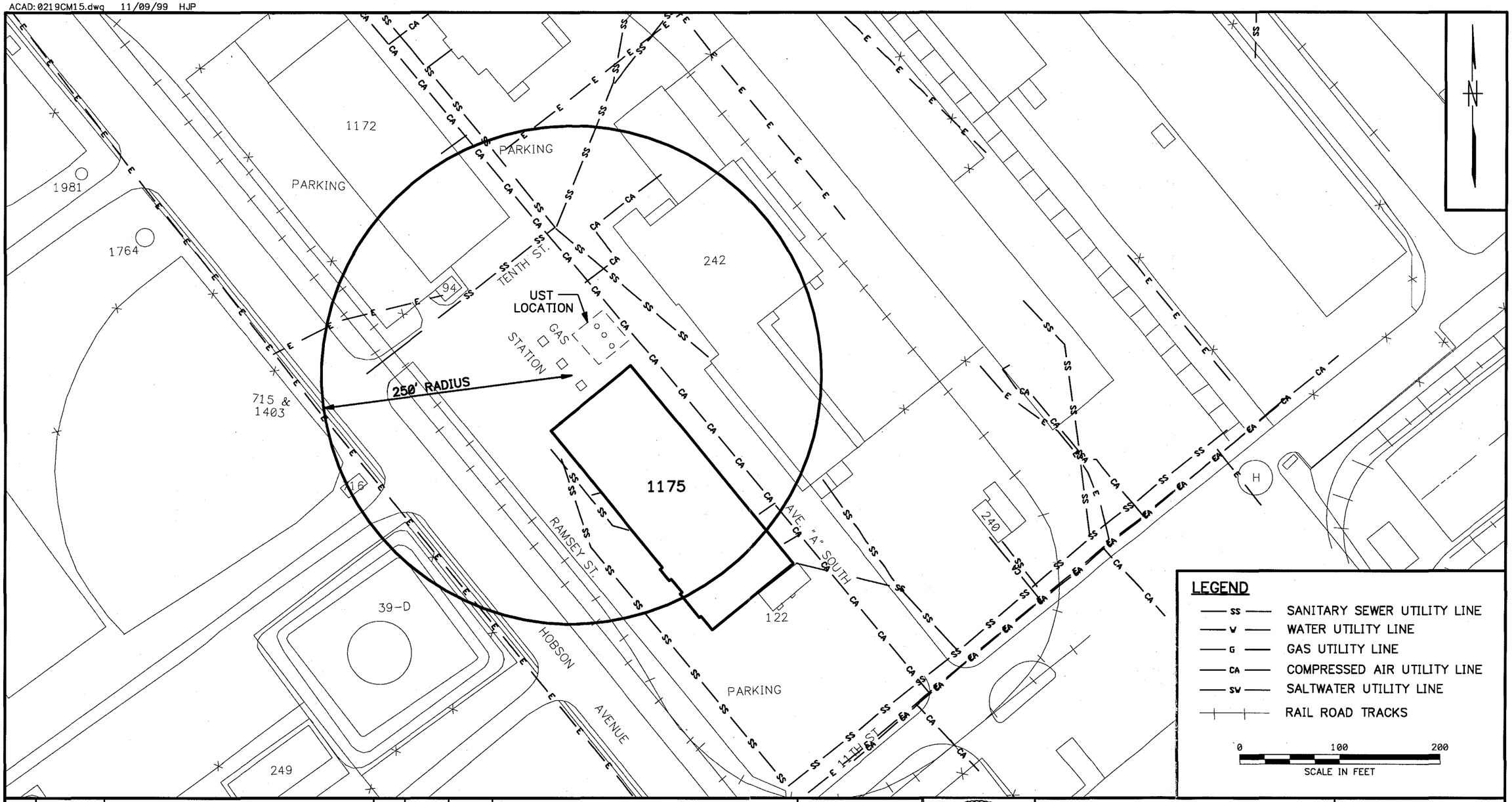
FIGURES

ACAD: B219CM14.dwg 11/09/99 HJP

DRAWN BY HJP DATE 11/4/99		SITE LOCATION MAP SITE 23, BUILDING 1175 ZONE F, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO. 0219
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV. 0

FORM CADD NO SOIV_AVIWG - REV 0 - 1/20/98

ACAD: 0219CM15.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

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CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

SITE VICINITY MAP
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2
REV. 0

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

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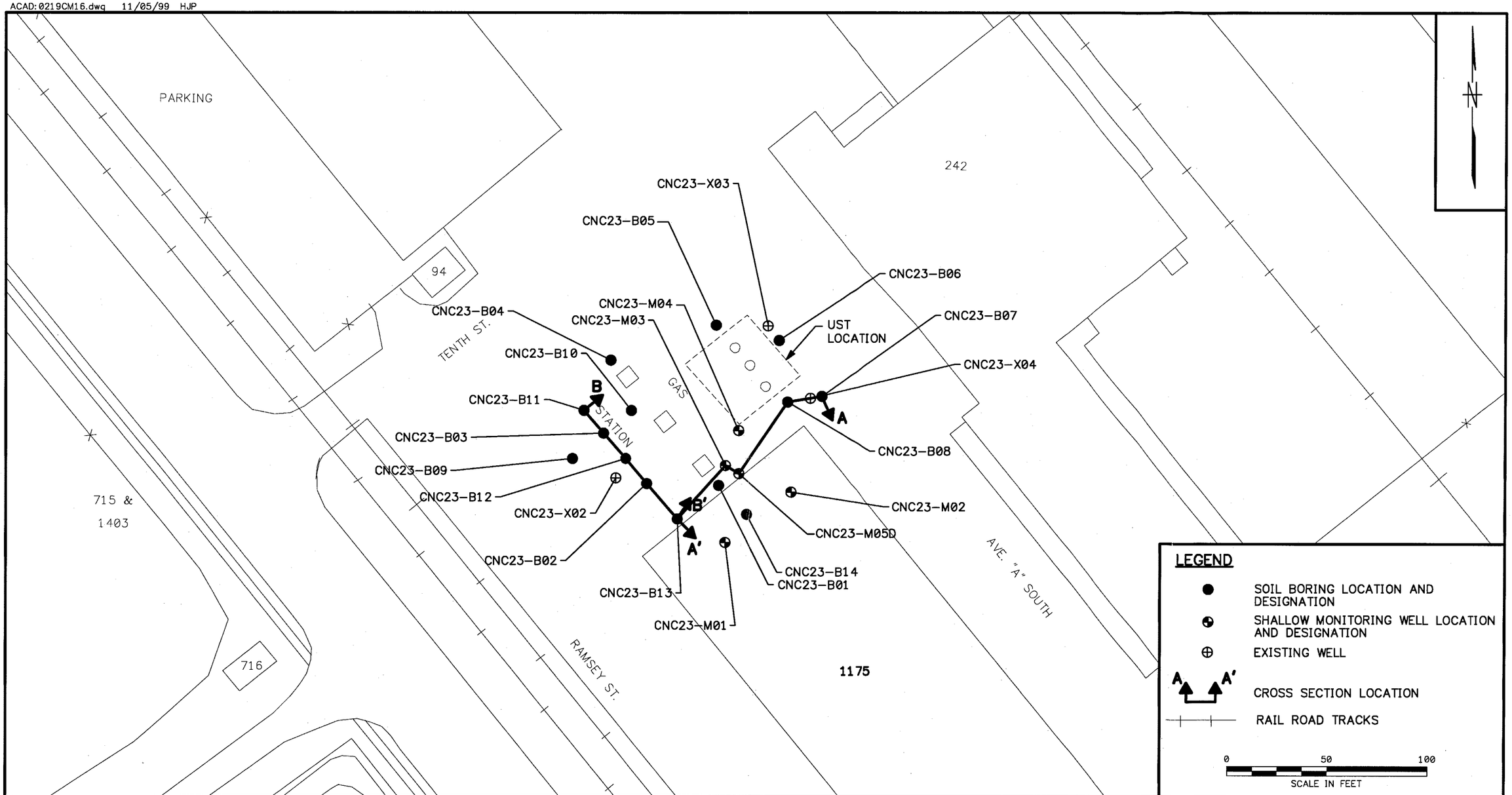

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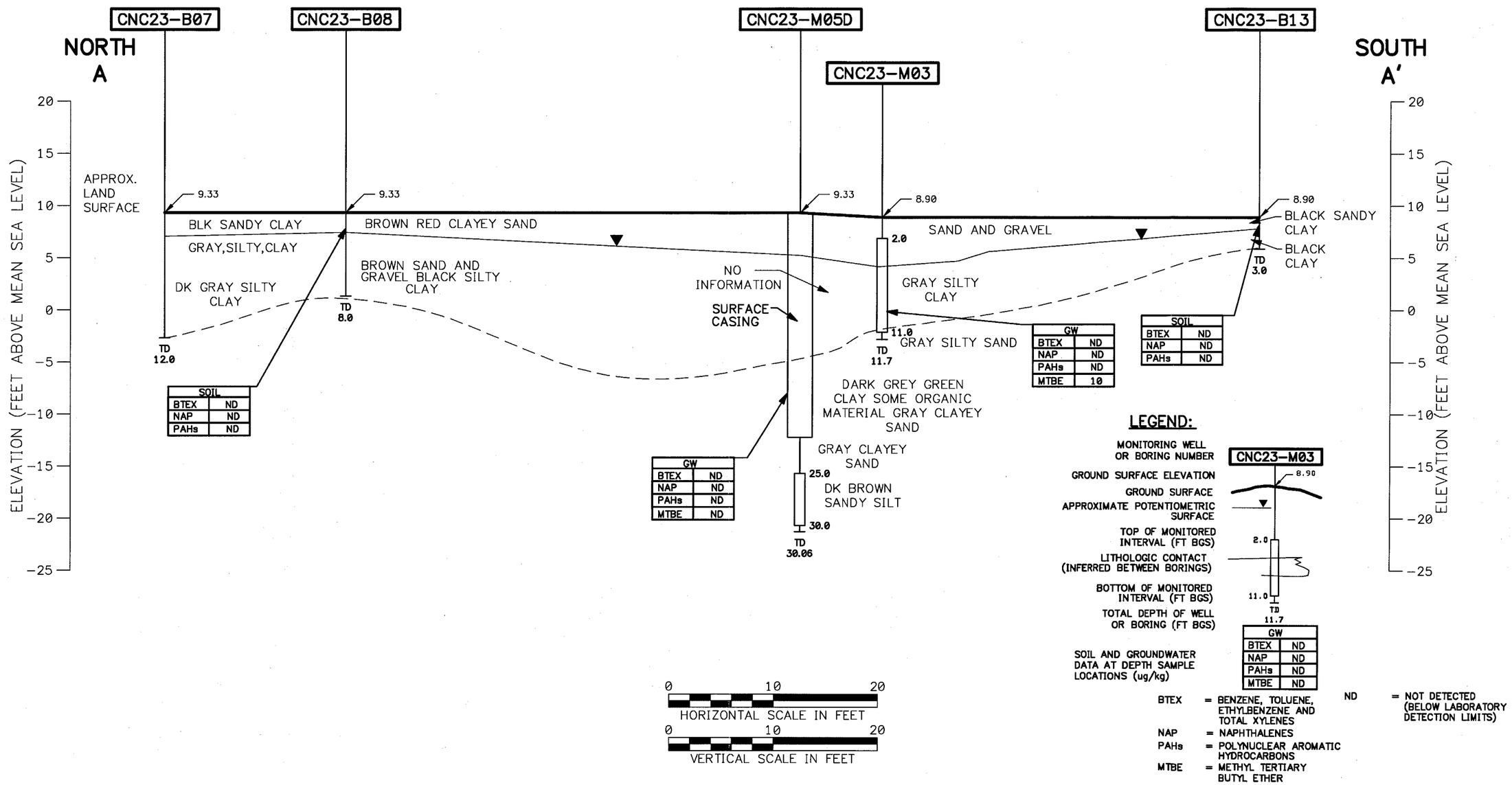
DRAWN BY HJP DATE 11/3/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE MAP AND SAMPLING LOCATIONS
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 3
REV. 0

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

ACAD:0219CX01.dwg 11/09/99 HJP



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CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

GEOLOGIC CROSS SECTION A-A'
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 4
REV. 0

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

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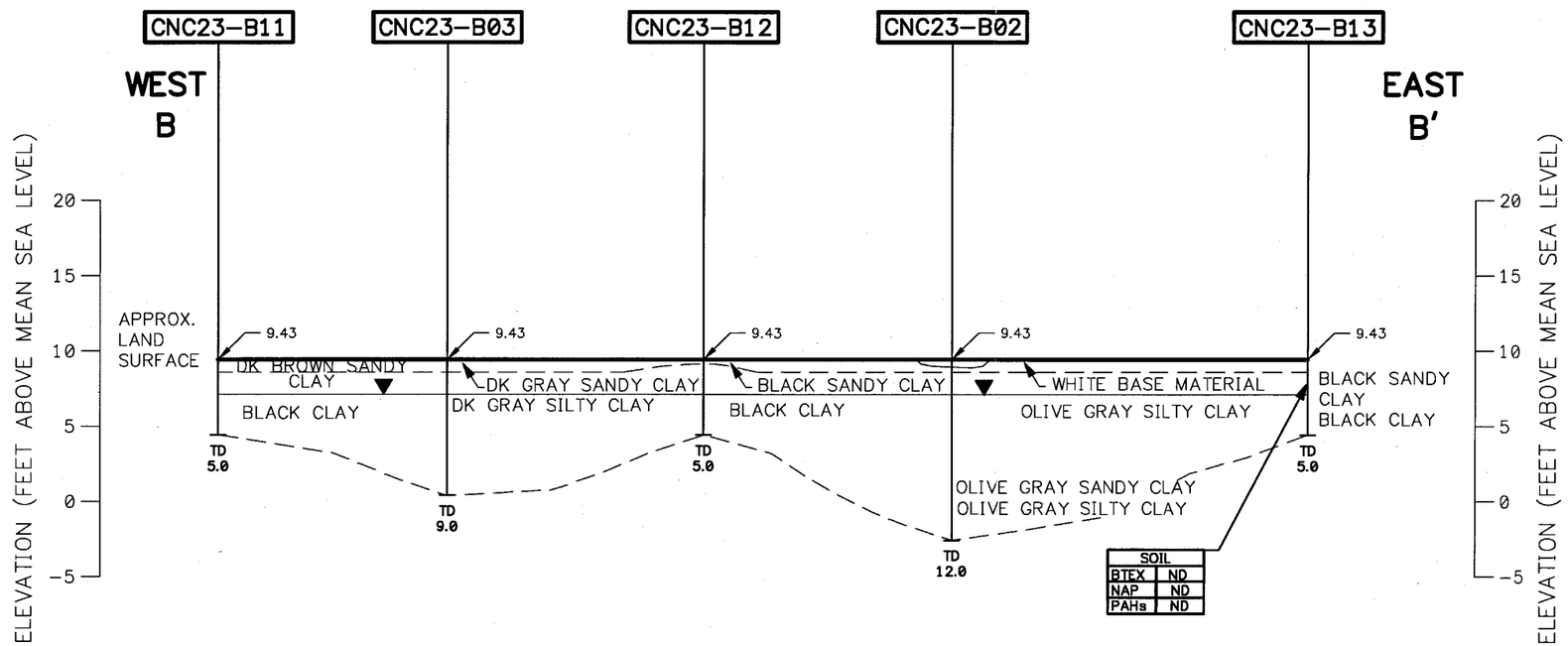

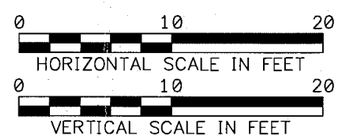

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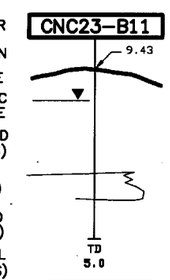


MONITORING WELL OR BORING NUMBER

GROUND SURFACE ELEVATION

GROUND SURFACE

APPROXIMATE POTENTIOMETRIC SURFACE

TOP OF MONITORED INTERVAL (FT BGS)

LITHOLOGIC CONTACT (INFERRED BETWEEN BORINGS)

BOTTOM OF MONITORED INTERVAL (FT BGS)

TOTAL DEPTH OF WELL OR BORING (FT BGS)

SOIL AND GROUNDWATER DATA AT DEPTH SAMPLE LOCATIONS (ug/kg)

SOIL	
BTEX	ND
NAP	ND
PAHs	ND

BTEX = BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES

NAP = NAPHTHALENES

PAHs = POLYNUCLEAR AROMATIC HYDROCARBONS

ND = NOT DETECTED (BELOW LABORATORY DETECTION LIMITS)

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/4/99

CHECKED BY DATE

COST/SCHED-AREA

SCALE AS NOTED

DEPARTMENT OF THE NAVY · SOUTHERN DIV FACILITIES ENGINEERING COMD

GEOLOGIC CROSS SECTION B-B'
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219

APPROVED BY DATE

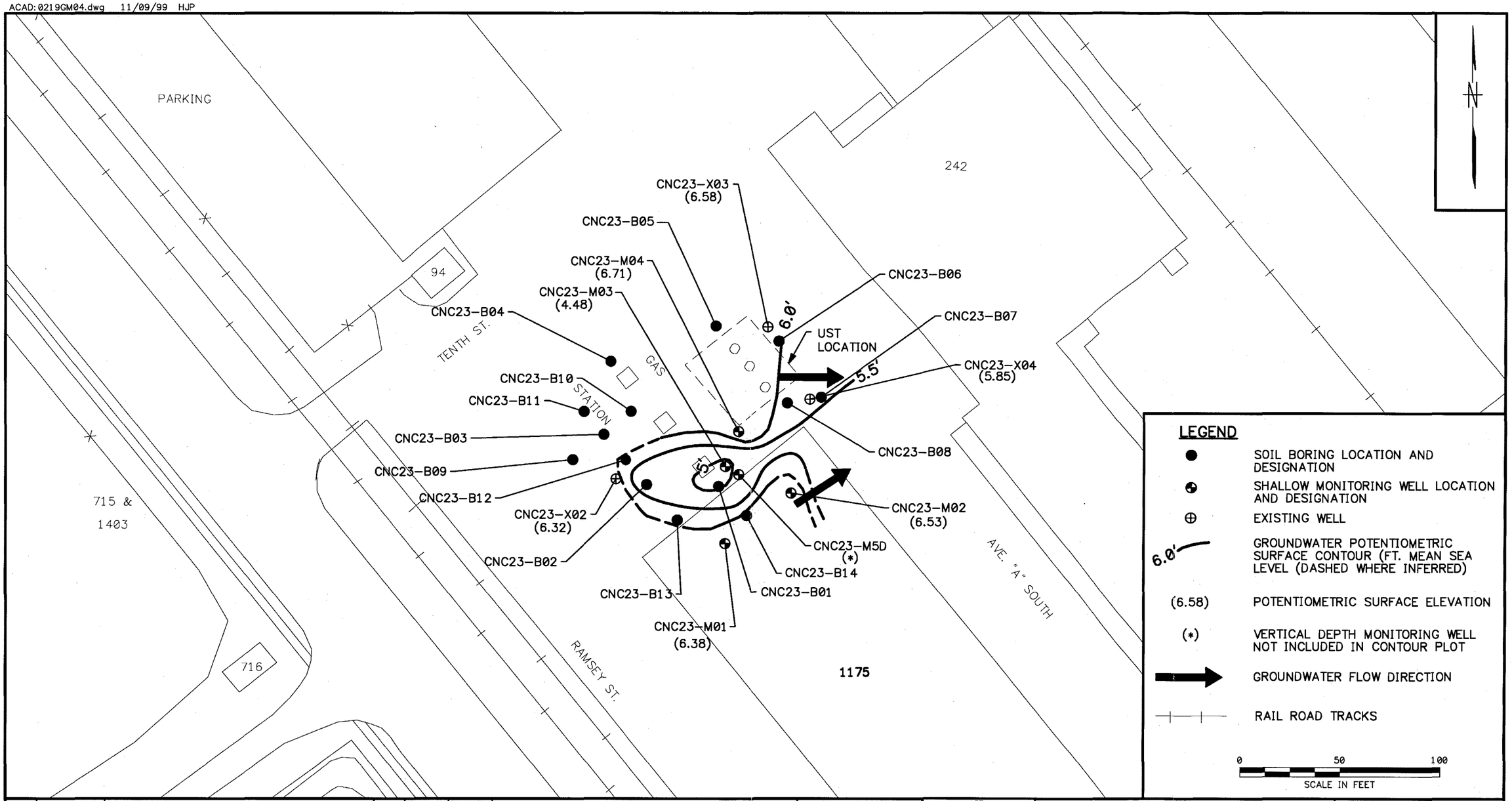
APPROVED BY DATE

DRAWING NO. FIGURE 5

REV. 0

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

ACAD:0219GM04.dwg 11/09/99 HJP



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DRAWN BY HJP DATE 11/3/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

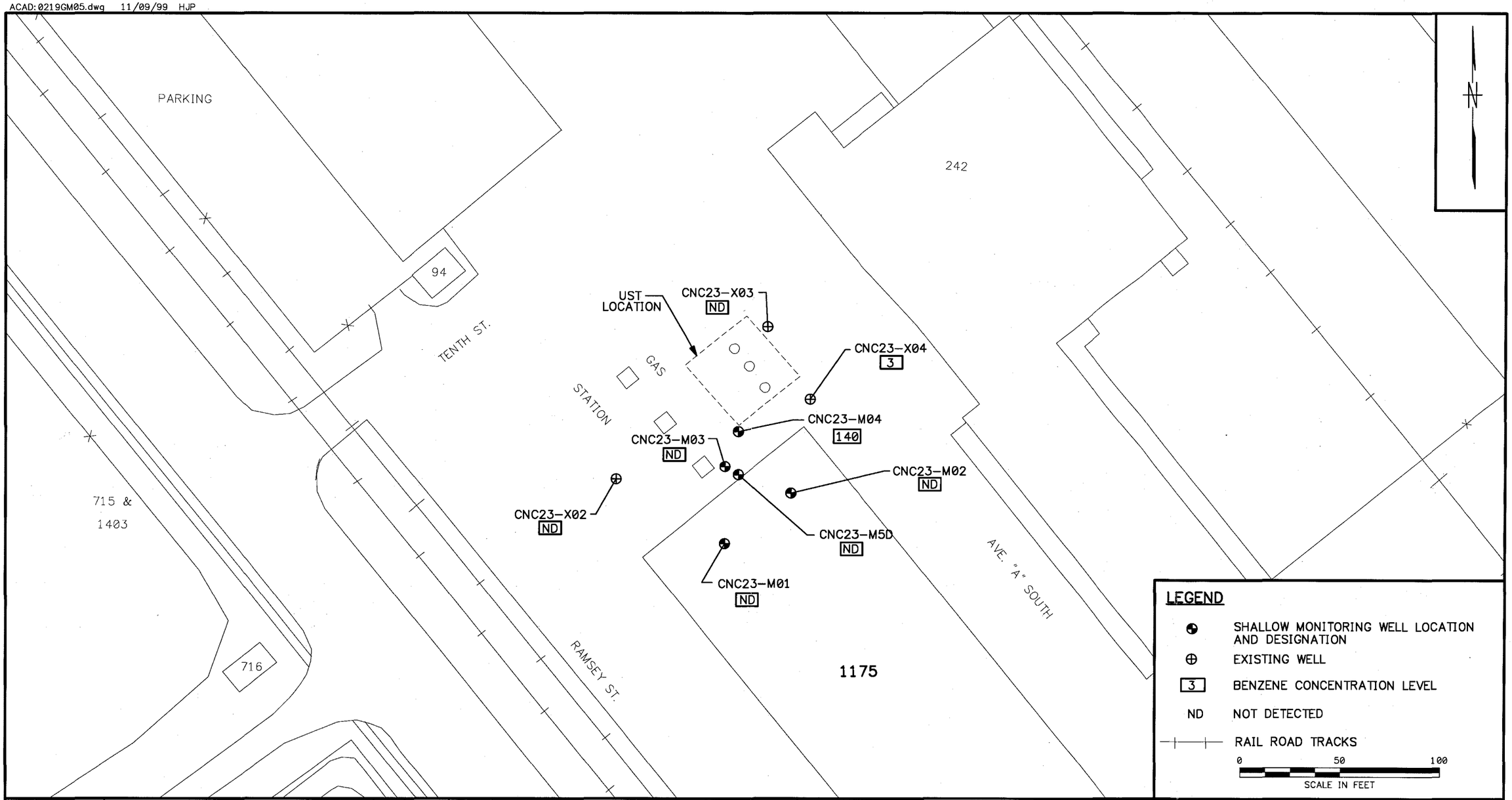
DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

GROUNDWATER POTENTIOMETRIC MAP (SEPTEMBER 9, 1999)
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 6
REV. 0

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

ACAD:0219GM05.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/3/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

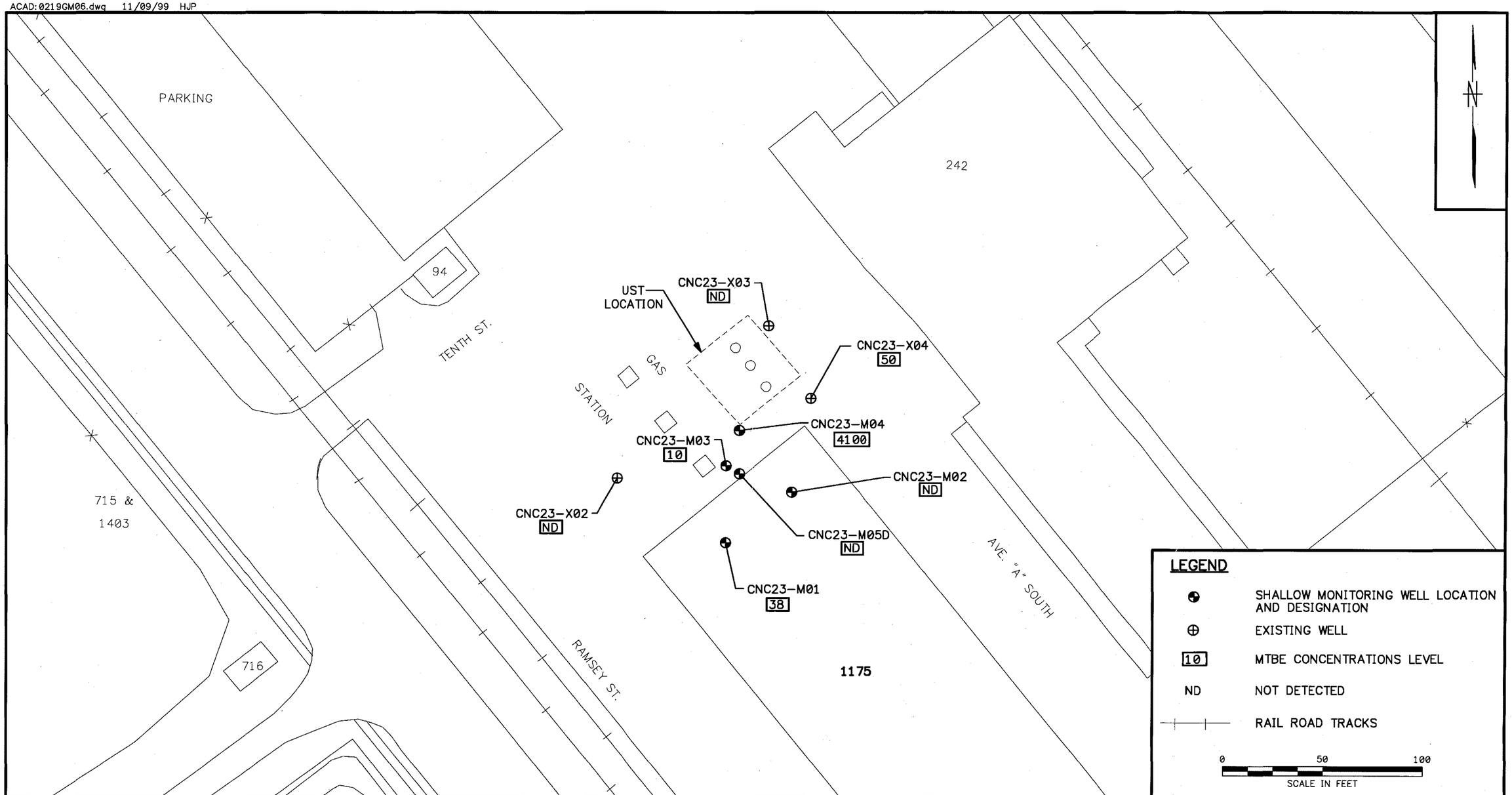
DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

GROUNDWATER BENZENE CONCENTRATION MAP (SEPTEMBER 10, 1999)
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 7
REV. 0

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

ACAD: 0219GM06.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/3/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DEPARTMENT OF THE NAVY SOUTHERN DIV FACILITIES ENGINEERING COMD

GROUNDWATER MTBE CONCENTRATION MAP (SEPTEMBER 10, 1999)
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 8
REV. 0

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

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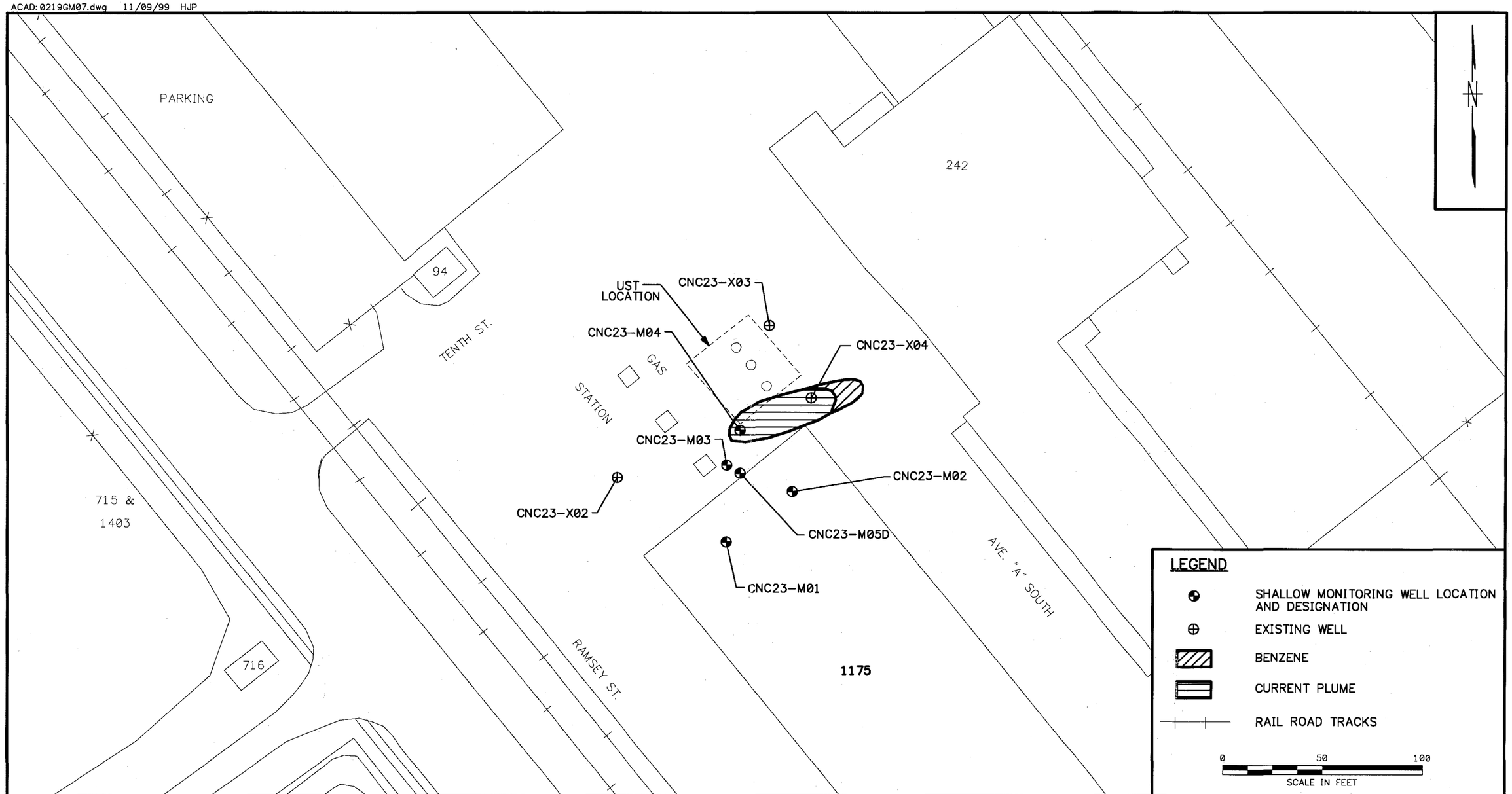


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

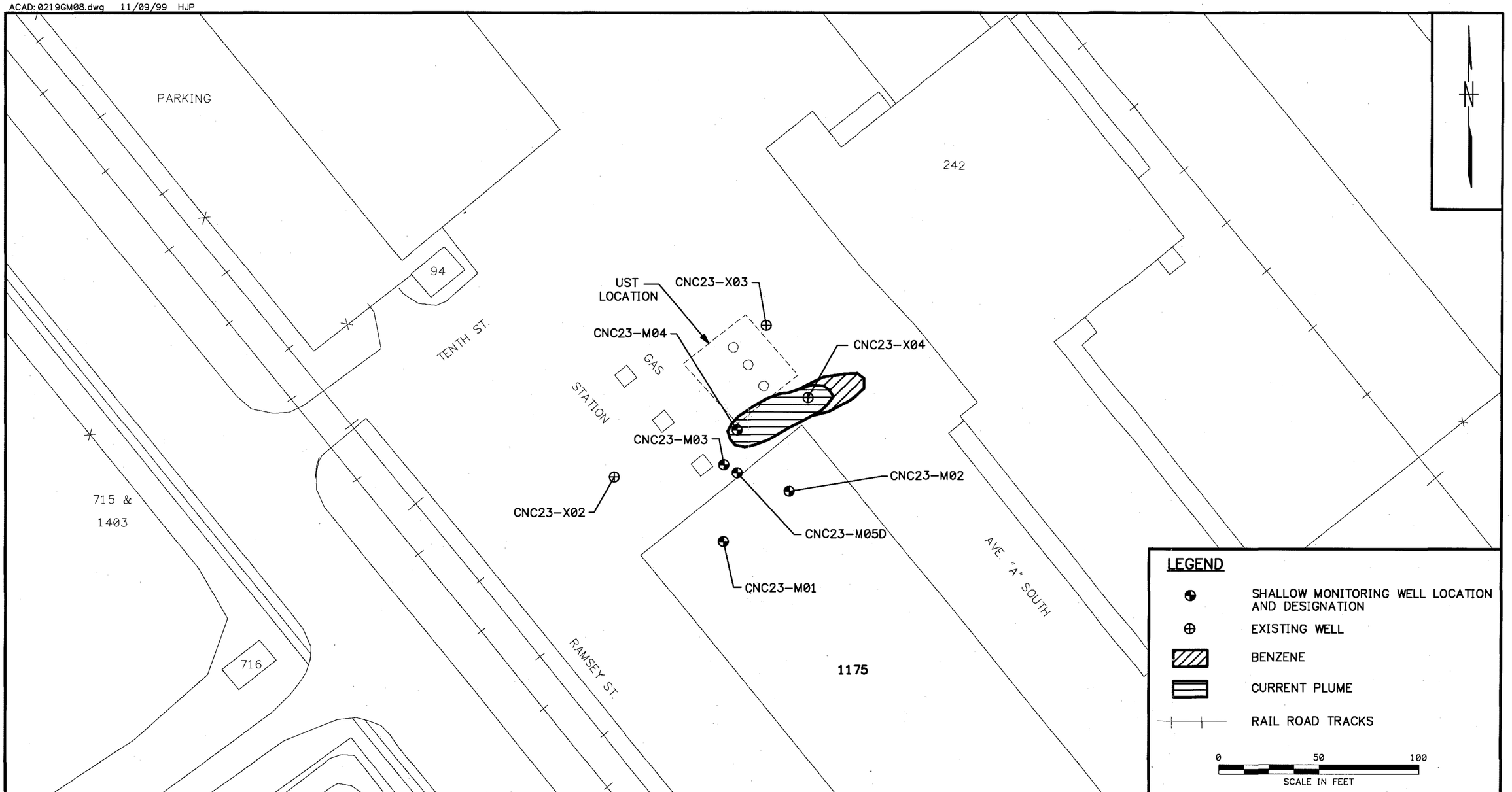
DRAWN BY HJP DATE 11/4/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

PREDICTED 10 YEAR MIGRATION
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 9
REV. 0

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

ACAD:0219GM08.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/3/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

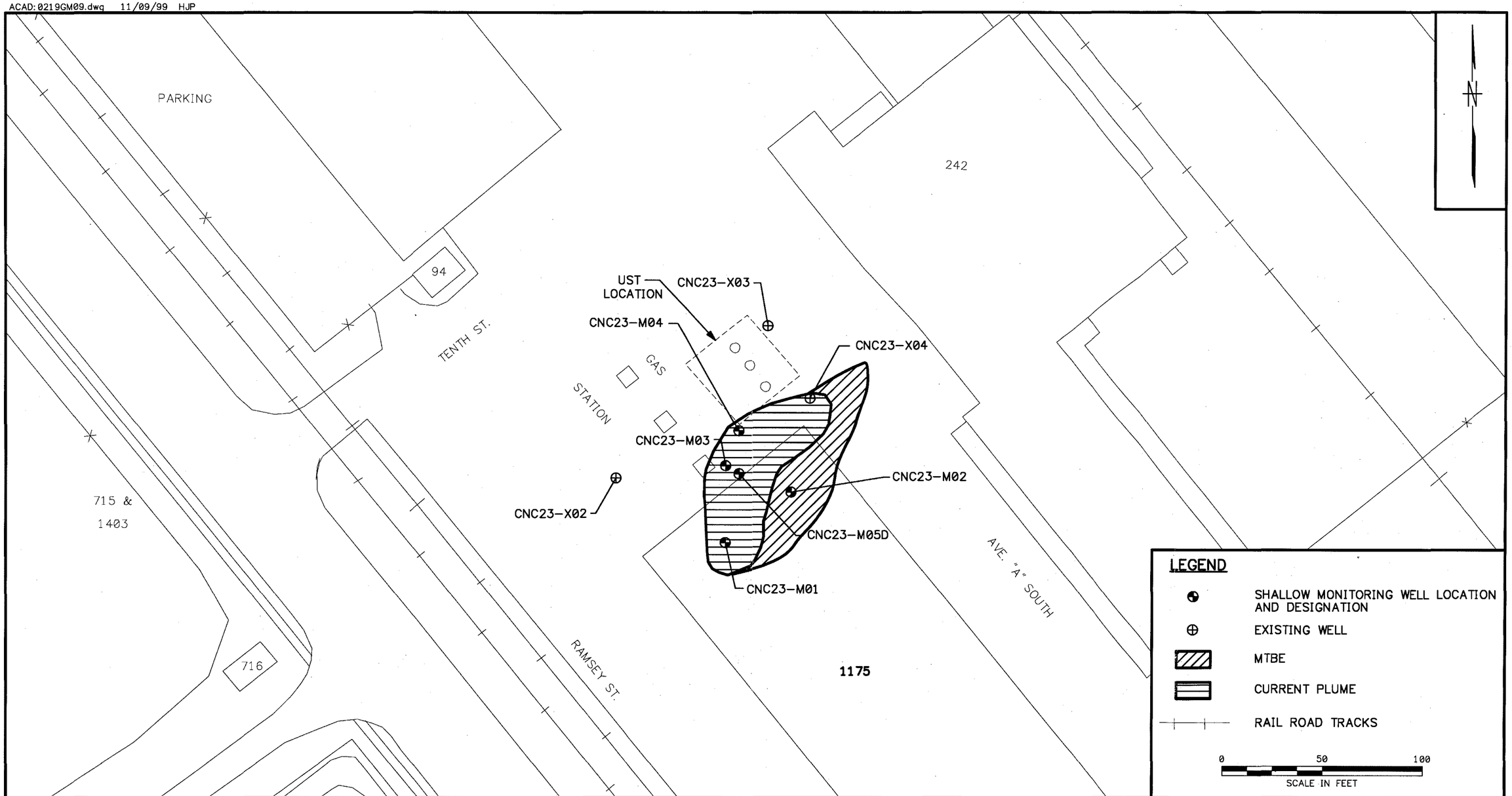
DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

PREDICTED 20 YEAR MIGRATION
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 10
REV. 0

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

ACAD:0219GM09.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/4/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

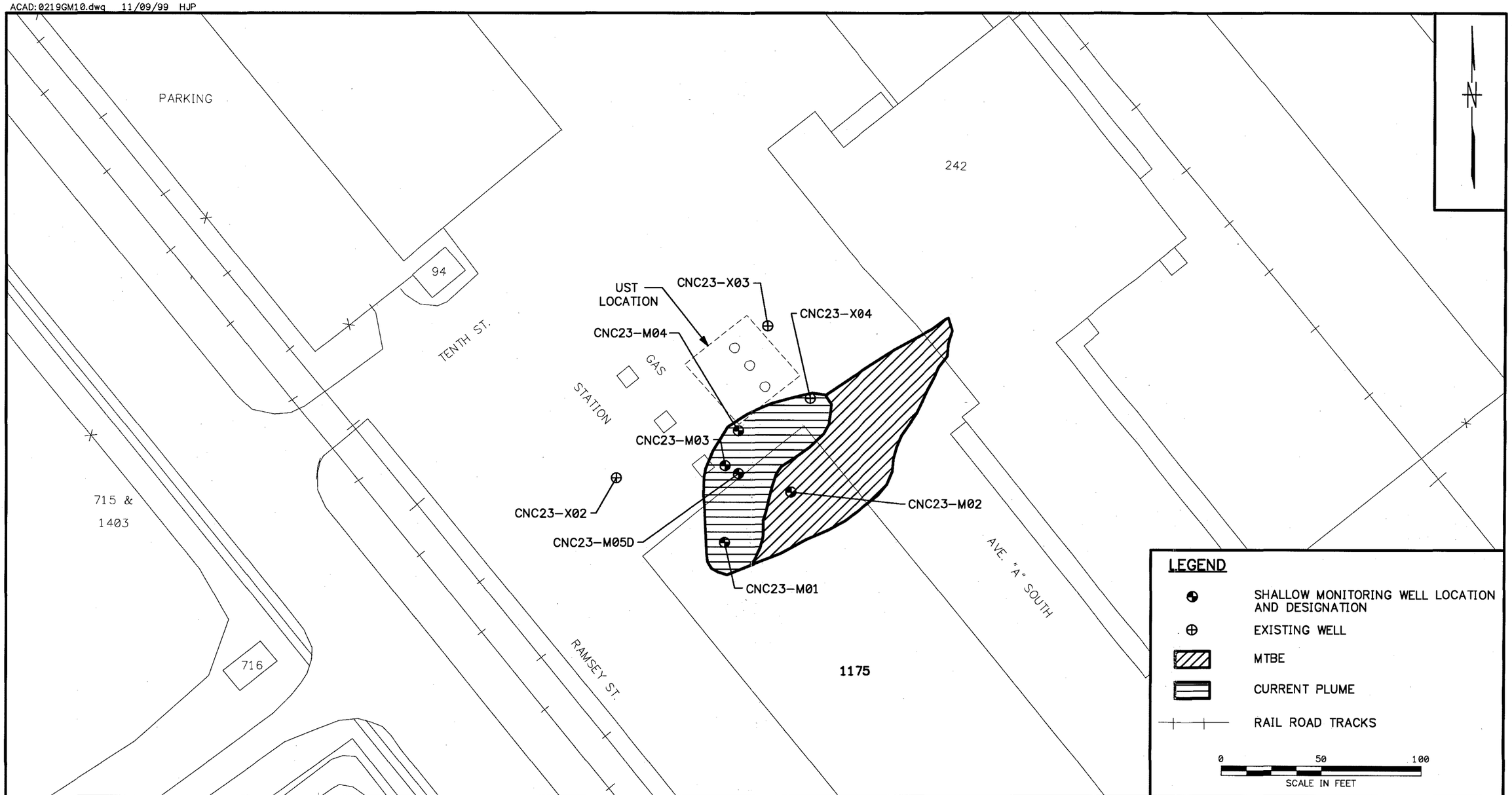
DEPARTMENT OF THE NAVY · SOUTHERN DIV FACILITIES ENGINEERING COMD

PREDICTED 10 YEAR MIGRATION
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 11
REV. 0

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

ACAD:0219GM10.dwg 11/09/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP DATE 11/4/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

PREDICTED 20 YEAR MIGRATION
SITE 23, BUILDING 1175
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0219
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 12
REV. 0

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

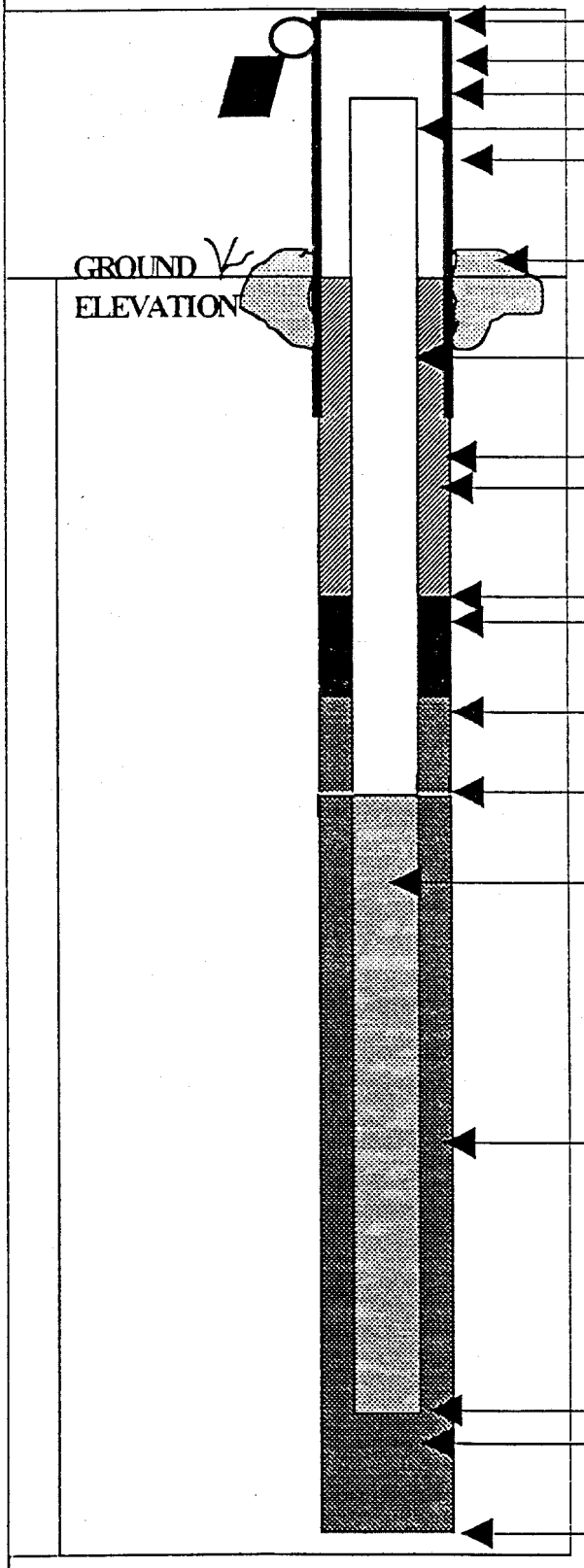
APPENDIX A

GEOLOGIC BORING LOGS AND WELL CONSTRUCTION FORMS

BORING NO.: _____

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC	LOCATION: CNC23-MW01	DRILLER Rod
PROJECT NO. CNC23	BORING CNC23-MW01	METHOD: ~~DPT~~ HSA
ELEVATION	DATE 8/7/99	DRILLING Custom Drilling
FIELD GEOLOGIST Marty Ray		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING: Flush

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: Steel man hole with cover

TYPE OF SURFACE SEAL: concretet pad

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 4.25"

TYPE OF SEAL: grout to 6" bls

ELEVATION / DEPTH OF SEAL: 1'10"

TYPE OS SEAL: 30/65 sand

DEPTH TOP OF SAND PACK: 2'0"

ELEVATION / DEPTH TOP OF SCREEN: 4'0" ~~3'10"~~

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE X LENGTH: 10 slot

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30 sand

ELEVATION / DEPTHBOTTOM OF SCREEN: 14' ~~13'10"~~

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'1 6"

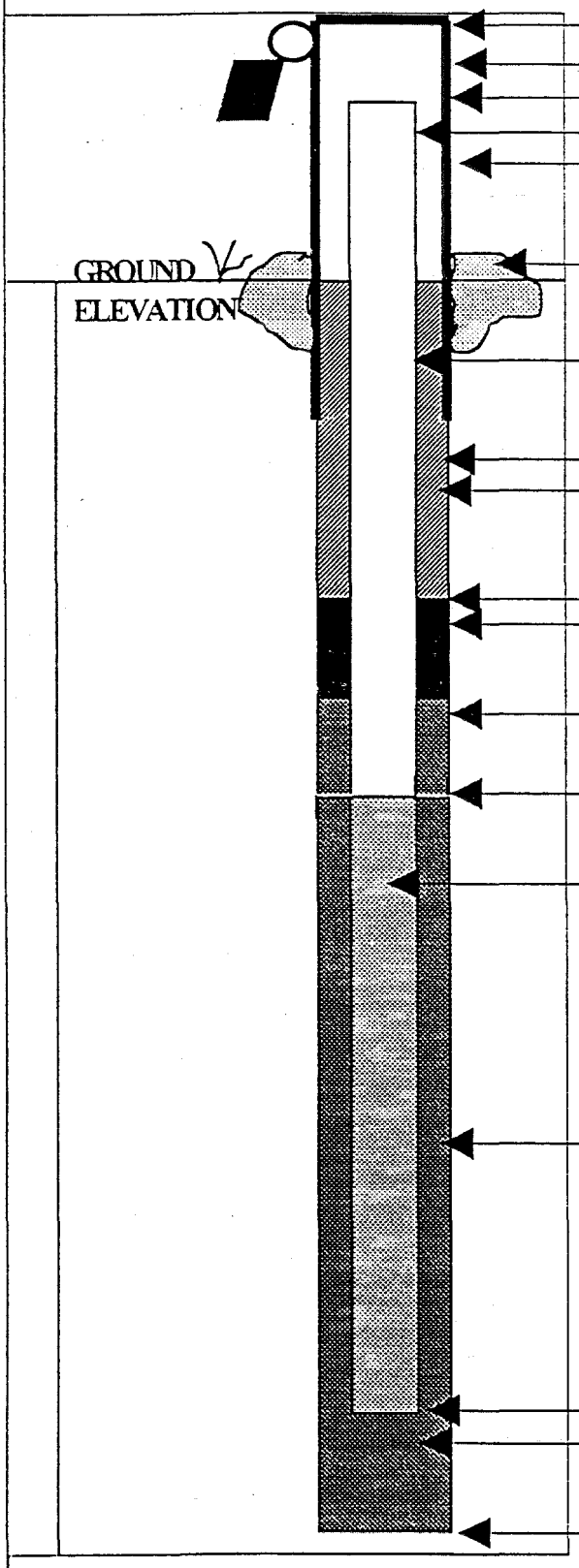
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 sand

ELEVATION / DEPTH OF HOLE: 14'6"

BORING NO.: CNC23-MW02

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC	LOCATION:	CNC23-MW02	DRILLER	Rod
PROJECT NO.	CNC23	BORING	CNC23-MW02	METHOD:	~~DPT~~ HSA
ELEVATION		DATE	8/7/99	DRILLING	Custom Drilling
FIELD GEOLOGIST	Marty Ray			DEVELOPMENT: NA	



ELEVATION OF TOP OF SURFACE CASING: Flush

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING:

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: steel man-hole w/cover

TYPE OF SURFACE SEAL: concrete pad 2'x2'x6"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 4.25"

TYPE OF SEAL: grout to 6" bls

ELEVATION / DEPTH OF SEAL: 1'10"

TYPE OS SEAL: 30/65 sand

DEPTH TOP OF SAND PACK: 2'0"

ELEVATION / DEPTH TOP OF SCREEN: 4'10"

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE X LENGTH: 10 slot

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30 sand

ELEVATION / DEPTHBOTTOM OF SCREEN: 14'10"

ELEVATION / DEPTH BOTTOM OF SAND PACK: 14'6"

TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 sand

ELEVATION / DEPTH OF HOLE: 14'6"

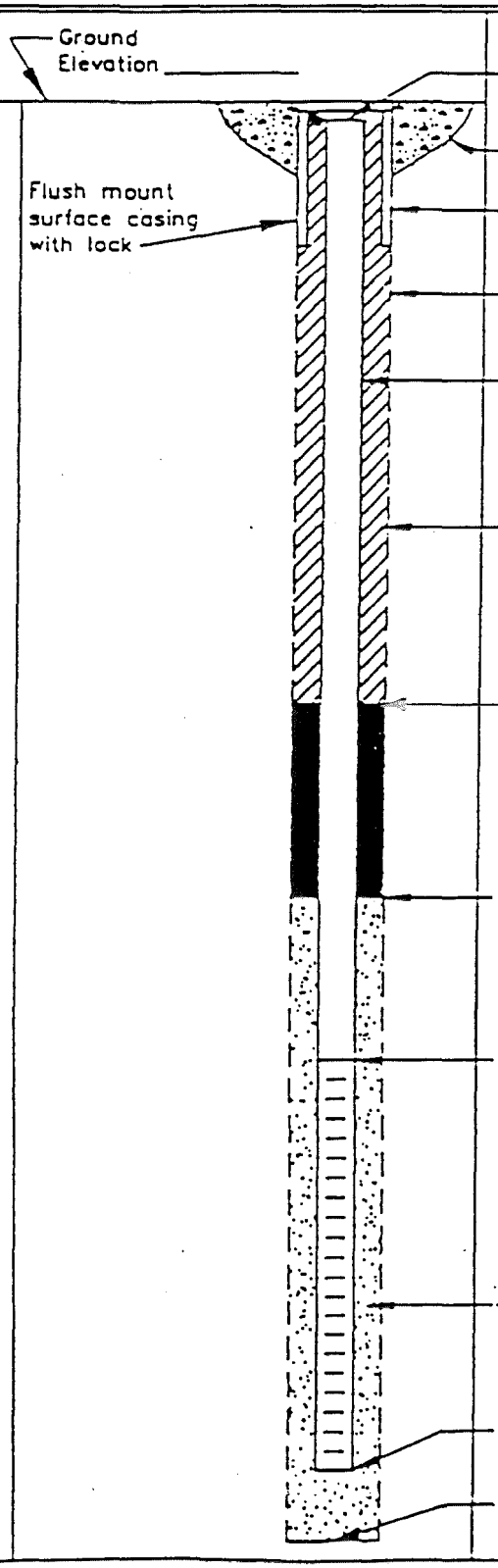
BORING NO.: _____

MONITORING WELL SHEET

PROJECT CNC Zone F
PROJECT NO. N0219
ELEVATION _____
FIELD GEOLOGIST _____

LOCATION site 23/Bldg 1175
BORING CNC23-M03
DATE 8/17/99

DRILLER Columbia Environmental
DRILLING METHOD DPT
DEVELOPMENT METHOD surface Pump



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: concrete

TYPE OF PROTECTIVE CASING: steel christy Box

I.D. OF PROTECTIVE CASING: 8-inch

DIAMETER OF HOLE: 3-inch

TYPE OF RISER PIPE: Flush threaded SCH 40 PVC

RISER PIPE I.D.: 1.25-inch

TYPE OF BACKFILL/SEAL: Type I Portland cement/Bentonite slurry

20/65 Fine sand seal

DEPTH/ELEVATION TOP OF SAND: 1 ft. /

DEPTH/ELEVATION TOP OF SCREEN: 2 ft. /

TYPE OF SCREEN: 1.25-inch ID Flush Thread SCH 40 PVC

SLOT SIZE x LENGTH: 0.010-inch x 10 feet

TYPE OF SAND PACK: 20/30 silica sand

DIAMETER OF HOLE IN BEDROCK: N/A

DEPTH/ELEVATION BOTTOM OF SCREEN: 12 ft. /

DEPTH/ELEVATION BOTTOM OF SAND: 12 ft. /

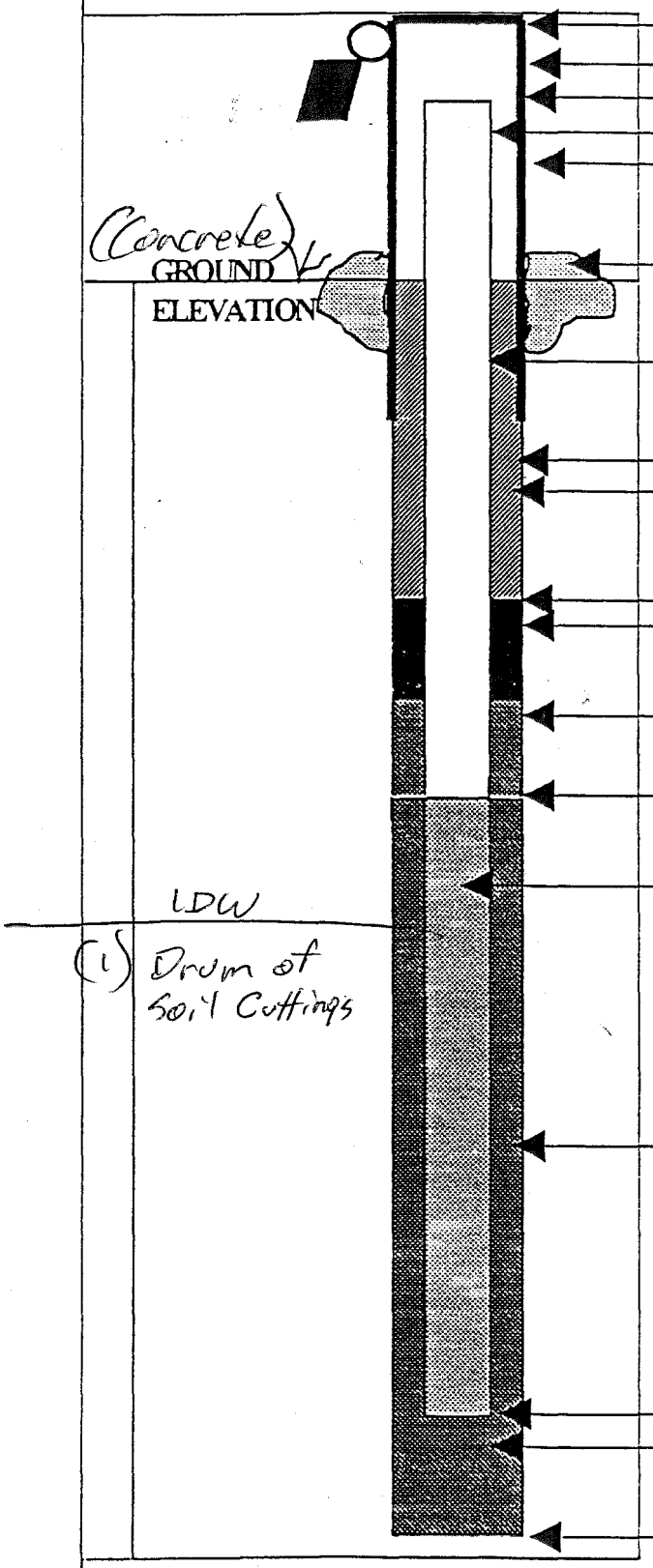
DEPTH/ELEVATION BOTTOM OF HOLE: 12 ft. /

BACKFILL MATERIAL BELOW SAND: N/A

BORING NO.: CNC23-mw04

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC-Chas.	LOCATION: Site23/ZoneF	DRILLER Custom Drilling
PROJECT NO. 0219(ZoneF)	BORING CNC23-mw04	METHOD: ~~DPT~~ 4.25" HSA
ELEVATION	DATE 8/17/99	DRILLING Rod Fuller
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

TYPE OF SURFACE CASING: ~~Concrete Pad (Quickcrete) 2ft x 2ft x 6in~~ Flush steel cover

TYPE OF SURFACE SEAL: Concrete Pad (Quickcrete) 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

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: 0.010in x 10ft.

I.D. OF SCREEN: 2in.

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

ELEVATION / DEPTHBOTTOM OF SCREEN: 112

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112'

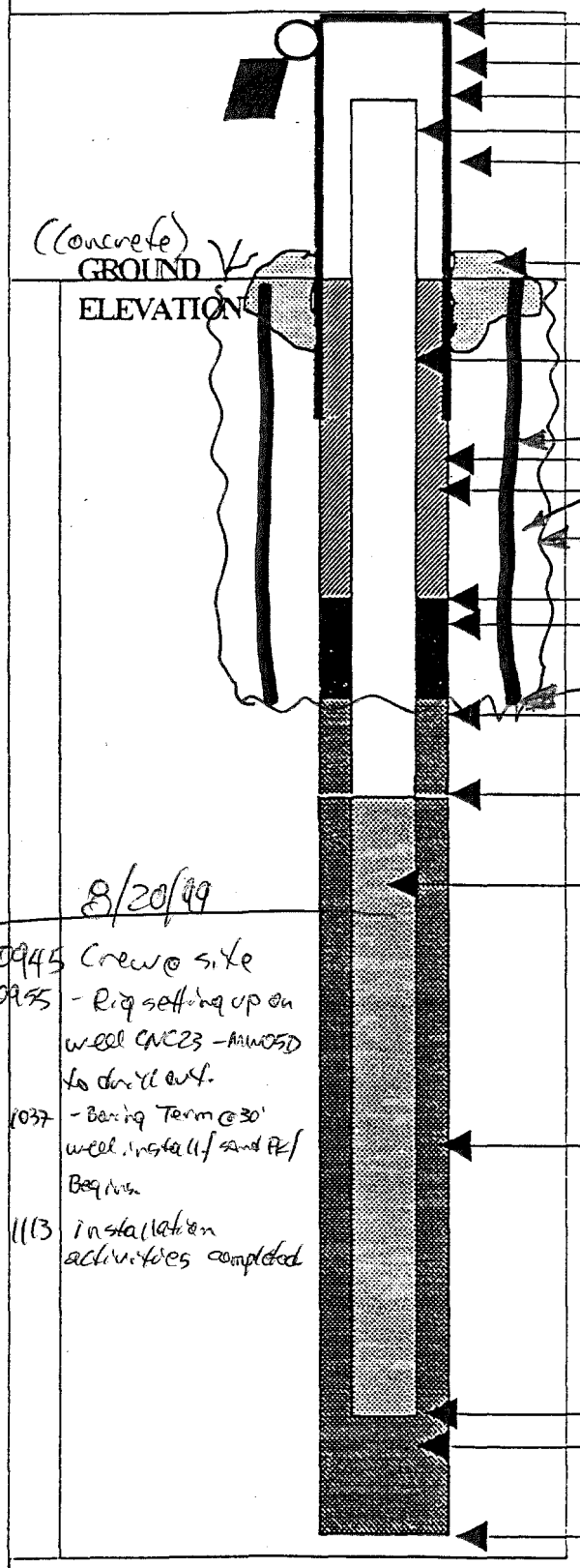
TYPE OF BACKFILL BELOW OBSERVATION WELL: Fine Qtz. Sand (20/30)

ELEVATION / DEPTH OF HOLE: 112'

BORING NO.: CNC23 - MW05P

OVERBURDEN MONITORING WELL SHEET

PROJECT CNC - Chas. SC	LOCATION: Site 23	DRILLER Custom Drilling
PROJECT NO. 0219	BORING CNC23 - MW05D	METHOD: ~~DPT~~ 8.25" HSA &
ELEVATION	DATE 8/19/99 & 8/20/99	DRILLING 5 7/8" Roll Cone / Mud Rotary
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 2ft x 2ft x 6 in.

RISER PIPE I.D.: 2 in.

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

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: 121'

TYPE OS SEAL: 3/8" Bentonite Plug

Depth of Surface Case: 20 ft.

DEPTH TOP OF SAND PACK: 23'

ELEVATION / DEPTH TOP OF SCREEN: 125'

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) (3/12 bags @ 50 lbs/ea.)

ELEVATION / DEPTHBOTTOM OF SCREEN: 130'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 130'

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

ELEVATION / DEPTH OF HOLE: 130'

8/20/99

0945 Crew @ site

0955 - Rig setting up on well CNC23 - MW05D to drill out.

1037 - Boring Term @ 30' well installed / sand pk / Begin

1113 installation activities completed

BORING LOG

PROJECT NAME: CNC-Chas, SC
PROJECT NUMBER: 0219
DRILLING COMPANY: Custom Drilling
DRILLING RIG: Mobile B57
BORING NUMBER: CNC23-MW05D
DATE: 8/30/99
GEOLOGIST: Mark Dennington
DRILLER: Rod 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**
(4)	See previous Boring Logs, One on 8/19/99 by MWD												
(1)	22	2/6	24"		Soft.	Gy/T	Sandy clay to clayey	SC	No petro. odor-	2.5	0	0	0
	↓	2/6					sand, VF-F grain, well		cohesive when wet,				
		2/6					sorted, H.M. throughout,		nonplastic.				
(2)	24	2/6					saturated, no fossils.						
(2)	24	2/6	24"		Soft	Gy/T	Clayey sand	SC	No petro. odors	2.6	0	0	0
	↓	0/6					(as above) saturated.		or discolor.				
		0/6											
	26	2/6											
(3)	26	2/6	12"		Soft	Ol Gn/Br.	Sandy silt -		No petro. odors	2.3	0	0	0
	↓	5/6					VF-F grain, H.M.						
		5/6					throughout, no fossils						
	28	6/6					saturated (Uppermost Cooper Group)						
(4)	28	2/6	24"		Soft/ Firm	Ol Gn to Brown	Sandy silt		No petro. odors	2.0	0	0	0
	↓	2/6					(as above) moist to						
		3/6					saturated with bottom						
	30	4/6					3" where it's clayey to						
				EOB			material.						
					30'		Boring Termination Depth						
					25-30	-	Screen Interval.						

* 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. #: CNC23-MW05D

H.M. = Heavy mon.
T = Tan
Gy = Grey.
Ol = Olive
Gn = Green

BORING LOG

Page ___ of ___

PROJECT NAME: CNC-Chas, SC
PROJECT NUMBER: 0219
DRILLING COMPANY: Custom Drilling
DRILLING RIG: Mobile B57
BORING NUMBER: CNC23-MW05D
DATE: 8/19/99
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**
	0-15				See		Previous DPT						
							Boring Log sheets.						
					(*)		No split-spoon						
							soil samples collected.						
(1)	15	1/6	24"		Soft.	dk gray	Green Clay w/ abundant		No petro. odors				
	1	0/6					amt. of peat/organic		strong Hydrogen				
	↓	1/6					material, cohesive,		sulfide (rotten egg)				
	17	1/6					plastic, moist, no fossils.		odors.				
(2)	17	1/6	24"		Soft.	dk gray	gray Clay to sandy		Strong Hydrog.	65			
	↓	0/6					Clay (as above)		sulfide odor/no				
	↓	1/6		18.5			w/ brown peat.		petro. odor.				
	19	3/6			Soft.	Bl/Gr	pale green clay. a		No petro.				
							cohesive, plastic,		odors, but				
							sticky, moist,		strong hydro.				
							no fossils.		sulfide odors				
				(*)	20'		Depth of 6"	PVC	Surf. Case.				

* When rock coring, enter rock brokeness.

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

Drilling Area (Adj. to fuel dispenser island)

Remarks: _____

Background (ppm): 1.0

Converted to Well: Yes ✓ No _____ Well I.D. #: CNC23-MW05D

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Strato probe
BORING NUMBER: 23 B ϕ 1
DATE: 6/8/99
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					Red	Sand & Gravel		Dry				
	2												
	3					Olive Gray	Stiff Silty Clay		Moist				
	4		2.5/4			↓	↓		↓				
1107	5					↓	↓		↓	1,000	0		0
	6					↓	Soft Silty Clay		Saturated				
	7					↓			↓	1,200			
1100	8					Blk	Clayey Sand		↓				
	9					↓	Silty Clay		↓				
	10					Blk	Sandy Muck		↓				
	11					Olive	Silty Clay		↓				
1097	12		3.8/4			Gray	Silty Sand w/ wood chips		↓				

* 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: Borehole cored to 1' bgs

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

X.25

BORING LOG

PROJECT NAME: CNE
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: 23 BP2
DATE: 6/2/99
GEOLOGIST:
DRILLER: R. Brunt

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				Wet.		Base material		Dry				
	2				Olive Gray		Silty Clay - Stiff						
	3												
1022	4		2.9/4				Soft Silty Clay		Moist				
X	5									896	0	0	0
	6												
	7						Soft Silty Clay		Saturated	130	0	0	0
	8												
1026	9						Sandy Clay						
	10						Silty Clay						
	11												
	12						Silty Clay w/ wood chips						
1035													

* 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: CVE
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: State probe

BORING NUMBER: 23B03
DATE: 6/8/94
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**
	1					PK Gray	Stiff Sandy Clay		Dry				
	2					↓	Silty Clay		Moist	2,400	0	0	0
	3					↓	↓		Saturated				
	4		20/4										
1042	5						No recovery						
	6						X						
	7												
	8												
1246	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 _____ No _____ Well I.D. #:

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: 23B04
DATE: 6/8/99
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/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		1					Blk. Gray	Base - clay, sand, gravel		Dry				
		2					Olive Gray	Stiff Silty Clay						
		3												
		4												
1110		5		2/4		Olive Gray		Stiff Silty Clay		Dry	70			
		6						Soft Silty Clay w/ Gravel		Moist				
		7								Saturated	1,180			
1115		8		4/4										
		9												
		10						w/ wood chips						
		11												
1120		12				Brown		Silty, 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):

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

BORING LOG

PROJECT NAME: CNC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: B2313D5
DATE: 6/8/99
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**	Driller BZ**
		1					Lt. Gray	Base - Silty Med. Sand		Moist				
		2												
		3												
1129		4		1/4										
		5												
		6					DK Gray	Sandy Clay		Moist				
		7									6			
		8		1/4										
1133		9					Olive Gray	Sandy Clay		Moist				
		10					DK Gray	Sandy (white) Clay		Moist	130			
		11					DK Brn.	Silty Clay		Moist				
1141		12		3 3/4			↓	↓		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):

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

BORING LOG

PROJECT NAME: CWC
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: Z3B06
DATE: 6/8/99
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**	Driller BZ**
	1					White	Base		Dry				
	2					Olive Gray	Silty Fine Sand		Saturated	4			
X	3												
1151	4		2/4										
	5						No						
	6						Recovery						
	7												
	8		0/4										

* 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: 23B67
DATE: 6/8/99
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**	Driller BZ**
	1					Tan	Base		Dry				
	2					Blk & Tan	Stiff Sandy Clay		Dry				
	3					Olive Gray	Med Silty Clay w/ Sand		Moist	790			
1224	4		3.5/4			↓	↓		↓				
	5		~~3.5/4~~				No recovery						
	6						- no tube in						
	7						Sampler						
	8												
	9					Dk Gray	Sandy Silty Soft Clay		Saturated				
	10						↓		↓	580			
	11												
1232	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):

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: 23 B08
DATE: 6/8/99
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**	Driller BZ**
		1					White & Blk	Base-Sand, gravel		Dry				
X		2					Brn & Red	Clayey Sand		Moist	8			
		3						X						
1242		4		1.5/4										
		5					Brn	Sand & Gravel		Saturated				
		6					Blk	Silty Clay						
		7						X						
1251		8		1.2/4										
		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 _____ No _____ Well I.D. #:

BORING LOG

PROJECT NAME: CNE Zone F
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: 23B9
DATE: 7/7/99
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	Sampler**	Drillers BZ**
							concrete						
	1					dk br	Sandy clay		dry/firm				
	2					to blk	↓		moist				
	3						clay ↓/crumbly		↓	70	0	75	0
X	4					blk	clay/		↓				
	5					↓	↓		wet				
	6												
	7												
	8												

* When rock coring, enter rock Sealeness

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

Remarks:

Drilling Area Background (ppm): 0

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

Hand Auger

BORING LOG

PROJECT NAME: CAC Zone F
PROJECT NUMBER:
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe

BORING NUMBER: Z3B10
DATE: 7/7/99
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 B2	Borehole**	Sampler B2**
	1					BLK	Concrete w/Mass						
	2					BLK	Crumbly Clay		Dry				
	3								Moist	60	0	75	0
X	4								Saturated				
	5												

* When rock coring, enter rock hardness

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

Remarks:

Drilling Area Background (ppm): 0

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

Hand Auger

BORING LOG

PROJECT NAME: CWE, Fowler
PROJECT NUMBER: site 23
DRILLING COMPANY: Columbia
DRILLING RIG: Stratoprobe
BORING NUMBER: 23B11
DATE: 7 7 99
GEOLOGIST:
DRILLER: J. 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): Borehole	Sample	Background	Drilling Area
	1				dk br		Sandy clay		dry				
	2				blk		clay		moist				
X	3				↓		↓		↓	270		450	
	4												
	5				↓		↓		Saturated				
	6												
	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. #:

Hand Auger

BORING LOG

Page ___ of ___

PROJECT NAME:
PROJECT NUMBER: CNC 23
DRILLING COMPANY: Columbia
DRILLING RIG: hand auger

BORING NUMBER: 23 B12
DATE: 7 7 99
GEOLOGIST: R. Franklin
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 Air	Sample Bz	Background	Drilled Bz
	1					blk	Sandy clay		dry				
	2						clay		dry				
	3				stiff		(crumbly)		moist				
K	4									190	0	3K	0
	5								saturated				
	6												
	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. #:

Hand Auger

BORING LOG

PROJECT NAME: Zone F
PROJECT NUMBER: CNC 23
DRILLING COMPANY: Columbia
DRILLING RIG: hand auger
BORING NUMBER: 23B13
DATE: 7 7 99
GEOLOGIST: R. Franklin
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**
	1					blk	sandy clay		dry				
	2						clay		dry			5ft+	
X	3				stiff					74	0		0
	4								moist				
	5								moist/wet				

* 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): Ø

Remarks:

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

Hand Auger

BORING LOG

Page ___ of ___

PROJECT NAME: Zone F
PROJECT NUMBER: CNC 25
DRILLING COMPANY: Columbia
DRILLING RIG: hand auger

BORING NUMBER: 23B14
DATE: 7-7-99
GEOLOGIST: R Franklin
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	Picarro Reading (ppm): Sample	Sample BZ	Sample**	Sample BZ**
	1					gray	clay (sandy)		dry				
	2				lt gray		sand		moist				
	3					lt	clay		moist				
	4				crumbly				wet	21	0	4.4	0
	5								saturated				

* When rock coring, enter rock backness

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

Remarks:

Drilling Area Background (ppm): 0

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

Hand Auger

APPENDIX B

FIELD SAMPLING DATA SHEETS

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GLM0101
Sample Location: CNC23-MW1
Sampled By: JK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/10/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1630								
Method: Geopump	Murky	6.53	2.41	31.5	94	0.44		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Method: Slow Flow	Initial	6.68	1.06	30.0	43	0.72		
Monitor Reading (ppm):	1	6.52	2.06	31.6	73	0.81		
Well Casing Diameter & Material	2	6.62	2.24	31.4	90	0.71		
Type: 2" PVC	3	6.58	2.32	31.5	153	0.63		
Total Well Depth (TD): 12.50	4	6.60	2.40	31.5	130	0.47		
Static Water Level (WL): 3.05	5	6.53	2.41	31.5	94	0.44		
One Casing Volume(gal/L): 1.56gal								
Start Purge (hrs): 1200								
End Purge (hrs): 1430								
Total Purge Time (min): 150								
Total Vol. Purged (gal/L): 9gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, NAPH	HCl	3x 40 ML Vials	3
~~Dissolved Methane~~	~~HCl~~	~~2x 40ML Vials~~	
PAHs	—	2 x 1L Amber	2
Total Lead	HNO3	1 x 250 ML Plastic	1
~~Anions (Nitrate, Sulfate)~~	—	~~1 X 50 ML Plastic~~	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): JKelly

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GL170201
Sample Location: ENC-23-MW-2
Sampled By: RH/SK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/9/99								
Time: 1140	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: Geopump	Clear	7.35	11.9	29.7	8	0.58		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9-9-99								
Method: Slow Purge	Initial	7.11	18.3	27.4	16	2.08		
Monitor Reading (ppm):	1	7.44	9.7	30.5	13	1.38		
Well Casing Diameter & Material	2	7.52	11.6	29.6	7	1.06		
Type: 2" PVC	3	7.35	11.9	29.7	8	0.58		
Total Well Depth (TD):	12.37							
Static Water Level (WL):	2.85							
One Casing Volume(gal/L):	1.6gal							
Start Purge (hrs): 1023								
End Purge (hrs): 1130								
Total Purge Time (min): 67								
Total Vol. Purged (gal/L): 6.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, Naph.	HCl	3x40 ml vials	9-9-99
Dissolved Methane	HCl	2 " " "	3
PAH's	—	2 1L amber	2
Total Lead	HNO3	1-250 ml. plastic	1
Anions (Nitrate, Sulfate)	—	1-50 ml. "	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): [illegible]

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GWM0301
Sample Location: CNC23 MW-3
Sampled By: JK/RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
Date: 9/9/99								
Time: 1425								
Method: Geopump	Murky	8.70	6.20	28.8	103	3.21		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9-9-99								
Method: Slow Purge	Initial	7.29	14.8	26.1	0	0.60		
Monitor Reading (ppm):	1	7.26	2.76	28.1	72	2.30		
Well Casing Diameter & Material	2	8.07	4.98	27.2	104	3.00		
Type: 2" PVC	3	8.17	6.50	28.4	130	1.41		
Total Well Depth (TD): 11.70	4	7.75	5.96	27.7	87	3.57		
Static Water Level (WL): 4.42	5	8.70	6.20	28.8	103	3.21		
One Casing Volume(gal/L): 0.6 gal	0.6 gal							
Start Purge (hrs): 1010								
End Purge (hrs): 1418								
Total Purge Time (min): 244								
Total Vol. Purged (gal/L): 5 Gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, NAPH	HCl	3x 40 ML Glass	3
Dissolved Methane	HCl	3x 40 ML Glass	3
PAHs	—	2x 1L Amber	2
Total Lead	HNO3	1x 250 ML Plastic	1
Anions (Nitrate, Sulfate)	—	1x 50 ML Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): J Kirkley

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GLM0401
Sample Location: CNC23 - MW4
Sampled By: JK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/10/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1517								
Method: Geopump	Orange	6.62	5.46	28.3	31	0.53		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Method: Slow Purge	Initial	6.45	9.1	26.1	106	0.40		
Monitor Reading (ppm):	1	6.73	2.06	28.7	13	1.59		
Well Casing Diameter & Material	2	6.74	2.08	28.8	10	1.21		
Type: 2" PVC	3	6.75	1.74	28.9	39	1.29		
Total Well Depth (TD): 12.21	4	6.70	1.58	29.2	24	1.15		
Static Water Level (WL): 1.85	5	6.62	5.46	28.3	31	0.53		
One Casing Volume(gal/L): 1.76gal								
Start Purge (hrs): 0945								
End Purge (hrs): 1275								
Total Purge Time (min): 155								
Total Vol. Purged (gal/L): 10 Gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, NAPH	HCl	3x 40 ML Vials	3
~~Dissolved Methane~~	~~HCl~~	~~3x 40 ML Vials~~	~~3~~
PAHs	—	2x 1L Amber	2
Total Lead	HNO3	1 250 ML Plastic	1
~~Anions (Nitrate, Sulfate)~~	—	~~1 50 ML Plastic~~	~~1~~

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): J Kulage

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GLM0S01
Sample Location: CNC23-MWSD
Sampled By: SK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Time: 1600	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: GeoPump	clear	6.65	.000	27.7	161	7.67		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Method: Slow Flow	Initial	6.76	14.5	23.8	258	0.92		
Monitor Reading (ppm):	1	6.46	10.9	24.9	21	2.24		
Well Casing Diameter & Material	2	6.44	14.0	25.1	429	2.79		
Type:	3	6.56	.000	27.4	162	8.32		
Total Well Depth (TD): 30.05	4	6.68	.000	28.8	180	7.41		
Static Water Level (WL): 9.89	5	6.65	.000	27.7	161	7.67		
One Casing Volume(gal/L): 3.36gal								
Start Purge (hrs): 1120								
End Purge (hrs): 1410								
Total Purge Time (min): 170								
Total Vol. Purged (gal/L): 176gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX MTBE EDB, VPPH	HCl	3x 40ML Vial	3
~~Dissolved Methane~~	~~HCl~~	~~3x 40 ML Vial~~	
PAHs	—	2x 1L Amber	2
Total Lead	HNO3	1x 250ML Plastic	1
~~Anions (Nitrates, Sulfate)~~	~~—~~	~~1x 50ML Plastic~~	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GLX0201
Sample Location: X03
Sampled By: JK/RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/9/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1350								
Method: Geopump	Clear	7.69	8.10	29.2	26	1.51		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9-9-99								
Method: Slow Purge	Initial	7.10	10.1	25.3	762	1.40		
Monitor Reading (ppm):	1	7.34	8.77	27.8	56	0.86		
Well Casing Diameter & Material	2	7.48	9.1	27.5	681	0.50		
Type: 2" PVC.	3	7.70	9.1	27.6	51	0.74		
Total Well Depth (TD): 13.25	4	7.76	8.17	29.1	49	1.18		
Static Water Level (WL): 2.46	5	7.69	8.10	29.2	26	1.51		
One Casing Volume(gal/L): 1.76								
Start Purge (hrs): 1007								
End Purge (hrs): 1340								
Total Purge Time (min): 213								
Total Vol. Purged (gal/L): 10 Gal								

SAMPLE COLLECTION INFORMATION:

~~BTEX, MTBE~~ Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, MAPH	HCl	3 x 40 ml Glass	3
Dissolved Methane	HCl	3 x 40 ML Glass	3
PAHs	—	2 x 1 L Amber	2
Total Lead	HNO3	1 x 250 ML Plastic	1
Anions (nitrate, sulfate)	—	1 x 50 ML Plastic	1

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23GLX0301
Sample Location: X03
Sampled By: JK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/10/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1535								
Method: Geopump	Orange	6.90	1.21	29.9	37	0.51		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Method: Low Flow	Initial	6.73	2.69	25.7	46	0.87		
Monitor Reading (ppm):	1	6.70	.807	29.7	53	0.37		
Well Casing Diameter & Material	2	6.73	.766	29.8	40	0.60		
Type: 2" PVC	3	6.76	.687	29.9	19	1.32		
Total Well Depth (TD): 13.25	4	6.77	.756	29.9	18	0.45		
Static Water Level (WL): 1.81	5	6.90	1.21	29.9	37	0.51		
One Casing Volume(gal/L): 1.96 Gal								
Start Purge (hrs): 1030								
End Purge (hrs): 1300								
Total Purge Time (min): 150								
Total Vol. Purged (gal/L): 10 Gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE EDB, NAPH	HCl	3x 40 ML Vials	3
~~Dissolved Methane~~	~~HCl~~	~~3 x 40 ML Vials~~	
PAHS	—	2x 1L Amber	2
Total Lead	HNO3	1 250 ML Plastic	1
~~Anions (Nitrate, Sulfate)~~	—	~~150 ML Plastic~~	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): J Kilgore

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Site 23
Project No.: N0219

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

Sample ID No.: 23 6LX0401
Sample Location: X04
Sampled By: SK
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/10/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1540								
Method: Geopump	Black	6.76	2.95	28.1	47	0.96		

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9/10/99								
Method: Slow Purge	Initial	6.53	15.7	25.3	373	0.21		
Monitor Reading (ppm):	1	6.69	3.59	28.0	980	0.32		
Well Casing Diameter & Material	2	6.69	3.61	28.1	894	0.54		
Type: 2" PVC	3	6.72	2.86	27.6	19	1.02		
Total Well Depth (TD): 13.35	4	6.72	2.72	27.9	19	1.43		
Static Water Level (WL): 2.05	5	6.76	2.95	28.1	47	0.96		
One Casing Volume(gal/L): 1.86								
Start Purge (hrs): 1010								
End Purge (hrs): 1310								
Total Purge Time (min): 180								
Total Vol. Purged (gal/L): 10 Gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
BTEX, MTBE, EDB, NAPH	HCl	3x 40 ML Vial	6
~~Dissolved Methane~~	~~HCl~~	~~3x 40 ML Vial~~	~~6~~
PAHs	—	2x 1 L Amber	4
Total Lead	HNO3	1x 250 ML Plastic	2
~~Anions (Nitrate, Sulfate~~	~~—~~	~~1x 50 ML Plastic~~	~~2~~

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.: 23GLX0401D

Signature(s): [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC23
Project No.: N0219
Sampled By: R.H / JK.
Field Analyst: R.H
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 23GLX0201
Sample Location: X 02
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: 9/9/95								
Time: 1350								
Method: Geopump	clear	7.69	8.10	29.2	26	1.51		

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

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

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: _____mg/L

Notes:

Alkalinity:

Analysis Time: _____

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	_____ & _____	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	_____ & 302	x 5.0	= 1510 mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

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: _____

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
495	x 2.0	= 990. 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: CNC23
Project No.: N0219
Sampled By: RH / JK
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: 23GLX0201
Sample Location: X02
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

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

Concentration: 0.111 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: _____
Equipment: DR-700 DR-8 __ Other: _____ Filtered: ☐
Program/Module: 60
Concentration: _____ 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: CNC23
Sample ID No.: 23GLX0201
Project No.: N0219
Sample Location: X02
Sampled By: RH/JK
Duplicate: ☐
Field Analyst: RH
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

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

Program/Module: 525nm 41

Concentration: 11.7 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: _____

Program/Module: 500nm 33

Concentration: 5.10 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

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

Concentration: 0.7 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: CNC23
Project No.: N0719
Sampled By: RH / JK.
Field Analyst: RN
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 23GLM0201
Sample Location: MW-2
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: 9-9-99								
Time: 1140								
Method:	clear	—	11.9	29.7	8	0.58	—	7.35

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: ~~1-12~~ 0-1.0 mg/L) Analysis Time: _____

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: ~~3.0~~ mg/L 0.4

Notes:

Alkalinity:

Analysis Time: _____

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	_____ & _____	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	_____ & 288	x 5.0	= 1440 mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	_____ & _____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

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: _____

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
470	x 2.0	= 940 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: CNC23
Project No.: N0219
Sampled By: RH / JK.
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: 23GKM0201
Sample Location: MW02
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

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

Program/Module: 525nm 41

Concentration: 4.8 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: _____

Program/Module: 500nm 33

Concentration: 5.10 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

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

Concentration: 1.0 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: CNC23
Project No.: N0219
Sampled By: RH/JK
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 23GLM0201
Sample Location: MW02
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

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

Concentration: 0.040 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: _____
Equipment: DR-700 DR-8 __ Other: _____ Filtered: ☐
Program/Module: 60
Concentration: _____ 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: CNC 23
Project No.: N0219
Sampled By: RH/JK.
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 23GLM0301
Sample Location: MW-3
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 9 99								
Time: 1425								
Method: Geopump	Murky	—	620	28.8	103	3.21		8.70

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: _____

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: 3.0 mg/L

Notes:

Alkalinity:

Analysis Time: _____

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	_____ & _____	x 1.0	= mg/L
☒	200-800 mg/L	50 ml	1.600 N	2.0	_____ & 567	x 2.0	= 1134 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:			

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: _____

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
290	x 2.0	= 580 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 23
Project No.: N0219
Sampled By: RH / JK
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 23GLM0301
Sample Location: MW03
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: (DR-700) DR-8 __ HS-C Color Chart HS-WR Color Wheel Analysis Time: _____

Program/Module: 610nm 93 Other: _____

Concentration: 0.041 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: _____

Equipment: DR-700 DR-8 __ Other: _____ Filtered: ☐

Program/Module: 60

Concentration: _____ 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.

Page __ of __

Project Site Name: CNC 23
Project No.: N0219
Sampled By: RH / JK.
Field Analyst: RH
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: 23GLM0301
Sample Location: MW03
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

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

Program/Module: 525nm 41

Concentration: 2.3 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: _____

Program/Module: 500nm 33

Concentration: 2.39 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

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

Concentration: 0.3 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: ☐

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC Site 23 - Zone F
Project No.: N0219

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB01020Ø3
Sample Location: CNC23SBØ1
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9-24-99			
Time: 0925		Dk grey	Clay, moist
Method:			
Monitor Reading (ppm):	2-3		▽ - ~3 ft

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
8260	(4) Encore	4	
8270	(1) 4oz	1	
Total Pb	(1) 4oz	1	
		(6)	

OBSERVATIONS / NOTES:

FID:	Unfiltered	Filtered
0-1	158.6	82.7
1-2	1001.	1064
2-3	1724	474.9

Product odor present.

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CRC Zone F
Project No.: N0219

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SL13Ø4Ø2Ø
Sample Location: Site 23, Pit hole #4
Sampled By: M. Franklin
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/24/98 Time: 1730 Method: Hand Auger Monitor Reading (ppm): 190	2-3'	DK Gray	Sandy Clay, Moist

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, Naphthalene	4 x 5g Encore	—	
PAH	4 oz G	✓	
Total Pb	4 oz G	—	

OBSERVATIONS / NOTES:

FID 250 ppm w/o Filter
60 ppm w/Filter
190 ppm

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC Site 23 - Zone F
Project No.: N0219

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB08000.2
Sample Location: CNC23SB08
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 9-24-99	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 0900	2-3	Dk grey	Sandy Gravel w/ intermixed clay
Method:			
Monitor Reading (ppm):			

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
8260	(4) Encore	4	
8270	(1) 4 oz	1	
Total Pb	(1) 4 oz	1	
		6	

OBSERVATIONS / NOTES:

FID:	Unfiltered	Filtered	Product odor present.
0-1'	157.0	24.8	
1-2'	125.8	22.9	
2-3'	235.3	66.3	

∇ - 1 ft bgs

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC Site 23 - Zone F
Project No.: N0219

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB13Ø2Ø3
Sample Location: CNC23SB13
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9-24-99 Time: 1010 Method: Monitor Reading (ppm):	2-3	Dk Grey	Clay, moist

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
8260	(4) Encore	4	
8270	(1) 4 oz	1	
Total Pb	(1) 4 oz	1	
TOC	(1) 8 oz	1	
FOC	no separate container required		
		7	

OBSERVATIONS / NOTES:

FID:

	Unfiltered	Filtered
0-1	1499	617
1-2	362.4	59.6
2-3	620.5	96.4

Product odor present

∇: ~ 3ft

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC Site 23 - Zone F
Project No.: N0249

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB05020 03
Sample Location: CNC23SB05
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9-23-99 Time: 1620 Method: Monitor Reading (ppm): 12	2-3 ft	Dark Grey / Dark Brown	Clay, Moist ∇ - 3 ft

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):		0-1 ft		
		1-2 ft		
		2-3 ft		

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
BTEX, EDB, Nap	(4) Encore	4	
PAH	(1) 4oz	1	
Total Lead	(1) 4oz	1	
		6	

OBSERVATIONS / NOTES:

FID

	Unfiltered	Filtered
0-1	<10	—
1-2	214.5	40.4
2-3	20.9	12.0

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: CNC Site 23 - Zone F
Project No.: N0219

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB03Ø2Ø3
Sample Location: CNC23SB03
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9-24-99 Time: 1110 Method: Monitor Reading (ppm):	2-3	Dk Gray	Moist Clay ∇: ~3 ft

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
8260	(8) Encore	8	
8270	(2) 4 oz	2	
Total Pb	(2) 4 oz	2	
TPH	(2) TPH	2	
Grain Size	(1) 32 oz	1	
		15	

OBSERVATIONS / NOTES:

FID:	Unfiltered	Filtered
0-1	568.1	580.2
1-2	1094	366.9
2-3	837.5	620.0

Product odor present

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: 23SLB03Ø2Ø3D
(11) ~~23SLBØ2Ø3D~~

Signature(s):

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC Site 23-Zone F
Project No.: N0219

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 23SLB060001
Sample Location: CNC23SB06
Sampled By: TNT/JM
C.O.C. No.:

Type of Sample:
[] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9.23.99 Time: 1715 Method: Monitor Reading (ppm):	0-1 ft	Grey	Sand / Fill Material

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
8260	4 Encore	4	
8270	1 4 oz	1	
Total Pb	1 4 oz	1	

OBSERVATIONS / NOTES:

FID

0-1: 15 ppm

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

APPENDIX C

SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA

Katahdin
ANALYTICAL SERVICES

October 27, 1999

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

RE: Katahdin Lab Number: WP-4075
Project ID: CTO #68
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: 9/24/99,9/25/99

Dear Mr. Calligan:

Please find enclosed the following information:

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

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

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

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Patricia Homly
Authorized Signature

10/27/99
Date

340 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

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

The following samples were received on September 24 and 25, 1999 and were logged in under Katahdin Analytical Services work order number WP4075 for a hardcopy due date of October 24, 1999.

KATAHDIN Sample No.	TTNUS Sample Identification	GEL Sample Identification
WP4075-1&17	27GLX0301	
WP4075-2&18	27GLX0401	
WP4075-3&19	27GLX4D01	
WP4075-4&45	28GLM0201D	
WP4075-5&20	27GLM0101D	
WP4075-6&16	27GLX0501	
WP4075-7&15	27GLM0101	
WP4075-8&44	28GLM0201	
WP4075-9&43	28GLM0301	
WP4075-10&42	27GLX0701	
WP4075-11&24	36SLB040304	9909740-08
WP4075-12&23	36SLB070304	9909740-09
WP4075-13&21	26SLB350405	9909740-10
WP4075-14&22	26SLB360405	9909740-12
WP4075-25	23SLB050203	
WP4075-26	23SLB060001	
WP4075-27	23SLB080203	
WP4075-28	23SLB010203	
WP4075-29	23SLB030203D	9909740-07
WP4075-30	23SLB040203	
WP4075-31	23SLB130203	9909740-05
WP4075-32	23SLB030203	9909740-06
WP4075-33	36SLB060304	9909740-11
WP4075-34	26SLB140405	
WP4075-35	42SLB090304	9909740-01
WP4075-36	42SLB200203	9909740-02
WP4075-37	42SLB410304	9909740-03
WP4075-38	42SLB270304	9909740-04
WP4075-39	28GLM0101	
WP4075-40	28TL00101	
WP4075-41	28TL00201	

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

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

Volatile Organic Analysis

Fourteen soil/sediment and thirteen aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on September 24, 1999 and were specified to be analyzed by USEPA method 8260B for the analytes benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, and EDB.

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

Batch QC (VBLK, and LCS) was performed in each twelve-hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. An aqueous matrix spike/matrix spike duplicate analysis was performed on sample WP4075-19.

Initial analysis of soil sample WP4075-23 yielded internal standard area and surrogate recovery deviations. Reanalysis yielded similar results, confirming matrix interference. Both sets of data are included in this data package.

Initial analysis of soil sample WP4075-33 following low level protocols yielded a concentration of the target analyte naphthalene over the upper limit of the calibration curve. Analysis of the methanol-extruded aliquot also yielded a concentration of naphthalene over the upper limit of the calibration curve. A 1:5 dilution of the methanol sample was then performed successfully. All three sets of data for this sample are included in the data package.

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

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

Semivolatile Organic Analysis

Fourteen soil/sediment and eleven aqueous samples were received by Katahdin Analytical Services laboratory on September 25, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the soil samples occurred following USEPA method 3550 on September 29, 1999. A laboratory control spike was extracted in the batch, along with a site-specific MS/MSD pair on sample WP4075-13. Extraction of all of the aqueous samples occurred following USEPA method 3510 on September 28, 1999. A laboratory control sample was extracted in the batch.

Initial analysis of sample WP4075-14 was performed at a 1:5 dilution due to the matrix and high target analyte concentrations, resulting in elevated reporting limits. Reanalysis occurred at a 1:10 dilution to bring target analyte concentrations within the range of the calibration curve. Both sets of data are included in this data package.

Initial analysis of sample WP4075-33 yielded target analyte concentrations over the upper limit of the calibration curve. Reanalysis occurred at a 1:4 dilution successfully. Both sets of data are included in this data package.

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

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

Metals Analysis

The samples of Katahdin Work Order WP4075 were prepared and analyzed for metals in accordance with the "Test Methods for Evaluating Solid Waste", SW-846, November 1986, Third Edition.

Inductively-Coupled Plasma (ICP) Atomic Emission Spectroscopic Analysis

Soil-matrix Katahdin Sample Nos. WP4075-(11, 12, 25-33) were digested for ICP analysis on 10/07/99 (QC Batch PJ07ICS1) in accordance with USEPA Method 3050B. Katahdin Sample No. WP4075-30 was prepared with duplicate matrix-spiked aliquots.

Aqueous-matrix Katahdin Sample Nos. WP4075-(5, 10, 15-19) were digested for ICP analysis on 10/07/99 (QC Batch PJ07ICW0) in accordance with USEPA Method 3010A.

ICP analyses of Katahdin Work Order WP4075 sample digestates were performed in accordance with USEPA Method 6010B, using a Thermo Jarrell Ash (TJA) Trace ICP spectrometer and a TJA 61 ICP spectrometer. All samples were analyzed within holding times and all QC criteria were met with the following comments or exceptions:

Some of the results for run QC samples (ICV, ICB, CCV, CCB, ICSA, and ICSAB) included in the accompanying data package may have exceeded acceptance limits for some elements. Please note that all client samples and batch QC samples associated with out-of-control results for run QC samples were subsequently reanalyzed for the analytes in question.

Analysis of Mercury by Cold Vapor Atomic Absorption (CVAA) Spectrophotometry

Aqueous-matrix Katahdin Sample Nos. WP4075-(5, 10, 15-19) were digested for mercury analysis on 09/28/99 (QC Batch PI28HGW0) in accordance with USEPA Method 7470A.

Soil-matrix Katahdin Sample Nos. WP4075-(11, 12, 33) were digested for mercury analysis on 10/07/99 (QC Batch PJ07HGS1) in accordance with USEPA Method 7471A.

Mercury analyses of Katahdin Work Order WP4075 sample digestates were performed using a Leeman Labs PS200 automated mercury analyzer. All samples were analyzed within holding times and all run QC criteria were met.

Wet Chemistry Analysis

Due to IC instrument failure, alternate methods were approved by Kelly Johnson-Carper for the analysis of nitrate and sulfate. Nitrate analyses (353.2) and Sulfate analyses (375.4) were performed according to the U.S. EPA, Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020, 1979, Revised 1983. Analyses for Total Combustible Organics (TCO) have been performed in accordance with the "Annual Book of ASTM Standards", 1987. Analyses for Solids-Total Residue (TS) have been performed in accordance with "Contract Laboratory Program Statement of Work for Inorganic Analysis".

All analyses were performed within analytical hold time. No protocol deviations were noted by the Wet Chemistry laboratory staff.

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

LAB (WORK ORDER) # WP 4075

PAGE: 1 OF ~~2~~ 5

COOLER: 1 OF ~~2~~ 5

CLIENT: Tetratech – SC

PROJECT: CNC CHARLESTON CTO # 68

COC#: —
SDG#:
DATE / TIME RECEIVED: 09-24-99 ~ 0845
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: ADC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☒	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☒	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☒	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐	see below	Jeff Alexander said missing tests not needed – will cross off COC.
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 1.6	
6. SAMPLES RECEIVED AT 4°C ~~(+-2)~~	☐	☑	☐	COOLER TEMP (°C)= NA	OK per client
ICE / ICE PACKS PRESENT? Y or N?				(RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☑	☐	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]: 276LM0101D – did not receive methane, anions
286LM0201D – did not receive methane, anions, metals
286LM0301 } did not receive metals
286LM0201 }

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

00001167

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

LAB (WORK ORDER) # WP-10 (BN) 407C

PAGE: 2 OF ~~7~~ 5 (BN)

COOLER: 2 OF ~~7~~ 5

CLIENT: TETRATECH-SC

COC# –
SDG# –
DATE / TIME RECEIVED: 09-24-99 ~ 0845
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

PROJECT: CNC CHARLESTON / CTO #68

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	✓				
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?		✓			
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	✓				
4. CHAIN OF CUSTODY MATCHES SAMPLES?	✓				
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 2.0	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	✓			COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	✓				
8. TRIP BLANK PRESENT IN THIS COOLER		✓			
9. PROPER SAMPLE CONTAINERS AND VOLUME?	✓				
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	✓				
11. SAMPLES PROPERLY PRESERVED(1)?	✓				
12. CORRECTIVE ACTION REPORT FILED?		✓	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

00001168

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

LAB (WORK ORDER) # WP 4075

PAGE: 3 OF ~~3~~ (BK) 5

COOLER: 3 OF ~~3~~ 5

CLIENT: Tetratech - NUS

PROJECT: CTO 68/ CNC CHARLESTON

COC# –
SDG# –
DATE / TIME RECEIVED: 09-25-99-1050
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: KJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	✓				
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	✓				
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	✓				
4. CHAIN OF CUSTODY MATCHES SAMPLES?	✓				
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 3.6	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	✓			COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	✓				
8. TRIP BLANK PRESENT IN THIS COOLER	✓				
9. PROPER SAMPLE CONTAINERS AND VOLUME?	✓				
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	✓				
11. SAMPLES PROPERLY PRESERVED(1)?	✓				
12. CORRECTIVE ACTION REPORT FILED?		✓	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

0000169

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

LAB (WORK ORDER) # WP 4075

PAGE: 4 OF 5

COOLER: 4 OF 5

CLIENT: Tetratech - NUS

PROJECT: CTO 68 / CNC CHARLESTON

COC# —
SDG# —
DATE / TIME RECEIVED: 09-25-99 ~1050
DELIVERED BY: ~~FEDEX~~
RECEIVED BY: ~~BKR~~
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: ADC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	✓				
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	✓	~~✓~~ BK			
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	✓				
4. CHAIN OF CUSTODY MATCHES SAMPLES?		✓		See page 1 of 5	
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 4.5	
6. SAMPLES RECEIVED AT 4°C ~~+/- 2°~~ ICE / ICE PACKS PRESENT Y or N?	✓			COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	✓				
8. TRIP BLANK PRESENT IN THIS COOLER		✓			
9. PROPER SAMPLE CONTAINERS AND VOLUME?	✓				
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	✓				
11. SAMPLES PROPERLY PRESERVED(1)?	✓				
12. CORRECTIVE ACTION REPORT FILED?		✓	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

00001170

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

LAB (WORK ORDER) # WP4075

PAGE: 5 OF 5

COOLER: 5 OF 5

COC# —
SDG# —
DATE / TIME RECEIVED: 09-25-99 ~ 1050
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

CLIENT: Tetratech NUS

PROJECT: CTO 68 / CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐	see page 1 of 5	
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.9	
6. SAMPLES RECEIVED AT 4°C ±2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☑	☐	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

0000171

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)	FOC ⓗ 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 ⓜ	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~~	aq	2										
		/					Cooler ~~1 of 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	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 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Paul Calliguan
Phone #: (843) 554-4925
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, [signature]
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					EID
					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
	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						0
	23SLBØ5Ø2Ø3	9/23/99/1620	S	6	X	X	X		X					
	23SLBØ6ØØØ1	9/23/99/1715	S	6	X	X	X		X					
		/												
		/												
		/												
		/												
		/												
		/												
		/						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)
[signature]	9/23/99 1900	Fed-Ex 813458369293		9-23-99 1054	[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: TT NUS
Contact: Paul Calligan
Phone #: (843) 554-4925
Fax #: ( )
Address: NH-21 Avet H
City: N. Charleston
State: SC
Zip Code:
Purchase Order #:
Proj. Name / No.: Charleston Navel 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, Nap, MTBE	Dissolved Methane	PAHs	Metals	Anions						
					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	Filt. ☐Y ☐
	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	9-23/1100			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										
		/													
		/													
		/													
		/													
		/													

~~1~~ cooler (BK) ~~2 of 3~~ 4 of 5

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	9/23/1850	Fed-Ex 813458369293		9-25-99 1050	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

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

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP4075-1	27GLX0301	23 SEP 1010	24 SEP	AQ
	WP4075-2	27GLX0401	23 SEP 1010		
	WP4075-3	27GLX4D01	23 SEP 1012		
	WP4075-4	28GLM0201D	23 SEP		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	4	125.00	500.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP4075-5	27GLM0101D	23 SEP	24 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Target Analyte List Metals, Total		1	100.00	100.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00
TOTALS		1	225.00	225.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP4075-6	27GLX0501	23 SEP	24 SEP	AQ
	WP4075-7	27GLM0101	23 SEP 1050		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	125.00	250.00
Nitrate as N	353.2	2	30.00	60.00
Sulfate	375.4	2	0.00	0.00
TOTALS		2	155.00	310.00

LABORATORY ORDER CONTINUED ON PAGE 2

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP4075-10	27GLX0701	23 SEP 1126	24 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00
Target Analyte List Metals, Total		1	100.00	100.00
Nitrate as N	353.2	1	30.00	30.00
Sulfate	375.4	1	0.00	0.00
TOTALS		1	255.00	255.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP4075-11	36SLB040304	23 SEP 0900	24 SEP	SL
	WP4075-12	36SLB070304	23 SEP 1210		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	2	0.00	0.00
Target Analyte List Metals, Total		2	100.00	200.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	135.00	270.00
TPH Subcontract		2	75.00	150.00
TOTALS		2	310.00	620.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
6	WP4075-13	26SLB350405	23 SEP 1635	24 SEP	SL
	WP4075-14	26SLB360405	23 SEP 1610		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	135.00	270.00
Solids-Total Residue (TS)	CLP/CIP SO	2	0.00	0.00
Total Petroleum Hydrocarbons (TPH)	E418.1	2	75.00	150.00
TOTALS		2	210.00	420.00

LABORATORY ORDER CONTINUED ON PAGE 3

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

INVOICE: ACCOUNTS PAYABLE
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FOSTER PLAZA 7, 661 ANDERSEN DR.
PITTSBURGH, PA 15220

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
7	WP4075-15	27GLM0101	23 SEP 1050	25 SEP	AQ
	WP4075-16	27GLX0501	23 SEP 1100		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	75.00	150.00
Target Analyte List Metals, Total		2	100.00	200.00
Methane Subcontract		2	95.00	190.00
TOTALS		2	270.00	540.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
8	WP4075-17	27GLX0301	23 SEP 1010	25 SEP	AQ
	WP4075-18	27GLX0401	23 SEP 1010		
	WP4075-19	27GLX4D01	23 SEP 1012		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	3	75.00	225.00
Target Analyte List Metals, Total		3	100.00	300.00
TOTALS		3	175.00	525.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
9	WP4075-20	27GLM0101D	23 SEP	25 SEP	AQ

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

LABORATORY ORDER CONTINUED ON PAGE 4

0009177

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
10	WP4075-21	26SLB350405	23 SEP 1635	25 SEP	SL
	WP4075-22	26SLB360405	23 SEP 1610		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	85.00	170.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
11	WP4075-23	36SLB070304	23 SEP 1210	25 SEP	SL
	WP4075-24	36SLB040304	23 SEP 0900		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	85.00	170.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
12	WP4075-25	23SLB050203	23 SEP 1620	25 SEP	SL
	WP4075-26	23SLB060001	23 SEP 1715		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	85.00	170.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	135.00	270.00
Lead, Total	6010	2	20.00	40.00
Solids-Total Residue (TS)	CLP/CIP SO	2	0.00	0.00
TOTALS		2	240.00	480.00

LABORATORY ORDER CONTINUED ON PAGE 5

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
13	WP4075-27	23SLB080203	24 SEP 0900	25 SEP	SL
	WP4075-28	23SLB010203	24 SEP 0925		
	WP4075-30	23SLB040203	24 SEP 1730		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Lead, Total	6010	3	20.00	60.00
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
TOTALS		3	240.00	720.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
14	WP4075-31	23SLB130203	24 SEP 1010	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Lead, Total	6010	1	20.00	20.00
TOC Subcontract		1	60.00	60.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Total Combustible Organics	ASTM D2974	1	30.00	30.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
TOTALS		1	330.00	330.00

LABORATORY ORDER CONTINUED ON PAGE 6

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
15	WP4075-32	23SLB030203	24 SEP 1110	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Lead, Total	6010	1	20.00	20.00
Grain Size Subcontract		1	110.00	110.00
TPH Subcontract		1	75.00	75.00
TOTALS		1	425.00	425.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
16	WP4075-33	36SLB060304	24 SEP 1649	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Target Analyte List Metals, Total		1	100.00	100.00
Grain Size Subcontract		1	110.00	110.00
TPH Subcontract		1	75.00	75.00
TOTALS		1	505.00	505.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
17	WP4075-34	26SLB140405	24 SEP 0845	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
TOTALS		1	220.00	220.00

LABORATORY ORDER CONTINUED ON PAGE 7

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
18	WP4075-35	42SLB090304	24 SEP 1035	25 SEP	SL
	WP4075-36	42SLB200203	24 SEP 1050		
	WP4075-37	42SLB410304	24 SEP 1130		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Grain Size Subcontract		3	110.00	330.00
TPH Subcontract		3	75.00	225.00
TOTALS		3	185.00	555.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
19	WP4075-38	42SLB270304	24 SEP 1140	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Total Combustible Organics	ASTM D2974	1	30.00	30.00
TOC Subcontract		1	60.00	60.00
TOTALS		1	90.00	90.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
20	WP4075-39	28GLM0101	24 SEP 0840	25 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	75.00	75.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00
Nitrate as N	353.2	1	30.00	30.00
Sulfate	375.4	1	0.00	0.00
Methane Subcontract		1	95.00	95.00
TOTALS		1	325.00	325.00

LABORATORY ORDER CONTINUED ON PAGE 8

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

INVOICE: ACCOUNTS PAYABLE
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FOSTER PLAZA 7, 661 ANDERSEN DR.
PITTSBURGH, PA 15220

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
21	WP4075-40	28TL00101	23 SEP	25 SEP	AQ
	WP4075-41	28TL00201	24 SEP		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
22	WP4075-42	27GLX0701	23 SEP 1126	25 SEP	AQ
	WP4075-43	28GLM0301	23 SEP 1645		
	WP4075-44	28GLM0201	23 SEP 1640		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Methane Subcontract		3	95.00	285.00
Volatile Organics by 8260B	SW8260	3	75.00	225.00
TOTALS		3	170.00	510.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
23	WP4075-45	28GLM0201D	23 SEP	25 SEP	AQ

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

LABORATORY ORDER CONTINUED ON PAGE 9

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

INVOICE: ACCOUNTS PAYABLE
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PITTSBURGH, PA 15220

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
24	WP4075-8	28GLM0201	23 SEP 1640	24 SEP	AQ
	WP4075-9	28GLM0301	23 SEP 1645		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	125.00	250.00
Nitrate as N	353.2	2	30.00	60.00
Sulfate	375.4	2	0.00	0.00
TOTALS		2	155.00	310.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
25	WP4075-29	23SLB030203D	24 SEP 0000	25 SEP	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Lead, Total	6010	1	20.00	20.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
TPH Subcontract		1	75.00	75.00
TOTALS		1	315.00	315.00

LABORATORY ORDER CONTINUED ON PAGE 10

ORDER NO WP-4075

Project Manager: Andrea J. Colby
ORDER DATE: 09/24/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 23 NOV

ORDER NOTE: QC-II+ W/NARRATIVE
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRATECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT AND DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $8,820.00
This is NOT an Invoice

AJC/BKR/WEST.AJC(dw)
09-29Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
$	'$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmedmatrix interference.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
A-1	Insufficient sample was provided to enable laboratory to achieve the laboratory's standard Practical Quantitation Level.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB050203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 58.1 **Lab Sample ID:** WP4075-025

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	57.2		N	P	2

Comments:

FORM I - IN

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-25
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
23SLB050203	Solid	CLIENT	09/23/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	58.	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: WP4075-25
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 58
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB050203	SL	9/23/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<560	ug/Kg	1.7	560	330
2-METHYLNAPHTHALENE	<560	ug/Kg	1.7	560	330
ACENAPHTHYLENE	<560	ug/Kg	1.7	560	330
ACENAPHTHENE	<560	ug/Kg	1.7	560	330
FLUORENE	<560	ug/Kg	1.7	560	330
PHENANTHRENE	<560	ug/Kg	1.7	560	330
ANTHRACENE	<560	ug/Kg	1.7	560	330
FLUORANTHENE	<560	ug/Kg	1.7	560	330
PYRENE	<560	ug/Kg	1.7	560	330
BENZO[A]ANTHRACENE	<560	ug/Kg	1.7	560	330
CHRYSENE	<560	ug/Kg	1.7	560	330
BENZO[B]FLUORANTHENE	<560	ug/Kg	1.7	560	330
BENZO[K]FLUORANTHENE	<560	ug/Kg	1.7	560	330
BENZO[A]PYRENE	<560	ug/Kg	1.7	560	330
INDENO[1,2,3-CD]PYRENE	<560	ug/Kg	1.7	560	330
DIBENZ[A,H]ANTHRACENE	<560	ug/Kg	1.7	560	330
BENZO[G,H,I]PERYLENE	<560	ug/Kg	1.7	560	330
NITROBENZENE-D5	98	%	1.7		
2-FLUOROBIPHENYL	103	%	1.7		
TERPHENYL-D14	107	%	1.7		

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: WP4075-25
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 58
Method: SW8260
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB050203	SL	9/23/99	9/25/99	9/29/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<10	ug/Kg	2.1	10	5
TOLUENE	<10	ug/Kg	2.1	10	5
1,2-DIBROMOETHANE	<10	ug/Kg	2.1	10	5
ETHYLBENZENE	<10	ug/Kg	2.1	10	5
NAPHTHALENE	<10	ug/Kg	2.1	10	5
MTBE	<10	ug/Kg	2.1	10	5
TOTAL XYLENES	<10	ug/Kg	2.1	10	5
DIBROMOFLUOROMETHANE	121	%	2.1		
1,2-DICHLOROETHANE-D4	109	%	2.1		
TOLUENE-D8	121	%	2.1		
P-BROMOFLUOROBENZENE	105	%	2.1		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB060001

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 82.6 **Lab Sample ID:** WP4075-026

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	2.5		N	P	1

Comments:

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Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-26
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
23SLB060001	Solid	CLIENT	09/23/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	83.	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: WP4075-26
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 83
Method: EPA 8270
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB060001	SL	9/23/99	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	89	%	1.2		
2-FLUOROBIPHENYL	96	%	1.2		
TERPHENYL-D14	111	%	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: WP4075-26
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 83
Method: SW8260
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB060001	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	1.2	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	110	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	119	%	1.2		
1,2-DICHLOROETHANE-D4	111	%	1.2		
TOLUENE-D8	104	%	1.2		
P-BROMOFLUOROBENZENE	108	%	1.2		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB080203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 75.3 **Lab Sample ID:** WP4075-027

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	10.3		N	P	1

Comments:

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Katahdin
ANALYTICAL SERVICES

Lab Number : WP-4075-27
Report Date: 10/27/99
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
23SLB080203	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	75.	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: WP4075-27
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 75
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB080203	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<430	ug/Kg	1.3	430	330
2-METHYLNAPHTHALENE	<430	ug/Kg	1.3	430	330
ACENAPHTHYLENE	<430	ug/Kg	1.3	430	330
ACENAPHTHENE	<430	ug/Kg	1.3	430	330
FLUORENE	<430	ug/Kg	1.3	430	330
PHENANTHRENE	<430	ug/Kg	1.3	430	330
ANTHRACENE	<430	ug/Kg	1.3	430	330
FLUORANTHENE	<430	ug/Kg	1.3	430	330
PYRENE	<430	ug/Kg	1.3	430	330
BENZO[A]ANTHRACENE	<430	ug/Kg	1.3	430	330
CHRYSENE	<430	ug/Kg	1.3	430	330
BENZO[B]FLUORANTHENE	<430	ug/Kg	1.3	430	330
BENZO[K]FLUORANTHENE	<430	ug/Kg	1.3	430	330
BENZO[A]PYRENE	<430	ug/Kg	1.3	430	330
INDENO[1,2,3-CD]PYRENE	<430	ug/Kg	1.3	430	330
DIBENZ[A,H]ANTHRACENE	<430	ug/Kg	1.3	430	330
BENZO[G,H,I]PERYLENE	<430	ug/Kg	1.3	430	330
NITROBENZENE-D5	91	%	1.3		
2-FLUOROBIPHENYL	95	%	1.3		
TERPHENYL-D14	100	%	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: WP4075-27
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 75
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB080203	SL	9/24/99	9/25/99	9/30/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<8	ug/Kg	1.7	8	5
TOLUENE	<8	ug/Kg	1.7	8	5
1,2-DIBROMOETHANE	<8	ug/Kg	1.7	8	5
ETHYLBENZENE	<8	ug/Kg	1.7	8	5
NAPHTHALENE	<8	ug/Kg	1.7	8	5
MTBE	77	ug/Kg	1.7	8	5
TOTAL XYLENES	<8	ug/Kg	1.7	8	5
DIBROMOFLUOROMETHANE	118	%	1.7		
1,2-DICHLOROETHANE-D4	107	%	1.7		
TOLUENE-D8	126	%	1.7		
P-BROMOFLUOROBENZENE	102	%	1.7		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB010203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 59.6 **Lab Sample ID:** WP4075-028

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	41.3		N	P	1

Comments:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-28
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
23SLB010203	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	60.	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: WP4075-28
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 60
Method: EPA 8270
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB010203	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<560	ug/Kg	1.7	560	330
2-METHYLNAPHTHALENE	<560	ug/Kg	1.7	560	330
ACENAPHTHYLENE	<560	ug/Kg	1.7	560	330
ACENAPHTHENE	<560	ug/Kg	1.7	560	330
FLUORENE	<560	ug/Kg	1.7	560	330
PHENANTHRENE	<560	ug/Kg	1.7	560	330
ANTHRACENE	<560	ug/Kg	1.7	560	330
FLUORANTHENE	<560	ug/Kg	1.7	560	330
PYRENE	<560	ug/Kg	1.7	560	330
BENZO[A]ANTHRACENE	<560	ug/Kg	1.7	560	330
CHRYSENE	<560	ug/Kg	1.7	560	330
BENZO[B]FLUORANTHENE	<560	ug/Kg	1.7	560	330
BENZO[K]FLUORANTHENE	<560	ug/Kg	1.7	560	330
BENZO[A]PYRENE	<560	ug/Kg	1.7	560	330
INDENO[1,2,3-CD]PYRENE	<560	ug/Kg	1.7	560	330
DIBENZ[A,H]ANTHRACENE	<560	ug/Kg	1.7	560	330
BENZO[G,H,I]PERYLENE	<560	ug/Kg	1.7	560	330
NITROBENZENE-D5	91	%	1.7		
2-FLUOROBIPHENYL	100	%	1.7		
TERPHENYL-D14	108	%	1.7		

Report Notes:

0000066

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: WP4075-28
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 60
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB010203	SL	9/24/99	9/25/99	9/30/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<10	ug/Kg	2.0	10	5
TOLUENE	<10	ug/Kg	2.0	10	5
1,2-DIBROMOETHANE	<10	ug/Kg	2.0	10	5
ETHYLBENZENE	<10	ug/Kg	2.0	10	5
NAPHTHALENE	<10	ug/Kg	2.0	10	5
MTBE	<10	ug/Kg	2.0	10	5
TOTAL XYLENES	<10	ug/Kg	2.0	10	5
DIBROMOFLUOROMETHANE	100	%	2.0		
1,2-DICHLOROETHANE-D4	92	%	2.0		
TOLUENE-D8	106	%	2.0		
P-BROMOFLUOROBENZENE	86	%	2.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB030203D

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 63.0 **Lab Sample ID:** WP4075-029

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	41.7		N	P	1

Comments:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-29
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
23SLB030203D	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	63.	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: WP4075-29
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 63
Method: EPA 8270
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB030203D	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<530	ug/Kg	1.6	530	330
2-METHYLNAPHTHALENE	<530	ug/Kg	1.6	530	330
ACENAPHTHYLENE	<530	ug/Kg	1.6	530	330
ACENAPHTHENE	<530	ug/Kg	1.6	530	330
FLUORENE	<530	ug/Kg	1.6	530	330
PHENANTHRENE	<530	ug/Kg	1.6	530	330
ANTHRACENE	<530	ug/Kg	1.6	530	330
FLUORANTHENE	<530	ug/Kg	1.6	530	330
PYRENE	<530	ug/Kg	1.6	530	330
BENZO[A]ANTHRACENE	<530	ug/Kg	1.6	530	330
CHRYSENE	<530	ug/Kg	1.6	530	330
BENZO[B]FLUORANTHENE	<530	ug/Kg	1.6	530	330
BENZO[K]FLUORANTHENE	<530	ug/Kg	1.6	530	330
BENZO[A]PYRENE	<530	ug/Kg	1.6	530	330
INDENO[1,2,3-CD]PYRENE	<530	ug/Kg	1.6	530	330
DIBENZ[A,H]ANTHRACENE	<530	ug/Kg	1.6	530	330
BENZO[G,H,I]PERYLENE	<530	ug/Kg	1.6	530	330
NITROBENZENE-D5	98	%	1.6		
2-FLUOROBIPHENYL	102	%	1.6		
TERPHENYL-D14	111	%	1.6		

Report Notes:

0000070

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: WP4075-29
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 63
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB030203D	SL	9/24/99	9/25/99	9/30/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<9	ug/Kg	1.8	9	5
TOLUENE	<9	ug/Kg	1.8	9	5
1,2-DIBROMOETHANE	<9	ug/Kg	1.8	9	5
ETHYLBENZENE	<9	ug/Kg	1.8	9	5
NAPHTHALENE	<9	ug/Kg	1.8	9	5
MTBE	<9	ug/Kg	1.8	9	5
TOTAL XYLENES	<9	ug/Kg	1.8	9	5
DIBROMOFLUOROMETHANE	111	%	1.8		
1,2-DICHLOROETHANE-D4	100	%	1.8		
TOLUENE-D8	122	%	1.8		
P-BROMOFLUOROBENZENE	93	%	1.8		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB040203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 66.1 **Lab Sample ID:** WP4075-030

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	64.1		N	P	2

Comments:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-30
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
23SLB040203	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	66.	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: WP4075-30
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 66
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB040203	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<500	ug/Kg	1.5	500	330
2-METHYLNAPHTHALENE	<500	ug/Kg	1.5	500	330
ACENAPHTHYLENE	<500	ug/Kg	1.5	500	330
ACENAPHTHENE	<500	ug/Kg	1.5	500	330
FLUORENE	<500	ug/Kg	1.5	500	330
PHENANTHRENE	<500	ug/Kg	1.5	500	330
ANTHRACENE	<500	ug/Kg	1.5	500	330
FLUORANTHENE	<500	ug/Kg	1.5	500	330
PYRENE	<500	ug/Kg	1.5	500	330
BENZO[A]ANTHRACENE	<500	ug/Kg	1.5	500	330
CHRYSENE	<500	ug/Kg	1.5	500	330
BENZO[B]FLUORANTHENE	<500	ug/Kg	1.5	500	330
BENZO[K]FLUORANTHENE	<500	ug/Kg	1.5	500	330
BENZO[A]PYRENE	<500	ug/Kg	1.5	500	330
INDENO[1,2,3-CD]PYRENE	<500	ug/Kg	1.5	500	330
DIBENZ[A,H]ANTHRACENE	<500	ug/Kg	1.5	500	330
BENZO[G,H,I]PERYLENE	<500	ug/Kg	1.5	500	330
NITROBENZENE-D5	103	%	1.5		
2-FLUOROBIPHENYL	109	%	1.5		
TERPHENYL-D14	116	%	1.5		

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: WP4075-30
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 66
Method: SW8260
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB040203	SL	9/24/99	9/25/99	10/1/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.5	7	5
TOLUENE	<7	ug/Kg	1.5	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.5	7	5
ETHYLBENZENE	<7	ug/Kg	1.5	7	5
NAPHTHALENE	<7	ug/Kg	1.5	7	5
MTBE	<7	ug/Kg	1.5	7	5
TOTAL XYLENES	<7	ug/Kg	1.5	7	5
DIBROMOFLUOROMETHANE	101	%	1.5		
1,2-DICHLOROETHANE-D4	94	%	1.5		
TOLUENE-D8	100	%	1.5		
P-BROMOFLUOROBENZENE	74	%	1.5		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB130203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 55.4 **Lab Sample ID:** WP4075-031

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	69.7		N	P	2

Comments:

FORM I - IN

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-31
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
23SLB130203	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	54.	wt %	1.0	0.10	CLP/CIP SOW	10/02/99	DA	1
Total Combustible Organics	36.	wt %	1.0	0.1	ASTM D2974-8	10/21/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 10/01/99 by BAD
(2) Sample Preparation on 10/20/99 by JF

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: WP4075-31
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 55
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB130203	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<590	ug/Kg	1.8	590	330
2-METHYLNAPHTHALENE	<590	ug/Kg	1.8	590	330
ACENAPHTHYLENE	<590	ug/Kg	1.8	590	330
ACENAPHTHENE	<590	ug/Kg	1.8	590	330
FLUORENE	<590	ug/Kg	1.8	590	330
PHENANTHRENE	<590	ug/Kg	1.8	590	330
ANTHRACENE	<590	ug/Kg	1.8	590	330
FLUORANTHENE	<590	ug/Kg	1.8	590	330
PYRENE	<590	ug/Kg	1.8	590	330
BENZO[A]ANTHRACENE	<590	ug/Kg	1.8	590	330
CHRYSENE	<590	ug/Kg	1.8	590	330
BENZO[B]FLUORANTHENE	<590	ug/Kg	1.8	590	330
BENZO[K]FLUORANTHENE	<590	ug/Kg	1.8	590	330
BENZO[A]PYRENE	<590	ug/Kg	1.8	590	330
INDENO[1,2,3-CD]PYRENE	<590	ug/Kg	1.8	590	330
DIBENZ[A,H]ANTHRACENE	<590	ug/Kg	1.8	590	330
BENZO[G,H,I]PERYLENE	<590	ug/Kg	1.8	590	330
NITROBENZENE-D5	91	%	1.8		
2-FLUOROBIPHENYL	103	%	1.8		
TERPHENYL-D14	116	%	1.8		

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: WP4075-31
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 55
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB130203	SL	9/24/99	9/25/99	9/30/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<11	ug/Kg	2.2	11	5
TOLUENE	<11	ug/Kg	2.2	11	5
1,2-DIBROMOETHANE	<11	ug/Kg	2.2	11	5
ETHYLBENZENE	<11	ug/Kg	2.2	11	5
NAPHTHALENE	<11	ug/Kg	2.2	11	5
MTBE	<11	ug/Kg	2.2	11	5
TOTAL XYLENES	<11	ug/Kg	2.2	11	5
DIBROMOFLUOROMETHANE	119	%	2.2		
1,2-DICHLOROETHANE-D4	108	%	2.2		
TOLUENE-D8	124	%	2.2		
P-BROMOFLUOROBENZENE	96	%	2.2		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB030203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 63.9 **Lab Sample ID:** WP4075-032

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	70.4		N	P	2

Comments:

FORM I - IN

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-4075-32
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
23SLB030203	Solid	CLIENT	09/24/99	09/25/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	64.	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: WP4075-32
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 64
Method: EPA 8270
Date Analyzed: 10/4/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB030203	SL	9/24/99	9/25/99	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<530	ug/Kg	1.6	530	330
2-METHYLNAPHTHALENE	<530	ug/Kg	1.6	530	330
ACENAPHTHYLENE	<530	ug/Kg	1.6	530	330
ACENAPHTHENE	<530	ug/Kg	1.6	530	330
FLUORENE	<530	ug/Kg	1.6	530	330
PHENANTHRENE	<530	ug/Kg	1.6	530	330
ANTHRACENE	<530	ug/Kg	1.6	530	330
FLUORANTHENE	<530	ug/Kg	1.6	530	330
PYRENE	<530	ug/Kg	1.6	530	330
BENZO[A]ANTHRACENE	<530	ug/Kg	1.6	530	330
CHRYSENE	<530	ug/Kg	1.6	530	330
BENZO[B]FLUORANTHENE	<530	ug/Kg	1.6	530	330
BENZO[K]FLUORANTHENE	<530	ug/Kg	1.6	530	330
BENZO[A]PYRENE	<530	ug/Kg	1.6	530	330
INDENO[1,2,3-CD]PYRENE	<530	ug/Kg	1.6	530	330
DIBENZ[A,H]ANTHRACENE	<530	ug/Kg	1.6	530	330
BENZO[G,H,I]PERYLENE	<530	ug/Kg	1.6	530	330
NITROBENZENE-D5	86	%	1.6		
2-FLUOROBIPHENYL	93	%	1.6		
TERPHENYL-D14	99	%	1.6		

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: WP4075-32
SDG: WP4075
Report Date: 10/18/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 64
Method: SW8260
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23SLB030203	SL	9/24/99	9/25/99	10/1/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<10	ug/Kg	1.9	10	5
TOLUENE	<10	ug/Kg	1.9	10	5
1,2-DIBROMOETHANE	<10	ug/Kg	1.9	10	5
ETHYLBENZENE	<10	ug/Kg	1.9	10	5
NAPHTHALENE	<10	ug/Kg	1.9	10	5
MTBE	<10	ug/Kg	1.9	10	5
TOTAL XYLENES	<10	ug/Kg	1.9	10	5
DIBROMOFLUOROMETHANE	117	%	1.9		
1,2-DICHLOROETHANE-D4	106	%	1.9		
TOLUENE-D8	118	%	1.9		
P-BROMOFLUOROBENZENE	94	%	1.9		

Report Notes:

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBSPJ07ICS1

Matrix: SOIL **SDG Name:** WP4075

QC Batch ID: PJ07ICS1

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

Analyte	RESULT	C
ALUMINUM	1.080	U
ANTIMONY	0.180	U
ARSENIC	-0.285	B
BARIUM	0.050	U
BERYLLIUM	0.030	U
CADMIUM	-0.260	B
CALCIUM	1.470	U
CHROMIUM	0.430	U
COBALT	0.450	U
COPPER	0.160	U
IRON	0.823	B
LEAD	0.142	B
MAGNESIUM	1.720	U
MANGANESE	0.100	U
NICKEL	1.320	U
POTASSIUM	44.950	U
SELENIUM	0.260	U
SILVER	0.250	U
SODIUM	4.096	B
THALLIUM	0.450	U
VANADIUM	-0.371	B
ZINC	0.172	B

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWPJ07ICW0

Matrix: WATER **SDG Name:** WP4075

QC Batch ID: PJ07ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	RESULT	C
ALUMINUM	10.760	U
ANTIMONY	1.860	B
ARSENIC	2.070	U
BARIUM	0.480	U
BERYLLIUM	0.330	U
CADMIUM	-2.310	B
CALCIUM	16.120	B
CHROMIUM	4.310	U
COBALT	4.450	U
COPPER	1.620	U
IRON	6.410	B
LEAD	1.090	U
MAGNESIUM	17.160	U
MANGANESE	0.970	U
NICKEL	13.210	U
POTASSIUM	449.540	U
SELENIUM	2.570	U
SILVER	2.540	U
SODIUM	53.390	B
THALLIUM	4.490	U
VANADIUM	3.580	U
ZINC	7.640	B

LABORATORY CONTROL SAMPLES

Lab Name: Katahdin Analytical Services **Sample ID:** LCSSPJ07ICS1

Matrix: SOIL **SDG Name:** WP4075

QC Batch ID: PJ07ICS1

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

Analyte	TRUE	FOUND	% R	LIMITS (%)	
ALUMINUM	5720.0	5905.25	103.2	66	134
ANTIMONY	26.6	27.06	101.7	13	186
ARSENIC	163.0	162.00	99.4	62	138
BARIUM	195.0	182.06	93.4	66	134
BERYLLIUM	78.9	76.37	96.8	72	128
CADMIUM	114.0	101.16	88.7	74	124
CALCIUM	1280.0	1175.24	91.8	70	130
CHROMIUM	175.0	165.58	94.6	69	131
COBALT	73.7	66.65	90.4	70	130
COPPER	91.0	85.91	94.4	71	128
IRON	9080.0	9812.05	108.1	53	146
LEAD	66.0	70.36	106.6	68	132
MAGNESIUM	1210.0	1232.84	101.9	73	126
MANGANESE	261.0	254.87	97.7	78	122
NICKEL	68.3	61.78	90.5	56	144
POTASSIUM	1500.0	1702.09	113.5	64	136
SELENIUM	123.0	114.89	93.4	74	126
SILVER	57.2	51.14	89.4	71	128
SODIUM	1380.0	1261.18	91.4	68	133
THALLIUM	80.0	90.47	113.1	57	142
VANADIUM	95.4	92.05	96.5	68	132
ZINC	190.0	180.88	95.2	76	124

LABORATORY CONTROL SAMPLES

Lab Name: Katahdin Analytical Services **Sample ID:** LCSWPJ07ICW0

Matrix: WATER **SDG Name:** WP4075

QC Batch ID: PJ07ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	TRUE	FOUND	% R	LIMITS (%)	
ALUMINUM	2000.0	2056.51	102.8	80	120
ANTIMONY	500.0	498.28	99.7	80	120
ARSENIC	2000.0	1978.88	98.9	80	120
BARIUM	2000.0	2154.32	107.7	80	120
BERYLLIUM	50.0	51.22	102.4	80	120
CADMIUM	50.0	53.82	107.6	80	120
CALCIUM	2500.0	2622.88	104.9	80	120
CHROMIUM	200.0	209.72	104.9	80	120
COBALT	500.0	519.15	103.8	80	120
COPPER	250.0	255.13	102.1	80	120
IRON	1000.0	1080.01	108.0	80	120
LEAD	500.0	554.80	111.0	80	120
MAGNESIUM	5000.0	5099.18	102.0	80	120
MANGANESE	500.0	514.62	102.9	80	120
NICKEL	500.0	519.61	103.9	80	120
POTASSIUM	25000.0	26210.36	104.8	80	120
SELENIUM	2000.0	1880.36	94.0	80	120
SILVER	50.0	44.81	89.6	80	120
SODIUM	7500.0	7792.18	103.9	80	120
THALLIUM	2000.0	2210.97	110.5	80	120
VANADIUM	500.0	520.42	104.1	80	120
ZINC	500.0	501.49	100.3	80	120

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services | **Client Field ID:** 23SLB040203S

Matrix: SOIL | **SDG Name:** WP4075

Percent Solids: 66.1 | **Lab Sample ID:** WP4075-030S

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

Analyte	Spiked Sample Result	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
LEAD	128.0622		64.1099		62.55	102.2		75	125	P

Comments:

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB040203S

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 66.1 **Lab Sample ID:** WP4075-030P

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

Analyte	Spiked Sample Result	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
LEAD	145.8800		64.1099		63.07	129.6	N	75	125	P

Comments:

5D

SPIKE DUPLICATES

Lab Name: Katahdin Analytical Services **Client Field ID:** 23SLB040203

Matrix: SOIL **SDG Name:** WP4075

Percent Solids: 66.1 **Lab Sample ID:** WP4075-030

Concentration Units (ug/L or mg/Kg dry weight): mg/Kg

Analyte	Control Limits	Spike Result	C	Spike Dup. Result	C	RPD	Q	M
LEAD		128.0622		145.8800		13.0		P

Comments:

FORM VD - IN

Katahdin Analytical Services, Inc.
Quality Control Report

Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP4075

			METHOD BLANK RESULTS					LABORATORY CONTROL SAMPLE RESULTS					
Parameter	Date of Prep	Date of Analysis	Units		Concentration Measured in Blank		Acceptance Range	Practical Quantitation Level**	Units	True Value	Measured Value	Percent Recovered	Acceptance Range (%)	Acceptance Range (mg/kg)
Nitrate-Nitrogen	24-Sep-99	24-Sep-99	mg/L	<	0.050	<	0.050	0.050	mg/L	1.00	1.01	101.0	80-120	
	25-Sep-99	25-Sep-99	mg/L	<	0.050	<	0.050	0.050	mg/L	1.00	1.03	103.0	80-120	
Sulfate	11-Oct-99	11-Oct-99	mg/L	<	1.0	<	1.0	1.0	mg/L	250	221	88.4	83-112	@
	12-Oct-99	12-Oct-99	mg/L	<	1.0	<	1.0	1.0	mg/L	250	221	88.4	83-112	@
TS -**Total Residue**	01-Oct-99	02-Oct-99	wt %	<	0.10	<	0.10	0.10	wt %	90	88.1	97.9	80-120	
Total Combustible Organics	20-Oct-99	21-Oct-99	wt %	<	0.10	<	0.10	0.10						
	14-Oct-99	20-Oct-99	wt %	<	0.10	<	0.10	0.10						

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

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

0000115

Katahdin Analytical Services, Inc.
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client: Tetra Tech NUS	
Work Order: WP4075	

			DUPLICATE RESULTS					*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurements				Acceptance		Concentration or Quantity				Matrix Spike Recovery (%)				
Parameter	Katahdin Sample No	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Range for RPD (%)	Units	Sampl Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Nitrate - N	WP4075-7	mg/L					0-20	mg/L	<0.050	0.50	0.485		97.0		75-125		0-20
Nitrate - N	WP4075-39	mg/L	0.055	<0.050	0.053	10	0-20	mg/L	0.06	0.50	0.66		121.0		75-125		0-20
Sulfate	WP4075-10	mg/L					0-20	mg	0.01	0.50	0.34		67.0 *		75-125		0-20
Sulfate	WP4075-8	mg/L	86.98	81.72	84.35	6.2	0-20	mg	0.44	0.50	0.83		79.0		75-125		0-20
TS	WP4075-11	wt%	82.570	84.932	83.751	2.8	0-20	MS/MSD Not Applicable for this Parameter									
TS	WP4075-31	wt%	54.265	55.400	54.833	2.1	0-20	MS/MSD Not Applicable for this Parameter									
TCO	WP4075-31	wt%	35.710	40.540	38.125	13	0-20	MS/MSD Not Applicable for this Parameter									

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

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

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

Katahdin
ANALYTICAL SERVICES

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

PROJECT: CTO #68

REPORT OF LABORATORY METHOD BLANK RESULTS

SAMPLE DESCRIPTION	MATRIX
METHOD BLANK	Solid/Soil/Sludge

ANALYTE	ANALYZED	UNITS	METHOD	RESULT	NOTES
Total Combustible Organics	10-21-99	wt %	ASTM D	<0.10	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. See cover letter for additional information

[1] Sample Preparation on 10-20-99 by JF

10/27/99

Lab Number: WP4075-31

Katahdin
ANALYTICAL SERVICES

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

PROJECT: CTO #68

REPORT OF DUPLICATE SAMPLE RESULTS

SAMPLE DESCRIPTION	MATRIX
QC DUPLICATE	Solid/Soil/Sludge

ANALYTE	ANALYZED	UNITS	METHOD	*PQL	RESULT	DUP #1	RPD	LIMITS	NOTES
Total Combustible Organics	10-21-99	wt %	ASTM D	0.1	36.	40.5	12		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. See cover letter for additional information

[1] Sample Preparation on 10-20-99 by JF

10/27/99

Lab Number: WP4075-31

Katahdin
ANALYTICAL SERVICES

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

PROJECT: CTO #68

REPORT OF LABORATORY METHOD BLANK RESULTS

SAMPLE DESCRIPTION	MATRIX
METHOD BLANK	Solid/Soil/Sludge

ANALYTE	ANALYZED	UNITS	METHOD	RESULT	NOTES
Total Combustible Organics	10-20-99	wt %	ASTM D	<0.10	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. See cover letter for additional information

[1] Sample Preparation on 10-14-99 by JF

10/27/99

Lab Number: WP4075-38

340 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

4B
SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;092999

Lab Name: Katahdin Analytical Services SDG No.: WP4075

Lab File ID: Z2214

Lab Sample ID: SBLK;092999

Instrument ID: 5972-Z

Date Extracted: 9/29/99

GC Column: RTX-5 ID: 0.25 (mm)

Date Analyzed: 09/30/99

Matrix: (soil/water) SOIL

Time Analyzed: 20:34

Level: (low/med) LOW

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCS;092999	LCS;092999	Z2215	9/30/99	9:23:00 PM
36SLB040304	WP4075-11	Z2220	10/1/99	1:05:00 PM
36SLB070304	WP4075-12	Z2221	10/1/99	1:51:00 PM
23SLB060001	WP4075-26	Z2225	10/1/99	4:57:00 PM
23SLB010203	WP4075-28	Z2227	10/1/99	6:32:00 PM
23SLB030203D	WP4075-29	Z2228	10/1/99	7:18:00 PM
36SLB060304	WP4075-33	Z2231	10/1/99	9:40:00 PM
26SLB140405	WP4075-34	Z2232	10/1/99	10:28:00 PM
23SLB040203	WP4075-30	Z2236	10/4/99	10:07:00 AM
36SLB060304	WP4075-33DL	Z2237	10/4/99	10:54:00 AM
26SLB360405	WP4075-14	Z2238	10/4/99	11:41:00 AM
23SLB050203	WP4075-25	Z2240	10/4/99	1:16:00 PM
23SLB080203	WP4075-27	Z2241	10/4/99	2:03:00 PM
23SLB130203	WP4075-31	Z2242	10/4/99	2:50:00 PM
23SLB030203	WP4075-32	Z2243	10/4/99	3:38:00 PM
26SLB350405	WP4075-13	Z2263	10/5/99	6:06:00 PM
26SLB350405MS	WP4075-13MS	Z2264	10/5/99	6:53:00 PM
26SLB350405MSD	WP4075-13MSD	Z2265	10/5/99	7:42:00 PM
26SLB360405	WP4075-14DL	Z2266	10/5/99	8:29:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;092999
SDG: WP4075
Report Date: 10/9/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;092999	SL	-	-	9/29/99	DPD	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	50	%	1.0		
2-FLUOROBIPHENYL	51	%	1.0		
TERPHENYL-D14	57	%	1.0		

Report Notes:

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z2215 **Sample ID: LCS;092999** **Date Run: 9/30/99**

Analyst: KRT **Time Injected 9:23:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	1667	1250	75	60-140
ACENAPHTHENE	1667	1100	66	60-140
ACENAPHTHYLENE	1667	1260	76	60-140
ANTHRACENE	1667	1230	74	60-140
BENZO[A]ANTHRACENE	1667	1260	76	60-140
BENZO[A]PYRENE	1667	1220	73	60-140
BENZO[B]FLUORANTHENE	1667	1230	74	60-140
BENZO[G,H,I]PERYLENE	1667	1160	70	60-140
BENZO[K]FLUORANTHENE	1667	1320	80	60-140
CHRYSENE	1667	1230	74	60-140
DIBENZ[A,H]ANTHRACENE	1667	1350	81	60-140
FLUORANTHENE	1667	1320	79	60-140
FLUORENE	1667	1170	70	60-140
INDENO[1,2,3-CD]PYRENE	1667	1280	77	60-140
NAPHTHALENE	1667	1160	70	60-140
PHENANTHRENE	1667	1250	75	60-140
PYRENE	1667	1280	77	60-140

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP4075-13	Z2263	10/5/99	6:06:00 PM	KRT	SL	8270_99
WP4075-13MS	Z2264	10/5/99	6:53:00 PM	KRT	SL	8270_99
WP4075-13MSD	Z2265	10/5/99	7:42:00 PM	KRT	SL	8270_99

Compound Name	Native (ug/Kg)	MS Spk Amount (ug/Kg)	MSD Spk Amount (ug/Kg)	MS Result (ug/Kg)	MSD Result (ug/Kg)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
CHRYSENE	0	1910	1910	1430	1650	75	86	60-140	14	50
ACENAPHTHENE	0	1910	1910	1260	1520	66	79	60-140	19	50
ACENAPHTHYLENE	0	1910	1910	1430	1720	75	90	60-140	18	50
ANTHRACENE	0	1910	1910	1490	1770	78	93	60-140	17	50
BENZO[A]ANTHRACENE	0	1910	1910	1520	1740	79	91	60-140	13	50
BENZO[A]PYRENE	0	1910	1910	1420	1630	74	85	60-140	14	50
BENZO[B]FLUORANTHENE	0	1910	1910	1370	1620	72	84	60-140	17	50
2-METHYLNAPHTHALENE	0	1910	1910	1410	1690	74	89	60-140	18	50
BENZO[K]FLUORANTHENE	0	1910	1910	1520	1790	80	94	60-140	16	50
PYRENE	0	1910	1910	1480	1690	77	88	60-140	13	50
DIBENZ[A,H]ANTHRACENE	0	1910	1910	1560	1770	82	93	60-140	13	50
FLUORANTHENE	0	1910	1910	1630	1900	85	99	60-140	15	50
FLUORENE	0	1910	1910	1430	1690	75	89	60-140	17	50
INDENO[1,2,3-CD]PYRENE	0	1910	1910	1660	1740	87	91	60-140	4.7	50
NAPHTHALENE	0	1910	1910	1310	1550	68	81	60-140	17	50
PHENANTHRENE	0	1910	1910	1600	1830	84	96	60-140	13	50
BENZO[G,H,I]PERYLENE	0	1910	1910	1450	1620	76	85	60-140	11	50

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

*** Out of Limits**

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKM29A

Lab Name: Katahdin Analytical Services SDG No.: WP4075

Lab File ID: M2049 Lab Sample ID: VBLKM29A

Date Analyzed: 09/29/99 Time Analyzed: 10:31

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) Y

Instrument ID: 5972-M

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSM29A	LCSM29A	M2048	9/29/99	9:40:00 AM
26SLB350405	WP4075-21	M2057	9/29/99	4:16:00 PM
36SLB070304	WP4075-23	M2059	9/29/99	5:38:00 PM
36SLB040304	WP4075-24	M2060	9/29/99	6:20:00 PM
23SLB050203	WP4075-25	M2061	9/29/99	7:01:00 PM
23SLB060001	WP4075-26	M2062	9/29/99	7:42:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKM29A
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 9/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM29A	SL	-	-	9/29/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	120	%	1.0		
1,2-DICHLOROETHANE-D4	110	%	1.0		
TOLUENE-D8	126	%	1.0		
P-BROMOFLUOROBENZENE	119	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M2048 **Sample ID: LCSM29A** **Date Run: 9/29/99**

Analyst: JSS **Time Injected 9:40:00 AM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	51.4	103	60-140
BENZENE	50	53.0	106	60-140
ETHYLBENZENE	50	51.3	103	60-140
MTBE	50	54.4	109	60-140
NAPHTHALENE	50	48.4	97	60-140
TOLUENE	50	51.9	104	60-140
TOTAL XYLENES	150	152	101	60-140

*** Out of Limits**

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKM30A

Lab Name: Katahdin Analytical Services SDG No.: WP4075

Lab File ID: M2067 Lab Sample ID: VBLKM30A

Date Analyzed: 09/30/99 Time Analyzed: 10:13

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) Y

Instrument ID: 5972-M

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSM30A	LCSM30A	M2066	9/30/99	9:22:00 AM
26SLB360405	WP4075-22	M2068	9/30/99	11:08:00 AM
36SLB070304	WP4075-23RA	M2069	9/30/99	11:49:00 AM
23SLB080203	WP4075-27	M2070	9/30/99	12:31:00 PM
23SLB010203	WP4075-28	M2071	9/30/99	1:12:00 PM
23SLB030203D	WP4075-29	M2072	9/30/99	1:53:00 PM
23SLB130203	WP4075-31	M2074	9/30/99	3:16:00 PM
36SLB060304	WP4075-33	M2076	9/30/99	4:38:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKM30A
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 9/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM30A	SL	-	-	9/30/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	127	%	1.0		
1,2-DICHLOROETHANE-D4	125	%	1.0		
TOLUENE-D8	114	%	1.0		
P-BROMOFLUOROBENZENE	108	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M2066 **Sample ID: LCSM30A** **Date Run: 9/30/99**

Analyst: JSS **Time Injected 9:22:00 AM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	52.6	105	60-140
BENZENE	50	50.7	101	60-140
ETHYLBENZENE	50	51.5	103	60-140
MTBE	50	55.2	110	60-140
NAPHTHALENE	50	65.4	131	60-140
TOLUENE	50	50.8	102	60-140
TOTAL XYLENES	150	148	99	60-140

*** Out of Limits** *1*

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKM01A

Lab Name: Katahdin Analytical Services SDG No.: WP4075

Lab File ID: M2086 Lab Sample ID: VBLKM01A

Date Analyzed: 10/01/99 Time Analyzed: 12:01

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) Y

Instrument ID: 5972-M

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSM01A	LCSM01A	M2085	10/1/99	11:06:00 AM
23SLB040203	WP4075-30	M2089	10/1/99	2:20:00 PM
23SLB030203	WP4075-32	M2090	10/1/99	3:01:00 PM
26SLB140405	WP4075-34	M2091	10/1/99	3:42:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKM01A
SDG: WP4075
Report Date: 10/15/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 10/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM01A	SL	-	-	10/1/99	HMP	5030	HMP

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	J3	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	108	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	112	%	1.0		
P-BROMOFLUOROBENZENE	106	%	1.0		

Report Notes: J

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M2085 **Sample ID: LCSM01A** **Date Run: 10/1/99**

Analyst: HMP **Time Injected 11:06:00 AM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	51.2	102	60-140
BENZENE	50	51.4	103	60-140
ETHYLBENZENE	50	50.6	101	60-140
MTBE	50	54.9	110	60-140
NAPHTHALENE	50	50.7	101	60-140
TOLUENE	50	51.9	104	60-140
TOTAL XYLENES	150	149	99	60-140

*** Out of Limits**

CASE NARRATIVE
for
Katahdin Analytical
Westbrook, ME
Former Charleston Naval Complex Site
SDG #99740S

October 20, 1999

Laboratory Identification:

General Engineering Laboratories, Inc. (GEL)

Mailing Address:

P.O. Box 30712
Charleston, SC 29417

Express Mail Delivery and Shipping Address:

2040 Savage Rd
Charleston, SC 29414

Telephone Number:

(843) 556-8171

Summary:

Sample receipt

The samples from the former Charleston Naval Complex site arrived at General Engineering Laboratories, Inc., Charleston, SC on September 25, 1999, for environmental analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The following samples were received by the laboratory:

Laboratory Identification	Sample Description
9909740-01	42SLB090304
9909740-02	42SLB200203
9909740-03	42SLB410304
9909740-04	42SLB270304 →
9909740-05	23SLB130203 → TOC

2

9909740-06	23SLB030203
9909740-07	23SLB030203D
9909740-08	36SLB040304
9909740-09	36SLB070304
9909740-10	26SLB350405
9909740-11	36SLB060304
9909740-12	26SLB360405

Case Narrative

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Data Qualifier Definitions, Chain of Custody, Cooler Receipt Checklist, and General Chemistry Analysis.

The following are definitions of reporting limits used at General Engineering Laboratories:

DL — Detection Limit: The minimum level of an analyte that can be determined (identified not quantified) with 99% confidence. The values are normally achieved by preparing and analyzing seven aliquots of laboratory water spiked 1 to 5 times the estimated MDL, taking the standard deviation and multiplying it against the one-tailed t-statistic at 99%. This computed value is then verified for reasonableness by repeating the study using the concentration found in the initial study, calculating an F-ratio, and computing the final limit. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The detection limit is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is above zero. It answers the question "Is It Present."

QL — Quantitation Limit: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The QL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting. For many analytes the QL analyte concentration is selected as the lowest non-zero standard in the calibration curve.

Sample QL's are highly matrix-dependent. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The QL is always $\geq$ DL.

This data package, to the best of my knowledge, is in compliance with technical and administrative requirements.

Valerie S. Davis
Project Manager

fc:kata9909740%

GENERAL ENGINEERING LABORATORIES
PO Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(803) 556-8171 • Fax (803) 766-1178

Printed on recycled paper.

General Engineering Laboratories, Inc.

DATA QUALIFIERS FOR INORGANIC ANALYSES

Data Qualifiers used on Form 1s or Certificates of Analysis (C Of A) follow the specifications set forth in the technical specifications of the most current CLP Statement of Work and are defined as follows:

Section	Explanation	Location
E	The qualifier that is used when the percent difference between the parent sample and its serial dilution's concentrations exceeds 10%. The sample's concentration must be greater than 50 times the IDL/MDL for ICP (6010B/ILMO 3.0) or 100 times the absolute value of the preparation blank's concentration (6020). However, if analyzing ILMO 4.0 (ICP-MS), the parent sample's concentration must be 20 times the CRDL before the "E" flag is applied.	Form 1, and EDD
*	The qualifier that is used to indicate that the duplicate sample analysis for an analyte is out of control.	Form 1, and EDD
+	Correlation coefficient the Method of Standard Addition (MSA) is less than 0.095.	Form 2, and EDD
B	The qualifier is used to indicate that the reported result fell above the IDL/MDL but below the CRDL.	Form 1, and EDD
M	The qualifier is used to indicate that the replicate injection readings of the GFAA sample analysis do not agree within 20% relative standard deviation (RSD) or coefficient of variation (CV).	Form 1, and EDD
N	This qualifier is used to indicate that the matrix or pre-digested spike sample recovery for an analyte is not within the specified control limit.	Form 1, and EDD
S	The reported value was determined by the Method of Standard Addition (MSA).	Form 1, and EDD
U	The analyte's result was less than the IDL/MDL.	C of A, Form 1, and EDD
W	Post-digestion spike for GFAA analysis is out of control limits (85%-115%), while sample results are less than 50% of the spike absorbance.	EDD, and Form 5, part 2
X	Other reporting flag as defined in report narrative.	Form 1, and EDD
**	This qualifier is used to indicate that the Laboratory Control Sample (LCS) recovery for an analyte is outside of the specified limits.	QC Summary Report

All surrogate recoveries and acceptance ranges are reported at the bottom of Form 2 or C of A.
Any recoveries falling outside the acceptance range will be flagged with a **.
All flags do not apply to QC Summary and Certificate of Analysis packages.

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

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:
Paul R. Collins	9.25.99	11:05					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[illegible]	[illegible]	1105	

White = sample collector Yellow = file Pink = with report

FEDERAL SAMPLE RECEIPT REVIEW

Client K+T A Received by GCC Date 9-25-99

GEL COOLER___ GEL POLY COOLER___ CLIENT COOLER___ OTHER ✓

SAMPLE REVIEW CRITERIA	YES	NO	COMMENTS/QUALIFIERS
1. Were shipping containers received intact and sealed? If no, notify Project Manager	✓		
2. Was the Shipment screened following the radiochemistry survey procedure (EPI SOP S-007)?		✓	
Were the survey results negative? If no, notify Project Manager	✓		
Are any of the samples identified by the client as radioactive? If yes, did client provide RAD activity?		✓	
3. Were chain of custody documents included?	✓		
4. Were chain of custody documents completed correctly? (Ink, signed, match containers)	✓		
5. Were all sample containers properly labeled?	✓		
6. Were proper sample containers received?	✓		
7. Preserved samples checked for pH?	✓		Soil
8. Were samples preserved correctly? If no, list samples & tests	✓		
9. Shipping container temperature checked?	✓		
10. Was shipping conatiner temperature within specifications (4°± 2° C) If no, notify Project Manager	✓		4°C
11. Is temperature documented on the Chain of Custody?		✓	
12. Were samples received within holding time? if No, notify Project Manger	✓		
13. Were VOA vials free of headspace?	—	—	
14. ARCOC# IF REQUIRED			
15. SDG# IF REQUIRED	✓		99740

REVIEW [signature] DATE 9-25-99 SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

Case Narrative for
KATA
SDG# 99740S

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 160400

Analytical Method: SW846 9071A

Laboratory Number	Sample Description
9909740-01	42SLB090304
9909740-02	42SLB200203
9909740-03	42SLB410304
9909740-06	23SLB030203
9909740-07	23SLB030203D
9909740-11	36SLB060304
QC656386	Blank
QC656387	Laboratory Control Sample
QC656388	Matrix Spike of 9909740-01
QC656389	Duplicate of 9909740-01

Sample Preparation:

All samples were prepared in accordance with accepted procedures.

Instrument Calibration:

The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

No target analytes were detected in the method blank above the required acceptance limit.

Spike Analyses:

The matrix spike was run on the following Sample Number.

9909740-01

All analyte recoveries in the matrix spike were within the required acceptance limits.

Laboratory Control Samples:

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 159321

Analytical Method: SW846 9071A

Laboratory Number	Sample Description
9909740-08	36SLB040304
9909740-09	36SLB070304
9909740-10	26SLB350405
9909740-12	26SLB360405
QC652076	Blank
QC652077	Laboratory Control Sample
QC652078	Matrix Spike of 9909644-02
QC652079	Duplicate of 9909644-02

Sample Preparation:

All samples were prepared in accordance with accepted procedures.

Instrument Calibration:

The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

No target analytes were detected in the method blank above the required acceptance limit.

Spike Analyses:

The matrix spike was run on the following Sample Number from another SDG.

9909644-02

All analyte recoveries in the matrix spike were within the required acceptance limits.

Laboratory Control Samples:

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

The following Nonconformance Report was written for this batch.

GEL-AS-GC-1615

TOTAL ORGANIC CARBON

Analytical Batch Number: 159373

Analytical Method: SW846 9060 Modified

Laboratory Number	Sample Description
9909740-04	42SLB270304
9909740-05	23SLB130203
QC652303	Blank
QC652304	Laboratory Control Sample
QC652305	Duplicate of 9909644-04
QC652306	Post Spike of 9909644-04

Sample Preparation:

All samples were prepared in accordance with accepted procedures. The method quoted is only for liquid samples. It is modified to handle soils analysis.

Instrument Calibration:

The instrument used was a Dohrmann DC-190 high temperature combustion TOC analyzer with a Dohrmann solids boat sampler. The instrument was properly calibrated on the day of the analysis.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

No target analytes were detected in the method blank above the required acceptance limit.

Spike Analyses:

The post spike was run on the following Sample Number from another SDG.

9909644-04

All analyte recoveries in the post spike were within the required acceptance limits.

Laboratory Control Samples:

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

Additional Comments:

TOC solid samples are tested to determine if inorganic carbon such as carbonates and bicarbonates are present in the sample. If so, the sample is acidified to remove the inorganic carbon, then dried in a low temperature oven. Because the sample portion is dried before analysis, the percent moisture correction is not applied to the TOC solid result.

The preceding narratives have been reviewed by: [signature] Date: 10/20/99

General Engineering Laboratories
(Form GEL-XXX
Rev. 09/98)

UNCONTROLLED DOCUMENT

1. NCR Report No.: GEL-AF-CC-1615
2. Page 1 of 1
3. Revision No.: 0

COMPANY-WIDE NONCONFORMANCE REPORT

COMPLETE EVERY ITEM

(See Instructions on Reverse Side)

4. Mo. Day Yr.: 9 | 30 | 99

5. Division: ☐ Industrial ☑ Federal ☐ Radiochemistry ☐ Bioassay ☐ Other

6. Type: Material ☐ Process ☑ Product ☐

7. Instrument Type: N/A

8. Quality Criteria: ☑ SOP ☑ QAP or QAPJP ☐ Client Contract ☐ Purchase Document ☐ Drawing ☐ Specifications ☐ Others

9. Supplier/Client Name & Code: KATA 00199

10. Test/Method: EPA 9071A (TPH)

11. Numerical Reference Identification: (Batch Number, Sample Number, ID number)

Batch 159344 (32 lab samples) 9909740-10 1-12

12. Specifications and Requirements Nonconformance Description:

Item No.

Samples were not scanned into Analysts Custody

RECEIVED OCT - 4 1999

13. Originator's Printed Name & Signature: Ashley Taylor Ashley Taylor Date: 9-30-99

14. NRG Disposition:

Item No.

Samples were accidently not scanned to the analyst's custody prior to analysis but the analyst did physically have custody of samples during analysis. Analyst is aware of oversight.

15. NRG's Printed Name & Signature: Ashley Taylor Ashley Taylor Date: 9-30-99

List NRG Participants:

DEIDRE REILLY 9/30/99

Management Review ☑ or Management Approval ☐

Please review within 24 hours of receipt.

010544

NCR Review & Disposition Review or Approval:

16. Quality Review: Date: 10/4/99

17. Originator's Director/Group Leader: Date:

Corrective Action Request and Approval: VD

18. CA Requested: Print Name and Sign: Date:

19. Corrective Action Approval & Number: Date:

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	: 23SLB130203
Lab ID	: 9909740-05
Matrix	: Soil
Date Collected	: 09/24/99
Date Received	: 09/25/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Evaporative Loss @ 105 C		45.0	1.00	1.00	wt%	1.0	GJ	09/28/99	1550	159267	1
Total Organic Carbon		17900	43.1	100	mg/kg	1.0	JB1	09/30/99	1515	159373	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

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	: 23SLB030203
Lab ID	: 9909740-06
Matrix	: Soil
Date Collected	: 09/24/99
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	J	197	164	328	mg/kg	1.0	AAT	10/12/99	1000	160400	1
Evaporative Loss @ 105 C		39.0	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

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	: 23SLB030203D
Lab ID	: 9909740-07
Matrix	: Soil
Date Collected	: 09/24/99
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	U	161	161	322	mg/kg	1.0	AAT	10/12/99	1000	160400	1
Evaporative Loss @ 105 C		38.0	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

QC Summary Report

Project Description: Former Naval Complex

cc: KATA00199 Lab. Sample ID: 9909740% Report Date: October 19, 1999

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC652076	BLANK	159321											
Total Rec. Petro. Hydrocarbons						90.0	mg/kg				AAT	09/30/99	1140
QC656386	BLANK	160400											
Total Rec. Petro. Hydrocarbons						115	mg/kg				AAT	10/12/99	1000
QC652079	9909644-02DUP	159321											
Total Rec. Petro. Hydrocarbons				576		451	mg/kg	24.3			AAT	09/30/99	1140
QC656389	9909740-01DUP	160400											
Total Rec. Petro. Hydrocarbons				603		761	mg/kg	23.1			AAT	10/12/99	1000
QC652077	LCS	159321											
Total Rec. Petro. Hydrocarbons			10800			7550	mg/kg		70.1	(70.0 - 116.)	AAT	09/30/99	1140
QC656387	LCS	160400											
Total Rec. Petro. Hydrocarbons			11100			10100	mg/kg		91.1	(70.0 - 116.)	AAT	10/12/99	1000
QC652078	9909644-02MS	159321											
Total Rec. Petro. Hydrocarbons			17100	576		14400	mg/kg		80.6	(70.0 - 130.)	AAT	09/30/99	1140
QC656388	9909740-01MS	160400											
Total Rec. Petro. Hydrocarbons			11700	603		10700	mg/kg		86.6	(70.0 - 130.)	AAT	10/12/99	1000
QC651869	BLANK	159267											
Evaporative Loss @ 105 C						0.00	wt%				GJ	09/28/99	1550
QC651867	9909740-12DUP	159267											
Evaporative Loss @ 105 C				17.0		17.0	wt%	0.00					
QC651868	9909815-01DUP	159267											
Evaporative Loss @ 105 C				30.0		30.0	wt%	0.00					
QC652303	BLANK	159373											
Total Organic Carbon						5.80	mg/kg				JB1	09/30/99	1242
QC652305	9909644-04DUP	159373											
Total Organic Carbon				2840		2960	mg/kg	4.07			JB1	09/30/99	1403
QC652304	LCS	159373											
Total Organic Carbon			4000			4660	mg/kg		117	(88.0 - 130.)	JB1	09/30/99	1249
QC652306	9909644-04PS	159373											
Total Organic Carbon			9410	2840		11800	mg/kg		94.6	(73.0 - 129.)	JB1	09/30/99	1410

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

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

S.W.COLE
ENGINEERING, INC.

RR 3, Box 7230, China Road, Winslow, ME 04901 TEL (207) 873-4283 FAX (207) 873-4977
Six Liberty Drive, Bangor, ME 04401 TEL (207) 848-5714 FAX (207) 848-2403
Gray Plaza, P. O. Box 378, Gray, ME 04039 TEL (207) 657-2866 FAX (207) 657-2840
91 Water St., P. O. Box 220, Caribou, ME 04736 TEL (207) 496-1511 FAX (207) 496-1501
33 Londonderry Rd., #6, Londonderry, NH 03053 TEL (603) 437-9600 FAX (603) 437-9656

LAB REPORT

October 14, 1999
99-812 M

Katahdin Analytical Services
ATTN: Andrea Colby
P.O. Box 720
Westbrook, Maine 04092

Reference: Laboratory Testing

SWC Sample No.	Material Source	Date Received	Date Tested
S-33	WP 4075-32	9-28-99	10-5-99
S-34	WP 4075-33	9-28-99	10-5-99
S-35	WP 4075-35	9-28-99	10-5-99
S-36	WP 4075-36	9-28-99	10-5-99
S-37	WP 4075-37	9-28-99	10-5-99

TEST RESULTS

Grain Size Analysis (Hydrometer)
The samples were tested in accordance with ASTM D-422, "Particle Size Analysis of Soils". After soaking for at least 16 hours, stirring apparatus A (a blender) was used to stir the samples for one minute.

	Percent of Material			
Sample Number	Gravel, 3" to No. 4	Sand No. 4 to No. 200	Silt 0.074 to 0.005mm	Clay Smaller Than 0.005 mm
S-33	4.2	13.6	60.5	21.7
S-34	1.7	46.6	46.3	5.4
S-35	1.3	86.1	8.8	3.8
S-36	0.5	67.9	19.1	12.5
S-37	0.2	78.2	10.7	10.9

Russell L. Bragg
Construction Services Manager

RLB:rac
Checked By: CEM

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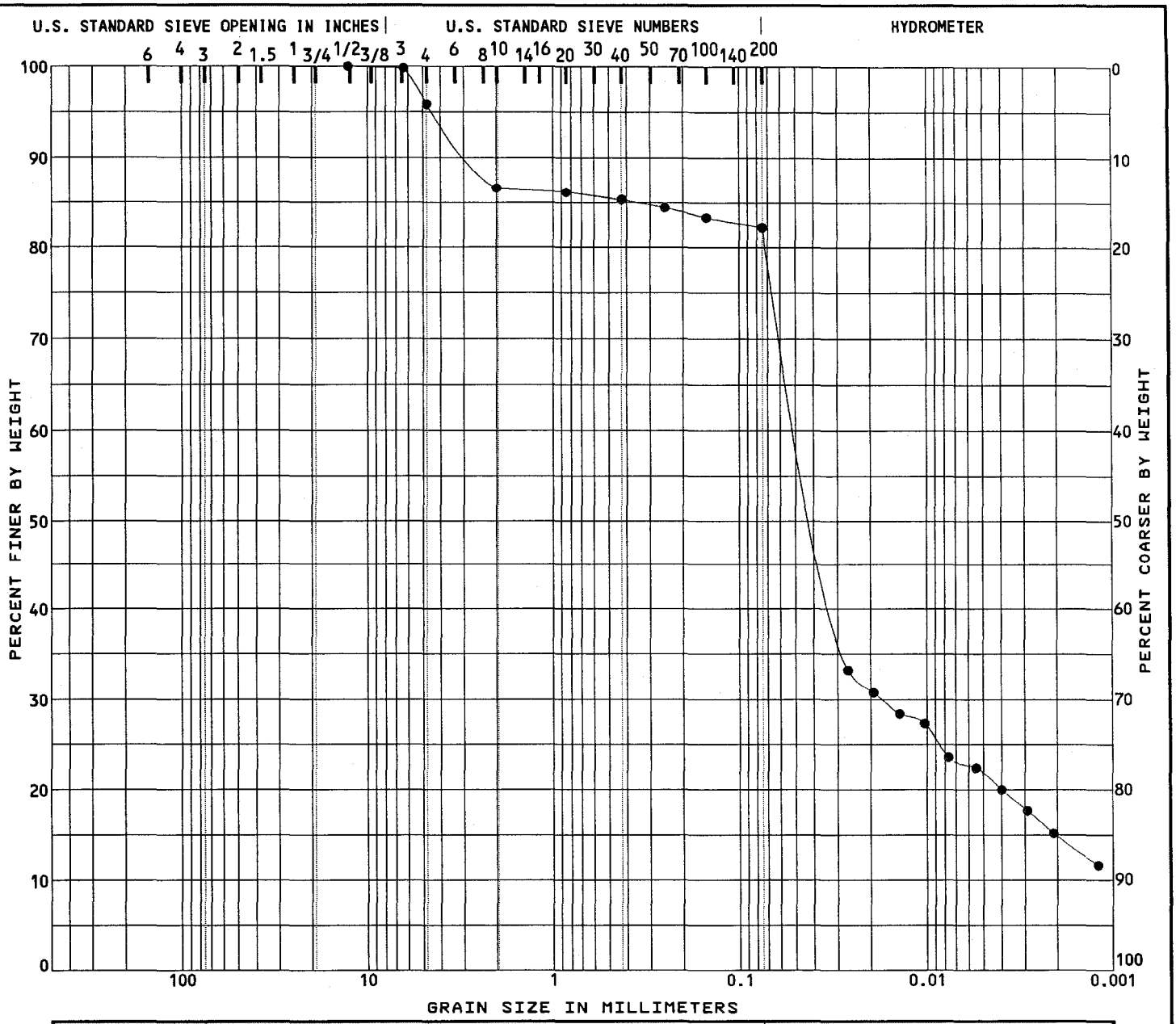

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	WC%	LL	PL	PI	Cc	Cu
● S-33 WP 4075-32							

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● S-33 WP 4075-32	12.70	0.05	0.017		4.2	13.6	60.5	21.7

S.W.COLE
ENGINEERING, INC.

Project Katahdin Analytical Services	Location Westbrook, Maine
SWC Job No. 99-812	Sheet No. 1
Date October 5, 1999	**GRADATION CURVES**

Katahdin
ANALYTICAL SERVICES

October 12, 1999

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

RE: Katahdin Lab Number: WP-3877
Project ID: CTO #68
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: September 10, 1999

Dear Mr. Calligan:

Please find enclosed the following information:

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

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

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

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Patricia Homey
Authorized Signature

10/12/99
Date

340 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

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

The following samples were received on September 10, 1999 and were logged in under Katahdin Analytical Services work order number WP3877 for a hardcopy due date of October 10, 1999. The methane samples were canceled by Paul Calligan when it was discovered that FEDEX has misdelivered the cooler and the samples were out of hold time by the time they were received by the subcontract lab.

KATAHDIN Sample No.	TTNUS Sample Identification
WP3877-1	34GLM0101
WP3877-2	34GLM0201
WP3877-3	34GLM0301
WP3877-4	34GLM0201D
WP3877-5	14GLM0301D
WP3877-6	34TL00201
WP3877-7	14TL00201
WP3877-8	18TL00101
WP3877-9	23TL00101
WP3877-10	14GLM0101
WP3877-11	14GLM0201
WP3877-12	14GLM0301
WP3877-13	19GLO1B01
WP3877-14	19GLM0301
WP3877-15	19GLM0601
WP3877-16	19GLO1D01
WP3877-17	19GLO1C01
WP3877-18	18GLO1F01
WP3877-19	18GLM03D01
WP3877-20	18GLM0201
WP3877-21	18GLM0201D
WP3877-22	18GLO1E01
WP3877-23	18GLM0101
WP3877-24	23GLM0201
WP3877-25	23GLX0201
WP3877-26	23GLM0301

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

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

Volatile Organic Analysis

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

Analyses for this workorder were performed on the 5972-F instrument. A VSTD050 (50 ppb standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ppb.

Batch QC (VBLK, and LCS) was performed in each twelve-hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. A matrix spike/matrix spike duplicate analysis was performed on sample WP3877-20.

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

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

Semivolatile Organic Analysis

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

Extraction of samples WP3877 2-5, -11-19 occurred following USEPA method 3510 on September 13, 1999. A laboratory control spike/laboratory control spike duplicate pair was extracted in the batch. The remainder of the samples. WP3877 20-26 were extracted following USEPA method 3510 on September 14, 1999. A laboratory control sample, along with a site specific MS/MSD pair on sample WP3877-20, was extracted in this batch.

Analysis of sample WP3877-21 yielded concentrations of the analytes acenaphthene and 2-methylnaphthalene over the upper limit of the calibration curve. Reanalysis occurred at a 1:2 dilution successfully. Both sets of data for this sample are included in this data package.

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

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

Metals Analysis

The samples of Katahdin Work Order WP3877 were prepared and analyzed for metals in accordance with the "Test Methods for Evaluating Solid Waste", SW-846, November 1986, Third Edition.

Inductively-Coupled Plasma (ICP) Atomic Emission Spectroscopic Analysis

Aqueous-matrix Katahdin Sample Nos. WP3877-(18-26) were initially digested for ICP analysis on 09/16/99 (QC Batch PI16ICW0) in accordance with USEPA Method 3010A. Katahdin Sample No. WP3877-20 was prepared with duplicate matrix-spiked aliquots in this digestion. The sodium (101 ug/L) concentration of the preparation blank that is associated with this QC batch exceeds the laboratory's acceptance limit. Because the measured sodium concentration of all associated sample were more than ten times that of the preparation blank, no corrective action was taken. The digestates of QC Batch PI16ICW0 were consumed before they could be analyzed for antimony, arsenic, lead, selenium, thallium, or zinc. For this reason, Katahdin Sample Nos. WP3877-(18-26) were redigested on 09/22/99 (QC Batch PI22ICW0) and 09/23/99 (QC Batch PI23ICW0) to provide additional digestate for further analysis. Redigestates are identified throughout the accompanying forms and raw data by the suffix "R" appended to the Katahdin Sample No., e.g. "WP3877-018R". Due to laboratory error, none of these samples were redigested with matrix-spiked aliquots, so there are no matrix QC data for antimony, arsenic, lead, selenium or thallium.

ICP analyses of Katahdin Work Order WP3877 sample digestates were performed in accordance with USEPA Method 6010B, using a Thermo Jarrell Ash (TJA) Trace ICP spectrometer and a TJA 61 ICP spectrometer. All samples were analyzed within holding times and all QC criteria were met with the following comments or exceptions:

Some of the results for run QC samples (ICV, ICB, CCV, CCB, ICSA, and ICSAB) included in the accompanying data package may have exceeded acceptance limits for some elements. Please note that all client samples and batch QC samples associated with out-of-control results for run QC samples were subsequently reanalyzed for the analytes in question.

Analysis of Mercury by Cold Vapor Atomic Absorption (CVAA) Spectrophotometry

Aqueous-matrix Katahdin Sample Nos. WP3877-(18-23) were digested for mercury analysis on 09/14/99 (QC Batch PI14HGW0) in accordance with USEPA Method 7470A. Due to laboratory error, none of these samples were digested with matrix-spiked aliquots, so there are no matrix QC data for mercury.

Mercury analyses of Katahdin Work Order WP3877 sample digestates were performed using a Leeman Labs PS200 automated mercury analyzer. All samples were analyzed within holding times and all run QC criteria were met.

Katahdin
ANALYTICAL SERVICES

Wet Chemistry Analysis

Due to IC instrument failure, alternate methods were approved by Kelly Johnson-Carper for the analysis of nitrate and sulfate.

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

LAB (WORK ORDER) # WP 3877

PAGE: 1 OF ~~5~~ 6

COOLER: 1 OF ~~5~~ 6

COC# —
SDG# —
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: BKL
LIMS ENTRY BY: ASC
LIMS REVIEW BY / PM: ASC

CLIENT: TETRATECH

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☑	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☑	☐	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 0.9	ASC notified Paul Calligan 9/13/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y or N)?	☐	☑	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☑ Sa	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☑	☐	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:
per Paul Calligan – 19GL01D01 should ~~not~~ have methane & anions
19GL01B01 should not have methane & anions
18GLM03D01 is correct ID

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

8600098

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

LAB (WORK ORDER) # WP3877

PAGE: 2 OF 6

COOLER: 2 OF 6

CLIENT: Tetratech

PROJECT: CNC CHARLESTON

COC# —
SDG# —
DATE / TIME RECEIVED: 09-10-99 ~1000
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☑	☐	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 1.1	AJC notified Paul Calligan 9/13/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☐	☑	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☑	☐	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

6600000

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

LAB (WORK ORDER) # WP3877

PAGE: 3 OF 6

COOLER: 3 OF 6

CLIENT: Tetratech

PROJECT: CNC CHARLESTON

COC# –
SDG# –
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	✓				
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	✓				
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	✓				
4. CHAIN OF CUSTODY MATCHES SAMPLES?		✓			
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 3.5	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	✓			COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	✓				
8. TRIP BLANK PRESENT IN THIS COOLER	✓				
9. PROPER SAMPLE CONTAINERS AND VOLUME?	✓				
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	✓				
11. SAMPLES PROPERLY PRESERVED[1]?	✓				
12. CORRECTIVE ACTION REPORT FILED?		✓	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]: On some of the 14... containers! COC (+ most bottles) have 14GLM..., a few bottles have 14GLW... (all times, dates, parameters match)

0000100

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

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

LAB (WORK ORDER) # WP3877

PAGE: 4 OF 6

COOLER: 4 OF 6

CLIENT: TETRATECH

COC# —
SDG# —
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: BKL
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☑	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑*	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 1.5	AJC notified Dave Calligan 9/13/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☐	☑	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED(1)?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

1 of 2 PAH bottles 18GLM0101 arrived broken
on COC, 19GL01B01 has anions listed but no container sent
" " 19GL01D01 does not list anions, but bottle sent for anions
1 of 3 voa vials for 19GLM0601 arrived broken

Diss Meth sent for 19GL01D01 but not on COC

*On chain: 18GLM03D01, on all bottles: 18GLM0301
HNO_3 added to metals for: ~~18GLM03~~ 18GLM0301, 18GLM0201, 18GLM0201D, 18GL01E01, 18GLM0101

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

000010T

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

LAB (WORK ORDER) # WP 3877

PAGE: 5 OF 6

COOLER: 5 OF 6

CLIENT: Tetratech

PROJECT: CNC CHARLESTON

COC# –
SDG# –
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: ADC
LIMS REVIEW BY / PM: ADC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☑	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☑	☐	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 4.9	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]: 23GLM0201 Diss. Methane voa (1 of 3) has headspace -- a bunch of small bubbles (maybe pea size total)
23GLX0201 Added HNO_3 to Pb container to ↓ pH to <2

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

0000102

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

LAB (WORK ORDER) # ASP 3877

PAGE: 6 OF 6

COOLER: 6 OF 6

COC# —
SDG# —
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

CLIENT: Tetratech

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	✓				
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?		✓			
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	✓				
4. CHAIN OF CUSTODY MATCHES SAMPLES?	✓				
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 0.8	AJC notified Paul Calligan 9/13/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?		✓		COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	✓				
8. TRIP BLANK PRESENT IN THIS COOLER		✓			
9. PROPER SAMPLE CONTAINERS AND VOLUME?	✓				
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	✓				
11. SAMPLES PROPERLY PRESERVED[1]?	✓				
12. CORRECTIVE ACTION REPORT FILED?		✓	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

00001103

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) 385-9860
Address: 1401 Oven Park Drive #102
City: Tallahassee
State: FL
Zip Code: 32312
Purchase Order #:
Proj. Name / No.: CNC / ~~N0164~~ N0164
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): JASON McGAHEE
Copies To:

LAB USE ONLY
WORK ORDER #: WP3877
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 (water)	Filt. ☐Y☐N BTEX, EDB, MTBE, Total Nap. (HCl)	Filt. ☐Y☐N Dis. methane (HCl)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	34GLM0101	9/8/99/1725	GW	~~MW~~ 3	0	0	3							
	34GLM0201	9/8/99/1748	GW	~~MW~~ 8	2	3	3							
	34GLM0301	9/8/99/1848	GW	~~MW~~ 8	2	3	3							
	34GLM0201D	9/8/99/—	GW	~~MW~~ 8	2	3	3							
	34TL00201	9/8/99/—	—	1		Trip Blank								
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												

Cooler 1 of ~~2~~ 6
BP

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/9/99 1900	FedEx 8134517388		9-10-99 1000	[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) 385-9860
Address: 1401 Oven Park Drive #102
City: Tallahassee
State: FL
Zip Code: 32312
Purchase Order #:
Proj. Name / No.: CNC / N0141
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): JASON McCann [signature]
Copies To:

LAB USE ONLY
WORK ORDER #: WP3877 - *
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 Anions (none)	Filt. ☐Y☐N PAH (none)	Filt. ☐Y☐N BTEX, EDB, MTBE, Total Naphthalene (HCL)	Filt. ☐Y☐N DISS. methane (HCL)	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N	Filt. ☐Y☐N
	14GLM0101	9/8/99/1225	GW	4	1	0	0	3						
	14GLM0201	9/8/99/1430	GW	9	1	2	3	3						
	14GLM0301	9/8/99/1210	GW	9	1	2	3	3						
	14GLM0301D	9/8/99/ -	GW	8	0	2	3	3						
	14TL00201	9/6/99/ —	—	1	Trip Blank									
		/												
		/												
		/												
		/												
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		/												
		/												
		/												
		/												
		/												

Cooler 3 of 6
BR

COMMENTS
Put on Ice 4°C

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/9/99 1900	[signature] 9-10-99 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 Inc.
Contact:
Phone #: ( )
Fax #: ( )
Address: NH-21 Ave H
City: N. Charleston
State: S.C.
Zip Code:
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): James R. Hill
Copies To:

LAB USE ONLY
WORK ORDER #: WP3877
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, Naphth	PAH	Total Lead	Anions nitrate, Sulfate	Dissolved Methane					
					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
	23GLM0201	9/9/99 1140	G.W	10	3	2	1	1	3					
	23GLX0201	1350		10	3	2	1	1	3					
	23GLM0301	1445		10	3	2	1	1	3					
	23TL00101	0800		2	2									

Cooler 5 of 6
BR

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/9/99 1900	Fedex 813451738820		9-10-99 1000	[signature]
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

Page ____ of ____

Client: TETRA TECH NUS
Contact: PAUL CALLAGAN
Phone #: (850) 385-9899
Fax #: (850) 356-9860
Address: 1401 OVEN PARK DR. 102
City: TALLAHASSEE
State: FL
Zip Code:
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 #: WP3877 - *
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, MTBE TOTAL NAPHTHALENE HCL	PAH Ø	ANIONS Ø	DISSOLVED METALS HCL	METALS HNO3					
	19GL01B01	9/9/99/1040	GW	9	3	2	~~1~~ 2	~~3~~ 2						
	19GLM0601	9/9/99/1600	GW	5	3	2								
	18GL01F01	9/9/99/1510	GW	6	3	2			1					
	19GL01D01	9/9/99/1045	GW	5	3	2	1	3						
	19GLM0301	9/9/99/1059	GW	9	3	2	1	3						
	19GL01C01	9/9/99/1033	GW	5	3	2								
	18GLM03D01	9/9/99/1601	GW	6	3	2			1					
	18GL01E01	9/9/99/1605	GW	10	3	2	1	3	1					
	18GLM0201	9/9/99/1517	GW	6	3	2			1					
	18GLM0201 D	9/9/99/0000	GW	6	3	2			1					
	18GLM0201 M	9/9/99/1517	GW	6	3	2			1					
	18GLM0101	9/9/99/1550	GW	10	3	2	1	3	1					
	T18TL00101	9/9/99	TRIP BLANK											
		/												
		/												
		/												

Cooler 4 of 6

BR

COMMENTS
PUT ON ICE 4°C

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/9/99 1830	FED EX 813451938820		9-10-99 1000	[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

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

ORDER NO WP-3877

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

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 09 NOV

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3877-1	34GLM0101	08 SEP 1725	10 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
CANCEL ANALYSIS		1	0.00	0.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP3877-2	34GLM0201	08 SEP 1748	10 SEP	AQ
	WP3877-3	34GLM0301	08 SEP 1848		
	WP3877-4	34GLM0201D	08 SEP		
	WP3877-5	14GLM0301D	08 SEP		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	4	125.00	500.00
Volatile Organics by 8260B	SW8260	4	75.00	300.00
CANCEL ANALYSIS		4	0.00	0.00
TOTALS		4	200.00	800.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP3877-6	34TL00201	08 SEP	10 SEP	AQ
	WP3877-7	14TL00201	08 SEP		
	WP3877-8	18TL00101	09 SEP		
	WP3877-9	23TL00101	09 SEP 0800		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	4	75.00	300.00

LABORATORY ORDER CONTINUED ON PAGE 2

ORDER NO WP-3877

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

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 09 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP3877-10	14GLM0101	08 SEP 1225	10 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Nitrate as N	353.2	1	30.00	30.00
Sulfate	375.4	1	0.00	0.00
CANCEL ANALYSIS		1	0.00	0.00
TOTALS		1	30.00	30.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP3877-11	14GLM0201	08 SEP 1430	10 SEP	AQ
	WP3877-12	14GLM0301	08 SEP 1210		
	WP3877-16	19GLO1D01	09 SEP 1045		
	WP3877-14	19GLM0301	09 SEP 1059		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Nitrate as N	353.2	4	30.00	120.00
Sulfate	375.4	4	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	4	125.00	500.00
Volatile Organics by 8260B	SW8260	4	75.00	300.00
CANCEL ANALYSIS		4	0.00	0.00
TOTALS		4	230.00	920.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
6	WP3877-15	19GLM0601	09 SEP 1600	10 SEP	AQ
	WP3877-13	19GLO1B01	09 SEP 1040		
	WP3877-17	19GLO1C01	09 SEP 1033		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	3	75.00	225.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	125.00	375.00
TOTALS		3	200.00	600.00

LABORATORY ORDER CONTINUED ON PAGE 3

ORDER NO WP-3877

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

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 09 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
7	WP3877-18	18GLO1F01	09 SEP 1510	10 SEP	AQ
	WP3877-19	18GLM03D01	09 SEP 1601		
	WP3877-20	18GLM0201	09 SEP 1517		
	WP3877-21	18GLM0201D	09 SEP 0000		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	4	75.00	300.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	4	125.00	500.00
Target Analyte List Metals, Total		4	100.00	400.00
TOTALS		4	300.00	1200.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
8	WP3877-22	18GLO1E01	09 SEP 1605	10 SEP	AQ
	WP3877-23	18GLM0101	09 SEP 1550		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	75.00	150.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	125.00	250.00
Nitrate as N	353.2	2	30.00	60.00
Sulfate	375.4	2	0.00	0.00
CANCEL ANALYSIS		2	0.00	0.00
Target Analyte List Metals, Total		2	100.00	200.00
TOTALS		2	330.00	660.00

LABORATORY ORDER CONTINUED ON PAGE 4

ORDER NO WP-3877

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

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

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

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 09 NOV

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
9	WP3877-24	23GLM0201	09 SEP 1140	10 SEP	AQ
	WP3877-25	23GLX0201	09 SEP 1350		
	WP3877-26	23GLM0301	09 SEP 1445		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	3	75.00	225.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	125.00	375.00
Lead, Total	200.7/6010	3	20.00	60.00
Nitrate as N	353.2	3	30.00	90.00
CANCEL ANALYSIS		3	0.00	0.00
Sulfate	375.4	3	0.00	0.00
TOTALS		3	250.00	750.00

ORDER NOTE: QC-II+ W/NARRATIVE
DD(KAS007QC-DB3)
CNC CHARLESTON
NFESC

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $5,260.00
This is NOT an Invoice

AJC/WEST.AJC(dw)
10-04Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

KATAHDIN ANALYTICAL SERVICES
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: WP3877-9
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/11/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23TL00101	AQ	9/9/99	9/10/99	9/11/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	102	%	1.0		
1,2-DICHLOROETHANE-D4	98	%	1.0		
TOLUENE-D8	88	%	1.0		
P-BROMOFLUOROBENZENE	89	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLM0201

Matrix: WATER **SDG Name:** WP3877

Percent Solids: 0.00 **Lab Sample ID:** WP3877-024

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.09	U		P	1

Comments:

FORM I - IN

Katahdin
ANALYTICAL SERVICES

Lab Number : WP-3877-24
Report Date: 10/12/99
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
23GLM0201	Aqueous	CLIENT	09/09/99	09/10/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	<0.050	mg/L	1.0	0.050	353.2	09/10/99	KW	
Sulfate	16.	mg/L	1.0	1.0	300.0	09/23/99	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.

10/12/99

LJO/baeajc(dw)/msm
PI10NOW1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

340 Country Club Rd.
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

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3877-24
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0201	AQ	9/9/99	9/10/99	9/14/99	DS	EPA 3510	SW

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	58	%	1.0		
2-FLUOROBIPHENYL	67	%	1.0		
TERPHENYL-D14	89	%	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: WP3877-24
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0201	AQ	9/9/99	9/10/99	9/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	96	%	1.0		
1,2-DICHLOROETHANE-D4	98	%	1.0		
TOLUENE-D8	85	%	1.0		
P-BROMOFLUOROBENZENE	85	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLX0201

Matrix: WATER **SDG Name:** WP3877

Percent Solids: 0.00 **Lab Sample ID:** WP3877-025

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.2	B		P	1

Comments:

FORM I - IN

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3877-25
Report Date: 10/12/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
23GLX0201	Aqueous	CLIENT	09/09/99	09/10/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	<0.050	mg/L	1.0	0.050	353.2	09/10/99	KW	
Sulfate	10.	mg/L	4.0	1.0	375.4	10/04/99	LT	

* 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.

10/12/99

LJO/baeajc(dw)/msm
PI10NOW2
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: WP3877-25
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0201	AQ	9/9/99	9/10/99	9/14/99	DS	EPA 3510	SW

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	71	%	1.0		
2-FLUOROBIPHENYL	69	%	1.0		
TERPHENYL-D14	74	%	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: WP3877-25
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0201	AQ	9/9/99	9/10/99	9/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	98	%	1.0		
1,2-DICHLOROETHANE-D4	96	%	1.0		
TOLUENE-D8	84	%	1.0		
P-BROMOFLUOROBENZENE	84	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLM0301

Matrix: WATER **SDG Name:** WP3877

Percent Solids: 0.00 **Lab Sample ID:** WP3877-026

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.3	B		P	1

Comments:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3877-26
Report Date: 10/12/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
23GLM0301	Aqueous	CLIENT	09/09/99	09/10/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Nitrate as N	<0.050	mg/L	1.0	0.050	353.2	09/10/99	KW	
Sulfate	5.1	mg/L	1.0	1.0	300.0	09/23/99	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.

10/12/99

LJO/baeajc(dw)/msm
PI10NOW1
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: WP3877-26
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0301	AQ	9/9/99	9/10/99	9/14/99	DS	EPA 3510	SW

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	68	%	1.0		
2-FLUOROBIPHENYL	70	%	1.0		
TERPHENYL-D14	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: WP3877-26
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0301	AQ	9/9/99	9/10/99	9/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	10	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	99	%	1.0		
1,2-DICHLOROETHANE-D4	95	%	1.0		
TOLUENE-D8	85	%	1.0		
P-BROMOFLUOROBENZENE	86	%	1.0		

Report Notes:

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWPI22ICW0

Matrix: WATER **SDG Name:** WP3877

QC Batch ID: PI22ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	RESULT	C
ANTIMONY	1.810	U
ARSENIC	2.070	U
LEAD	1.090	U
SELENIUM	2.570	U
THALLIUM	4.490	U

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWPI23ICW0

Matrix: WATER **SDG Name:** WP3877

QC Batch ID: PI23ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	RESULT	C
ANTIMONY	1.810	U
ARSENIC	2.070	U
LEAD	1.090	U
SELENIUM	2.570	U
THALLIUM	4.620	B
ZINC	6.650	B

LABORATORY CONTROL SAMPLES

Lab Name: Katahdin Analytical Services **Sample ID:** LCSWPI22ICW0

Matrix: WATER **SDG Name:** WP3877

QC Batch ID: PI22ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	TRUE	FOUND	% R	LIMITS (%)	
ANTIMONY	500.0	498.13	99.6	80	120
ARSENIC	2000.0	2007.28	100.4	80	120
LEAD	500.0	552.13	110.4	80	120
SELENIUM	2000.0	1882.55	94.1	80	120
THALLIUM	2000.0	2257.63	112.9	80	120

LABORATORY CONTROL SAMPLES

Lab Name: Katahdin Analytical Services **Sample ID:** LCSWPI23ICW0

Matrix: WATER **SDG Name:** WP3877

QC Batch ID: PI23ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	TRUE	FOUND	% R	LIMITS (%)	
ANTIMONY	500.0	488.94	97.8	80	120
ARSENIC	2000.0	1983.97	99.2	80	120
LEAD	500.0	544.49	108.9	80	120
SELENIUM	2000.0	1854.01	92.7	80	120
THALLIUM	2000.0	2170.03	108.5	80	120
ZINC	500.0	508.55	101.7	80	120

Katahdin Analytical Services, Inc.
Quality Control Report

Method Blank and Laboratory Control Sample Results

Client: Tetra Tech NUS	
Work Order: WP3877	

			METHOD BLANK RESULTS						LABORATORY CONTROL SAMPLE RESULTS						
Parameter	Date of Prep	Date of Analysis	Units		Concentration Measured in Blank		Acceptance Range	Practical Quantitation Level**	Units	True Value	Measured Value	Percent Recovered	Acceptance Range (%)	Acceptance Range (mg/kg)	
Nitrate-Nitrogen	10-Sep-99	10-Sep-99	mg/L	<	0.050	<	0.050	0.050	mg/L	1.00	0.82	82.0	80-120		
	10-Sep-99	10-Sep-99	mg/L	<	0.050	<	0.050	0.050	mg/L	1.00	1.06	106.0	80-120		
Sulfate	23-Sep-99	23-Sep-99	mg/L	<	1.0	<	1.0	1.0	mg/L	10	10	100.0	80-120		
	24-Sep-99	24-Sep-99	mg/L	<	1.0	<	1.0	1.0	mg/L	10	10	100.0	80-120		
	04-Oct-99	04-Oct-99	mg/L	<	1.0	<	1.0	1.0	mg/L	250	223	89.2	83-112		@

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

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

@ The laboratory uses the internally established statistical 99% confidence range as the acceptance range for this LCS.

0000082

Katahdin Analytical Services, Inc.
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client: Tetra Tech NUS	
Work Order: WP3877	

			DUPLICATE RESULTS					*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*										
			Sample Measurements				Acceptance		Concentration or Quantity				Matrix Spike Recovery (%)					
Parameter	Katahdin Sample No	Units	Rep 1	Rep 2	Mean Conc	RPD (%)	Range for RPD (%)	Units	Sampl Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1		Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
Nitrate - N	WP3877-12	mg/L	0.072	0.067	0.070	7.2	0-20	mg/L	0.07	0.5	0.362		58.0	*		75-125		0-20
Sulfate	WP3877-24	mg/L	15.892	15.814	15.853	0.5	0-20	mg/L	15.9	10	24.2		83.0			75-125		0-20

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

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

* Matrix spike recovery is outside the laboratory's specified acceptance range indicating potential sample matrix interference and potential bias of reported value for this parameter.

4B

SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;091499

Lab Name: Katahdin Analytical Services SDG No.: WP3877

Lab File ID: Z2054 Lab Sample ID: SBLK;091499

Instrument ID: 5972-Z Date Extracted: 9/14/99

GC Column: RTX-5 ID: 0.25 (mm) Date Analyzed: 09/16/99

Matrix: (soil/water) WATER Time Analyzed: 11:41

Level: (low/med) LOW

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCS;091499	LCS;091499	Z2055	9/16/99	12:28:00 PM
18GLM0201	WP3877-20	Z2152	9/27/99	12:51:00 PM
18GLM0201D	WP3877-21	Z2153	9/27/99	1:36:00 PM
18GLO1E01	WP3877-22	Z2154	9/27/99	2:23:00 PM
18GLM0101	WP3877-23	Z2155	9/27/99	3:09:00 PM
23GLM0201	WP3877-24	Z2156	9/27/99	3:56:00 PM
23GLX0201	WP3877-25	Z2157	9/27/99	4:41:00 PM
23GLM0301	WP3877-26	Z2158	9/27/99	5:29:00 PM
18GLM0201MS	WP3877-20MS	Z2159	9/27/99	6:15:00 PM
18GLM0201MSD	WP3877-20MSD	Z2160	9/27/99	7:01:00 PM
18GLM0201D	WP3877-21DL	Z2161	9/27/99	7:48:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;091499
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/16/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;091499	AQ	-	-	9/14/99	DS	EPA 3510	SW

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	54	%	1.0		
2-FLUOROBIPHENYL	56	%	1.0		
TERPHENYL-D14	66	%	1.0		

Report Notes: none

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z2055 **Sample ID: LCS;091499** **Date Run: 9/16/99**

Analyst: KRT **Time Injected: 12:28:00 PM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	50	28.8	*58	70-130
ACENAPHTHENE	50	30.1	*60	70-130
ACENAPHTHYLENE	50	29.9	*60	70-130
ANTHRACENE	50	30.4	*61	70-130
BENZO[A]ANTHRACENE	50	31.6	*63	70-130
BENZO[A]PYRENE	50	31.1	*62	70-130
BENZO[B]FLUORANTHENE	50	28.6	*57	70-130
BENZO[G,H,I]PERYLENE	50	28.7	*57	70-130
BENZO[K]FLUORANTHENE	50	35.5	71	70-130
CHRYSENE	50	35.8	72	70-130
DIBENZ[A,H]ANTHRACENE	50	28.0	*56	70-130
FLUORANTHENE	50	32.5	*65	70-130
FLUORENE	50	30.7	*61	70-130
INDENO[1,2,3-CD]PYRENE	50	28.8	*58	70-130
NAPHTHALENE	50	29.8	*60	70-130
PHENANTHRENE	50	31.3	*62	70-130
PYRENE	50	32.2	*64	70-130

*** Out of Limits**

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3877-20	Z2152	9/27/99	12:51:00 PM	SW	AQ	8270_99
WP3877-20MS	Z2159	9/27/99	6:15:00 PM	SW	AQ	8270_99
WP3877-20MSD	Z2160	9/27/99	7:01:00 PM	SW	AQ	8270_99

Compound Name	Native (ug/L)	MS Spk Amount (ug/L)	MSD Spk Amount (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
CHRYSENE	0	50	50	43.9	46.2	88	92	60-140	5.1	30
ACENAPHTHENE	117	50	50	208	198	*181	*161	60-140	4.9	30
ACENAPHTHYLENE	0	50	50	45.7	43.6	91	87	60-140	4.7	30
ANTHRACENE	0	50	50	44.2	45.0	88	90	60-140	1.8	30
BENZO[A]ANTHRACENE	0	50	50	42.7	45.9	85	92	60-140	7.2	30
BENZO[A]PYRENE	0	50	50	41.4	43.6	83	87	60-140	5.2	30
BENZO[B]FLUORANTHENE	0	50	50	40.2	42.4	80	85	60-140	5.3	30
2-METHYLNAPHTHALENE	131	50	50	237	213	*212	*164	60-140	11	30
BENZO[K]FLUORANTHENE	0	50	50	43.6	48.8	87	98	60-140	11	30
PYRENE	0	50	50	42.2	45.0	84	90	60-140	6.4	30
DIBENZ[A,H]ANTHRACENE	0	50	50	40.9	40.6	82	81	60-140	0.74	30
FLUORANTHENE	0	50	50	46.3	50.4	92	101	60-140	8.5	30
FLUORENE	47.5	50	50	120	118	*145	140	60-140	1.7	30
INDENO[1,2,3-CD]PYRENE	0	50	50	43.0	40.8	86	82	60-140	5.2	30
NAPHTHALENE	5.09	50	50	47.4	43.6	84	77	60-140	8.4	30
PHENANTHRENE	23.0	50	50	82.3	84.6	119	123	60-140	2.8	30
BENZO[G,H,I]PERYLENE	0	50	50	41.5	40.1	83	80	60-140	3.4	30

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

*** Out of Limits**

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKF11A

Lab Name: Katahdin Analytical Services SDG No.: WP3877

Lab File ID: F1820 Lab Sample ID: VBLKF11A

Date Analyzed: 09/11/99 Time Analyzed: 10:00

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: 5972-F

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSF11A	LCSF11A	F1819	9/11/99	8:56:00 AM
34TL00201	WP3877-6	F1822	9/11/99	11:26:00 AM
14TL00201	WP3877-7	F1823	9/11/99	12:03:00 PM
18TL00101	WP3877-8	F1824	9/11/99	12:40:00 PM
34GLM0201	WP3877-2	F1828	9/11/99	3:06:00 PM
34GLM0301	WP3877-3	F1829	9/11/99	3:42:00 PM
34GLM0201D	WP3877-4	F1830	9/11/99	4:19:00 PM
14GLM0301D	WP3877-5	F1831	9/11/99	4:56:00 PM
23TL00101	WP3877-9	F1832	9/11/99	5:32:00 PM
14GLM0201	WP3877-11	F1833	9/11/99	6:08:00 PM
14GLM0301	WP3877-12	F1834	9/11/99	6:45:00 PM
19GLO1B01	WP3877-13	F1835	9/11/99	7:22:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKF11A
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/11/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF11A	AQ	-	-	9/11/99	JSS	5030	JSS

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	94	%	1.0		
TOLUENE-D8	86	%	1.0		
P-BROMOFLUOROBENZENE	87	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F1819 **Sample ID: LCSF11A** **Date Run: 9/11/99**

Analyst: JSS **Time Injected 8:56:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	54.3	108	60-140
BENZENE	50	46.7	93	60-140
ETHYLBENZENE	50	48.3	96	60-140
MTBE	50	49.7	99	60-140
NAPHTHALENE	50	44.4	89	60-140
TOLUENE	50	48.3	96	60-140
TOTAL XYLENES	150	143	95	60-140

*** Out of Limits**

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKF13A

Lab Name: Katahdin Analytical Services SDG No.: WP3877

Lab File ID: F1839 Lab Sample ID: VBLKF13A

Date Analyzed: 09/13/99 Time Analyzed: 10:59

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: 5972-F

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSF13A	LCSF13A	F1838	9/13/99	10:07:00 AM
19GLM0301	WP3877-14	F1840	9/13/99	11:52:00 AM
19GLM0601	WP3877-15	F1841	9/13/99	12:28:00 PM
19GLO1D01	WP3877-16	F1842	9/13/99	1:05:00 PM
19GLO1C01	WP3877-17	F1843	9/13/99	1:41:00 PM
18GLO1F01	WP3877-18	F1844	9/13/99	2:17:00 PM
18GLM03D01	WP3877-19	F1845	9/13/99	2:54:00 PM
18GLM0201	WP3877-20	F1846	9/13/99	3:30:00 PM
18GLM0201D	WP3877-21	F1847	9/13/99	4:07:00 PM
18GLO1E01	WP3877-22	F1848	9/13/99	4:43:00 PM
18GLM0101	WP3877-23	F1849	9/13/99	5:20:00 PM
23GLM0201	WP3877-24	F1850	9/13/99	5:56:00 PM
23GLX0201	WP3877-25	F1851	9/13/99	6:32:00 PM
23GLM0301	WP3877-26	F1852	9/13/99	7:09:00 PM
18GLM0201MS	WP3877-20MS	F1853	9/13/99	7:45:00 PM
18GLM0201MSD	WP3877-20MSD	F1854	9/13/99	8:22:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKF13A
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/13/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF13A	AQ	-	-	9/13/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	95	%	1.0		
1,2-DICHLOROETHANE-D4	93	%	1.0		
TOLUENE-D8	82	%	1.0		
P-BROMOFLUOROBENZENE	83	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F1838 **Sample ID: LCSF13A** **Date Run: 9/13/99**

Analyst: KMC **Time Injected 10:07:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	50.6	101	60-140
BENZENE	50	40.5	81	60-140
ETHYLBENZENE	50	44.0	88	60-140
MTBE	50	46.8	94	60-140
NAPHTHALENE	50	41.0	82	60-140
TOLUENE	50	42.6	85	60-140
TOTAL XYLENES	150	130	87	60-140

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3877-20	F1846	9/13/99	3:30:00 PM	KMC	AQ	8260_99
WP3877-20MS	F1853	9/13/99	7:45:00 PM	KMC	AQ	8260_99
WP3877-20MSD	F1854	9/13/99	8:22:00 PM	KMC	AQ	8260_99

Compound Name	Native (ug/L)	MS Spk Amount (ug/L)	MSD Spk Amount (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
TOTAL XYLENES	4.02	150	150	117	114	76	73	60-140	2.6	20
TOLUENE	0	50	50	37.8	37.9	76	76	60-140	0.26	20
NAPHTHALENE	7.44	50	50	60.4	60.4	106	106	60-140	0	20
MTBE	0	50	50	45.5	46.8	91	94	60-140	2.8	20
ETHYLBENZENE	0.760	50	50	39.2	37.8	77	74	60-140	3.6	20
BENZENE	2.90	50	50	39.2	38.6	72	71	60-140	1.5	20
1,2-DIBROMOETHANE	0	50	50	49.2	50.7	98	101	60-140	3.0	20

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

*** Out of Limits**

Katahdin
ANALYTICAL SERVICES

October 13, 1999

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

RE: Katahdin Lab Number: WP3906
Project ID: CNC Charleston
Project Manager: Ms. Andrea J.Colby
Sample Receipt Date(s): 9/14/99

Dear Mr. Calligan:

Please find enclosed the following information:

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

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

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

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Patricia Homey
Authorized Signature

10/13/99
Date

340 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

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

The following samples were received on September 14, 1999 and were logged in under Katahdin Analytical Services work order number WP3906 for a hardcopy due date of October 14, 1999.

KATAHDIN Sample No.	TTNUS Sample Identification
WP3906-1	36GLM0101
WP3906-2	36GLO680004
WP3906-3	36GLM0701
WP3906-4	36GLM0401
WP3906-5	36GLM0501
WP3906-6	42GLM0401
WP3906-7	42GLM0301
WP3906-8	42GLM0201
WP3906-9	42GLM0501
WP3906-10	42GLM1401
WP3906-11	42GLM1701
WP3906-12	42GLM1501
WP3906-13	42GLM1601
WP3906-14	36GLM0201D
WP3906-15	22GLM0101
WP3906-16	22GLM0201
WP3906-17	22GLM0501
WP3906-18	22GLM0701
WP3906-19	42GLM1001
WP3906-20	42GLM1201
WP3906-21	42GLM0801
WP3906-22	42GLM0601
WP3906-23	42GLM0701D
WP3906-24	42GLM0101D
WP3906-25	42GLM1801
WP3906-26	42TL00101
WP3906-27	23TL00201
WP3906-28	36GLM0601
WP3906-29	36GLM0201
WP3906-30	36GLM0301
WP3906-31	42GLM0701
WP3906-32	42GLM0901
WP3906-33	42GLM1101
WP3906-34	42GLM0101

WP3906-35	42GLM1301
WP3906-36	23GLM0401
WP3906-37	23GLX0301
WP3906-38	23GLX0401
WP3906-39	23GLX0401D
WP3906-40	23GLM05D01
WP3906-41	23GLM0101
WP3906-42	25GLM0301
WP3906-43	25GLM0801
WP3906-44	25GLM0601
WP3906-45	25GLM0401
WP3906-46	25GLM0701
WP3906-47	16GLM7D01
WP3906-48	26GLP1201
WP3906-49	26GLP1301

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

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

Volatile Organic Analysis

Forty-seven aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on September 14, 1999 and were specified to be analyzed by USEPA method 8260B for the analytes benzene, toluene, ethylbenzene, xylenes, MTBE, naphthalene, and EDB.

Analyses for this workorder were performed on the 5973-U and 5970-Q instruments. A VSTD050 (50 ppb standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ppb.

Batch QC (VBLK, and LCS) was performed in each twelve-hour window. Results are included in this data package. The LCS QC samples were spiked with the entire list of compounds quantitated for at 50 ppb. Matrix spike/matrix spike duplicate analyses were performed on samples WP3906-5, -17, and -19.

Analyses of samples WP3906-10, -11, and -13 yielded concentrations of 1,2-dichloroethene (cis) over the upper limit of the calibration curve. Since this was not a requested analyte to be reported by the client, no laboratory action was taken.

Analysis of sample WP3906-19 was performed at a 1:5 dilution due to naphthalene concentrations, resulting in elevated reporting limits.

The initial analysis of sample WP3906-30 was performed outside of the twelve hour BFB tuning window. This was recognized during data review, and the subsequent reanalysis was outside of analytical holding times. Only the reanalysis performed outside of holding times is included in this data package.

Initial analyses of samples WP3906-36 and -44 yielded concentrations of target analytes over the upper limit of the calibration curve. Reanalyses occurred at 1:50 and 1:5 dilutions, respectively. Both sets of data for each sample are included in the data package.

Analysis of the QC samples WP3906-19MS/MSD yielded target analyte concentrations over the upper limit of the calibration curve. In accordance with the method, no laboratory action was taken with these samples.

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

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

Semivolatile Organic Analysis

Twenty-three aqueous samples were received by Katahdin Analytical Services laboratory on September 14, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of samples WP3906 3-12 and 15-18 occurred following USEPA method 3510 on September 16, 1999. A laboratory control spike/laboratory control spike duplicate pair was extracted in the batch. Samples WP3906-13 and -19-25 were extracted following USEPA method 3510 on September 17, 1999. A laboratory control sample, along with a site-specific MS/MSD pair on sample WP3906-19, was extracted in this batch. The remaining sample, WP3906-14, was extracted following USEPA method 3510 on September 20, 1999. A laboratory control sample was also extracted in this batch.

Analysis of sample WP3906-19 yielded a concentration of the analyte naphthalene over the upper limit of the calibration curve. Reanalysis occurred at a 1:2 dilution successfully. Both sets of data for this sample are included in this data package.

Initial analysis of sample WP3906-22 yielded internal standard area recovery deviations. Reanalysis yielded similar results, confirming matrix interference. Both sets of data are included in this data package.

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

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

Metals Analysis

The samples of Katahdin Work Order WP3906 were prepared and analyzed for metals in accordance with the "Test Methods for Evaluating Solid Waste", SW-846, November 1986, Third Edition.

Inductively-Coupled Plasma (ICP) Atomic Emission Spectroscopic Analysis

Aqueous-matrix Katahdin Sample Nos. WP3906- (1-25, 28-46) were digested for ICP analysis on 09/17/99 (QC Batch PI17ICW0), 09/21/99 (QC Batch PI21ICW0), and 09/22/99 (QC Batch PI22ICW0) in accordance with USEPA Method 3010A. Katahdin Sample Nos. WP3906- (19, 46) were prepared with duplicate matrix-spiked aliquots during digestion.

ICP analyses of Katahdin Work Order WP3906 sample digestates were performed in accordance with USEPA Method 6010B, using a Thermo Jarrell Ash (TJA) Trace ICP spectrometer and a TJA 61 ICP spectrometer. All samples were analyzed within holding times and all QC criteria were met with the following comments or exceptions:

Some of the results for run QC samples (ICV, ICB, CCV, CCB, ICSA, and ICSAB) included in the accompanying data package may have exceeded acceptance limits for some elements. Please note that all client samples and batch QC samples associated with out-of-control results for run QC samples were subsequently reanalyzed for the analytes in question.

Analysis of Mercury by Cold Vapor Atomic Absorption (CVAA) Spectrophotometry

Aqueous-matrix Katahdin Sample Nos. WP3906- (1-25, 28-35) were digested for mercury analysis on 09/22/99 (QC Batch PI22HGW0), 09/25/99 (QC Batch PI25HGW0), and 09/27/99 (QC Batch PI27HGW0) in accordance with USEPA Method 7470A. Katahdin Sample No. WP3906-1 was prepared with a single matrix-spiked aliquot, and Katahdin Sample Nos. WP3906- (19, 21) were prepared with duplicate matrix-spiked aliquots during digestion.

Mercury analyses of Katahdin Work Order WP3906 sample digestates were performed using a Leeman Labs PS200 automated mercury analyzer. All samples were analyzed within holding times and all run QC criteria were met.

Wet Chemistry Analysis

Due to IC instrument failure, alternate methods were approved for work order WP3906 by Kelly Johnson-Carper for the analysis of nitrate and sulfate. Nitrate analyses (353.2) and Sulfate analyses (375.4) were performed according to the U.S. EPA, Methods for Analysis of Water and Wastes, EPA 600/4-79-020, 1979, Revised 1983. Nitrate analyses (E300) were performed according to the U.S. EPA "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA 600/R-93/100, August 1993. All samples were analyzed within analytical hold times.

The Wet Chemistry staff noted no protocol deviations.

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

LAB (WORK ORDER) # WD3906

PAGE: 1 OF 12

COOLER: 1 OF 12

COC# –
SDG# –
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: ASC

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☑	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☑	☐	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.1	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]: HNO_3 added to metals aliquot to bring pH < 2 : 426LM100l, 36 6LM030l, 426LM070l, 426LM090l, 426LM110l, 36 6LM060l, 36 6LM020l, 36 6LM070l, 36 6LM040l, 36 6LM010l, 36 6L0680004, 426LM070l D

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

0000219

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

LAB (WORK ORDER) # WD3906

PAGE: 2 OF 12

COOLER: 2 OF 12

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

COC# –
SDG# –
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FED EX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☑	☐	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 1.3	AJC notified Jeff Alexander 9/14/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	BKR ☑	☑	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	BKR ☑	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:
* Sample matching discussed w/ P.M
No containers for 226LM0301D – Jeff Alexander said to cross off COC
Received Pb bottle for 256LM0401 – Jeff Alexander said to add to COC

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

0000220

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

LAB (WORK ORDER) # WD3906

PAGE: 3 OF 12

COOLER: 3 OF 12

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☐	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.6	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	BP ☑	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

0000221

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

LAB (WORK ORDER) # WD3906

PAGE: 4 OF 12

COOLER: 4 OF 12

COC# —
SDG#
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.0	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☑	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

00000222

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

LAB (WORK ORDER) # WD3906

PAGE: 5 OF 12

COOLER: 5 OF 12

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FED EX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJL

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 3.2	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

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

LAB (WORK ORDER) # WD3906

PAGE: 6 OF 12

COOLER: 6 OF 12

CLIENT: Tetratech NUS

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FED EX
RECEIVED BY: BKR
LIMS ENTRY BY: BEW
LIMS REVIEW BY / PM: AJC

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 3.1	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

0000224

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

LAB (WORK ORDER) # WD3906

PAGE: 7 OF 12

COOLER: 7 OF 12

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

COC# –
SDG# –
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 3.0	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

00000225

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

LAB (WORK ORDER) # WD3906

PAGE: 8 OF 12

COOLER: 8 OF 12

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FED EX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.2	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED(1)?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

0000226

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

LAB (WORK ORDER) # WD3906

PAGE: 9 OF 12

COOLER: 9 OF 12

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FED EX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: ASC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 21	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP (NFESC) ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

0000227

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

LAB (WORK ORDER) # WD3906

PAGE: 10 OF 12

COOLER: 10 OF 12

COC#

SDG#

DATE / TIME RECEIVED: 09-14-99 ~ 0900

DELIVERED BY: FED EX

RECEIVED BY: BKR

LIMS ENTRY BY: BKR

LIMS REVIEW BY / PM: AJL

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.1	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED(1)?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

0000228

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

LAB (WORK ORDER) # WD3906

PAGE: 11 OF 12

COOLER: 11 OF 12

CLIENT: Tetratech NUS

PROJECT: CNC CHARLESTON

COC#
SDG#
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 1.7	ASC notified Jeff Alexander 9/14/99
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	BK ☑	☑	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES[1]:

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

0000229

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

LAB (WORK ORDER) # WD3906

PAGE: 12 OF 12

COOLER: 12 OF 12

CLIENT: Tetratech NUS

COC# —
SDG# —
DATE / TIME RECEIVED: 09-14-99 ~ 0900
DELIVERED BY: FEDEX
RECEIVED BY: BKR
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

PROJECT: CNC CHARLESTON

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☐	☐		
2. CHAIN OF CUSTODY PRESENT IN THIS COOLER?	☐	☑	☐		
3. CHAIN OF CUSTODY SIGNED BY CLIENT?	☑	☐	☐		
4. CHAIN OF CUSTODY MATCHES SAMPLES?	☐	☑	☐		
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 3.1	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT Y or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☐	☑	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED(1)?	☐	☑	☐		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

13. ANALYTICAL PROGRAMS (CIRCLE ONE) COMMERCIAL CLP HAZWRAP NFESC ACOE AFCEE OTHER (STATE OF ORIGIN):

LOG - IN NOTES(1):

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

0000230

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 Krieger / Jerry Krieger
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 (Filt. ☐Y☐N)	PAH (Filt. ☐Y☐N)	Total Lead (Filt. ☐Y☐N)	Anions Nitrate, Sulfate (Filt. ☐Y☐N)	Dissolved Methane (Filt. ☐Y☐N)	(Filt. ☐Y☐N)	(Filt. ☐Y☐N)	(Filt. ☐Y☐N)	(Filt. ☐Y☐N)	(Filt. ☐Y☐N)
	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							
	23TL0020	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 BR

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
J. Krieger	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 0000231

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					
	36GLM0201D	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)
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 #: 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	BTEX, MTBE, EDB Total Vol. HCL Filt. ☐Y ☒N	PAH 10 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							
	42TLØØ1Ø1	9/13/99	aq	2		2								
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	9/13/99 1700	8134583693 3Ø		9-14-99 0900	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

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

ORDER NO WP-3906

Project Manager: Andrea J. Colby
ORDER DATE: 09/14/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 14 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: P.HALVERSON/T.THOMPSON/J.KRIEGERDELIVERED BY: FEDEXDISPOSE: AFTER 13

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3906-1	36GLM0101	10 SEP 1110	14 SEP	AQ
	WP3906-2	36GLO680004	10 SEP 1115		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Target Analyte List Metals, Total		2	100.00	200.00

LABORATORY ORDER CONTINUED ON PAGE 2

ORDER NO WP-3906

Project Manager: Andrea J. Colby
ORDER DATE: 09/14/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 14 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: P.HALVERSON/T.THOMPSON/J.KRIEGERDELIVERED BY: FEDEXDISPOSE: AFTER 13

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP3906-3	36GLM0701	10 SEP 1120	14 SEP	AQ
	WP3906-4	36GLM0401	10 SEP 1510		
	WP3906-5	36GLM0501	10 SEP 1515		
	WP3906-6	42GLM0401	11 SEP 1055		
	WP3906-7	42GLM0301	11 SEP 1050		
	WP3906-8	42GLM0201	11 SEP 1045		
	WP3906-9	42GLM0501	11 SEP 1035		
	WP3906-10	42GLM1401	11 SEP 1125		
	WP3906-11	42GLM1701	11 SEP 1110		
	WP3906-12	42GLM1501	11 SEP 1110		
	WP3906-13	42GLM1601	11 SEP 1125		
	WP3906-14	36GLM0201D	13 SEP		
	WP3906-15	22GLM0101	10 SEP 1130		
	WP3906-16	22GLM0201	10 SEP 1110		
	WP3906-17	22GLM0501	10 SEP 1418		
	WP3906-18	22GLM0701	10 SEP 1420		
	WP3906-19	42GLM1001	12 SEP 0941		
	WP3906-20	42GLM1201	12 SEP 1030		
	WP3906-21	42GLM0801	12 SEP 1057		
	WP3906-22	42GLM0601	12 SEP 1535		
	WP3906-23	42GLM0701D	12 SEP 0000		
	WP3906-24	42GLM0101D	12 SEP 0000		
	WP3906-25	42GLM1801	13 SEP 0842		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Target Analyte List Metals, Total		23	100.00	2300.00
Volatile Organics by 8260B	SW8260	23	75.00	1725.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	23	125.00	2875.00
TOTALS		23	300.00	6900.00

LABORATORY ORDER CONTINUED ON PAGE 3

ORDER NO WP-3906

Project Manager: Andrea J. Colby
ORDER DATE: 09/14/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 14 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: P.HALVERSON/T.THOMPSON/J.KRIEGERDELIVERED BY: FEDEXDISPOSE: AFTER 13

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP3906-26	42TL00101	13 SEP	14 SEP	AQ
	WP3906-27	23TL00201	10 SEP 0800		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP3906-28	36GLM0601	13 SEP 1015	14 SEP	AQ
	WP3906-29	36GLM0201	13 SEP 1055		
	WP3906-30	36GLM0301	13 SEP 1131		
	WP3906-31	42GLM0701	12 SEP 1202		
	WP3906-32	42GLM0901	12 SEP 1206		
	WP3906-33	42GLM1101	12 SEP 1204		
	WP3906-34	42GLM0101	12 SEP 1435		
	WP3906-35	42GLM1301	12 SEP 1449		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Target Analyte List Metals, Total		8	100.00	800.00
Volatile Organics by 8260B	SW8260	8	75.00	600.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	8	125.00	1000.00
Nitrate as N	353.2	8	30.00	240.00
Sulfate	375.4	8	0.00	0.00
Methane Subcontract		8	95.00	760.00
TOTALS		8	425.00	3400.00

LABORATORY ORDER CONTINUED ON PAGE 4

ORDER NO WP-3906

Project Manager: Andrea J. Colby
ORDER DATE: 09/14/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 14 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: P.HALVERSON/T.THOMPSON/J.KRIEGERDELIVERED BY: FEDEXDISPOSE: AFTER 13

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP3906-36	23GLM0401	10 SEP 1517	14 SEP	AQ
	WP3906-37	23GLX0301	10 SEP 1535		
	WP3906-38	23GLX0401	10 SEP 1540		
	WP3906-39	23GLX0401D	10 SEP		
	WP3906-40	23GLM05D01	10 SEP 1600		
	WP3906-41	23GLM0101	10 SEP 1630		
	WP3906-42	25GLM0301	12 SEP 1510		
	WP3906-43	25GLM0801	12 SEP 1555		
	WP3906-44	25GLM0601	12 SEP 1620		
	WP3906-45	25GLM0401	13 SEP 1140		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	10	75.00	750.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	10	125.00	1250.00
Lead, Total	200.7/6010	10	20.00	200.00
Elements Sample Preparation		10	0.00	0.00
TOTALS		10	220.00	2200.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
6	WP3906-46	25GLM0701	13 SEP 1115	14 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	75.00	75.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00
Lead, Total	200.7/6010	1	20.00	20.00
Elements Sample Preparation		1	0.00	0.00
Nitrate as N	353.2	1	30.00	30.00
Sulfate	375.4	1	0.00	0.00
Methane Subcontract		1	95.00	95.00
TOTALS		1	345.00	345.00

LABORATORY ORDER CONTINUED ON PAGE 5

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

ORDER NO WP-3906

Project Manager: Andrea J. Colby
ORDER DATE: 09/14/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 14 OCT
FAC.ID: CNC CHARLESTON

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

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

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

PROJECT: CTO #68

SAMPLED BY: P.HALVERSON/T.THOMPSON/J.KRIEGERDELIVERED BY: FEDEXDISPOSE: AFTER 13

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
7	WP3906-47	16GLM7D01	12 SEP 0755	14 SEP	AQ
	WP3906-48	26GLP1201	13 SEP 1345		
	WP3906-49	26GLP1301	13 SEP 1355		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	3	75.00	225.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	125.00	375.00
TOTALS		3	200.00	600.00

ORDER NOTE: QC-II+ W/NARRATIVE
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA. 15220
REPORT AND DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $13,795.00
This is NOT an Invoice

AJC/BKR
09-14Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

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KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
A-1	Insufficient sample was provided to enable laboratory to achieve the laboratory's standard Practical Quantitation Level.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
B	'B' flag denotes detection of this analyte in the laboratory method blank analyzed concurrently with the sample.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-2	Sample dilution required for quantitation of one or more target analytes; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLM0401

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-036

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	4.8	B		P	1

Comments:

FORM I - IN

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: WP3906-36
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0401	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	73	%	1.0		
2-FLUOROBIPHENYL	86	%	1.0		
TERPHENYL-D14	97	%	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: WP3906-36
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0401	AQ	9/10/99	9/14/99	9/20/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	140	ug/L	1.0	5	5
TOLUENE	11	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	J5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	E2800	ug/L	1.0	5	5
TOTAL XYLENES	J3	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	97	%	1.0		
1,2-DICHLOROETHANE-D4	86	%	1.0		
TOLUENE-D8	101	%	1.0		
P-BROMOFLUOROBENZENE	103	%	1.0		

Report Notes: J, 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: WP3906-36DL
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/22/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0401	AQ	9/10/99	9/14/99	9/22/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	J170	ug/L	50	250	5
TOLUENE	<250	ug/L	50	250	5
1,2-DIBROMOETHANE	<250	ug/L	50	250	5
ETHYLBENZENE	<250	ug/L	50	250	5
NAPHTHALENE	<250	ug/L	50	250	5
MTBE	4100	ug/L	50	250	5
TOTAL XYLENES	<250	ug/L	50	250	5
DIBROMOFLUOROMETHANE	113	%	50		
1,2-DICHLOROETHANE-D4	104	%	50		
TOLUENE-D8	108	%	50		
P-BROMOFLUOROBENZENE	105	%	50		

Report Notes: J, O-2

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLX0301

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-037

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.7	B		P	1

Comments:

FORM I - IN

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: WP3906-37
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0301	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	71	%	1.0		
2-FLUOROBIPHENYL	85	%	1.0		
TERPHENYL-D14	109	%	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: WP3906-37
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0301	AQ	9/10/99	9/14/99	9/20/99	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	98	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	101	%	1.0		
P-BROMOFLUOROBENZENE	103	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLX0401

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-038

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.2	B		P	1

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: WP3906-38
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0401	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	J9	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	77	%	1.0		
TERPHENYL-D14	70	%	1.0		

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: WP3906-38
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0401	AQ	9/10/99	9/14/99	9/20/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	J3	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	J3	ug/L	1.0	5	5
MTBE	28	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	102	%	1.0		
P-BROMOFLUOROBENZENE	104	%	1.0		

Report Notes: J

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLX0401D

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-039

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.9	B		P	1

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: WP3906-39
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0401D	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	13	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	69	%	1.0		
2-FLUOROBIPHENYL	80	%	1.0		
TERPHENYL-D14	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: WP3906-39
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLX0401D	AQ	9/10/99	9/14/99	9/20/99	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	50	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	98	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	100	%	1.0		
P-BROMOFLUOROBENZENE	102	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLM05D01

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-040

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.09	U		P	1

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: WP3906-40
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM05D01	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	66	%	1.0		
2-FLUOROBIPHENYL	79	%	1.0		
TERPHENYL-D14	53	%	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: WP3906-40
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM05D01	AQ	9/10/99	9/14/99	9/20/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	100	%	1.0		
1,2-DICHLOROETHANE-D4	95	%	1.0		
TOLUENE-D8	102	%	1.0		
P-BROMOFLUOROBENZENE	105	%	1.0		

Report Notes:

INORGANIC ANALYSIS DATA SHEET

Lab Name: Katahdin Analytical Services **Client Field ID:** 23GLM0101

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-041

Concentration Units (ug/L or mg/Kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M	DF
7439-92-1	LEAD	1.2	B		P	1

Comments:

FORM I - IN

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: WP3906-41
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0101	AQ	9/10/99	9/14/99	9/16/99	LAP	EPA 3510	SW

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	79	%	1.0		
2-FLUOROBIPHENYL	88	%	1.0		
TERPHENYL-D14	71	%	1.0		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3906-41
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
23GLM0101	AQ	9/10/99	9/14/99	9/20/99	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	38	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	99	%	1.0		
1,2-DICHLOROETHANE-D4	92	%	1.0		
TOLUENE-D8	101	%	1.0		
P-BROMOFLUOROBENZENE	105	%	1.0		

Report Notes:

3P

PREPARATION BLANKS

Lab Name: Katahdin Analytical Services **Sample ID:** PBWPI22ICW0

Matrix: WATER **SDG Name:** WP3906

QC Batch ID: PI22ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	RESULT	C
LEAD	1.090	U

LABORATORY CONTROL SAMPLES

Lab Name: Katahdin Analytical Services **Sample ID:** LCSWPI22ICW0

Matrix: WATER **SDG Name:** WP3906

QC Batch ID: PI22ICW0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	TRUE	FOUND	% R	LIMITS (%)	
LEAD	500.0	552.13	110.4	80	120

FORM VII - IN

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services **Client Field ID:** 25GLM0701S

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-046S

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	Spiked Sample Result	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
LEAD	538.0900		0.6200	U	500	107.6		75	125	P

Comments:

5A

SPIKE SAMPLE RECOVERY

Lab Name: Katahdin Analytical Services **Client Field ID:** 25GLM0701S

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-046P

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	Spiked Sample Result	C	Sample Result	C	Spike Added	%R	Q	Control Limits (%R) Low	High	M
LEAD	504.6900		0.6200	U	500	100.9		75	125	P

Comments:

5D

SPIKE DUPLICATES

Lab Name: Katahdin Analytical Services **Client Field ID:** 25GLM0701

Matrix: WATER **SDG Name:** WP3906

Percent Solids: 0.00 **Lab Sample ID:** WP3906-046

Concentration Units (ug/L or mg/Kg dry weight): ug/L

Analyte	Control Limits	Spike Result	C	Spike Dup. Result	C	RPD	Q	M
LEAD		538.0900		504.6900		6.4		P

Comments:

FORM VD - IN

4B
SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;091699

Lab Name: Katahdin Analytical Services SDG No.: WP3906

Lab File ID: X2884 Lab Sample ID: SBLK;091699

Instrument ID: 5970-X Date Extracted: 9/16/99

GC Column: RTX-5 ID: 0.25 (mm) Date Analyzed: 09/23/99

Matrix: (soil/water) WATER Time Analyzed: 12:48

Level: (low/med) LOW

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSD;091699	LCSD;091699	X2886	9/23/99	2:18:00 PM
36GLM0701	WP3906-3	X2887	9/23/99	3:03:00 PM
36GLM0501	WP3906-5	X2889	9/23/99	4:32:00 PM
42GLM0401	WP3906-6	X2890	9/23/99	5:16:00 PM
42GLM0301	WP3906-7	X2891	9/23/99	6:01:00 PM
42GLM0201	WP3906-8	X2892	9/23/99	6:45:00 PM
42GLM0501	WP3906-9	X2893	9/23/99	7:30:00 PM
42GLM1401	WP3906-10	X2894	9/23/99	8:15:00 PM
LCS;091699	LCS;091699	X2899	9/24/99	1:41:00 PM
42GLM1701	WP3906-11	X2901	9/24/99	3:10:00 PM
42GLM1501	WP3906-12	X2902	9/24/99	3:54:00 PM
22GLM0201	WP3906-16	X2904	9/24/99	5:23:00 PM
22GLM0501	WP3906-17	X2905	9/24/99	6:07:00 PM
22GLM0701	WP3906-18	X2906	9/24/99	6:52:00 PM
23GLM0401	WP3906-36	X2907	9/24/99	7:37:00 PM
23GLX0301	WP3906-37	X2908	9/24/99	8:21:00 PM
23GLX0401	WP3906-38	X2909	9/24/99	9:05:00 PM
23GLX0401D	WP3906-39	X2910	9/24/99	9:50:00 PM
23GLM0101	WP3906-41	X2912	9/24/99	11:18:00 PM
36GLM0401	WP3906-4	X2916	9/27/99	12:48:00 PM
22GLM0101	WP3906-15	X2917	9/27/99	1:32:00 PM
23GLM05D01	WP3906-40	X2918	9/27/99	2:17:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;091699
SDG: WP3906
Report Date: 10/6/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/23/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;091699	AQ	-	-	9/16/99	LAP	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	106	%	1.0		
2-FLUOROBIPHENYL	98	%	1.0		
TERPHENYL-D14	114	%	1.0		

Report Notes:

Katahdin Analytical Services

LCS/LCSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
LCSD;091699	X2886	9/23/99	14:18	KRT	AQ	8270
LCS;091699	X2899	9/24/99	13:41	SW	AQ	8270

Compound Name	Spk Amt ug/L	LCS Result ug/L	LCSD Result ug/L	LCS Rec (%)	LCSD Rec (%)	Rec. Limits (%)	RPD (%)	RPD Limit (%)
2-METHYLNAPHTHALENE	50	33.9	33.3	*68	*67	70-130	1.5	30
ACENAPHTHENE	50	37.7	35.6	75	71	70-130	5.5	30
ACENAPHTHYLENE	50	37.8	35.8	76	72	70-130	5.4	30
ANTHRACENE	50	42.5	43.9	85	88	70-130	3.5	30
BENZO[A]ANTHRACENE	50	40.6	44.8	81	90	70-130	10	30
BENZO[A]PYRENE	50	38.5	42.3	77	85	70-130	9.9	30
BENZO[B]FLUORANTHENE	50	35.6	45.7	71	91	70-130	25	30
BENZO[G,H,I]PERYLENE	50	44.1	37.9	88	76	70-130	15	30
BENZO[K]FLUORANTHENE	50	38.5	48.1	77	96	70-130	22	30
CHRYSENE	50	50.0	50.4	100	100	70-130	0	30
DIBENZ[A,H]ANTHRACENE	50	42.3	37.6	85	75	70-130	12	30
FLUORANTHENE	50	45.3	47.5	91	95	70-130	4.3	30
FLUORENE	50	36.9	38.2	74	76	70-130	2.7	30
INDENO[1,2,3-CD]PYRENE	50	53.1	33.0	110	*66	70-130	*50	30
NAPHTHALENE	50	32.1	30.5	*64	*61	70-130	4.8	30
PHENANTHRENE	50	44.9	44.6	90	89	70-130	1.1	30
PYRENE	50	41.1	41.2	82	82	70-130	0	30

RPD = (lcs rec - lcsd rec) /[(lcsd rec +lcsd rec)/2] * 100

*** Out of Limits**

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKU20A

Lab Name: Katahdin Analytical Services SDG No.: WP3906

Lab File ID: U0972 Lab Sample ID: VBLKU20A

Date Analyzed: 09/20/99 Time Analyzed: 9:25

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: 5973-U

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSU20A	LCSU20A	U0971	9/20/99	8:32:00 AM
42GLM0101D	WP3906-24	U0973	9/20/99	10:12:00 AM
42GLM1801	WP3906-25	U0974	9/20/99	10:47:00 AM
42GLM0701	WP3906-31	U0975	9/20/99	11:23:00 AM
42GLM0901	WP3906-32	U0976	9/20/99	11:59:00 AM
42GLM1101	WP3906-33	U0977	9/20/99	12:34:00 PM
42GLM0101	WP3906-34	U0978	9/20/99	1:10:00 PM
42GLM1301	WP3906-35	U0979	9/20/99	1:46:00 PM
23GLM0401	WP3906-36	U0980	9/20/99	2:22:00 PM
23GLX0301	WP3906-37	U0981	9/20/99	2:58:00 PM
23GLX0401	WP3906-38	U0982	9/20/99	3:34:00 PM
23GLX0401D	WP3906-39	U0983	9/20/99	4:10:00 PM
23GLM05D01	WP3906-40	U0984	9/20/99	4:45:00 PM
23GLM0101	WP3906-41	U0985	9/20/99	5:21:00 PM
25GLM0301	WP3906-42	U0986	9/20/99	5:57:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKU20A
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKU20A	AQ	-	-	9/20/99	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	98	%	1.0		
1,2-DICHLOROETHANE-D4	88	%	1.0		
TOLUENE-D8	101	%	1.0		
P-BROMOFLUOROBENZENE	102	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: U0971 **Sample ID: LCSU20A** **Date Run: 9/20/99**

Analyst: KMC **Time Injected: 8:32:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	50.7	101	60-140
BENZENE	50	50.6	101	60-140
ETHYLBENZENE	50	50.3	101	60-140
MTBE	50	42.3	84	60-140
NAPHTHALENE	50	48.0	96	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	148	99	60-140

*** Out of Limits** *1*

4A
VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKU22A

Lab Name: Katahdin Analytical Services SDG No.: WP3906

Lab File ID: U1018 Lab Sample ID: VBLKU22A

Date Analyzed: 09/22/99 Time Analyzed: 10:44

GC Column: RTX-624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: 5973-U

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSU22A	LCSU22A	U1017	9/22/99	9:54:00 AM
25GLM0601	WP3906-44DL	U1019	9/22/99	11:32:00 AM
23GLM0401	WP3906-36DL	U1021	9/22/99	12:47:00 PM
36GLM0501MS	WP3906-5MS	U1025	9/22/99	3:14:00 PM
36GLM0501MSD	WP3906-5MSD	U1026	9/22/99	3:50:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKU22A
SDG: WP3906
Report Date: 10/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 9/22/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKU22A	AQ	-	-	9/22/99	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	110	%	1.0		
1,2-DICHLOROETHANE-D4	99	%	1.0		
TOLUENE-D8	107	%	1.0		
P-BROMOFLUOROBENZENE	104	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: U1017 **Sample ID: LCSU22A** **Date Run: 9/22/99**

Analyst: KMC **Time Injected: 9:54:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	49.7	99	60-140
BENZENE	50	51.1	102	60-140
ETHYLBENZENE	50	48.6	97	60-140
MTBE	50	41.8	84	60-140
NAPHTHALENE	50	41.2	82	60-140
TOLUENE	50	53.6	107	60-140
TOTAL XYLENES	150	141	94	60-140

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3906-5	Q6636	9/15/99	7:27:00 PM	HMP	AQ	8260_99
WP3906-5MS	U1025	9/22/99	3:14:00 PM	KMC	AQ	8260_99
WP3906-5MSD	U1026	9/22/99	3:50:00 PM	KMC	AQ	8260_99

Compound Name	Native (ug/L)	MS Spk Amount (ug/L)	MSD Spk Amount (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
TOTAL XYLENES	0	150	150	134	123	89	82	60-140	8.6	20
TOLUENE	0	50	50	51.1	46.5	102	93	60-140	9.4	20
NAPHTHALENE	0	50	50	45.6	42.6	91	85	60-140	6.8	20
MTBE	0	50	50	45.4	43.4	91	87	60-140	4.5	20
ETHYLBENZENE	0	50	50	45.6	41.8	91	84	60-140	8.7	20
BENZENE	0	50	50	48.5	44.6	97	89	60-140	8.4	20
1,2-DIBROMOETHANE	0	50	50	53.6	48.8	107	98	60-140	9.4	20

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

*** Out of Limits**

APPENDIX D

AQUIFER CHARACTERIZATION GRAPHS

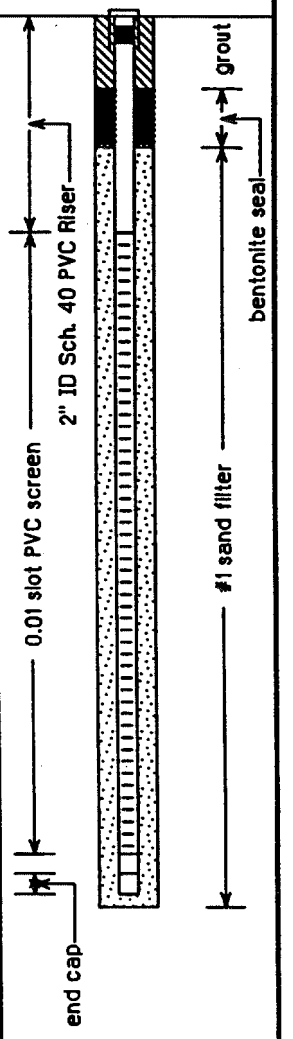
EnSafe/Allen & Hoshall

Monitoring Well NBCF613001

Project: *ZONE F – Naval Base Charleston*	Coordinates: *2319224.29 E, 374017.05 N*
Location: *Charleston, SC*	Surface Elevation: *9.5 feet msl*
Started at *14:00 on 10-21-96*	TOC Elevation: *9.48 feet msl*
Completed at *15:30 on 10-21-96*	Depth to Groundwater: *8.90 feet TOC* Measured: *12/18/96*
Drilling Method: *4.25" ID (7.5" OD) HSA with split spoon sampler*	Groundwater Elevation: *0.58 feet msl*
Drilling Company: *Alliance Environmental (SC cert. # 889)*	Total Well Depth: *13.3 feet bgs*
Geologist: *B. Blythe*	Well Screen: *3.3 to 12.7 feet bgs*

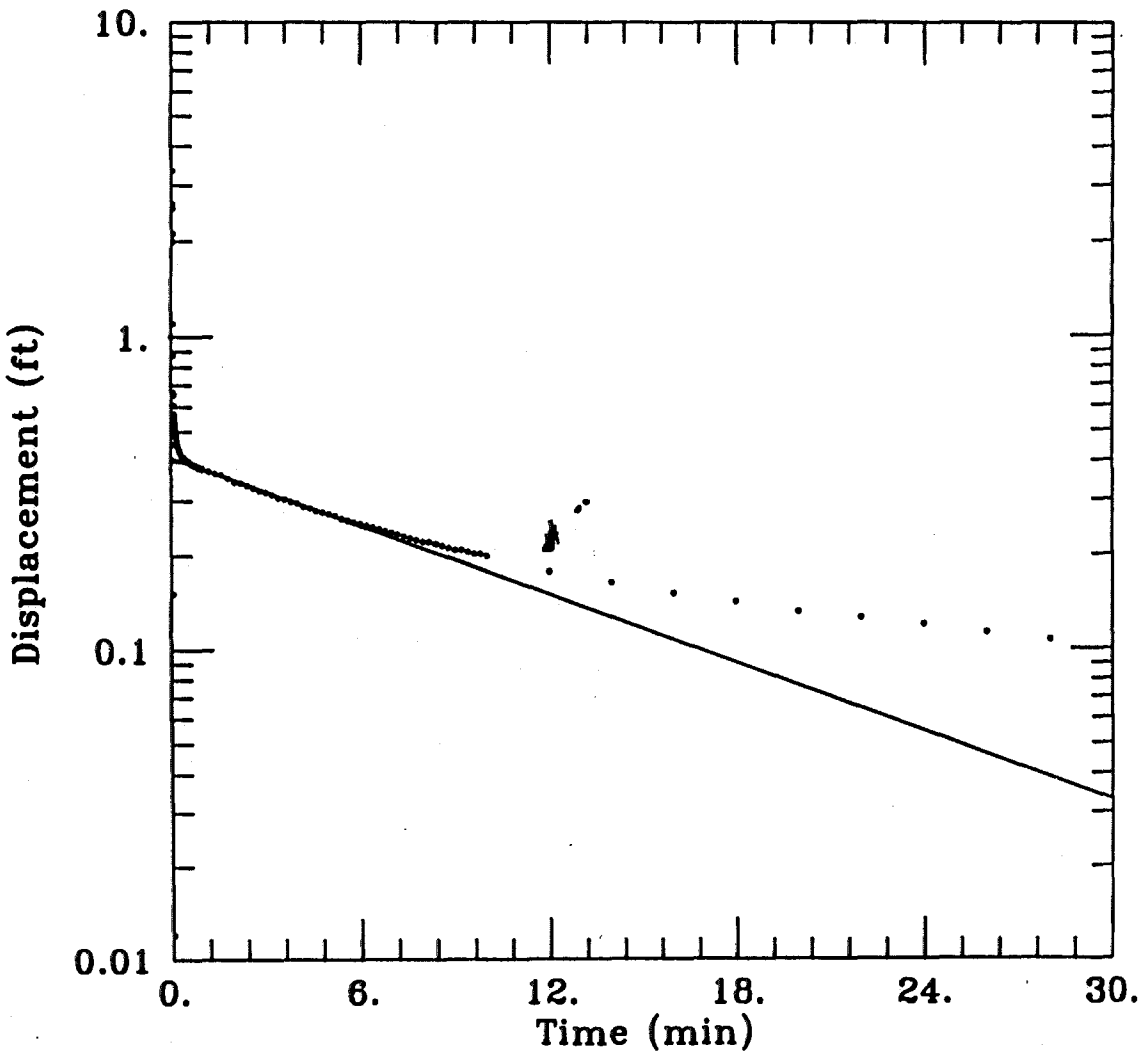
DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
								Surface conditions: Asphalt	
								No recovery: evidence of sandy clay with mottled black organic sandy clay on augers.	
5			1	0				No recovery.	
			2	0			SM	Sand: red and grey; fine to medium; silty; dense; dry to moist.	2.5
							SM CL	Sand and clay: gray to green; fine to medium; dense; moist.	1.8 / 1.5
			3	50	0				
10							SC	Sand: gray to green; clayey; fine to medium; dense; moist; with saturated sand lenses at 11.2 – 11.4.	.5
			4	95	0				-2.4
15									
20									

WELL DIAGRAM



Client: CLEAN	Company: E/A&H
Location: NAVAL BASE CHARLESTON	Project: 2906-08450

FALLING HEAD SLUG TEST NBCF613001



DATA SET:
61301FAL.AQT
04/15/97

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: January 1997

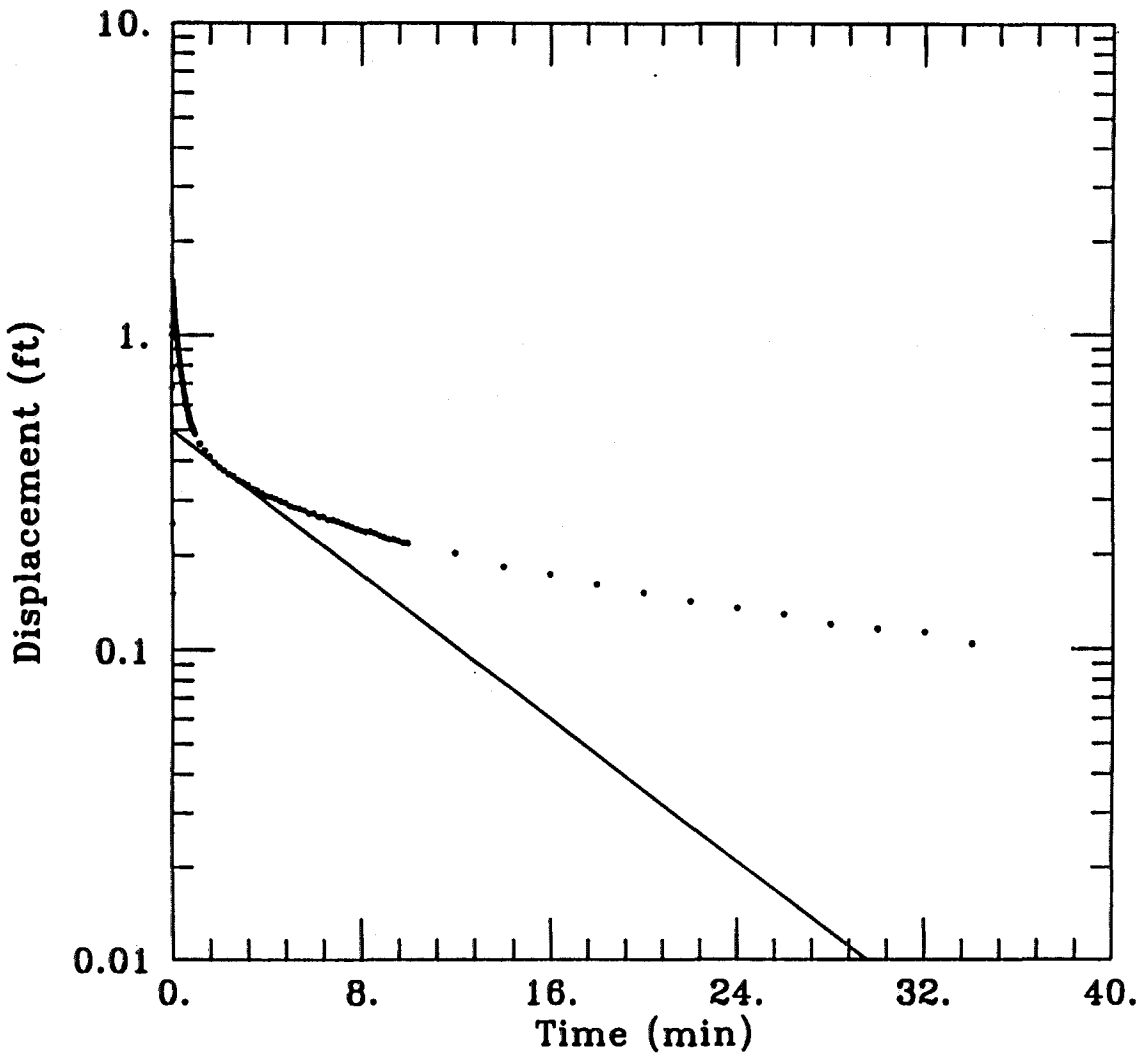
TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.3125 ft
L = 4. ft
b = 4. ft
H = 4. ft

PARAMETER ESTIMATES:
K = 0.0005749 ft/min
y0 = 0.4125 ft

AQTESOLV

Client: **CLEAN**	Company: **E/A&H**
Location: **NAVAL BASE CHARLESTON**	Project: **2906-08450**

RISING HEAD SLUG TEST NBCF613001



DATA SET:
61301RIS.AQT
04/15/97

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: January 1997

TEST DATA:
H0 = 1. ft
rc = 0.083 ft
rw = 0.3125 ft
L = 4. ft
b = 4. ft
H = 4. ft

PARAMETER ESTIMATES:
K = 0.0009022 ft/min
y0 = 0.4989 ft

AQTESOLV

APPENDIX E

RBSL CALCULATIONS

Minimum Construction Worker RBSLs

	Dermal	Incidental Ingestion	Inhalation	Minimum
	RBSL	RBSL	RBSL	RBSL
	mg/L	mg/L	mg/L	mg/L
Benzene	0.85	68.52	0.15	0.15
Naphthalene	1.63	1135.56	2.63	1.63
MTBE	25.92	141.94	293.44	25.92

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

Prepared By: _____ Reviewed By: _____

Construction Worker Inhalation RBSLs

Chemical			Dair	Dwater	H	θ_{scap}	θ_{Wcap}	θ_{as}	θ_{ws}	θ_T	Deff-cap	Deff-s
			cm^2/s	cm^2/s	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^2/s	cm^2/s
Benzene			0.093	1.10E-05	2.26E-01	0.038	0.342	0.33	0.15	0.48	1.35E-05	1.01E-02
Naphthalene			0.072	9.40E-06	2.00E-03	0.038	0.342	0.33	0.15	0.48	5.79E-04	7.83E-03
MTBE			0.102	1.05E-05	4.16E-02	0.038	0.342	0.33	0.15	0.48	3.90E-05	1.10E-02

Chemical			hcap	hv	Deff-ws	Uair	δair	Lgw	W	VFwamb	TR (carc)	HI (nonc)
			cm	cm	cm^2/s	cm/sec	cm	cm	cm	$mg/m^3/mg/L$		
Benzene			5	117	3.18E-04	225	200	122	1500	1.97E-05	1.00E-06	NA
Naphthalene			5	117	5.17E-03	225	200	122	1500	2.83E-06	NA	1
MTBE			5	117	8.79E-04	225	200	122	1500	9.99E-06	NA	1

Chemical	TR (carc)	HI (nonc)	BWadult	AT	Sfi (carc)	RfD (nonc)	IR air	EF	ED	RBSLair	H	RBSLwater
			kg	yr	$[mg/kg\text{-}day]^{-1}$	[mg/kg-day]	m^3/day	day/yr	yr	mg/m^3	cm^3/cm^3	mg/L
Benzene	1.00E-06	NA	70	70	2.90E-02	NA	20	90	1	3.43E-02	2.26E-01	0.15
Naphthalene	NA	1	70	1	NA	3.71E-04	20	90	1	5.27E-03	2.00E-03	2.63
MTBE	NA	1	70	1	NA	8.60E-01	20	90	1	1.22E+01	4.16E-02	293.443

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

Prepared By: _____

Reviewed By: _____

Construction Worker Incidental Ingestion RBSLs

	BW	AT	IR	ED	EF	Target	CSF oral	Rfd oral	RBSL
	kg	day	L/day	yrs	days/yr	Risk or HQ			mg/L
Benzene	70	25550	0.01	1	90	1.00E-06	2.90E-02		6.85E+01
Naphthalene	70	365	0.01	1	90	1.0	NA	4.00E-02	1135.556
MTBE	70	365	0.01	1	90	1.0	NA	5.00E-03	141.9444

Prepared By: _____ Reviewed By: _____

Construction Worker Dermal RBSLs

	Kow	MW	Kp	B	τ_{event}	c	b	t^*	t_{event}	DAevent
			cm/hr	unitless	hr/event			hr	hr/event	
Benzene	199.526231	78.1	0.11551543	0.39263786	2.87E-01	6.32E-01	6.03E-01	6.90E-01	1	eq 3.3
Naphthalene	1995.26231	128.2	0.60545239	2.63663896	5.48E-01	2.73E+00	5.69E+00	2.29E+00	1	eq 3.2
MTBE	15.136	88.15	0.00769788	0.0277977	3.27E-01	3.52E-01	3.20E-01	7.85E-01	1	eq 3.3

	BW	AT	EV	ED	EF	SA	CSF derm	Rfd derm	Target	RBSL	RBSL
	kg	day	events/day	yrs	days/yr	cm^2	$(mg/kg\text{-}day)^{-1}$	mg/kg-day	Risk or HQ	mg/L	mg/L
Benzene	70	25550	1	1	90	4500	2.99E-02	NA	1.00E-06		8.52E-01
Naphthalene	70	365	1	1	90	4500	NA	3.20E-02	1.0	1.63E+00	
MTBE	70	365	1	1	90	4500	NA	5.00E-03	1.0	2.59E+01	

Factor A	Factor 1	Factor 2
	7.18E-01	0.782661
1.24E+00		
1.22E-02		

* Kow and MW values for xylene, m-

Prepared By: _____

Reviewed By: _____

Volatilization Factor: Groundwater to Ambient Air (VFwamb)

Chemical	Dair	Dwater	H	θ_{acap}	θ_{wcap}	θ_{as}	θ_{ws}	θ_T	Deff-cap	Deff-s
	cm^2/s	cm^2/s	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^2/s	cm^2/s
Benzene	0.093	1.10E-05	2.20E-01	0.038	0.342	0.33	0.15	0.48	1.36E-05	1.01E-02
Toluene	0.085	9.40E-06	2.60E-01	0.038	0.342	0.33	0.15	0.48	1.13E-05	9.20E-03
Ethylbenzene	0.076	8.50E-06	3.20E-01	0.038	0.342	0.33	0.15	0.48	9.39E-06	8.22E-03
Xylenes	0.072	8.50E-06	2.90E-01	0.038	0.342	0.33	0.15	0.48	9.40E-06	7.79E-03
Naphthalene	0.072	9.40E-06	4.90E-02	0.038	0.342	0.33	0.15	0.48	2.92E-05	7.79E-03

Chemical	hcap	hv	Deff-ws	Uair	δair	Lgw	W	VFwamb	TR (carc)	HI (nonc)
	cm	cm	cm^2/s	cm/sec	cm	cm	cm	$mg/m^3/mg/L$		
Benzene	5	117	3.22E-04	225	200	122	1500	1.94E-05	1.00E-06	NA
Toluene	5	117	2.68E-04	225	200	122	1500	1.90E-05	NA	1
Ethylbenzene	5	117	2.23E-04	225	200	122	1500	1.95E-05	NA	1
Xylenes	5	117	2.23E-04	225	200	122	1500	1.77E-05	NA	1
Naphthalene	5	117	6.55E-04	225	200	122	1500	8.77E-06	NA	1

Chemical	BWadult	AT	Sfi (carc)	RfD (nonc)	IR air	EF	ED	RBSLair	RBSLwater
	kg	yr	$[mg/kg\text{-}day]^{-1}$	[mg/kg-day]	m^3/day	day/yr	yr	mg/m^3	mg/L
Benzene	70	70	2.90E-02	NA	20	90	1	3.43E-02	1769.4
Toluene	70	1	NA	1.14E-01	20	90	1	1.62E+00	8.51E+04
Ethylbenzene	70	1	NA	2.86E-01	20	90	1	4.06E+00	2.08E+05
Xylenes	70	1	NA	NA*	20	90	1	NA*	NA*
Naphthalene	70	1	NA	3.71E-04	20	90	1	5.27E-03	6.00E+02

Reference: American Society for Testing and Materials (ASTM). 1997. *Standard Guide for Risk-Based Corrective Action Applied to Petroleum Release Sites.* Designation E 1739-95[ε1]

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

= South Carolina value
= Site-specific value or based on site-specific value
= Calculated value
= ASTM default value
= Value from EPA Integrated Risk Information System
= Assumptions for construction worker scenario

Construction Worker Inhalation RBSLs

Chemical	Dair	Dwater	H	θ_{acap}	θ_{wcap}	θ_{as}	θ_{ws}	θ_T	Deff-cap	Deff-s
	cm^2/s	cm^2/s	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	cm^2/s	cm^2/s
Benzene	0.093	1.10E-05	2.20E-01	0.038	0.342	0.33	0.15	0.48	1.36E-05	1.01E-02
Toluene	0.085	9.40E-06	2.60E-01	0.038	0.342	0.33	0.15	0.48	1.13E-05	9.20E-03
Ethylbenzene	0.076	8.50E-06	3.20E-01	0.038	0.342	0.33	0.15	0.48	9.39E-06	8.22E-03
Xylenes	0.072	8.50E-06	2.90E-01	0.038	0.342	0.33	0.15	0.48	9.40E-06	7.79E-03
Naphthalene	0.072	9.40E-06	4.90E-02	0.038	0.342	0.33	0.15	0.48	2.92E-05	7.79E-03

Chemical	hcap	hv	Deff-ws	Uair	δair	Lgw	W	VFwamb	TR (carc)	HI (nonc)
	cm	cm	cm^2/s	cm/sec	cm	cm	cm	$mg/m^3/mg/L$		
Benzene	5	117	3.22E-04	225	200	122	1500	1.94E-05	1.00E-06	NA
Toluene	5	117	2.68E-04	225	200	122	1500	1.90E-05	NA	1
Ethylbenzene	5	117	2.23E-04	225	200	122	1500	1.95E-05	NA	1
Xylenes	5	117	2.23E-04	225	200	122	1500	1.77E-05	NA	1
Naphthalene	5	117	6.55E-04	225	200	122	1500	8.77E-06	NA	1

Chemical	BWadult	AT	Sfi (carc)	RfD (nonc)	IR air	EF	ED	RBSLair	RBSLwater
	kg	yr	$[mg/kg\text{-}day]^{-1}$	[mg/kg-day]	m^3/day	day/yr	yr	mg/m^3	mg/L
Benzene	70	70	2.90E-02	NA	20	90	1	3.43E-02	1769.4
Toluene	70	1	NA	1.14E-01	20	90	1	1.62E+00	8.51E+04
Ethylbenzene	70	1	NA	2.86E-01	20	90	1	4.06E+00	2.08E+05
Xylenes	70	1	NA	NA*	20	90	1	NA*	NA*
Naphthalene	70	1	NA	3.71E-04	20	90	1	5.27E-03	6.00E+02

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

APPENDIX F

RBCA CALCULATIONS

SITE 23
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

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

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

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{oc} = Fraction Organic Carbon in Soil	g-C/g-soil
α_X = Longitudinal Dispersivity = 0.2x	m
α_Y = Transverse Dispersivity = $\alpha_X/300$	m
α_Z = Vertical Dispersivity = 1×10^{-99}	m
k_{oc} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_c = Constituent Retardation Factor	
V/R_c = Maximum Transport Rate of Dissolved Constituent = $(K_s i)/(\theta R_c)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE} ft	X_{POE} m	Y m	Z m	t sec	K_s m/sec	i m/m	θ cm^3/cm^3	ρ_s g/cm^3	α_X m	α_Y m	α_Z m	f_{oc} g-C/g-soil	k_{oc} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-so	V m/sec	R_c	C_{POE}/C_{SOURCE}
Benzene	900	274.323	15	2	1.00E+13	3.52E-06	0.0023	0.55	1.2	27.43	9.14	1.37	1.79E-02	83	1.4857	1.47E-08	4.242	4.901E-03
MTBE	900	274.323	15	2	1.00E+13	3.52E-06	0.0023	0.55	1.2	27.43	9.14	1.37	1.79E-02	11.5	0.20585	1.47E-08	1.449	4.901E-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-so	V m/sec	R_c	C_{POE}/C_{COMP}
Benzene	860	262.131	15	2	1.00E+12	3.52E-06	0.0023	0.55	1.2	26.21	8.74	1.31	1.79E-02	83	1.4857	1.47E-08	4.242	5.366E-03
MTBE	860	262.131	15	2	1.00E+13	3.52E-06	0.0023	0.55	1.2	26.21	8.74	1.31	1.79E-02	11.5	0.20585	1.47E-08	1.449	5.366E-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
Benzene	0.005	1.020	0.932
MTBE	0.040	8.161	7.454

SITE 23
ZONE F, 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_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_c = Constituent Retardation Factor	
V/R_c = Maximum Transport Rate of Dissolved Constituent = $(K_s i)/(\theta R_c)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE} ft	X_{POE} m	Y m	Z m	t sec	K_s m/sec	i m/m	θ m^3/cm	ρ_s g/cm^3	α_x m	α_y m	α_z m	f_{oc} g-C/g-soil	k_{oc} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-soil	V m/sec	R_c	C_{POE}/C_{SOURCE}
Benzene	8	2.43843	15	2	3.15E+08	3.52E-06	0.0023	0.55	1.2	0.24	0.08	0.01	1.79E-02	83	1.4857	1.47E-08	4.242	3.291E-02
MTBE	28.5	8.68691	15	2	3.15E+08	3.52E-06	0.0023	0.55	1.2	0.87	0.29	0.04	1.79E-02	11.5	0.20585	1.47E-08	1.449	9.830E-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	C_{SOURCE} mg/L	C_X mg/L
Benzene	0.140	0.005
MTBE	4.100	0.040

Prepared By: _____

Reviewed By: _____

SITE 23
ZONE F, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

DOMENICO'S DILUTION/ATTENUATION EQUATION FOR GROUNDWATER TRANSPORT

Predicted 20-year Migration of Constituents in Groundwater

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

Parameter Descriptions:	Units
ρ_s = Soil Bulk Density	g/cm^3
f_{OC} = Fraction Organic Carbon in Soil	g-C/g-soil
α_X = Longitudinal Dispersivity = x/10	m
α_Y = Transverse Dispersivity = $\alpha_X/3$	m
α_Z = Vertical Dispersivity = $\alpha_X/20$	m
k_{OC} = Organic Carbon Partition Coefficient	cm^3-H_2O/g-C
k_D = Soil-Water Sorption Coefficient	cm^3-H_2O/g-soil
V = Pore Water Velocity	m/sec
R_C = Constituent Retardation Factor	
V/R_C = Maximum Transport Rate of Dissolved Constituent = $(K_s i)/(\theta R_C)$	m/sec
RBSL = Risk-Based Screening Level in Water Provided by SCDHEC (1998)	mg/L

Dilution & Attenuation without Biological Decay

Constituent	X_{POE} ft	X_{POE} m	Y m	Z m	t sec	K_S m/sec	i m/m	θ m^3/cm^3	ρ_S g/cm^3	α_X m	α_Y m	α_Z m	f_{OC} g-C/g-soil	k_{OC} cm^3-H_2O/g-C	k_D cm^3-H_2O/g-soil	V m/sec	R_C	C_{POE}/C_{SOURCE}
Benzene	15.5	4.72446	15	2	6.31E+08	3.52E-06	0.0023	0.55	1.2	0.47	0.16	0.02	1.79E-02	83	1.4857	1.47E-08	4.242	3.894E-02
MTBE	73.8	22.4945	15	2	6.31E+08	3.52E-06	0.0033	0.55	1.2	2.25	0.75	0.11	1.79E-02	11.5	0.20585	2.11E-08	1.449	9.705E-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	C_{SOURCE} mg/L	C_X mg/L
Benzene	0.140	0.005
MTBE	4.100	0.040

Prepared By: _____

Reviewed By: _____