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STANDARD LIMITED ASSESSMENT REPORT FOR SITE 34 BUILDING NH1137 ZONE C REVISION 1 CNC CHARLESTON SC

01/01/2000

TETRA TECH INC

Rev.1
01/07/00

Standard Limited Assessment Report for Site 34, Building NH 1137

Zone C
Charleston Naval Complex
North Charleston, South Carolina

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

January 2000

Rev.1
01/13/00

STANDARD LIMITED ASSESSMENT REPORT
FOR
SITE 34, BUILDING NH 1137

ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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

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

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0093

JANUARY 2000

PREPARED UNDER THE SUPERVISION OF:

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EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment (RA) for Site 34 which includes an underground storage tank (UST) system for Building NH1137 of Zone C, at Charleston Naval Complex (CNC), located in North Charleston, South Carolina. The UST provided fuel oil to the boilers in the Boiler House behind Building NH1137. The boilers generated steam for use by the complex. The RA was performed under the direction of the South Carolina Department of Health and Environmental Control Rapid Assessment guidance dated June 20, 1997, and approval letter dated April 7, 1999. After determining all laboratory analytical results for groundwater and all but four analytical results for soil were below risk-based screening levels (RBSLs), the reporting format was reduced from a Rapid Assessment Report to a Standard Limited Assessment (SLA) report format. A Tier I and a Tier II Evaluation were performed for the chemicals of concern (CoCs) in soil which exceeded the RBSLs.

TtNUS performed the following actions during the Rapid Assessment:

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, to evaluate public and private potable wells, to locate utility line areas, to locate nearby surface water bodies, and to determine surface hydrology and drainage.
- Reviewed the previously prepared Underground Storage Tank Assessment Report for UST 1137-2 and AST 1137-1 to determine boring locations and monitoring well placements.
- Conducted site survey to identify utilities and to construct a site plan.
- Installed nine soil borings: eight borings to depths of 7 to 13 feet below land surface (bls) using direct push technology (DPT); and one background lithology soil boring to a depth of 30 feet bls.
- Collected soil samples for field screening using an organic vapor analyzer.
- Installed three temporary piezometers, two inside selected soil borings, and one installed in the predicted upgradient direction.
- Collected soil and groundwater samples from DPT borings for on-site mobile laboratory screening analysis for benzene, toluene, ethylbenzene, and total xylenes (BTEX); naphthalene; and diesel range organics.
- Collected and analyzed seven confirmation soil samples at a fixed-base analytical laboratory for BTEX and naphthalene using U.S. Environmental Protection Agency (USEPA) Method 8260, and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270.

- Collected and analyzed soil sample from one soil boring for total organic carbon using USEPA Method 415.1, total recoverable petroleum hydrocarbon using USEPA Method 9071, and grain size analysis using sieve and hydrometer methods.
- Installed three shallow permanent monitoring wells using hollow stem auger to 12.5 to 13.5 feet bls.
- Collected groundwater samples from the three newly constructed monitoring wells for laboratory analysis at a fixed-base analytical laboratory.
- Analyzed groundwater samples for BTEX, methyl tert-butyl ether, and naphthalene using USEPA Method 8260 and PAHs using USEPA Method 8270.
- Surveyed monitoring well and top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

Conclusions

Five soil samples were collected on May 11, 1999, and analyzed for BTEX and PAHs by a fixed-base laboratory. Soil concentrations were reported below RBSLs for clay-rich soils (<5 feet) in all borings except one. Soil boring SB-01, collected at a depth of 2 to 3 feet bls, contained four CoCs below laboratory detection limits but above RBSLs (total naphthalene, benzene, toluene, and ethylbenzene, all <850 mg/kg). Because of the high detection limit for the CoCs, it is uncertain if the concentration is below the RBSL; therefore, the concentrations were evaluated as actual.

Two groundwater sampling events were conducted, one on July 13, 1999, collecting samples from only MW1 and another on September 8, 1999, collecting samples from all three monitoring wells. No dissolved CoCs were detected in any of the wells sampled.

Tier I Evaluation

A site conceptual model identified one possible receptor with two pathways present for Site 34:

1. A construction worker in a utility trench ingesting subsurface soil and/or having dermal contact with impacted subsurface soil.
2. A construction worker in a utility trench who might ingest potentially contaminated groundwater and/or have dermal contact with groundwater contaminated by the leaching of petroleum hydrocarbons from the soil to the groundwater.

Tier II Evaluation

No soil concentrations exceeded the dermal contact or ingestion soil RBSLs; therefore, a construction worker ingesting or contacting impacted soil is not considered at risk.

The maximum soil concentration of the CoCs (all <850 mg/kg) found during the site assessment does not exceed the calculated SSTL; therefore, the construction worker is not at risk if exposed to groundwater by dermal contact, incidental ingestion, and/or inhalation--regardless of downgradient distance from the source. The concentrations of CoCs in the groundwater resulting from leaching from the soil to the groundwater will not exceed the RBSL for a construction worker in a utility trench. This potential receptor is considered nonthreatened and further analysis is not necessary.

Recommendations for Further Action

Intrinsic Corrective Action is proposed for Site 34. The representative concentration of the CoC is below the State-provided RBSL, the calculated RBSL, or the SSTL; therefore, further delineation is not necessary. TtNUS recommends submitting a Corrective Action Plan proposing a short-term monitoring program to verify intrinsic remediation.

Contracting Company Name/Address

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

STANDARD LIMITED ASSESSMENT REPORT

Site 34,
Former UST NH1137-2
Turnbull Avenue
Building NH 1137
Zone C
Charleston Naval Complex
North Charleston, South Carolina 29405-2413

Site ID # 17754

Submitted to:
Bureau of Underground Storage Tank Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

This report has been reviewed by:

Name	Gregory D. Swanson	17132	1/16/00
	Registered Professional Engineer	**Registration #**	**Date**
Signature	Gregory D. Swanson		1/16/00
			Date

REGISTERED PROFESSIONAL SEAL

SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 17132
GREGORY D. SWANSON

SCDHEC Certificate # 24

STANDARD LIMITED ASSESSMENT

I INTRODUCTION

A. Owner/Operator Information

Name: U.S. Navy Southern Division (SouthDiv), Naval Facilities Engineering Command (NAVFAC)

Address: 2155 Eagle Drive, North Charleston, South Carolina 29406

Telephone Number (Include area code): 803-743-9985

B. Property Owner Information

Name (if different from above): Same as above

Address:

Telephone Number (include area code):

C. Contractor Information

Name: Tetra Tech NUS

Address: Foster Plaza VII, 661 Andersen Drive, Pittsburgh, Pennsylvania 15220

Telephone Number (include area code): 412-921-7090

D. Site Information

Address: Site 34, Building NH 1137, Turnbull Avenue, North Charleston, South Carolina 29405-2413

Description of Adjacent Land Use (Commercial, residential, rural, etc.) Include documentation (e.g. zoning regulations) as appropriate: commercial & industrial

Predicted Future Land Use (include site and adjacent area): residential & commercial

E. Site History

Date Release Reported to SCDHEC: Estimated as August 1996

Estimated Quantity of Product Released: unknown

Cause of Release: Definite cause unknown but holes in the UST were observed during removal from the subsurface.

UST #	Product	Date Installed	Currently in use (Yes or No)	If not in use, Date Removed
1	UST 1137-2	1940	No	August 19, 1996

Other Releases at this site? **Yes** _____ **No** X

If yes, Date Release Reported to SCDHEC: Not Applicable

Status of Release: Corrective Action

No Further Action Date: Not Applicable

II. SITE CHARACTERISTICS

A. Site Geography

Describe the topography of the site and surrounding area (slope, vegetation, bodies of water, major land features, etc.): Topography is typical of lower coastal plains - flat low relief plains broken only by meandering sluggish streams and rivers. Original topography has been modified by dredge spoil deposition. Site 34 lies in Zone C of the developed area on the west bank of the Cooper River (as described in the RFI). The east bank is undeveloped and contains extensive wetlands.

Mean Elevation of Site: <10 ft above mean sea level

Additional Comments: None

B. Exposure Analysis

Describe all potential receptors and preferential pathways within a 1000-foot radius of the site.

Description of Receptor	Distance/Direction from Site
Trespassers	On-site. No complete pathways.
Recreation Park Visitors	Not Applicable
Construction Workers in Utility Trenches	30 feet to the east
Commercial Workers	On-site. No complete pathways.
Surface Water	2000 feet north toward Noisette Creek. 2500 feet east toward Cooper River. No complete pathways.
Resident	Not Applicable

Provide any additional comments necessary to complete the exposure analysis:

Trespassers –

A trespasser would be treated similarly as an on-site commercial worker. No complete pathways exist for trespassers.

Recreation Park Visitors –

The site is not a recreational area. Plans for the site do not include the development of recreational areas at the site. Therefore, a recreational park visitor was not considered as a potential receptor.

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 potential chemical constituents of concern in soil by the following pathways: inhalation of volatiles from soil, dermal contact with soil, and incidental ingestion of soil. There is no groundwater impact at the site; however, impacted soil leaching to groundwater was considered as a complete pathway. There are buried storm drain lines, water, electric, and sanitary sewer lines within close proximity of the former UST location; therefore, the point of exposure location for the on-site construction worker was considered to be at the source.

Commercial 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; therefore, an on-site worker was considered as a potential receptor. Incidental ingestion of and dermal contact with impacted soil are expected to be virtually nonexistent because commercial workers are typically located inside the building. Groundwater at the site is not impacted; therefore, no groundwater pathways are complete. It is unlikely that any additional exposure pathways will exist; therefore, no complete pathways exist for commercial workers.

Surface Water –

Noisette Creek is located approximately 2000 feet north and Cooper River is 2500 feet west of the site. There is no impacted groundwater at the site to impact off-site surface water; therefore, this pathway was not considered further.

Resident –

The site is not a residential area (an on-site resident is defined as any person making his or her home at the site). Future plans for the site do not include the development of residential areas at the site. Therefore, a resident was not considered as a potential receptor.

Drinking Water –

Drinking water at this site is provided by the city; therefore, ingestion of groundwater is not a complete exposure pathway. Adjacent building foundations are assumed sufficient to prevent volatilization from groundwater into buildings, and there is no known history of vapors in nearby buildings.

See Tier 1 Evaluation section for a detailed discussion of receptors, exposure, and potential pathways.

C. **Utilities Survey**

List the utilities on site, and adjacent to the site within a 250-foot radius, that could serve as exposure points or as preferential pathways.

Utility	On-site or Distance/Direction from site	Depth to Utility
Gas	80 feet east, 120 feet north	See Additional Comments
Electrical	30 feet east	See Additional Comments
Sewer	150 feet south, 110 feet north	See Additional Comments
Storm Drain	20 fee east, 20 feet north, 180 feet south, 70 feet west	See Additional Comments
Water	150 feet south, 150 feet west	See Additional Comments

Additional Comments: Specific information concerning the depth of utilities below land surface is currently unavailable. However, according to facility personnel, typically utility lines are located approximately 2 to 6 feet below land surface (SPORTENVDETCHASN, 1999).

SPORTENDETCHASN (Supervisor of Ship Building, Conversion and Repair, United States Navy, Portsmouth Virginia, Environmental Detachment Charleston), 1999. Personal Contact between Paul Calligan, TtNUS and Copes Wannamaker, SPORTENDCHASN, June 17, 1999.

D. **Site Geology**

Provide a brief description of the regional geology and hydrogeology: Cretaceous and younger sediments thicken seaward and are underlain by older igneous and metamorphic basement rock. Pleistocene-age (Quaternary Period) sands, silts, and clays of high organic content, referred to as the Wando Formation, may be exposed at the surface at the Naval Base. Underlying the Wando Formation are the Oligocene-age Cooper Group and the Eocene-age Santee Limestone, both from the Tertiary Period. The Cooper Group consists of the Parker's Ferry, Ashley, and Harleyville formations. The Ashley formation, which was formerly referred to as the Cooper Marl, is a pale-green or olive-brown, sandy, phosphatic limestone or marl at a depth of 30-70 feet below ground surface. Native soil is fine-grained silts, silty sands, and clay typical of terrigenous tidal marsh environments. Sand lenses are present in some areas but are generally only a few feet thick. Most of the Naval Base has been filled using dredged materials consisting of unsorted mixture of sands, silts, and clays.

Provide a brief description of the site geology and stratigraphy: Geological and stratigraphic information has been obtained from soil and monitoring well borings installed during the RFIs for Zone C. The most prominent formations encountered during drilling were the Wando and Ashley formations. The lowermost stratigraphic unit is identified as the Ashley, which is the confining unit for the deep groundwater aquifer. There is difficulty identifying the Quaternary sediments overlying the Ashley, but they are thought to be the Wando Formation. The borehole lithologic information is limited to only the upper 85 feet of the subsurface. The Quaternary-age sediments consist of three lithologic units: quaternary-age clay (Qc), quaternary-age marsh clay (Qm), and quaternary-age sand (Qs). The Qs unit is the most predominant quaternary-age unit found in Zone C.

The stratigraphy of the southeastern portion of Zone C follows. Beneath the upper 5 feet of fill (clay and unconsolidated sand), a 20-foot section of very fine or fine sand (Qs) with some medium-grained lenses and silty sections was encountered. Rapidly interbedded fine-grained silty sand and clay laminae were present from 25 to 35 feet below ground surface, followed by more than 2 feet of poorly sorted, fine to coarse sand with shell fragments and black phosphate fragments to approximately 37 feet below ground surface. Older, compacted marsh clay (Qm) was present from 37 feet below ground surface to the top of the Ashley Formation at 40 feet below ground surface.

E. **Soil Boring Data**

Drilling Dates: 5/11/99

Provide a brief justification for the location of the soil borings

SB-1	Outside of but adjacent to east side of former tank pit
SB-2	In the middle of former tank pit
SB-3	Outside of but adjacent to west side of former tank pit
SB-4	Northernmost and inside former product supply pipeline trench
SB-5	Southernmost and inside former product supply pipeline trench
SB-6	15 feet west of former tank pit and SB-3
SB-7	9 feet south of junction of product supply pipeline and boiler house
SB-8	10 feet east of former tank pit and SB-1
SB-9	15 feet north of former tank pit and SB-2

UST Area Borings –

Borehole SB 01 **Sampling Date 5/11/99** **Sample Depth 2-3 ft**

Split Spoon Interval (ft)	Field Screening Results (mg/kg)	Lithology (soil type, color, rocks/minerals present)	Soil Conditions (dry, moist, etc.; petroleum odor)
0-1	15 ppm	Brown, sandy silt	Moist
1-2	100 ppm	Brown, sandy silt	Moist; strong odor
2-3	20 ppm	Brown, silty organic clay	Moist
3-4	20 ppm	Olive, silty organic clay	Moist
4-9	ND	No Recovery	-
9-10	ND	Dark gray silty sand	Wet
10-12	ND	Light gray, silty sand	Saturated

Borehole SB 02 **Sampling Date 5/11/99** **Sample Depth 3-4 ft**

Split Spoon Interval (ft)	Field Screening Results (mg/kg)	Lithology (soil type, color, rocks/minerals present)	Soil Conditions (dry, moist, etc.; petroleum odor)
0-1	6 ppm	Brown sandy silt	Moist
1-2	20 ppm	Orange sandy silt, bricks	Moist
2-3	100 ppm	Olive, silty organic clay, concrete	Moist
3-4	ND	ND	ND
4-5	ND	Olive, silty organic clay, concrete	Moist
5-6	ND	Gray, concrete gravel mix	Wet
6-7	ND	Olive, silty sand	Saturated; strong odor
7-8	ND	ND	ND
8-9	ND	Olive clay/gravel/sand	Saturated
9-11	ND	Gray silty sand	Saturated

Borehole SB 03 **Sampling Date 5/11/99** **Sample Depth 3-4 ft**

Split Spoon Interval (ft)	Field Screening Results (mg/kg)	Lithology (soil type, color, rocks/minerals present)	Soil Conditions (dry, moist, etc.; petroleum odor)
0-1	2 ppm	Brown sandy silt	Moist
1-2	2 ppm	Mix silt, brick, and wood	Moist
2-3	2 ppm	Dark olive, silty organic clay	Moist
3-4	ND	ND	ND
4-5	2 ppm	Dark olive, sandy silt	Moist

5-6	ND	Olive-gray silty sand	Wet
6-8	ND	No Recovery	ND
8-9	ND	Dark olive-gray, sandy silt	Wet
9-12	ND	Gray silty sand	Saturated

Borehole SB 04 **Sampling Date 5/11/99** **Sample Depth 3-4 ft**

Split Spoon Interval (ft)	Field Screening Results (mg/kg) (without/with filter)	Lithology (soil type, color, rocks/minerals present)	Soil Conditions (dry, moist, etc.; petroleum odor)
0-1	2/ND ppm	Light brown sandy silt	Dry
1-2	15/10 ppm	Dark olive silty organic clay	Moist
2-3	15/10 ppm	Olive, gray silty organic clay	Moist
3-4	ND	ND	ND
4-5	ND/15 ppm	Olive-gray silty organic clay	Moist
5-6	ND/20 ppm	Black silty sand	Wet
6-7	ND/20 ppm	Black, silty sand	Wet
7-8	ND	ND	ND
8-9	ND	Black sandy silt, some clay	Wet
9-10	ND	Black silty sand	Saturated
10-12	ND	Gray, silty sand	Saturated

Background Boring –

Borehole SB 05 **Sampling Date 5/11/99** **Sample Depth 2-3 ft**

Split Spoon Interval (ft)	Field Screening Results (mg/kg) (without/with filter)	Lithology (soil type, color, rocks/minerals present)	Soil Conditions (dry, moist, etc.; petroleum odor)
0-1	4/ND ppm	Light brown sandy silt	Dry
1-2	100/20 ppm	Dark brown sandy silt some clay	Moist
2-3	50/20 ppm	Dark olive silty organic clay	Moist
3-5	10/ND ppm	Dark olive silty organic clay	Moist
5-6	ND	Black silty sand	Saturated
6-8	ND	ND	ND
8-9	ND	Dark olive silty organic clay	Wet
9-10	ND	Black silty sand	Wet
10-12	ND	Gray silty sand	Saturated

12-16	ND	No recovery	ND
16-17	ND	Black sandy silt with some clay	Saturated
17-20	ND	Gray silty sand	Saturated
20-22	ND	Gray silty sand	Moist
22-24	ND	Light gray silty sand	Moist
24-28	ND	Light gray sand	Moist

See Appendix A for boring logs for soil borings SB06 – SB09.

Enter the soil analytical data for each soil boring for all COC in the table below and on the following page. Enter the appropriate RBSL for the soil type from Tables 4 through 8 in SCDHEC Risk-Based Corrective Action (RBCA) for Petroleum Releases Guidance Document.

CoC (µg/kg)	RBSL Clay-rich soil (<5ft)	SB-1	SB-2	SB-2D	SB-3	SB-4	SB-5
Benzene	**5**	<850	<7	<6	<7	<8	<13
Toluene	**478**	<850	<7	<6	<7	<8	<13
Ethylbenzene	**364**	<850	<7	<6	<7	<8	<13
Xylenes	**11,119**	<850	<7	<6	<7	<8	<13
Naphthalene	**52**	<850	<7	<6	8	<8	8 J

CoC (µg/kg unless otherwise noted)	RBSL Clay-rich soil (<5ft)	SB-1	SB-2	SB-2D	SB-3	SB-4	SB-5
Benzo(a)anthracene	17,687	<460	<430	<460	<430	<460	<360
Benzo(b)fluoranthene	7,042	<460	<430	280 J	<430	<460	<360
Benzo(k)fluoranthene	55,930	<460	<430	<460	<430	<460	<360
Chrysene	3,146	<460	<430	<460	<430	<460	<360
Dibenzo(a,h)anthracene	21,265	<460	<430	<460	<430	<460	<360
TPH (USEPA 3550)(mg/kg)	N/A	NS	NS	NS	464	NS	NS
TOC (Background)(mg/kg)	N/A	NS	NS	NS	16,600	NS	NS

NS = Not Sampled

Discuss the horizontal and vertical extent of COC in the soil: It is believed that no COCs above RBSLs are present in soils; however, elevated detection levels in analytical methods have prevented confirmation of the presumed absence. All soil concentrations are non-detect or below RBSLs; however, because of the high

detection limit for benzene, toluene, ethylbenzene, and naphthalene in soil boring SB-1, it is uncertain if the concentrations are below the RBSL.

Additional Comments: None

F. Chemicals of Concern – Ground Water

Provide well installation information in the table below.

MW #	Installation Date	Development Date	Sampling Date
MW01	6/22/99	7/1/99 8/25/99	7/13/99 9/8/99
MW02	8/24/99	8/25/99	9/8/99
MW03	8/24/99	8/25/99	9/8/99

Enter the soil analytical data for each monitoring well for all CoC in the table below.

CoC	MW-1	MW-2	MW-3	
Depth of sample				
Benzene		*Soil samples were not collected from boreholes during monitoring well installation. However, soil samples were collected from soil borings located in the immediate vicinity. See preceding soil analytical data for direct push borings SB01 – SB05.*		
Toluene				
Ethylbenzene				
Xylenes				
Total BTEX				
Naphthalene				
Benzo(a)anthracene				
Benzo(b)fluoranthene				
Benzo(k)fluoranthene				
Chrysene				
Dibenzo(a,h)anthracene				
Lead				
EDB				

NS = Not Sampled

Summarize the monitoring well and ground-water data in the table below.

MW #	TOC Elevation (ft)	Screened Interval(ft)	Depth in Water (ft) (Date Measured)	Water Table Elevation (ft) (Date Measured)
P01 (SB06)	ND	2-12	4.3	4.93 Estimated (6/6/99)
P02 (SB07)	ND	2-12	4.2	5.07 Estimated (6/6/99)
P03	ND	2-12	7.35	5.19 Estimated (6/6/99)
MW01	7.5	3-13	3.97 (7/13/99) 4.17 (9/8/99)	3.53 (7/13/99) 3.33 (9/8/99)
MW02	7.59	2-12	6.17 (9/8/99)	1.42 (9/8/99)
MW03	7.45	2-12	4.09 (9/8/99)	3.36 (9/8/99)

NA = Not Available ND = Not Determined

Enter field data measurements (temperature, pH, conductivity) taken during well purging on the form provided. Complete for each well.

See Appendix C for field data sheets.

Enter dissolved oxygen measurements for each well.

Monitoring Well No.	MW-1 (Date Measured)	MW-2 (Date Measured)	MW-3 (Date Measured)
Dissolved Oxygen (mg/l)	4.17 (7/13/99) 0.86 (9/8/99)	1.23 (9/8/99)	1.58 (9/8/99)

Enter the ground water analytical data for each monitoring well for all CoC in the table below. If free product is present, indicate the measured thickness to the nearest 0.01 foot.

CoC	RBSL (µg/l)	MW-1 (sampled July 13, 1999)	MW-1 (sampled Sept. 8, 1999)	MW-2 (sampled Sept. 8, 1999)	MW-3 (sampled Sept. 8, 1999)
Free Product Thickness	None	None	None	None	None
Benzene	5	<5	NS	<5	<5
Toluene	1,000	<5	NS	<5	<5
Ethylbenzene	700	<5	NS	<5	<5
Xylenes	10,000	<5	NS	<5	<5
MTBE	40	<5	NS	<5	<5
Naphthalene	10	<10	NS	<10	<10
Benzo(a)anthracene	10	<10	NS	<10	<10
Benzo(b)fluoranthene	10	<10	NS	<10	<10
Benzo(k)fluoranthene	10	<10	NS	<10	<10

Chrysene	**10**	<10	NS	<10	<10
Dibenzo(a,h)anthracene	**10**	<10	NS	<10	<10
Ferrous Iron	**NA**	NS	>3.3 mg/L	>3.3 mg/L	1.28 mg/L
Lead	**Site Specific**	NS	NS	NS	NS
Nitrates	**NA**	NS	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L
Sulfates	**NA**	NS	41 mg/L	32 mg/L	17 mg/L

NS = Not Sampled NA = Not Available

Additional Comments: None

G. Aquifer Characteristics

Hydraulic Conductivity: Effective Horizontal Conductivity Value (K_{eff}) for Shallow Wells

= 4.38 feet/day

Hydraulic Gradient: Horizontal 0.005

Porosity: Average Porosity in Quaternary Sands = 34.5%

Estimated Seepage Velocity: Estimated Shallow Groundwater Velocity 23 feet/year

Complete the slug test form and include in Appendix D of the report. Include all data, graphs, and equations used to derive the aquifer characteristics and hydrologic parameters (hydraulic conductivity, seepage velocity, hydraulic gradient, etc.) in Appendix D.

H. Risk Assessment

Tier 1 Evaluation

Performance of a Site Conceptual Model is required because the RBSLs for soil were exceeded. Groundwater RBSLs were not exceeded. Four CoC concentrations in soil exceeded the RBSLs for clay-rich soil at a depth to groundwater of less than 5 feet. The sample was from soil boring SB-01 at 2 to 3 feet below land surface and the laboratory detection limit for benzene, toluene, ethylbenzene, and naphthalenes was <850 ug/kg for all. Although the sample analysis generated below detection limit results, in both cases the laboratory detection limit exceeded the RBSL; therefore, it is presumed the soil concentration is equivalent to the detection limit. Exceeding the soil RBSL for the CoCs requires performance of a Site Conceptual Model (identification of current and future potential receptors and human exposure pathways) as shown below:

1 **CURRENT LAND USE – Identify any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for current land use. Complete the table below. Additional sheets may be attached if necessary.**

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation?	Exposure point or Reason for Non-Selection	Data Requirements (IF pathway selected)
Air	Inhalation Explosion Hazard	No No	All volatiles measured at non-detects but Soil detection limit exceeds RBSL.	
Ground-Water	Ingestion Dermal Contact Volatile Inhalation	No No No	All groundwater data shows non-detect at or below RBSL	
Surface Water	Ingestion Dermal Contact Volatile Inhalation	No No No	No surface water bodies on-site and no groundwater above RBSLs to impact off-site surface waters.	
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Ground-Water	No No No No	Source is subsurface tank leaks therefore no surface soil data available.	
Subsurface Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Ground-Water	No No No No	No current pathways completed to subsurface soil	

2 **FUTURE LAND USE – identify any potential receptors of human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for projected future land use. Complete the table below. Additional sheets may be attached if necessary**

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation?(Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (IF pathway selected)
Air	Inhalation Explosion Hazard	No No	All volatiles measured at non-detects but soil detection limit exceeds RBSL.	
Ground-Water	Ingestion Dermal Contact Volatile Inhalation	No No No	All groundwater data show non-detect at or below RBSL. Groundwater exposure to utility worker by soil leaching to groundwater evaluated. All volatiles measured at non-detect for soil.	
Surface Water	Ingestion Dermal Contact Volatile Inhalation	No No No	No surface water bodies within 1000 feet of the site and no groundwater above RBSLs to impact off-site surface waters.	
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Ground-Water	No No No No	Source is subsurface tank leak therefore no surface soil data available.	

Subsurface Soil	**Ingestion** **Dermal Contact** **Volatile Inhalation** **Leaching to Ground-Water**	**Yes** **Yes** **Yes** **Yes**	Construction workers in utility trench. All soil concentrations are non-detect or below RBSLs; however, because of the high detection limit for SB-1, it is uncertain if the concentration is below RBSLs. Therefore, this pathway is considered. Volatile organics will volatilize before construction worker enters the trench.	No additional data needed.

Recommendations for further action:

The Site Conceptual Model identified one possible receptor with two pathways:

1. A construction worker in a utility trench ingesting and having dermal contact with affected subsurface soil.
2. A construction worker in a utility trench who might ingest potentially contaminated groundwater, have dermal contact with groundwater contaminated by the leaching of petroleum hydrocarbons from the soil to the groundwater, and/or inhale benzene, toluene, or ethylbenzene volatilizing from the groundwater.

Based on the identification of possible receptors, a Tier 2 evaluation was performed and is presented in the next section.

Tier 2 Evaluation

A Tier 2 evaluation is necessary for determining the potential risk to a construction worker in a utility trench exposed to either benzene or naphthalene-impacted soil or groundwater. The following analyzes two scenarios for a construction worker being exposed to the potential risk.

Ingestion and Dermal Contact with Soil for a Construction Worker in a Utility Trench

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

CoC	RBSL	SB-1	SB-2	SB-2D	SB-3	SB-4	SB-5
Benzene	200	<0.850	<0.007	<0.006	<0.007	<0.008	<0.013
Toluene	410,000	<0.850	<0.007	<0.006	<0.007	<0.008	<0.013
Ethylbenzene	200,000	<0.850	<0.007	<0.006	<0.007	<0.008	<0.013
Xylenes	1,000,000	<0.850	<0.007	<0.006	<0.007	<0.008	<0.013
Naphthalene	41,000	<0.850	<0.007	<0.006	0.008	<0.008	0.008 J
Benzo(a)anthracene	3.9	<0.460	<0.430	<0.460	<0.430	<0.460	<0.360
Benzo(b)fluoranthene	3.9	<0.460	<0.430	0.280 J	<0.430	<0.460	<0.360
Benzo(k)fluoranthene	39	<0.460	<0.430	<0.460	<0.430	<0.460	<0.360
Chrysene	390	<0.460	<0.430	<0.460	<0.430	<0.460	<0.360
Dibenzo(a,h)anthracene	0.39	<0.460	<0.430	<0.460	<0.430	<0.460	<0.360
TPH (USEPA 3550) (mg/kg)	**NA**	NS	NS	NS	464	NS	NS
TOC (Background) (mg/kg)	**NA**	NS	NS	NS	16600	NS	NS

NS = Not Sampled NA = Not Available
All concentrations in µg/kg unless indicated otherwise.

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

As shown in the above table, no soil concentrations exceeded the RBSLs; therefore, a construction worker ingesting or contacting impacted soil is not considered at risk and not considered for further analysis.

Ingestion of and Dermal Contact with Groundwater (Impacted by Soil Leaching) for a Construction Worker in a Utility Trench

An additional completed pathway for construction workers is CoCs leaching from the soil to the groundwater and possibly being exposed while working in a utility trench. The construction worker's potential exposure to groundwater containing benzene or naphthalene was assumed to consist of three pathways: dermal contact, incidental ingestion, and inhalation of volatiles. Drinking water is provided by the city; therefore, ingestion of groundwater is not a complete pathway.

1. Calculation of RBSLs

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

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

The dermal contact RBSLs were calculated using the procedures in *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Dermal Risk Assessment, Interim Guidance* (EPA 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 1 hour/event. The skin surface area available for contact was 4,500 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)*, EPA/540/1-89/002 (EPA 1989). An incidental ingestion rate of 0.01 L/day was assumed based on a fraction (12.5%) of the incidental ingestion rate for a wading adult (0.01 L/hr), considered for an 8-hour work day. The incidental ingestion rate for wading adults is given in *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment* (EPA Region 4 1995).

The inhalation RBSLs were calculated using equations given in the American Society for Testing and Materials (ASTM) *Standard Guide for Risk-Based Corrective Action Applied to Petroleum Release Sites, Designation E 1739-95e1* (1997).

The following table summarizes the calculated RBSLs for the analyzed pathways (see attached calculations) and tabulates the minimum RBSL regardless of the pathway:

	Dermal RBSL	**Incidental Ingestion RBSL**	**Inhalation RBSL**	**Selected (Minimum) RBSL**
	(mg/L)	**(mg/L)**	**(mg/L)**	**(mg/L)**
Benzene	0.85	68.52	0.15	0.15
Toluene	23.98	5677.78	5.19	5.19
Ethylbenzene	6.05	2838.89	14.70	6.05
Xylene	102.33	56777.78	102.12	102.12
Naphthalene	1.63	1135.56	2.63	1.63

2. Calculation of SSTL for Benzene, Toluene, Ethylbenzene, and Naphthalene Leaching from Soil to Groundwater

All soil CoC concentrations were non-detect or below RBSLs; however, the detection levels for benzene, toluene, ethylbenzene, and naphthalene (0.850 mg/kg) in soil boring SB-01 were greater than their respective RBSLs (0.005, 0.478, 0.364, and 0.052 mg/kg, respectively); therefore, it was uncertain if the concentrations were below RBSLs. Considering worst-case scenario, it is presumed the benzene, toluene, ethylbenzene, and naphthalene concentrations in soil boring SB-01 (0.850 mg/kg) exceeded the RBSLs for clay-rich soil less than 5 feet. The SCDHEC Soil Leachability Model was used to calculate site-specific target levels (SSTLs) for the CoCs. Site-specific parameters were input when available, or values were estimated from the charts on pages C2 through C5 of the *SCDHEC Risk-Based Corrective Action Guidance for Petroleum Releases*, January 5, 1998. The minimum calculated groundwater RBSLs for construction worker exposure from the above table (0.15 mg/L benzene, 5.19 mg/L toluene, 6.05 mg/L ethylbenzene, and 1.63 mg/L naphthalene) were used as opposed to the groundwater RBSL for ingestion. The soil leaching SSTLs calculated for the CoCs compared to the maximum concentrations found in SB-01 are tabulated below.

CoC	Concentration in SB-1 (mg/kg)	Soil Leaching SSTL (mg/kg)
Benzene	<0.85	**1.43**
Toluene	<0.85	**91**
Ethylbenzene	<0.85	**1,699**
Naphthalene	<0.85	**54,539**

Because the maximum soil concentrations of the CoCs (<0.85 mg/kg) found during the site assessment do not exceed the calculated SSTLs, the construction worker is not at risk if exposed to groundwater by dermal contact, incidental ingestion, or inhalation regardless of downgradient distance from the source. The concentrations of benzene, toluene, ethylbenzene, or naphthalene in the groundwater resulting from leaching from the soil to the groundwater will not exceed the RBSL for a construction worker in a utility trench. This potential receptor is considered non-threatened and further analysis is unnecessary.

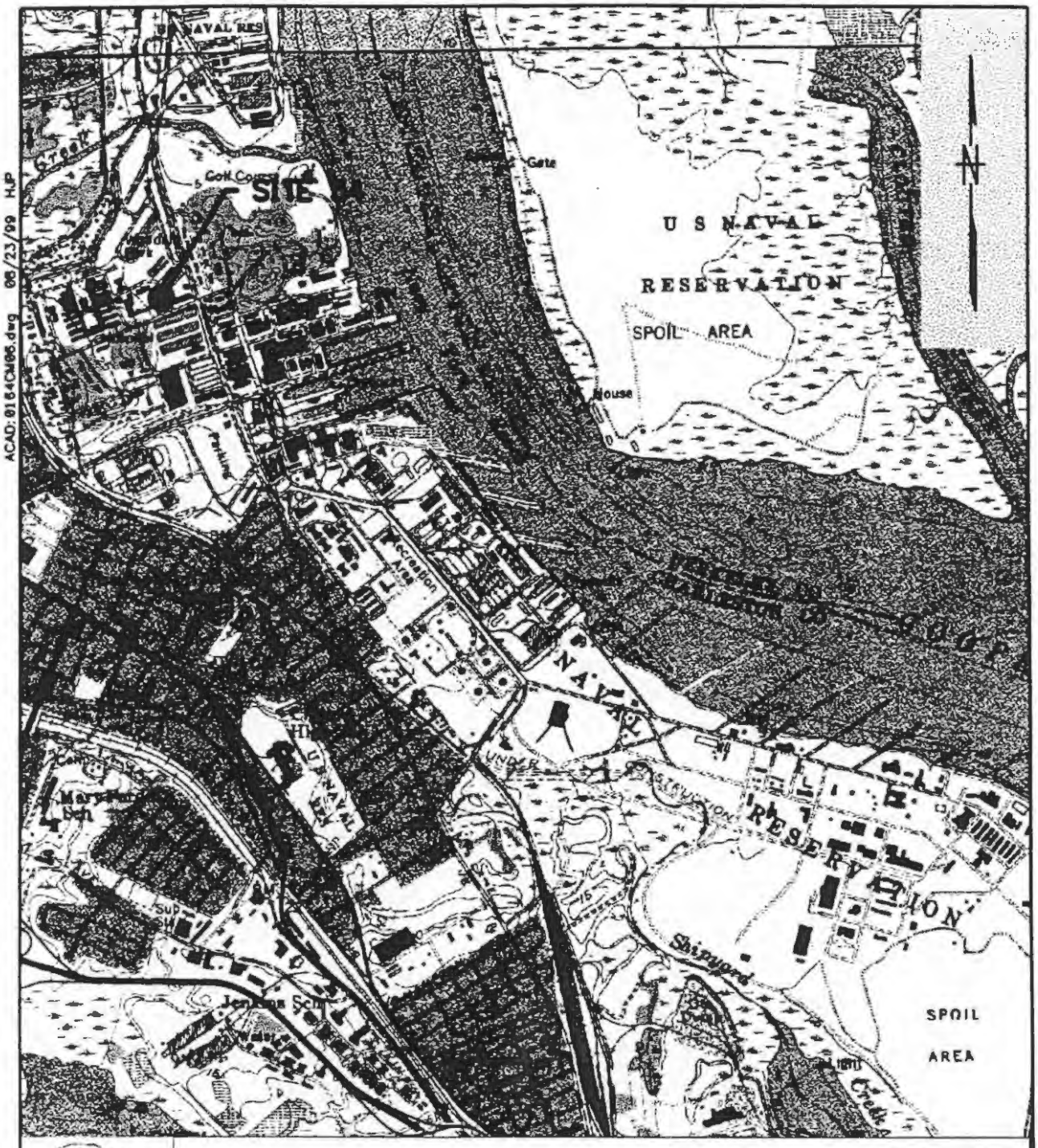
I Recommendations

Intrinsic Corrective Action is proposed for Site 34. The representative concentrations of the CoCs are below the SCDHEC provided "lookup" RBSLs, the calculated RBSLs, or the SSTLs, therefore further delineation is not necessary. The Author proposes submitting a Corrective Action Plan proposing a short-term monitoring program to verify intrinsic remediation.

FIGURES

FIGURE 1

TOPOGRAPHIC MAP



SC

QUADRANGLE LOCATION

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

0 2000 4000
SCALE IN FEET

DRAWN BY HJP DATE 8/20/99	DEPARTMENT OF THE NAVY ★ NAVAL FACILITIES ENGINEERING COMMAND ★	SITE LOCATION MAP SITE 34, BUILDING NH1137-1 & 2, ZONE C CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SC	CONTRACT NO. N0164
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV. 0

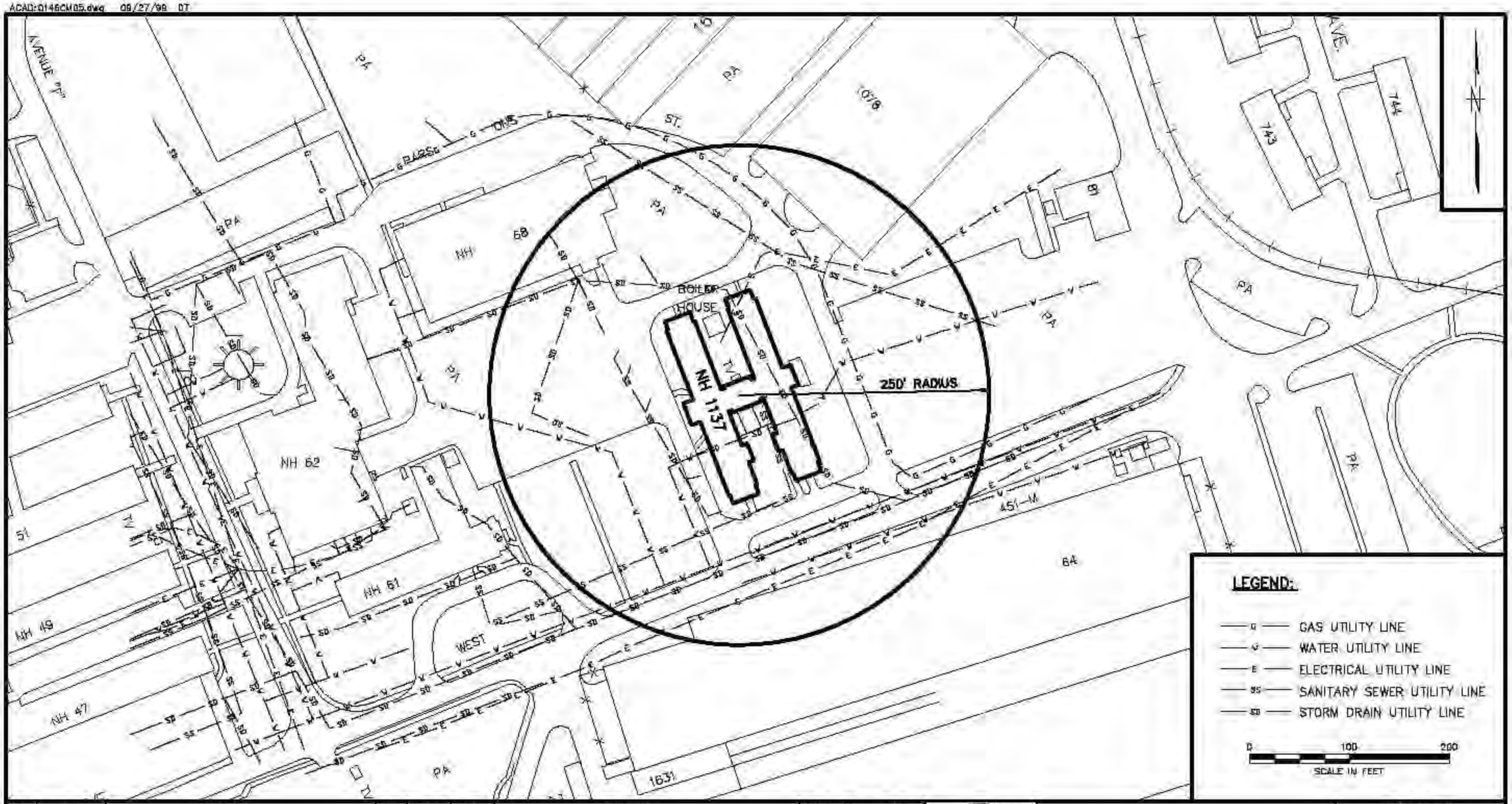
FORM CADD NO. SDIV_AV.DWG - REV 0 - 1/20/98

ACAD: 0164CM05.dwg 08/23/99 HJP

FIGURE 2

SCALED SITE LOCATION MAP

ACAD:0146CM05.dwg 09/27/99 DT



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DLT DATE 8/18/99
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

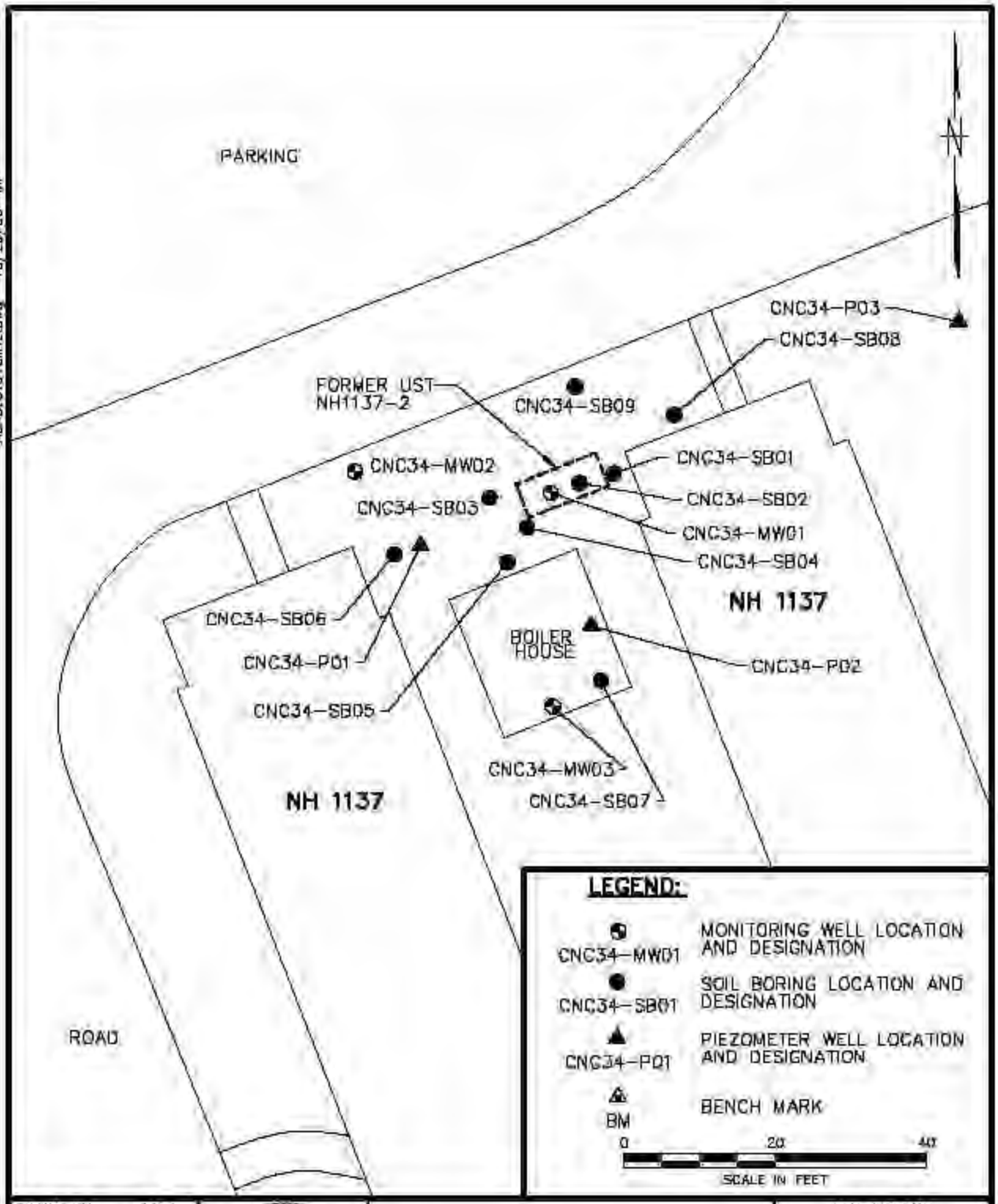
SITE VICINITY MAP
SITE 34, BUILDING NH 1137
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

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

FORM CADD NO. 2DIV_B-1DWG — REV. 0 — 1/28/98

FIGURE 3

SURVEYED SITE MAP



DRAWN BY MF DATE 9/28/99			CONTRACT NO. 0124
CHECKED BY DATE			APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV. 0

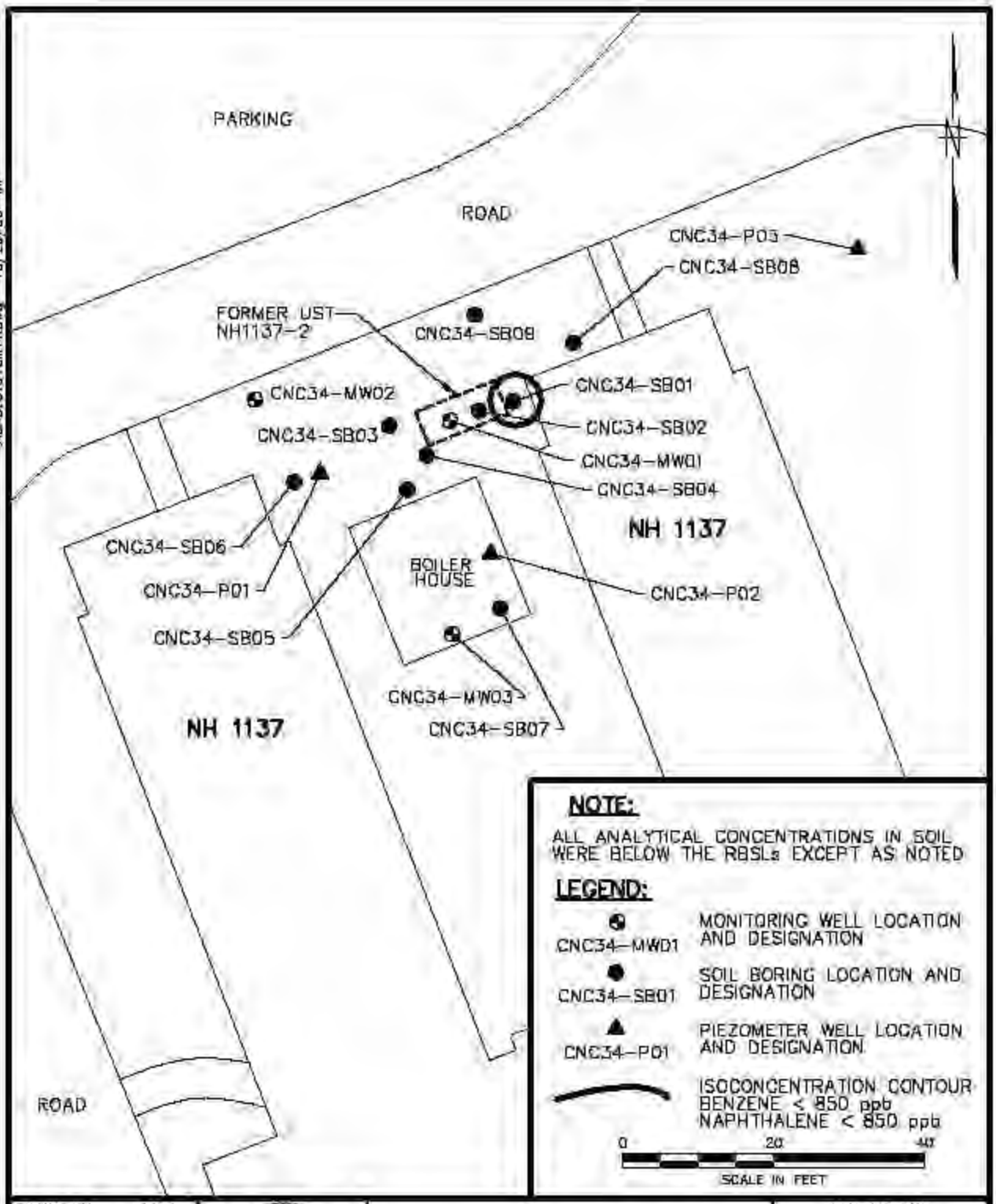
SITE MAP
SITE 34, BUILDING NH 1137-1 & 2
ZONE C, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

FORM CADD NO. SDIV_A0.DWG — REV 0 — 1/20/98

K:\CAD\0184\CM12.dwg 10/29/98 MF

FIGURE 4

SOIL CoC SITE MAP



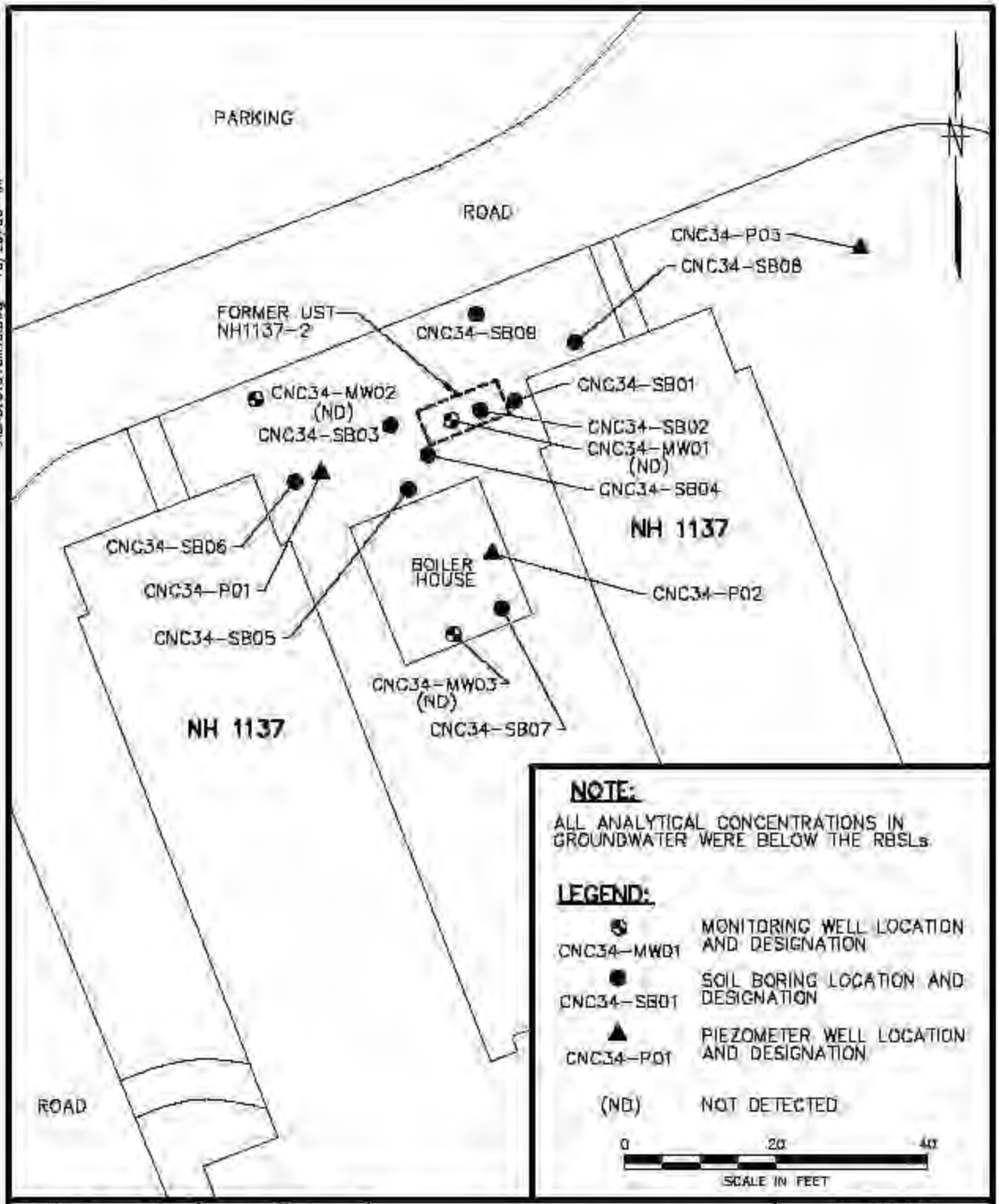
DRAWN BY MF DATE 9/28/99		CONTRACT NO. 0124	
CHECKED BY DATE	SOIL COC MAP SITE 34, BUILDING NH 1137-1 & 2 ZONE C, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	APPROVED BY DATE	
COST/SCHED-AREA		APPROVED BY DATE	
SCALE AS NOTED		DRAWING NO. FIGURE 4	REV. 0

FORM CADD NO. SOIL_A1.DWG — REV 0 — 1/20/98

K:\CAD\01B4\CM1A.dwg 10/29/98 MF

FIGURE 5

GROUNDWATER CoC SITE MAP



DRAWN BY MF DATE 9/28/99			CONTRACT NO. 0124
CHECKED BY DATE		GROUNDWATER COC MAP SITE 34, BUILDING NH 1137-1 & 2 ZONE C, CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	APPROVED BY DATE
COST/SCHED-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 5 / REV. 0

FORM C200 NO. SOV_A1.DWG — REV. 0 — 1/20/98

K:\CAD\01B4\2M15.dwg 10/29/98 MF

APPENDICES

APPENDIX A

SOIL BORING LOGS

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH 1137
PROJECT NUMBER: N0164 Zone C CTO 0093
DRILLING COMPANY:
DRILLING RIG: F-250 w/5400

BORING NUMBER: CNC34-B01
DATE: 5-11-99
GEOLOGIST: Bisco
DRILLER: M. COLEMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
	1				Brown		Sandy silt		Moist	15			
X	2					11	" " "		"	100			
	3					"	Silty org. clay		"	20			
	4		4		Olive		" " "		"	20			
	5								—				
	6								—				
	7								—				
	8		0				NO RECOVERY		—				
	9								—				
	10			▼	Dk. gray		Silty Sand		Wet				
	11				Lt. Gray		Silty Sand		Saturated				
	12		3		"	"	Silty Sand		Saturated				
				EOB									

Strong odor

* When rock coring, enter rock brokeness.
** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 5

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH 1137
PROJECT NUMBER: N01164 Zone C CTO 0093
DRILLING COMPANY:
DRILLING RIG: 250 w/ 5400

BORING NUMBER: CNC 34 - B02
DATE: 5-11
GEOLOGIST: Sisco
DRILLER: M. Coleman

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
	1				Brown		Sandy Silt		Moist	6			
	2				Brown		" " Brick fragments		Moist	20+			
X	3				Olive		Silty org. Clay some concrete		Moist	200+			
X	4		3										
	5				Olive		Silty org. Clay/concrete		Moist				
	6				Gray		Concrete gravel mix		Wet				
	7			▼	Olive		Silty sand		Saturated				→ Strong odor
	8		2										
	9				Olive		Clay/gravel/sand		Saturated				
	10				Gray		Silty sand		Saturated				
	11				Gray		Silty sand		"				
	12		3										
				EOB									

* 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): 6

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH1137
PROJECT NUMBER: N0164 Zone C, CTO 0093
DRILLING COMPANY:
DRILLING RIG: 250 w/ 5400

BORING NUMBER: CNC 34 - B03
DATE: 5-11
GEOLOGIST: SISCO
DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Drifter BZ**
	0												
	1				Brown		Sandy silt		Moist	2			
	2				Mix		Silt, brick, wood		"	2			
	3				Dk. olive		Silty org. clay		"	2			
	4		3										
	5				Olive (Dk.)		Sandy silt		Moist	2			
	6				Olive gray		Silty sand		Wet				
	7												
	8		2										
	9				Dk. olive gray		Sandy silt		Wet				
	10				Gray		Silty sand		Saturated				
	11				Gray		Silty sand		Sat.				
	12		3										
				EOB									

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 2

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH 1157
PROJECT NUMBER: N0164 Zone C CTO 0093
DRILLING COMPANY:
DRILLING RIG: 250 / 5400

BORING NUMBER: CNC34-B04
DATE: 5-11
GEOLOGIST: Sisco
DRILLER: Coleman

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0												
	1				Lt. Brown		Sandy Silt		Dry	2			
	2				Olive (Dk.)		Silty Org-clay		Moist	15/10			
	3				Olive gray		" " "		"	15/10			
	4		3										
	5				Olive gray		Silty Org-clay		Moist	15			
	6				Black		Silty sand		Wet	20			
	7				Black		" "		Wet	20			
	8		25										
	9				Black		~~Silty~~ Sandy silt some clay		Wet				
	10				Black		Silty sand		Saturated				
	11				Gray		" "		"				
	12		35		Gray		" "		"				
				EOB									

2nd N. w/ filter.

w/ filter

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 2

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH1157
PROJECT NUMBER: N0164 Zone C CTO 0093
DRILLING COMPANY:
DRILLING RIG: 250 / 5200

BORING NUMBER: CNC34-B05
DATE: 5-11
GEOLOGIST: SISCO
DRILLER: COLEMAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**	
	1				Lt. Brown		Sandy silt		Dry	4				
X	2				Dk. Brown		" " some clay		Moist	100	20			filter
	3				Dk. olive		Silty org. clay		"	50	20			filter
	4		3.5		" "		" " "		"	10				
	5				" "		Silty org. clay		Moist	10				
	6			▼	Black		Silty sand		Saturated					
	7													
	8		2											
	9				Dk. olive		Silty org. clay		Wet					
	10				Black		Silty sand		Wet					
	11				Gray		" "		Saturated					
	12		4		Gray		" "		Saturated					
	13													
	14													
	15													
	16		Ø				With Core Catcher							
	17				Black		Sandy silt with some clay		Saturated					
	18				Gray		Silty sand		Saturated					
	19				Gray		Silty sand		Saturated					
	20		4		Gray		Silty sand		"					
	21				Gray		Silty sand		Moist					
	22		2		Gray		Silty sand		Moist					
	23				"		Silty sand		Moist					
	24		2		"		Silty sand		Moist					

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

Remarks:

Drilling Area Background (ppm): 4

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH137
PROJECT NUMBER: N0164 Zone C CTO 0093
DRILLING COMPANY:
DRILLING RIG: 250/5400

BORING NUMBER: CNC34-B05
DATE: 5-11
GEOLOGIST: SISCO
DRILLER: COLEMAN

Sample No. and Type of 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**
	25				Lt. gray		Sand		Moist				
	26		2		Lt. gray		Sand		Moist				
	27				Lt. gray		Sand		Moist				
	28		2		"	"	Sand		Moist				
				EOB									

* 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): 3

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

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH 1137
PROJECT NUMBER: N01164 Zone C CTO 0093
DRILLING COMPANY: Columbia
DRILLING RIG: Strata probe
BORING NUMBER: 34B06
DATE: 6/6/99
GEOLOGIST:
DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Br.	Clayey Sand		Dry				
	2						↓		↓				
	3					Dk Brown	Silty Clay - Mud			50	0	0	0
1103	4		4/4				↓		↓				
	5						↓		↓				
	6					Bl.	↓		Moist				
	7						↓		↓	200			
1109	8		2 3/4			Gray	Silty Fine Sand		Saturated				
	9					Blk	Silty Sandy Clay		↓	•			
	10						↓		↓	400		440	
	11					Gray	Silty Sand		↓				
1111	12		2 3/4										

* When rock conng. 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/ piezometer No Well I.D. #:

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH1137 BORING NUMBER: 34B07
PROJECT NUMBER: N0164 Zone C CTO 0093 DATE: 6/6/99
DRILLING COMPANY: Columbia GEOLOGIST:
DRILLING RIG: Stratoprobe DRILLER: R. Board

	Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		1					Brn	Stiff Silty Clay		Dry				
		2					Olive							
		3								Moist	4			
1134		4		3.5/4										
		5												
		6					Red	Crushed brick - 6"		Saturated				
		7					Black	Silty Clay			<50			
1137		8		3/4			Light Gray	Fine Silty Sand						
		9												
		10												
		11												
1149		12		4/4										

* When rock conng. enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

BORING LOG

PROJECT NAME: CNESite 34 Bldg. NH1137 BORING NUMBER: 34B08
PROJECT NUMBER: N0104 Zone C CTO 0093 DATE: 6/6/99
DRILLING COMPANY: Colum Sia GEOLOGIST:
DRILLING RIG: DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Bra	Silty Sand		Dry				
	2					DK Bra	Sandy Clay		↓				
	3					Olive	Silty Clay - Soft		Moist				
1200	4		3.7/8			↓	↓		↓				
	5												
	6						↓		↓				
	7					↓	↓		↓				
1210	8		2.5/4			Blk	Silty Clay - Soft		Saturated				
	9					↓	↓		↓				
	10					DK Bra	Clayey fine Sand - wood chips						
	11					Gray	Silty Fine Sand						
1216	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 ____ No ____ Well I.D. #:

BORING LOG

PROJECT NAME: CNC Site 34 Bldg. NH1137 BORING NUMBER: 34 B04
PROJECT NUMBER: ND164 Zone C CTO 0093 DATE: 6/6/99
DRILLING COMPANY: Columbia GEOLOGIST:
DRILLING RIG: Stratoprobe DRILLER: R. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1					Brn.	Fine Sand		Dry				
	2					Blk	Asphalt		↓				
	3												
	4		1.5/4										
1232	5					DK Gray	Silt Sand		Dry	130	0	0	0
	6					↓	↓		↓				
	7						Soft Silty Clay		Moist	330	0	0	0
1234	8		3.5/4			↓	↓ w/wood chips		↓				
	9					Blk	Silty Sand Clay		Saturated				
	10					↓	↓		↓				
	11					Gray	Silty Sand		↓				
1241	12		1.5/4										

* When rock conng, 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. #:

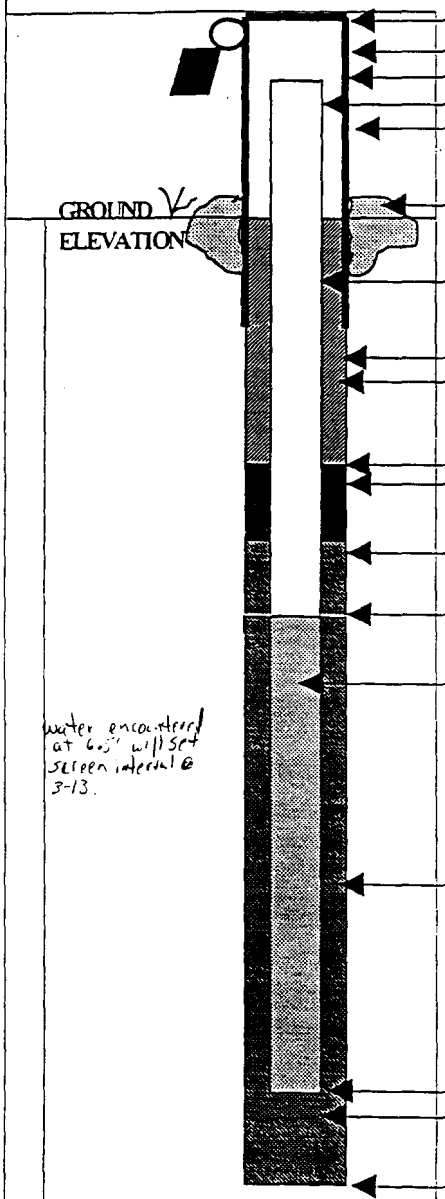
APPENDIX B

MONITORING WELL CONSTRUCTION LOGS

BORING NO.: CNC34-MW

OVERBURDEN MONITORING WELL SHEET

PROJECT	Zone C CNC Site 34	LOCATION:	CNC34-MW01	DRILLER	Rod
PROJECT NO.	N0164 CNC34 Bldg. NH137	BORING	CNC34-MW01	METHOD:	DPT
ELEVATION		DATE	6/22/98	DRILLING	HSA
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: 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 8" bls

ELEVATION / DEPTH OF SEAL: 1'6"

TYPE OS SEAL: 30/65 choke sand

DEPTH TOP OF SAND PACK: 2'6"

ELEVATION / DEPTH TOP OF SCREEN: 3'10

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE X LENGTH: 10 slot x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30 sand

ELEVATION / DEPTHBOTTOM OF SCREEN: 13'10

ELEVATION / DEPTH BOTTOM OF SAND PACK: 13'16

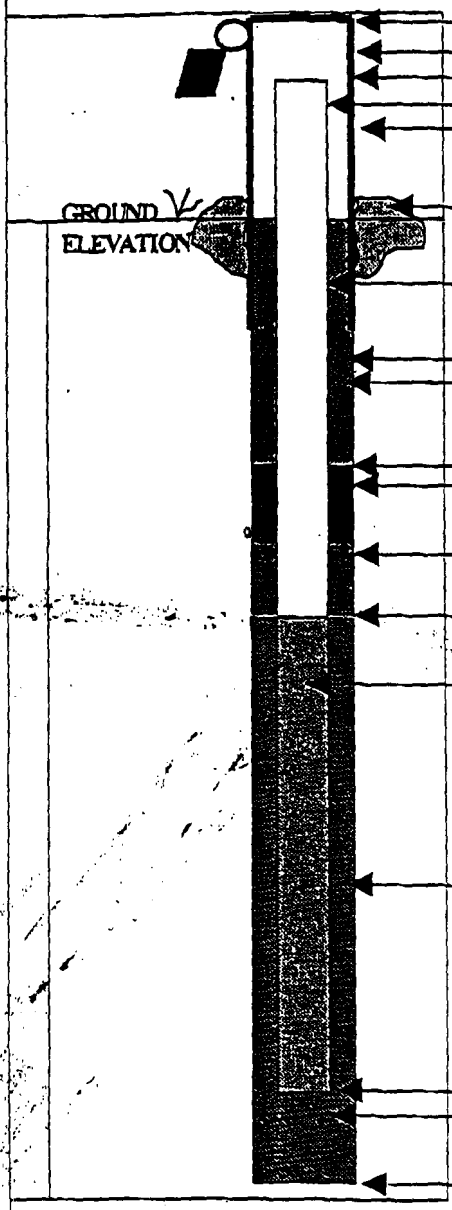
TYPE OF BACKFILL BELOW OBSERVATION WELL: 20/30 Sand

ELEVATION / DEPTH OF HOLE: 13'6"

BORING NO.: MW2

OVERBURDEN MONITORING WELL SHEET

PROJECT: CNC	LOCATION: Site 34	DRILLER: R. Fuller
PROJECT NO.: 0164	BORING: MW2	METHOD: ~~DPT~~
ELEVATION:	DATE: 8/24/99	DRILLING: HSA
FIELD GEOLOGIST: J. Hofer		DEVELOPMENT: NR



ELEVATION OF TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE: -

STICK-UP TOP OF SURFACE CASING: NA

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: flush mount

TYPE OF SURFACE SEAL: Concrete

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 6"

TYPE OF SEAL: cement

ELEVATION / DEPTH OF SEAL: 11.0

TYPE OS SEAL: fine sand

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: 12.0

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 0.01 x 10 ft

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTHBOTTOM OF SCREEN: 112.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112.5

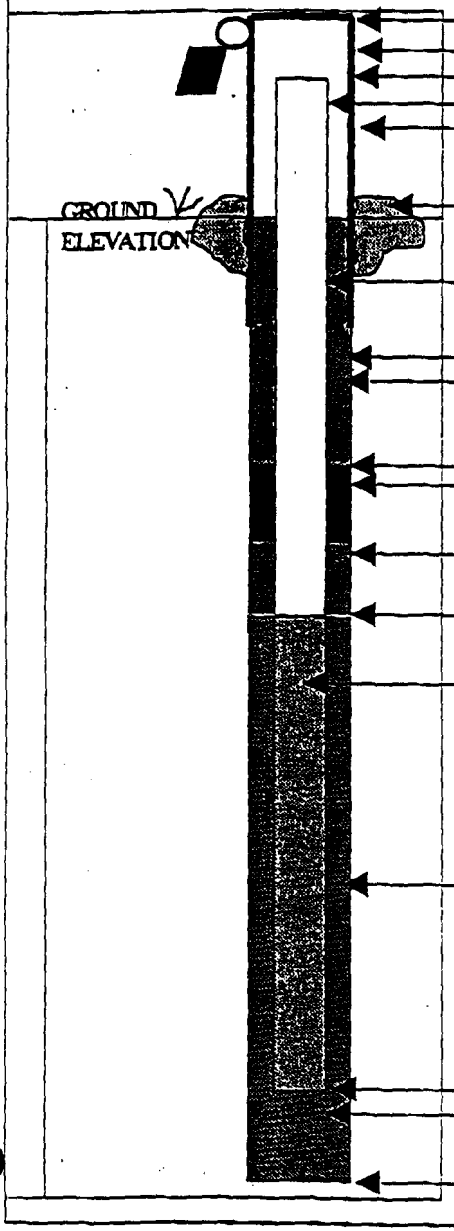
TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 112.5

BORING NO.: MW 3

OVERBURDEN MONITORING WELL SHEET

PROJECT	CNC	LOCATION:	Site 39	DRILLER	R Fuller
PROJECT NO.	0164	BORING	MW 3	METHOD:	DPT
ELEVATION		DATE	8/24/99	DRILLING	HSA
FIELD GEOLOGIST	J. Hofer			DEVELOPMENT:	NA



ELEVATION OF TOP OF SURFACE CASING: NA

ELEVATION OF TOP OF RISER PIPE:

STICK-UP TOP OF SURFACE CASING: NA

STICK-UP RISER PIPE:

I.D. OF SURFACE CASING: 8"

TYPE OF SURFACE CASING: flush-mount

TYPE OF SURFACE SEAL: Concrete

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 6"

TYPE OF SEAL: cement

ELEVATION / DEPTH OF SEAL: 11.0

TYPE OS SEAL: fine sand

DEPTH TOP OF SAND PACK: 1.5

ELEVATION / DEPTH TOP OF SCREEN: 12.0

TYPE OF SCREEN: PVC

SLOT SIZE X LENGTH: 0.01 x 10 f

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: 20/30

ELEVATION / DEPTHBOTTOM OF SCREEN: 112.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: 112.5

TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

ELEVATION / DEPTH OF HOLE: 112.5

APPENDIX C
FIELD DATA SHEETS AND
LABORATORY DATA

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 34 Bldg. NH1137
Project No.: N0164 Zone C CTO 0093

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

Sample ID No.: 34SLBC1-0203
Sample Location:
Sampled By: JA/JB
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/18/99 Time: 0935 Method: Monitor Reading (ppm): 1	2-3'	dark brown	clay

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
PAH	1 4oz jar	✓	
BTEX	4 EnCore	✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Janet Bookwright

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 34 Bldg. NH1137
Project No.: N0164 Zone C CTO 0093

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

Sample ID No.: 34SLBC2-C304
Sample Location:
Sampled By: JA/TB
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/18/99	3-4'	dark br	silty clay
Time: 1010			
Method:			
Monitor Reading (ppm): 100			

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
PAH		✓	
BTEX		✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	34SLBC2-C304D

Signature(s): Janet Bonknight

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 34 Bldg. NH1157
Project No.: ND64 Zone C CTO 0093

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

Sample ID No.: 34SLT303-0304
Sample Location:
Sampled By: JA/JB
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/18/99	3-4'	Black dark br	Silt clay with some ground asphalt
Time: 1025			
Method:			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
TCC		✓	
TPH		✓	
BTEX		✓	
PAH		✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Janet Bonknight

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 34 Bldg. NH1137
Project No.: N0164 Zone C CTO0093

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

Sample ID No.: 34SLB04-C3C4
Sample Location:
Sampled By: JA/JB
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/18/99	3-4'	dark grey br	clay silt
Time: 0950			
Method:			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	1 4oz jar	✓	
BTEX	4 Encore	✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Janet Barknight

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Site 34 Bldg. NH1137
Project No.: N0164 Zone C CTO 0093

Sample ID No.: 34SLB05-0203
Sample Location:
Sampled By: JA/JB
C.O.C. No.:

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

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

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/12/99			
Time: 09:58			
Method:	2-3'	black	Silty clay
Monitor Reading (ppm): 3			

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
PAH		✓	
BTEX		✓	
Grain Size		✓	

OBSERVATIONS / NOTES:

Piped twice

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Janet Bonknight

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 07/13/99
Field Personnel E.J. Harrison
General Weather Conditions Cloudy w/ thunderstorms
Ambient Air Temperature 29 °C
Facility Name Charleston Naval Complex Site 34 Site ID# 17754

pH Meter: NA
serial no.
pH=4.0
pH=7.0
pH=10.0

Quality Assurance:
Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
E.J. Harrison	7/13/99/1800	Katahdin - Shelly Williamson	7/14/99/0930

Well # CNC MW01

Well Diameter(D) 2 inch or ____ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 13.21 ft.
Depth to GW (DGW) 3.97 ft.

Length of Water Column(LWC=TWD-DGW) 9.24 ft.

1 Csg. Volume(LWC * C) = 9.24 X 0.163 = 1.51 gals.
3 Csg. Volumes = 3 X 1.51 = 4.53 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 4.5 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0	1.5	1.5	1.5				
Time (military)	0725	NA	NA	0857				
pH (s.u.)	6.53	6.59	6.66	6.61				
Specific Cond. (umhos/cm)	0.99	0.762	0.687	0.636				
Water Temp (°C)	22.8	22.6	22.7	22.7				
Turbidity (*)	20	3	∅	∅				
PID Readings	NA	NA	NA	NA				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks NA = not available

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 09/08/99
Field Personnel Jason McCann / Thomas Thompson
General Weather Conditions Sunny
Ambient Air Temperature 31 °C
Facility Name Charleston Naval Complex Site 34 Site ID# 17754

pH Meter: NA
serial no.
pH=4.0
pH=7.0
pH=10.0

Quality Assurance:
Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
Jason McCann	9/9/99 1900	Katahdin	9/10/99 1000

Well # CNC MW 03

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 12.25 ft.
Depth to GW (DGW) 4.09 ft.

Length of Water Column(LWC=TWD-DGW) 8.16 ft.

1 Csg. Volume(LWC * C) = 8.16 X 0.163 = 1.33 gals.
3 Csg. Volumes = 3 X 1.33 = 3.99 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 3.9 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	Ø	1.3	1.3	1.3				
Time (military)	1810	NA	NA	1847				
pH (s.u.)	7.00	6.96	7.06	7.06				
Specific Cond. (umhos/cm)	0.376	0.284	0.274	0.273				
Water Temp (°C)	24.8	24.1	23.9	23.9				
Turbidity (*)	Ø	Ø	Ø	Ø				
PID Readings	NA	NA	NA	NA				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks NA = not available

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 09/08/99
Field Personnel Jason McCann / Thomas Thompson
General Weather Conditions Sunny
Ambient Air Temperature 31 °C
Facility Name Charleston Naval Complex Site 34 Site ID# 17754

Quality Assurance:

pH Meter: NA
serial no.
pH=4.0
pH=7.0
pH=10.0

Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date / Time	Received by	Date/Time
Jason McCann	9/9/99 1900	Katahdin	9/10/99 1000

Well # CNC MWD2

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 12.5 ft.
Depth to GW (DGW) 6.17 ft.

Length of Water Column(LWC=TWD-DGW) 6.33 ft.

1 Csg. Volume(LWC * C) = 6.33 X 0.163 = 1.03 gals.
3 Csg. Volumes = 3 X 1.03 = 3.1 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 3 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	NA	NA	NA	3 (total)				
Time (military)	1732			1747				
pH (s.u.)	6.94	6.79	6.78	6.76				
Specific Cond. (umhos/cm)	0.339	0.331	0.329	0.331				
Water Temp (°C)	23.4	23.1	23.1	23.1				
Turbidity (*)	Ø	Ø	Ø	Ø				
PID Readings	NA	NA	NA	NA				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks NA = not available

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 09/08/99
Field Personnel Jason McCann / Thomas Thompson
General Weather Conditions Sunny
Ambient Air Temperature 31 °C
Facility Name Charleston Naval Complex Site 34 Site ID# 17754

pH Meter: NA
serial no.
pH=4.0
pH=7.0
pH=10.0

Quality Assurance:
Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
Jason McCann	9/9/99 1900	Katahdin	9/10/99 1000

Well # CNC MW01

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 13.2 ft.
Depth to GW (DGW) 4.17 ft.

Length of Water Column(LWC=TWD-DGW) 9.03 ft.

1 Csg. Volume(LWC * C) = 9.03 X 0.163 = 1.47 gals.
3 Csg. Volumes = 3 X 1.47 = 4.53 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 4.32 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	NA	NA	NA	4.32 total				
Time (military)	1658	NA	NA	1724				
pH (s.u.)	6.93	7.05	7.12	7.15				
Specific Cond. (umhos/cm)	0.678	0.524	0.485	0.459				
Water Temp (°C)	25.9	25.0	24.3	24.2				
Turbidity (*)	Ø	Ø	Ø	Ø				
PID Readings	NA	NA	NA	NA				

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks NA = not available

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: CNC ~~3~~ Zone ~~3~~ C
Project No.: N0164 Building NH 1137

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

Sample ID No.: 34GLM01Ø1
Sample Location: MW-1
Sampled By: EH / RH
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 7-13-99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 0858								
Method:								

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 7-13-99								
Method: Slow Purge	Initial	6.53	.99	22.8	20	2.92		
Monitor Reading (ppm):	1	6.59	.762	22.6	3	1.80		
Well Casing Diameter & Material	2	6.66	.687	22.7	Ø	3.23		
Type: P.V.C. 2"	3	6.61	.636	22.7	Ø	2.60		
Total Well Depth (TD): 13.21	~~13.24~~							
Static Water Level (WL):	3.97							
One Casing Volume(gal/L):	1.52							
Start Purge (hrs):	0725							
End Purge (hrs):	0857							
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): E J Hanson

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: CNC Site 34 **Project No.:** N0164
Location: Site 34 **Personnel:** Thomas Thompson, J. McCann
Weather Conditions: Sunny, 87°F **Measuring Device:** Water Level Indicator
Tidally Influenced: Yes ___ No X **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Readin (feet)*	Thickness of Free Produc (feet)*	Groundwater Elevation (feet)*	Comments
CNC34MW01	9-8-99	1654	—	13.20	4.17	—	—	—
CNC34MW02	9-8-99	1656	—	12.50	6.17	—	—	—
CNC34MW03	9-8-99	1658	—	12.25	4.09	—	—	—

Thomas Thompson

* All measurements to the nearest 0.01 foot

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 34
Project No.: N0164

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

Sample ID No.: 34GLM0101
Sample Location: CNC 34 MW01
Sampled By: JJM + TT
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9/8/99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1725								
Method: per.	Clear	7.15	.459	24.2	0	0.86	—	—

PURGE DATA:

Date: 9/8/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: per.	Initial	6.93	0.678	25.9	0	1.89	—	—
Monitor Reading (ppm): 0	1	7.05	0.524	25.0	0	0.40	—	1.44
Well Casing Diameter & Material	2	7.12	.485	24.3	0	1.09	—	2.88
Type: 2" PVC	3	7.15	.459	24.2	0	0.86	—	4.32
Total Well Depth (TD): 13.20								5.76
Static Water Level (WL): 4.17								
One Casing Volume(gal/L): 1.44								
Start Purge (hrs): 1658								
End Purge (hrs): 1724								
Total Purge Time (min): 26								
Total Vol. Purged (gal/L): 4.32								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Anions	—	500 mL Plastic	Yes
Dissolved Methane	HCl	40 mL Glass	Yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 34
Project No.: N0164

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

Sample ID No.: 34GLM0201
Sample Location: CNC34MW02
Sampled By: TNT/JJM
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 9/8/99	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1748	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Method: per.	clear	6.76	.331	23.1	0	1.23	—	—

PURGE DATA:

Date: 9-8-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Method: per	Initial	6.94	.339	23.4	0	1.03	—	—
Monitor Reading (ppm): 0	1	6.79	.331	23.1	0	1.25	—	1.00
Well Casing Diameter & Material	2	6.78	.329	23.1	0	1.29	—	2.00
Type: 2" PVC	3	6.76	.331	23.1	0	1.23	—	3.00
Total Well Depth (TD): 12.50								
Static Water Level (WL): 6.17								
One Casing Volume(gal/L): 1.00								
Start Purge (hrs): 1732								
End Purge (hrs): 1747								
Total Purge Time (min): 15								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Anions	—	500 mL Plastic	yes
Dissolved Methane	HCl	40 mL glass	yes
PAH	—	1 L glass	yes
BTEX, EDB, MTBE, Total Nap.	HCl	40 mL glass	yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	34GLM0201D

Signature(s):

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: CNC Site 34
Project No.: N0114

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

Sample ID No.: 34GLM0301
Sample Location: CNC34MW03
Sampled By: JJM / TNT
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 9-8-99	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	%	NA
Time: 1848								
Method: per	clear	7.06	.273	23.9	0	1.58	—	—

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
Date: 9-8-99								
Method: per	Initial	7.06	.376	24.8	0	1.30	—	—
Monitor Reading (ppm): 0	1	6.96	.284	24.1	0	1.33	—	1.30
Well Casing Diameter & Material	2	7.06	.274	23.9	0	1.43	—	2.60
Type: 2" PVC	3	7.06	.273	23.9	0	1.58	—	3.90
Total Well Depth (TD): 12.25								
Static Water Level (WL): 4.09								
One Casing Volume(gal/L): 1.30								
Start Purge (hrs): 1810								
End Purge (hrs): 1848								
Total Purge Time (min): 23								
Total Vol. Purged(gal/L): 3.90								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Anion	—	500 ml plastic	yes
Dissolved Methane	HCl	40 ml glass	yes
PAH	—	1 L glass	yes
BTEX, EDB, MTBE, Total Nap.	HCl	40 ml glass	yes

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC site 34
Project No.: N0164
Sampled By: JJM & TT
Field Analyst: JJM
Field Form Checked as per QA/QC Checklist (initials): MM

Sample ID No.: 34GLM0101
Sample Location: CNC 34 MW01
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: 4/8/99								
Time: 1725								
Method: new,	clear	—	0.459	24.2	0	0.86	—	7.15

SAMPLE COLLECTION/ANALYSIS INFORMATION

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 0-1 mg/L)) Analysis Time: 17:48

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

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 0.0 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 17:28 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	= mg/L
☑	100-400 mg/L	100 ml	1.600 N	1.0	0 & 114	x 1.0	= 114 mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	114

CHEMetrics: _____ mg/L

Notes:

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 17:41

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
185	x 1.0	= 185 mg/L
	x 2.0	= mg/L

CHEMetrics: _____ mg/L

Notes:

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

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC SAR 34
Sample ID No.: 34GLM0101
Project No.: N0164
Sample Location: CNC 34 MW01
Sampled By: JJM & TT
Duplicate: ☐
Field Analyst: JJM
Blank: ☐
Field Form Checked as per QA/QC Checklist (Initials): JJM

SAMPLE COLLECTION/ANALYSIS INFORMATION

Sulfide (S^{2-}):

Equipment: DR-700 (DR-850) HS-C Color Chart HS-WR Color Wheel Analysis Time: 19:35
Program/Module: 610nm 93 Other:
Concentration: 0.05 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: 19:32
Equipment: DR-700 (DR-850) Other: Filtered: ☐
Program/Module: 60
Concentration: 0.006 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 Site 34
Sample ID No.: 34GLM0101
Project No.: N0164
Sample Location: CNC 34 MW01
Sampled By: JJM & TT
Duplicate: ☐
Field Analyst: JJM
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JJM

SAMPLE COLLECTION/ANALYSIS INFORMATION

Manganese (Mn^{2+}):

Equipment: DR-700 (DR-850) HACH MN-5 Other: _____ Analysis Time: 18:58
Program/Module: 525nm 41
Concentration: 1.0 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-850) IR-18C Color Wheel Other: _____ Analysis Time: 18:26
Program/Module: 500nm 33
Concentration: 3.30 mg/L
Filtered: ☐
Notes: Limit

Hydrogen Sulfide (H_2S):

Equipment: (HS-C) Other: _____ Analysis Time: 17:35
Concentration: 0.1 mg/L Exceeded 5.0 mg/L range on color chart: ☐
Notes:

QA/QC Checklist:

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

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC 5TR 34
Project No.: N0164
Sampled By: JJM + TJ
Field Analyst: JJM
Field Form Checked as per QA/QC Checklist (Initials): JJM

Sample ID No.: 34GLM0201
Sample Location: CNC34MW02
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: 9/8/99								
Time: 1748								
Method: PUR.	<1 CUV	—	0.331	23.1	0	1.23	—	6.76

SAMPLE CONTEMPORANEOUS INFORMATION

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 0-1 mg/L)) Analysis Time: 1815

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

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 0.1 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: ____ mg/L) Analysis Time: ____ 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	0 & 148	x 0.4	= 59.2 mg/L
☑	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	59.2

CHEMetrics: ____ mg/L

Notes:

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

Carbon Dioxide:

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: ____ mg/L) Analysis Time: 17:52

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
156	x 1.0	= 156 mg/L
	x 2.0	= mg/L

CHEMetrics: ____ mg/L

Notes:

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

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC Site 34
Project No.: N0164
Sampled By: JJM & TT
Field Analyst: JJM
Field Form Checked as per QA/QC Checklist (initials): JJM

Sample ID No.: 34GLM0201
Sample Location: CNC34MW02
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION

Sulfide (S^{2-}):

Equipment: DR-700 (DR-850) HS-C Color Chart HS-WR Color Wheel Analysis Time: 19:36
Program/Module: 810nm 93 Other:
Concentration: 0.02 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: Analysis Time:
Program/Module: 91
Concentration: mg/L Filtered: ☐
Standard Solution: ☐ Results:
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Nitrite (NO_2^--N):

Analysis Time: 19:32
Equipment: DR-700 (DR-850) Other: Filtered: ☐
Program/Module: 60
Concentration: 0.006 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 Interferance Treatment: ☐
Standard Solution: ☐ Results: Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC Site 34
Project No.: N8164
Sampled By: JJM & TT
Field Analyst: JJM
Field Form Checked as per QA/QC Checklist (initials): JJM

Sample ID No.: 34GLM0201
Sample Location: CNC34MW02
Duplicate: ☐
Blank: ☐

Manganese (Mn^{2+}):

Equipment: DR-700 DR-850 HACH MN-5 Other: _____ Analysis Time: 19:11
Program/Module: 525nm 41
Concentration: 0.2 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-850 IR-18C Color Wheel Other: _____ Analysis Time: 18:31
Program/Module: 500nm 33
Concentration: 3.30 mg/L
Filtered: ☐
Notes: Limit

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: _____ Analysis Time: 18:10
Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐
Notes:

QA/QC Checklist:

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

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Site 34
Project No.: N0164
Sampled By: JJM & TT
Field Analyst: JJM
Field Form Checked as per QA/QC Checklist (initials): JJM

Sample ID No.: 34GLM0301
Sample Location: CNC 34MW03
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: 9/8/99								
Time: 1848								
Method: pos.	Clear	—	0.273	23.9	0	1.58	—	

SAMPLE COLLECTION/ANALYSIS INFORMATION

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT (CHEMetrics (Range: 0-1 mg/L)) Analysis Time: 19:23

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

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 0.3 mg/L

Notes:

Alkalinity:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 18:43 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	= mg/L
☑	100-400 mg/L	100 ml	1.600 N	1.0	0 & 206	x 1.0	= 206 mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:	0	0	206

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: 18:48

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
134	x 1.0	= 134 mg/L
	x 2.0	= mg/L

CHEMetrics: _____ mg/L

Notes:

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

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: CNC Site 34
Sample ID No.: 34GLM0301
Project No.: N0164
Sample Location: CNC 34 MW03
Sampled By: JJM & TT
Duplicate: ☐
Field Analyst: JJM
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JJM

SAMPLE COLLECTION/ANALYSIS INFORMATION

Sulfide (S^{2-}):

Equipment: DR-700 DR-850 HS-C Color Chart HS-WR Color Wheel Analysis Time: 19:37
Program/Module: 610nm 93 Other: _____

Concentration: 0.03 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: _____ Analysis Time: _____
Program/Module: 91
Concentration: _____ mg/L Filtered: ☐

Standard Solution: ☐ Results: _____
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Nitrite (NO_2^--N):

Analysis Time: 19:33
Equipment: DR-700 DR-850 Other: _____ Filtered: ☐
Program/Module: 60
Concentration: 0.001 mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

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

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: CNC Site 34
Sample ID No.: 34GLM0301
Project No.: N0164
Sample Location: CNC 34 MW03
Sampled By: JJM + TT
Duplicate: ☐
Field Analyst: JJM
Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): JJM

SAMPLE DOCUMENTATION AND VERIFICATION

Manganese (Mn^{2+}):

Equipment: DR-700 (DR-850) HACH MN-5 Other: _____ Analysis Time: 19:22
Program/Module: 525nm 41
Concentration: 0.6 mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: _____ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:_____ 0.2ml:_____ 0.3ml:_____
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 (DR-850) IR-18C Color Wheel Other: _____ Analysis Time: 18:37
Program/Module: 500nm 33
Concentration: 1.28 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: (HS-C) Other: _____ Analysis Time: 18:36
Concentration: 0.5 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: ☑

Katahdin
ANALYTICAL SERVICES

August 17, 1999

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

RE: Katahdin Lab Number: WP-3254
Project ID: CTO #68
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: July 14, 1999

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

Maria Crouch
Authorized Signature

08/17/99
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

TECHNICAL NARRATIVE

Volatile Organics Analysis

Four aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on July 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 5972-S instrument. A VSTD050 (50 ppb standard) was used for the continuing calibration standard. Internal standard and surrogate compounds were also spiked at 50 ug/l.

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

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

In the calibration curve analyzed in this SDG, the average %RSD for all analytes was 14.0%, making the curve acceptable.

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

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

Semivolatile Organics Extraction and Analysis

Three aqueous samples were received by Katahdin Analytical Services laboratory on July 14, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the samples occurred following USEPA method 3510 on July 15, 1999. A laboratory control spike consisting of all PAH analytes spiked into organic free water, was extracted in the batch, along with a site specific MS/MSD pair on sample WP3254-2.

The initial calibration curve analyzed in this SDG had some of the target analyte %RSD values exceeding 15 %.

Method 8000B, section 7.5.1.2.1 (Revision 2, 12/96) states, "in those instances where the RSD for one or more analytes exceeds 20%, the initial calibration curve may still be acceptable if the mean of the RSD values for all analytes in the calibration is less than or equal to 20%." Section 7.3.7.1 of method 8270C (revision 3, 12/96) narrows this 20% maximum to 15%.

In the calibration curve analyzed in this SDG, the average %RSD for all analytes was 10.1%, making the curve acceptable.

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

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

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

LAB (WORK ORDER) #: WP 3254

PAGE: 1 OF 1

COOLER: 1 OF 1

COC#: —
SDG#: —
DATE / TIME RECEIVED: 7-14-99 0930
DELIVERED BY: FedEx
RECEIVED BY: Sam
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

CLIENT: Tetra Tech

PROJECT: 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)= 3.5	
6. SAMPLES RECEIVED AT 4°C +/- 2? (CE) 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 required. If samples required pH adjustment, record volume and type of preservative added.

0000019

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryn Hance
Phone #: (843) 814-9080
Fax #: ( )
Address: NH21 Ave. H
City: N. Charleston
State: SC
Zip Code: 29405
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): Emily Harrison
Copies To:

LAB USE ONLY
WORK ORDER #: WP 3254
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/MAH/MTBE Preserv.-HCl	PAH	~~Lead~~	~~Pesticides~~							
	14GLM0101	7/13/99/1255	GW	5	3	2									
	15GLM0101	7/13/99/1050	GW	5	3	2									
	34GLM0101	7/13/99/0858	GW	5	3	2									
	34TL00201	7/13/99			2										

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	7/13/99 1800	8134029046 24		7-14-99 0930	[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-3254

Project Manager: Andrea J. Colby
ORDER DATE: 07/14/99
PHONE: 850/385-9[illegible]
FAX: 850/385-98[illegible]
DUE: 13 AUG
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 12 SEP

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3254-1	14GLM0101	13 JUL 1255	14 JUL	AQ
	WP3254-2	15GLM0101	13 JUL 1050		
	WP3254-3	34GLM0101	13 JUL 0858		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP3254-4	34TL00201	13 JUL	14 JUL	AQ

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

ORDER NOTE: QC-IV NFESC
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT & DISK

FINAL PAGE

INVOICE: With Report

TOTAL ORDER AMOUNT $675.0[illegible]
This is NOT an Invoi[illegible]

AJC/WEST.AJC(dw)
07-14Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

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

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3254-3
SDG: WP3254
Report Date: 8/11/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 8/2/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34GLM0101	AQ	7/13/99	7/14/99	7/15/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	80	%	1.0		
2-FLUOROBIPHENYL	80	%	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: WP3254-3
SDG: WP3254
Report Date: 8/11/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 7/19/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34GLM0101	AQ	7/13/99	7/14/99	7/19/99	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	113	%	1.0		
1,2-DICHLOROETHANE-D4	110	%	1.0		
TOLUENE-D8	112	%	1.0		
P-BROMOFLUOROBENZENE	99	%	1.0		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3254-4
SDG: WP3254
Report Date: 8/11/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 7/19/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34TL00201	AQ	7/13/99	7/14/99	7/19/99	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	115	%	1.0		
1,2-DICHLOROETHANE-D4	113	%	1.0		
TOLUENE-D8	115	%	1.0		
P-BROMOFLUOROBENZENE	96	%	1.0		

Report Notes:

4B
SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;071599

Lab Name: Katahdin Analytical Services SDG No.: WP3254

Lab File ID: Z1577 Lab Sample ID: SBLK;071599

Instrument ID: 5972-Z Date Extracted: 7/15/99

GC Column: RTX-624 ID: 0.18 (mm) Date Analyzed: 07/30/99

Matrix: (soil/water) WATER Time Analyzed: 15:18

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;071599	LCS;071599	Z1592	8/2/99	11:15:00 AM
14GLM0101	WP3254-1	Z1597	8/2/99	3:18:00 PM
15GLM0101	WP3254-2	Z1598	8/2/99	4:06:00 PM
34GLM0101	WP3254-3	Z1599	8/2/99	4:53:00 PM
15GLM0101MS	WP3254-2MS	Z1609	8/3/99	12:13:00 PM
15GLM0101MSD	WP3254-2MSD	Z1610	8/3/99	1:00:00 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;071599
SDG: WP3254
Report Date: 8/11/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 7/30/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;071599	AQ	-	-	7/15/99	DPD	EPA 3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	62	%	1.0		
2-FLUOROBIPHENYL	64	%	1.0		
TERPHENYL-D14	74	%	1.0		

Report Notes:

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z1592 **Sample ID:** LCS;071599 **Date Run:** 8/2/99

Analyst: KRT **Time Injected** 11:15:00 AM **Matrix:** AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	50	23.2	*46	70-130
ACENAPHTHENE	50	28.9	*58	70-130
ACENAPHTHYLENE	50	27.9	*56	70-130
ANTHRACENE	50	41.4	83	70-130
BENZO[A]ANTHRACENE	50	37.5	75	70-130
BENZO[A]PYRENE	50	35.9	72	70-130
BENZO[B]FLUORANTHENE	50	35.3	70	70-130
BENZO[G,H,I]PERYLENE	50	35.0	70	70-130
BENZO[K]FLUORANTHENE	50	38.1	76	70-130
CHRYSENE	50	39.6	79	70-130
DIBENZ[A,H]ANTHRACENE	50	35.1	70	70-130
FLUORANTHENE	50	43.5	87	70-130
FLUORENE	50	33.5	*67	70-130
INDENO[1,2,3-CD]PYRENE	50	37.3	75	70-130
NAPHTHALENE	50	19.7	*39	70-130
PHENANTHRENE	50	38.3	77	70-130
PYRENE	50	33.8	*68	70-130

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3254-2	Z1598	8/2/99	4:06:00 PM	KRT	AQ	8270_99
WP3254-2MS	Z1609	8/3/99	12:13:00 PM	KRT	AQ	8270_99
WP3254-2MSD	Z1610	8/3/99	1:00:00 PM	KRT	AQ	8270_99

Compound Name	Native (ug/L)	MS Spk Amount (ug/L)	MSD Spk Amount (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	MS REC (%)	MSD REC (%)	Recovery Limits (%)	RPD (%)	RPD Limit (%)
CHRYSENE	0	50	50	76.7	78.3	*153	*156	60-140	2.1	30
ACENAPHTHENE	0	50	50	71.0	67.2	*142	134	60-140	5.5	30
ACENAPHTHYLENE	0	50	50	67.5	64.1	135	128	60-140	5.2	30
ANTHRACENE	0	50	50	79.9	83.0	*160	*166	60-140	3.8	30
BENZO[A]ANTHRACENE	0	50	50	71.3	74.1	*143	*148	60-140	3.8	30
BENZO[A]PYRENE	0	50	50	69.6	69.9	139	140	60-140	0.43	30
BENZO[B]FLUORANTHENE	0	50	50	65.0	67.0	130	134	60-140	3.0	30
2-METHYLNAPHTHALENE	0	50	50	68.4	57.6	137	115	60-140	17	30
BENZO[K]FLUORANTHENE	0	50	50	83.3	78.5	*167	*157	60-140	5.9	30
PYRENE	0	50	50	71.8	79.4	*144	*159	60-140	10	30
DIBENZ[A,H]ANTHRACENE	0	50	50	60.0	66.6	120	133	60-140	10	30
FLUORANTHENE	0	50	50	78.6	77.4	*157	*155	60-140	1.5	30
FLUORENE	0	50	50	69.6	69.7	139	139	60-140	0.14	30
INDENO[1,2,3-CD]PYRENE	0	50	50	60.1	69.5	120	139	60-140	14	30
NAPHTHALENE	0	50	50	67.9	56.7	136	113	60-140	18	30
PHENANTHRENE	0	50	50	77.1	79.4	*154	*159	60-140	2.9	30
BENZO[G,H,I]PERYLENE	0	50	50	67.6	79.0	135	*158	60-140	16	30

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

*** Out of Limits**

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKS19A

Lab Name: Katahdin Analytical Services SDG No.: WP3254

Lab File ID: S5474 Lab Sample ID: VBLKS19A

Date Analyzed: 07/19/99 Time Analyzed: 10:09

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

Instrument ID: 5972-S

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
LCSS19A	LCSS19A	S5473	7/19/99	9:09:00 AM
14GLM0101	WP3254-1	S5475	7/19/99	11:03:00 AM
15GLM0101	WP3254-2	S5476	7/19/99	11:45:00 AM
34GLM0101	WP3254-3	S5477	7/19/99	12:27:00 PM
34TL00201	WP3254-4	S5478	7/19/99	1:10:00 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: VBLKS19A
SDG: WP3254
Report Date: 8/11/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 7/19/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKS19A	AQ	-	-	7/19/99	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	106	%	1.0		
TOLUENE-D8	102	%	1.0		
P-BROMOFLUOROBENZENE	97	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: S5473 **Sample ID: LCSS19A** **Date Run: 7/19/99**

Analyst: KMC **Time Injected 9:09:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	53.2	106	60-140
BENZENE	50	53.1	106	60-140
ETHYLBENZENE	50	61.1	122	60-140
MTBE	50	53.2	106	60-140
NAPHTHALENE	50	56.3	112	60-140
TOLUENE	50	54.4	109	60-140
TOTAL XYLENES	150	189	126	60-140

*** Out of Limits** *1*

Katahdin
ANALYTICAL SERVICES

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

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

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

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

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

0000002

340 County Road No. 5
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Tel: (207) 874-2400 Fax: (207) 775-4029

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210 West Road No. 5, Portsmouth, NH 03801
Tel: (603) 431-5777 Fax: (603) 436-3356

Katahdin
ANALYTICAL SERVICES

Volatile Organic Analysis

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

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

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

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

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

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

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

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

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

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

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Semivolatile Organic Analysis

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

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

Samples WP2502-2, -15, and -17 were analyzed at dilutions due to the matrix (1:100, 1:5, and 1:25, respectively), resulting in elevated reporting limits.

Initial analyses of samples WP2502-11-14 and 18 yielded internal standard area recovery deviations. Reanalyses yielded similar results, confirming matrix interference in each sample. Reanalysis of sample WP2502-18 (WP2502-18RA) occurred nineteen minutes outside of the twelve hour DFTPP tuning window. Both sets of data for each sample are included in the data package.

Method 8000B, section 7.5.1.2.1 (Revision 2, 12/96) states, "in those instances where the RSD for one or more analytes exceeds 20%, the initial calibration curve may still be acceptable if the mean of the RSD values for all analytes in the calibration is less than or equal to 20%." Section 7.3.7.1 of method 8270C (revision 3, 12/96) narrows this 20% maximum to 15%.

In the calibration curves analyzed in this SDG, several analytes had %RSD values exceeding the allowed 15%. Since the average %RSD for all analytes was 8.5% and 8.5%, respectively, the curves were acceptable.

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

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

Wet Chemistry Analysis

For work order WP2502 the analyses for Total Combustible Organics (TCO) have been performed in accordance with the "Annual Book of ASTM Standards", 1987. Analyses for Solids-Total Residue (TS) for work order WP2502 samples have been performed in accordance with "Contract Laboratory Program Statement of Work for Inorganic Analysis".

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

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Katahdin
ANALYTICAL SERVICES

Subcontracted Analysis

Analyses for Total Organic Carbon and Total Petroleum Hydrocarbon were subcontracted to outside laboratories. Both sets of data are included as separate sections to the data package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager and/or his designee, as verified by the following signature.

Deborah J. Nadeau
Authorized Signature
7·19·99

0000005

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P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

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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 2502

PAGE: 1 OF 2

COOLER: 1 OF 2

CLIENT: Tetra Tech - SE

PROJECT: CNC Charleston

COC#: —
SDG#: —
DATE / TIME RECEIVED: 5-19-99 0945
DELIVERED BY: FedEx
RECEIVED BY: Sam
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?	☐	☑	☐	only received VOA for AQ	AJC notified Paul Calnge and was told to proceed w/ VOA
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.5	
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 a

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

LAB (WORK ORDER) #: WP 2502

PAGE: 2 OF 2

COOLER: 2 OF 2

COC#: –
SDG#: –
DATE / TIME RECEIVED: 5-19-99 0945
DELIVERED BY: FedEx
RECEIVED BY: SPW
LIMS ENTRY BY: ADC
LIMS REVIEW BY / PM: ADC

CLIENT: Tetra Tech - SC

PROJECT: CNC Charleston

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☑ broken	☐		
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?	☐	☐	☑	NA	
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
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN OF CUSTODY

PLEASE PRINT IN PEN

Client	Contact	Phone #	Fax #
Tetra Tech NUS	Bryn Howze	(423) 483-9900	( )

Address	City	State	Zip Code
NH-21 Ave H	North Charleston	SC	29405

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

Bill (if different than above): Address:

Sampler (Print / Sign): Copies To:

LAB USE ONLY WORK ORDER #: WR2502

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.	PAHs + Napth 8070C	TAL metals 6010B	BTEX, EDB 8260B 9071A	Grain Size Hydrometer						FID Headspace
	34SLB01-0203	5/18/0935	S	5	X		X							[illegible]
	32SLB02-0506	5/18/0820	S	5	X		X							25
	32SLB04-0506	5/18/0830	S	5	X		X							0
	32SLB01-0506	5/18/0810	S	5	X		X							0
	32SLB03-0506D	5/18/0850	S	5	X		X							0
	34SLB03-0304	5/18/1025	S	5	X		X							0
	34SLB02-0304D	5/18/1010	S	5	X		X							100
	32SLB03-0506	5/18/0850	S	5	X		X							10
	32SLB09-0506	5/18/0840	S	6	X		X	X						4
	34SLB02-0304	5/18/1010	S	5	X		X							100
	34SLB05-0203	5/18/0958	S	6	X		X	X						3
	34SLB04-0304	5/18/0950	S	5	X		X							0
	33SLB05-0304	5/18/1235	S	5	X		X							1
	33SLB04-0304D	5/18/1220	S	5	X		X							2
	33SLB04-0304	5/18/1220	S	5	X		X							2
	33SLB08-0405	5/18/1205	S	6	X		X	X						1

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	5/18/99 1430	Fed Ex 809609650276			[signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					0000038

Katahdin ANALYTICAL SERVICES
340 County Road No. 5
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN of CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryn Howze
Phone #: (423) 483-9900
Fax #: ( )
Address: NH-21 Ave H
City: North Charleston
State: SC
Zip Code: 29405
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign):
Copies To:

LAB USE ONLY
WORK ORDER #: WP2502
KATAHDIN PROJECT MANAGER
REMARKS:
SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	PAHs + Naph 8070	TAL metals 6010B	BTEX, EDB 8260B 9071A	Grain Size Hydrometer						FID Headspace (PDM)
	33SLB06-0405	5/18/1155	S	5	X		X							O
	33SLB01-0304	5/18/1145	S	5	X		X							O
	D4TL00104	5/3/1515	W	2			X							
	D1E00101	5/18/1405	W	2	X	X	X							
	D1F00101	5/18/1400	W	2	X	X	X							
		/												
		/												
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		/												
		/												
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	5/18/99 1433	Fed Ex 809609650276			Shelby Williams 5-19-99 0934
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					0000009

ORIGINAL

New England-ME Laboratory (207) 874-2400
CONFIRMATION

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9[illegible]
FAX: 850/385-98[illegible]
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP2502-1	34SLB01-0203	18 MAY 0935	19 MAY	SL
	WP2502-2	32SLB02-0506	18 MAY 0820		
	WP2502-3	32SLB04-0506	18 MAY 0830		
	WP2502-4	32SLB01-0506	18 MAY 0810		
	WP2502-5	32SLB03-0506D	18 MAY 0850		
	WP2502-7	34SLB02-0304D	18 MAY 1010		
	WP2502-9	34SLB02-0304	18 MAY 1010		
	WP2502-10	34SLB04-0304	18 MAY 0950		
	WP2502-12	33SLB04-0304D	18 MAY 1220		
	WP2502-13	33SLB04-0304	18 MAY 1220		
	WP2502-14	33SLB06-0405	18 MAY 1155		
	WP2502-15	33SLB01-0304	18 MAY 1145		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	12	0.00	0.00
Volatile Organics by 8260B	SW8260	12	85.00	1020.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	12	135.00	1620.00
TOTALS		12	220.00	2640.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP2502-16	32SLB09-0506	18 MAY 0840	19 MAY	SL
	WP2502-17	34SLB05-0203	18 MAY 0958		
	WP2502-18	33SLB08-0405	18 MAY 1205		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	110.00	330.00
TOTALS		3	330.00	990.00

LABORATORY ORDER CONTINUED ON PAGE 2

000010

KC 6/14/99

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP2502-19	04TL00104	03 MAY 1515	19 MAY	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP2502-20	01E00101	18 MAY 1405	19 MAY	AQ
	WP2502-21	01F00101	18 MAY 1400		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP2502-6	34SLB03-0304	18 MAY 1025	19 MAY	SL
	WP2502-8	32SLB03-0506	18 MAY 0850		
	WP2502-11	33SLB05-0304	18 MAY 1235		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	135.00	405.00
Total Combustible Organics	ASTM D2974	3	30.00	90.00
TOTALS		3	385.00	1155.00

LABORATORY ORDER CONTINUED ON PAGE 3

000001

5/6/1999

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99

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

PHONE: 850/385-98
FAX: 850/385-98
DUE: 18 JUN
FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
TETRA TECH NUS, INC.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ORDER NOTE: QC-IV NFESC-D
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $5,020.00
This is NOT an Invoi

AJC/BKR/WEST.AJC(dw)
06-14Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

00000012

Dr 6/14/99

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
$	'$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis 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
#	'#' flag denotes surrogate compound recovery is out of criteria.
DL	'DL' flag denotes inability to calculate surrogate recovery due to sample dilution.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmedmatrix interference.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-1
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB01-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

340 County Road No. 5
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KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	54	%	1.4		
2-FLUOROBIPHENYL	54	%	1.4		
TERPHENYL-D14	70	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/28/99	HMP	5035	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<850	ug/Kgdrywt	170	850	5
TOLUENE	<850	ug/Kgdrywt	170	850	5
1,2-DIBROMOETHANE	<850	ug/Kgdrywt	170	850	5
ETHYLBENZENE	<850	ug/Kgdrywt	170	850	5
NAPHTHALENE	<850	ug/Kgdrywt	170	850	5
MTBE	<850	ug/Kgdrywt	170	850	5
TOTAL XYLENES	<850	ug/Kgdrywt	170	850	5
DIBROMOFLUOROMETHANE	92	%	170		
1,2-DICHLOROETHANE-D4	87	%	170		
TOLUENE-D8	94	%	170		
P-BROMOFLUOROBENZENE	97	%	170		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-6
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB03-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1
Total Combustible Organics	11.	wt %	1.0	0.1	ASTM D2974-8	06/07/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF
(2) Sample Preparation on 06/04/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	62	%	1.3		
2-FLUOROBIPHENYL	57	%	1.3		
TERPHENYL-D14	69	%	1.3		

Report Notes:

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KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	8	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	84	%	1.4		
1,2-DICHLOROETHANE-D4	79	%	1.4		
TOLUENE-D8	96	%	1.4		
P-BROMOFLUOROBENZENE	135	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-7
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304D	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	73.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	470	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	490	ug/Kg	1.4	460	330
PYRENE	J360	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	J280	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	58	%	1.4		
2-FLUOROBIPHENYL	55	%	1.4		
TERPHENYL-D14	79	%	1.4		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.3	6	5
TOLUENE	<6	ug/Kg	1.3	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.3	6	5
ETHYLBENZENE	<6	ug/Kg	1.3	6	5
NAPHTHALENE	<6	ug/Kg	1.3	6	5
MTBE	<6	ug/Kg	1.3	6	5
TOTAL XYLENES	<6	ug/Kg	1.3	6	5
DIBROMOFLUOROMETHANE	88	%	1.3		
1,2-DICHLOROETHANE-D4	83	%	1.3		
TOLUENE-D8	82	%	1.3		
P-BROMOFLUOROBENZENE	75	%	1.3		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-9
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	J280	ug/Kg	1.3	430	330
ANTHRACENE	<430	ug/Kg	1.3	430	330
FLUORANTHENE	J410	ug/Kg	1.3	430	330
PYRENE	J300	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	68	%	1.3		
2-FLUOROBIPHENYL	64	%	1.3		
TERPHENYL-D14	75	%	1.3		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	<7	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	79	%	1.4		
1,2-DICHLOROETHANE-D4	82	%	1.4		
TOLUENE-D8	86	%	1.4		
P-BROMOFLUOROBENZENE	66	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-10
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB04-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	62	%	1.4		
2-FLUOROBIPHENYL	61	%	1.4		
TERPHENYL-D14	67	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	<8	ug/Kg	1.7	8	5
TOTAL XYLENES	<8	ug/Kg	1.7	8	5
DIBROMOFLUOROMETHANE	84	%	1.7		
1,2-DICHLOROETHANE-D4	78	%	1.7		
TOLUENE-D8	77	%	1.7		
P-BROMOFLUOROBENZENE	$52	%	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: WP2502-10RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	70	%	1.9		
1,2-DICHLOROETHANE-D4	$65	%	1.9		
TOLUENE-D8	$61	%	1.9		
P-BROMOFLUOROBENZENE	$36	%	1.9		

Report Notes: $

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-17
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB05-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	53.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<16000	ug/Kg	47	16000	330
2-METHYLNAPHTHALENE	<16000	ug/Kg	47	16000	330
ACENAPHTHYLENE	<16000	ug/Kg	47	16000	330
ACENAPHTHENE	<16000	ug/Kg	47	16000	330
FLUORENE	<16000	ug/Kg	47	16000	330
PHENANTHRENE	<16000	ug/Kg	47	16000	330
ANTHRACENE	<16000	ug/Kg	47	16000	330
FLUORANTHENE	<16000	ug/Kg	47	16000	330
PYRENE	<16000	ug/Kg	47	16000	330
BENZO[A]ANTHRACENE	<16000	ug/Kg	47	16000	330
CHRYSENE	<16000	ug/Kg	47	16000	330
BENZO[B]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[K]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[A]PYRENE	<16000	ug/Kg	47	16000	330
INDENO[1,2,3-CD]PYRENE	<16000	ug/Kg	47	16000	330
DIBENZ[A,H]ANTHRACENE	<16000	ug/Kg	47	16000	330
BENZO[G,H,I]PERYLENE	<16000	ug/Kg	47	16000	330
NITROBENZENE-D5	DL	%	47		
2-FLUOROBIPHENYL	DL	%	47		
TERPHENYL-D14	DL	%	47		

Report Notes: DL, O-1

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<13	ug/Kg	2.6	13	5
TOLUENE	<13	ug/Kg	2.6	13	5
1,2-DIBROMOETHANE	<13	ug/Kg	2.6	13	5
ETHYLBENZENE	<13	ug/Kg	2.6	13	5
NAPHTHALENE	J6	ug/Kg	2.6	13	5
MTBE	<13	ug/Kg	2.6	13	5
TOTAL XYLENES	<13	ug/Kg	2.6	13	5
DIBROMOFLUOROMETHANE	96	%	2.6		
1,2-DICHLOROETHANE-D4	88	%	2.6		
TOLUENE-D8	96	%	2.6		
P-BROMOFLUOROBENZENE	73	%	2.6		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-19
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: -
Method: SW8260
Date Analyzed: 5/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
04TL00104	SL	5/3/99	5/19/99	5/26/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kgdrywt	1.0	5	5
TOLUENE	<5	ug/Kgdrywt	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kgdrywt	1.0	5	5
ETHYLBENZENE	<5	ug/Kgdrywt	1.0	5	5
NAPHTHALENE	<5	ug/Kgdrywt	1.0	5	5
MTBE	<5	ug/Kgdrywt	1.0	5	5
TOTAL XYLENES	<5	ug/Kgdrywt	1.0	5	5
DIBROMOFLUOROMETHANE	83	%	1.0		
1,2-DICHLOROETHANE-D4	83	%	1.0		
TOLUENE-D8	86	%	1.0		
P-BROMOFLUOROBENZENE	81	%	1.0		

Report Notes:

[redacted]

Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP2502

			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)
TS -Total Residue	19-May-99	20-May-99	wt %	<	0.10	<	0.10		0.10	wt %	90	89.8	100	80-120	
	19-May-99	20-May-99	wt %	<	0.10	<	0.10		0.10	wt %	90	90	100	80-120	
TCO-Total Combustible Organics	04-Jun-99	07-Jun-99	wt %	<	0.10	<	0.10		0.10	wt %	NA	NA	NA		

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

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

5000003

[redacted]

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client:	Tetra Tech NUS
Work Order:	WP2502

			DUPLICATE RESULTS					*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurements		Mean		Acceptance Range	Concentration or Quantity				Matrix Spike Recovery (%)					
Parameter	Sample No	Units	Rep 1	Rep 2	Conc	RPD (%)	for RPD (%)	Units	Sampl Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
TS	WP2502-6	wt%	78.6	78.9	78.8	0.4	0-20	MS/MSD Not Applicable for this Parameter									
TS	WP2502-16	wt%	83.6	82.2	82.9	1.7	0-20	MS/MSD Not Applicable for this Parameter									

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

DATA QUALITY COMMENTS:

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

5000004

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;052999
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 7/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	74	%	1.0		
2-FLUOROBIPHENYL	79	%	1.0		
TERPHENYL-D14	86	%	1.0		

Report Notes:

2000326

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: SBLKA;052999
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLKA;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	85	%	1.0		
2-FLUOROBIPHENYL	82	%	1.0		
TERPHENYL-D14	88	%	1.0		

Report Notes:

2000330

Katahdin Analytical Services

8270 LCS Recovery Sheet

Lab File: K1561 **Sample ID:** LCS;052999 **Date Run:** 7/3/99

Analyst: KRT **Time Injected:** 6:47:00 PM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	1667	1200	72	60-140
ACENAPHTHENE	1667	1290	77	60-140
ACENAPHTHYLENE	1667	1170	70	60-140
ANTHRACENE	1667	1240	74	60-140
BENZO[A]ANTHRACENE	1667	1290	77	60-140
BENZO[A]PYRENE	1667	1220	74	60-140
BENZO[B]FLUORANTHENE	1667	1240	74	60-140
BENZO[G,H,I]PERYLENE	1667	1500	90	60-140
BENZO[K]FLUORANTHENE	1667	1340	81	60-140
CHRYSENE	1667	1330	80	60-140
DIBENZ[A,H]ANTHRACENE	1667	1390	84	60-140
FLUORANTHENE	1667	1390	84	60-140
FLUORENE	1667	1200	72	60-140
INDENO[1,2,3-CD]PYRENE	1667	1530	92	60-140
NAPHTHALENE	1667	1220	73	60-140
PHENANTHRENE	1667	1320	79	60-140
PYRENE	1667	1130	68	60-140

*** Out of Limits**

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP2502-1	K1572	7/6/99	2:44:00 PM	KRT	SL	8270_99
WP2502-1MS	K1573	7/6/99	3:30:00 PM	KRT	SL	8270_99
WP2502-1MSD	K1574	7/6/99	4:17:00 PM	KRT	SL	8270_99

Compound Name	Native (ug/Kg)	MS Spk 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	2320	2320	1580	1730	68	75	60-140	9.1	50
ACENAPHTHENE	0	2320	2320	1500	1700	64	73	60-140	12	50
ACENAPHTHYLENE	0	2320	2320	1440	1620	62	70	60-140	12	50
ANTHRACENE	0	2320	2320	1540	1660	66	72	60-140	7.5	50
BENZO[A]ANTHRACENE	0	2320	2320	1590	1640	68	71	60-140	3.1	50
BENZO[A]PYRENE	0	2320	2320	1530	1750	66	75	60-140	13	50
BENZO[B]FLUORANTHENE	0	2320	2320	1630	1960	70	84	60-140	18	50
2-METHYLNAPHTHALENE	0	2320	2320	1370	1500	*59	65	60-140	9.0	50
BENZO[K]FLUORANTHENE	0	2320	2320	1750	1940	76	84	60-140	10	50
PYRENE	0	2320	2320	1560	1500	67	64	60-140	3.9	50
DIBENZ[A,H]ANTHRACENE	0	2320	2320	1320	1400	*57	60	60-140	5.9	50
FLUORANTHENE	0	2320	2320	1660	1800	72	77	60-140	8.1	50
FLUORENE	0	2320	2320	1560	1690	67	73	60-140	8.0	50
INDENO[1,2,3-CD]PYRENE	0	2320	2320	1290	1240	*56	*53	60-140	4.0	50
NAPHTHALENE	0	2320	2320	1360	1540	*59	66	60-140	12	50
PHENANTHRENE	0	2320	2320	1590	1780	69	77	60-140	11	50
BENZO[G,H,I]PERYLENE	0	2320	2320	1320	1490	*57	64	60-140	12	50

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

* Out of Limits

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: VBLKF26B
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF26B	AQ	-	-	5/26/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	84	%	1.0		
1,2-DICHLOROETHANE-D4	84	%	1.0		
TOLUENE-D8	87	%	1.0		
P-BROMOFLUOROBENZENE	82	%	1.0		

Report Notes:

4000602

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ27A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ27A	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	105	%	1.0		
1,2-DICHLOROETHANE-D4	104	%	1.0		
TOLUENE-D8	105	%	1.0		
P-BROMOFLUOROBENZENE	83	%	1.0		

Report Notes:

4000508

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKM27C
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM27C	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample 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	122	%	1.0		
1,2-DICHLOROETHANE-D4	122	%	1.0		
TOLUENE-D8	122	%	1.0		
P-BROMOFLUOROBENZENE	120	%	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: VBLKQ28A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ28A	AQ	-	-	5/28/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	93	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	97	%	1.0		
P-BROMOFLUOROBENZENE	95	%	1.0		

Report Notes:

4000618

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ28A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ28A	SL	-	-	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	86	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	85	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

4000626

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: VBLKZ29B
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/29/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ29B	SL	-	-	5/29/99	KRT	5030	KRT

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	119	%	1.0		
TOLUENE-D8	102	%	1.0		
P-BROMOFLUOROBENZENE	79	%	1.0		

Report Notes:

4000642

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ01A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ01A	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample 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	103	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	108	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

4000649

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: VBLKF01A
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF01A	AQ	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	89	%	1.0		
1,2-DICHLOROETHANE-D4	91	%	1.0		
TOLUENE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	86	%	1.0		

Report Notes:

4000658

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: MBLK060199
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
MBLK060199	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<600	ug/Kgdrywt	120	600	5
TOLUENE	<600	ug/Kgdrywt	120	600	5
1,2-DIBROMOETHANE	<600	ug/Kgdrywt	120	600	5
ETHYLBENZENE	<600	ug/Kgdrywt	120	600	5
NAPHTHALENE	<600	ug/Kgdrywt	120	600	5
MTBE	<600	ug/Kgdrywt	120	600	5
TOTAL XYLENES	<600	ug/Kgdrywt	120	600	5
DIBROMOFLUOROMETHANE	90	%	120		
1,2-DICHLOROETHANE-D4	88	%	120		
TOLUENE-D8	86	%	120		
P-BROMOFLUOROBENZENE	83	%	120		

Report Notes:

4000665

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0520 **Sample ID: LCSF26B** **Date Run: 5/26/99**

Analyst: JSS **Time Injected 5:55:00 PM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	43.4	87	60-140
BENZENE	50	42.0	84	60-140
ETHYLBENZENE	50	43.7	87	60-140
MTBE	50	45.0	90	60-140
NAPHTHALENE	50	45.2	90	60-140
TOLUENE	50	43.3	87	60-140
TOTAL XYLENES	150	130	86	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0870 **Sample ID: LCSZ27B** **Date Run: 5/27/99**

Analyst: JSS **Time Injected 4:25:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	44.8	90	60-140
BENZENE	50	44.0	88	60-140
ETHYLBENZENE	50	51.3	102	60-140
MTBE	50	50.4	101	60-140
NAPHTHALENE	50	48.0	96	60-140
TOLUENE	50	43.4	87	60-140
TOTAL XYLENES	150	157	105	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M0484 **Sample ID: LCSM27C** **Date Run: 5/27/99**

Analyst: JSS **Time Injected 5:24:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	57.1	114	60-140
BENZENE	50	53.4	107	60-140
ETHYLBENZENE	50	52.0	104	60-140
MTBE	50	58.1	116	60-140
NAPHTHALENE	50	59.8	120	60-140
TOLUENE	50	54.3	108	60-140
TOTAL XYLENES	150	152	102	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0889 **Sample ID:** LCSZ28A **Date Run:** 5/28/99

Analyst: JSS **Time Injected** 9:14:00 AM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.8	94	60-140
BENZENE	50	51.2	102	60-140
ETHYLBENZENE	50	66.3	133	60-140
MTBE	50	55.7	111	60-140
NAPHTHALENE	50	78.8	*158	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	204	136	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Q5312 **Sample ID: LCSQ28A** **Date Run: 5/28/99**

Analyst: HMP **Time Injected 9:39:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	47.7	95	60-140
BENZENE	50	49.2	98	60-140
ETHYLBENZENE	50	50.0	100	60-140
MTBE	50	43.5	87	60-140
NAPHTHALENE	50	46.5	93	60-140
TOLUENE	50	48.6	97	60-140
TOTAL XYLENES	150	136	91	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0917 **Sample ID: LCSZ29A** **Date Run: 5/29/99**

Analyst: KRT **Time Injected 5:45:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	50.9	102	60-140
BENZENE	50	54.6	109	60-140
ETHYLBENZENE	50	61.2	122	60-140
MTBE	50	47.1	94	60-140
NAPHTHALENE	50	40.7	81	60-140
TOLUENE	50	57.1	114	60-140
TOTAL XYLENES	150	184	123	60-140

*** Out of Limits**

1

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0922 **Sample ID:** LCSZ01A **Date Run:** 6/1/99

Analyst: KRT **Time Injected** 7:46:00 AM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	52.5	105	60-140
BENZENE	50	48.7	97	60-140
ETHYLBENZENE	50	59.1	118	60-140
MTBE	50	56.7	113	60-140
NAPHTHALENE	50	56.0	112	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	183	122	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0637 **Sample ID: LCSF01A** **Date Run: 6/1/99**

Analyst: KRT **Time Injected 11:12:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.3	93	60-140
BENZENE	50	43.4	87	60-140
ETHYLBENZENE	50	46.0	92	60-140
MTBE	50	47.4	95	60-140
NAPHTHALENE	50	43.4	87	60-140
TOLUENE	50	44.8	90	60-140
TOTAL XYLENES	150	132	88	60-140

*** Out of Limits**

Katahdin Analytical Services

LCS/LCSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
LCS	Z0934	6/1/99	15:42	KRT	SL	8260
LCSD	Z0935	6/1/99	16:19	KRT	SL	8260

Compound Name	Spk Amt ug/Kg	LCS Result ug/Kg	LCSD Result ug/Kg	LCS Rec (%)	LCSD Rec (%)	Rec. Limits (%)	RPD (%)	RPD Limit (%)
1,2-DIBROMOETHANE	50	52.8	53.0	100	110	60-140	9.5	30
BENZENE	50	55.7	57.0	110	110	60-140	0	30
ETHYLBENZENE	50	66.6	67.2	130	130	60-140	0	30
MTBE	50	50.2	53.6	100	110	60-140	9.5	30
NAPHTHALENE	50	49.8	54.3	100	110	60-140	9.5	30
TOLUENE	50	60.1	60.5	120	120	60-140	0	30
TOTAL XYLENES	150	207	208	140	140	60-140	0	30

RPD = (lcs rec - lcsd rec) /[(lcsd rec +lcsd rec)/2] * 100

*** Out of Limits**

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

June 2, 1999

Ms. Andrea Colby
Katahdin Analytical
340 County Rd
Westbrook, ME 04092

Dear Ms. Colby:

Enclosed is a data package for samples from the former Charleston Naval Complex site. The samples were analyzed for general chemistry.

General Engineering Laboratories appreciates this opportunity to provide you with analytical results, and trusts that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171.

Yours very truly,

Valerie S. Davis
Project Manager

enclosure

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

(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

Case Narrative for
KATA
SDG# 95606

TOTAL ORGANIC CARBON

Analytical Batch Number: 150121

Analytical Method: SW846 9060 Modified

Laboratory Number	Sample Description
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC615649	Duplicate of 9905519-05
QC615649	Post Spike of 9905519-05
QC615647	Blank
QC615650	Laboratory Control Sample

Sample Preparation:

The method quoted is for aqueous samples only. It is modified to accommodate soils analysis.

Instrument Calibration:

The instrument used was a Dohrmann DC-80 TOC analyzer. The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

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

Spike Analyses:

The post spike was run on the following Sample Number.

9905519-05

The analyte recovery in the post spike was within the required acceptance limits.

Laboratory Control Samples:

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 150797

Analytical Method: SW846 9071A

Laboratory Number	Sample Description
9905606-01	17SLB03-0506
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC618246	Blank
QC618247	Laboratory Control Sample
QC618248	Matrix Spike of 9905606-06
QC618249	Duplicate of 9905606-06

Instrument Calibration:

The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

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

Spike Analyses:

The matrix spike was run on the following Sample Number.

9905606-06

The analyte recovery in the matrix spike was within the required acceptance limits.

Laboratory Control Samples:

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

CASE NARRATIVE
for
Katahdin Analytical
Former Charleston Naval Complex Site
SDG #95606

June 2, 1999

Laboratory Identification:

General Engineering Laboratories, Inc. (GEL)

Mailing Address:

PO Box 30712
Charleston, SC 29417

Express Mail Delivery and Shipping Address:

2040 Savage Rd
Charleston, SC 29414

Telephone Number:

(843) 769-7391

Summary:

Sample receipt

The samples from the former Charleston Naval Complex site arrived at General Engineering Laboratories, Inc., Charleston, SC on May 18, 1999, for environmental analyses. The sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The following samples were received by the laboratory:

Laboratory Identification	Sample Description
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304

General Narrative:

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

Internal Chain of Custody:

Custody was maintained for the samples.

Data Package:

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

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

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

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

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

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

The QL is always $\geq$ DL.

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

Valerie S. Davis
Project Manager

fc:9905606%

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

9905606-06

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

The above narrative has been reviewed by: [signature] Date: 05/13/99

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

9905606 1/2

Page 1 of 1

Client Name/Facility Name: Katahdin Analytical (TetraTech NUS)

Collected by/Company: Charleston Naval Complex

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

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

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TPH		Remarks
01	17SLB03-0506	5/17	1210		X		X	2		X														X		40324.1
02	18SLB03-0506	5/17	1550		X		X	1		X																.2
03	19SLB16-0203	5/17	1640		X		X	1		X																.2
04	32SLB03-0506	5/18	0850		X		X	2		X														X		.1
05	34SLB03-0304	5/18	1025		X		X	2		X														X		.1
06	33SLB05-0304	5/18	1235		X		X	2		X														X		.1

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[signature]	5/18/99	3:55					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[signature]	5/18/99	1555	

White = sample collector Yellow = file Pink = with report

FEDERAL SAMPLE RECEIPT REVIEW

Client KAFA Received by [illegible] Date 5/18/99

GEL COOLER___ GEL POLY COOLER___ CLIENT COOLER___ OTHER___

SAMPLE REVIEW CRITERIA	YES	NO	COMMENTS/QUALIFIERS
1. Were shipping containers received intact and sealed? Call project Manager if No	✓		
2. Was the Shipment screened following the radiochemistry survey procedure (EPI SOP S-007)?		✓	
Were the survey results negative? Call Project Manager if No	—	—	
Are any of the samples identified by the client as radioactive? If yes, did client provide RAD activity?	—	—	
3. Were chain of custody documents included?	✓		
4. Were chain of custody documents completed properly ? (Ink, signed, match containers)	✓		
5. Did all samples container arrive intact? (sealed , unbroken)? Call Project Manager if No	✓		
6. Were all sample containers properly labeled?	✓		
7. Were proper sample containers received?	✓		
8. Preserved samples checked for proper pH?	—		
9. Were samples preserved properly? If no, list samples & tests	—		SO2
10. Shipping container temperature checked?	✓		
11. Was shipping container temperature within specifications (4+2C) If no, Call Project Manager	✓		4°C
12. Were samples received within holding time? if No, Call Project Manager	✓		
13. Were VOA vials free of headspace?	—	—	
14. ARCOC# IF REQUIRED	—	—	
15. SDG# IF REQUIRED	✓		

REVIEW [illegible] DATE 5/18/99 SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 13, 1999

Sample ID	: 17SLB03-0506
Lab ID	: 9905606-01
Matrix	: Soil
Date Collected	: 05/17/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		362	115	230	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		13.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		681	43.1	100	mg/kg	1.0	LS	05/28/99	1139	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

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

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

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 11, 1999

Sample ID	: 18SLB03-0506
Lab ID	: 9905606-02
Matrix	: Soil
Date Collected	: 05/17/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Evaporative Loss @ 105 C		11.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	1
Total Organic Carbon		2490	43.1	100	mg/kg	1.0	LS	05/28/99	1151	150121	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: June 11, 1999

Sample ID	: 19SLB16-0203
Lab ID	: 9905606-03
Matrix	: Soil
Date Collected	: 05/17/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Evaporative Loss @ 105 C		20.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	1
Total Organic Carbon		13900	254	590	mg/kg	1.0	LS	05/28/99	1220	150121	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.

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 13, 1999

Sample ID	: 32SLB03-0506
Lab ID	: 9905606-04
Matrix	: Soil
Date Collected	: 05/18/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		381	119	238	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		16.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		2180	43.1	100	mg/kg	1.0	LS	05/28/99	1235	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

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

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

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 13, 1999

Sample ID	: 34SLB03-0304
Lab ID	: 9905606-05
Matrix	: Soil
Date Collected	: 05/18/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		464	175	350	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		43.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		16600	43.1	100	mg/kg	1.0	LS	05/28/99	1247	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

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

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

Client:	Katahdin Analytical 340 County Road Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 13, 1999

Sample ID	: 33SLB05-0304
Lab ID	: 9905606-06
Matrix	: Soil
Date Collected	: 05/18/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		233	111	222	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		10.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		3750	43.1	100	mg/kg	1.0	LS	05/28/99	1304	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

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

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

QC Summary Report

Project Description: Former Naval Complex

cc: KATA00199 Lab. Sample ID: 9905606-06 Report Date: June 11, 1999

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC618246	BLANK	150797											
Total Rec. Petro. Hydrocarbons						150	mg/kg				AAT	06/11/99	1030
QC618249	9905606-06DUP	150797											
Total Rec. Petro. Hydrocarbons				233		267	mg/kg	13.3					
QC618247	LCS	150797											
Total Rec. Petro. Hydrocarbons			11200			10700	mg/kg		95.3	(70.0 - 116.)			
QC618248	9905606-06MS	150797											
Total Rec. Petro. Hydrocarbons			13400	233		11500	mg/kg		84.2	(70.0 - 130.)			
QC613273	BLANK	149550											
Evaporative Loss @ 105 C						0.00	wt%				GJ	05/19/99	1540
QC613272	9905606-06DUP	149550											
Evaporative Loss @ 105 C				10.0		9.00	wt%	10.5					
QC615647	BLANK	150121											
Total Organic Carbon						1.62	mg/kg				LS	05/28/99	1055
QC615650	LCS	150121											
Total Organic Carbon			3750			4340	mg/kg		116	(88.0 - 130.)	LS	05/28/99	1051

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

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

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

Sample No. 16, CLAY, WP-2502-16

Sieve Size	Percent Passing	PROJECT Specifications %
# 10	100.0	
# 20	99.9	
# 40	99.9	
# 60	97.8	
# 100	57.0	
# 200	43.6	

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

Sample No. 17, SILTY CLAY, WP-2502-17

Sieve Size	Percent Passing	PROJECT Specifications %
1 "	100.0	
3/4 "	96.3	
1/2 "	96.2	
1/4 "	91.6	
# 4	90.7	
# 10	87.1	
# 20	81.5	
# 40	76.5	
# 60	72.2	
# 100	61.0	
# 200	51.9	

Volatile Organic Analysis

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

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

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

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

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

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

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

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

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

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

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210 West Road No. 5, Portsmouth, NH 03801
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Semivolatile Organic Analysis

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

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

Samples WP2502-2, -15, and -17 were analyzed at dilutions due to the matrix (1:100, 1:5, and 1:25, respectively), resulting in elevated reporting limits.

Initial analyses of samples WP2502-11-14 and 18 yielded internal standard area recovery deviations. Reanalyses yielded similar results, confirming matrix interference in each sample. Reanalysis of sample WP2502-18 (WP2502-18RA) occurred nineteen minutes outside of the twelve hour DFTPP tuning window. Both sets of data for each sample are included in the data package.

Method 8000B, section 7.5.1.2.1 (Revision 2, 12/96) states, "in those instances where the RSD for one or more analytes exceeds 20%, the initial calibration curve may still be acceptable if the mean of the RSD values for all analytes in the calibration is less than or equal to 20%." Section 7.3.7.1 of method 8270C (revision 3, 12/96) narrows this 20% maximum to 15%.

In the calibration curves analyzed in this SDG, several analytes had %RSD values exceeding the allowed 15%. Since the average %RSD for all analytes was 8.5% and 8.5%, respectively, the curves were acceptable.

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

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

Wet Chemistry Analysis

For work order WP2502 the analyses for Total Combustible Organics (TCO) have been performed in accordance with the "Annual Book of ASTM Standards", 1987. Analyses for Solids-Total Residue (TS) for work order WP2502 samples have been performed in accordance with "Contract Laboratory Program Statement of Work for Inorganic Analysis".

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

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Katahdin
ANALYTICAL SERVICES

Subcontracted Analysis

Analyses for Total Organic Carbon and Total Petroleum Hydrocarbon were subcontracted to outside laboratories. Both sets of data are included as separate sections to the data package.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager and/or his designee, as verified by the following signature.

Deborah J. Nadeau
Authorized Signature
7.19.99

0000005

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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 2502

PAGE: 1 OF 2

COOLER: 1 OF 2

COC#: —
SDG#: —
DATE / TIME RECEIVED: 5-19-99 0945
DELIVERED BY: FedEx
RECEIVED BY: Sam
LIMS ENTRY BY: AJC
LIMS REVIEW BY / PM: AJC

CLIENT: TetraTech - SO

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?	☐	☑	☐	only received VOA for AQ	AJC notified Dave Calvage and was told to proceed w/ co.
5. TEMPERATURE BLANKS PRESENT?	☑	☐	☐	TEMP BLANK TEMP (°C)= 2.5	
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.

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

Sample No. 18, SANDY GRAVEL, WP-2502-18

Sieve Size	Percent Passing	PROJECT Specifications %
1/2 "	100.0	
1/4 "	96.1	
# 4	95.0	
# 10	93.3	
# 20	90.5	
# 40	85.5	
# 60	77.9	
# 100	41.9	
# 200	21.4	

Katahdin
ANALYTICAL SERVICES

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

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

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

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

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

0000002

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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 2502

PAGE: 2 OF 2

COOLER: 2 OF 2

COC# –
SDG# –
DATE / TIME RECEIVED: 5-19-99 0945
DELIVERED BY: FedEx
RECEIVED BY: SPW
LIMS ENTRY BY: ASC
LIMS REVIEW BY / PM: ASC

CLIENT: Tetra Tech - SC

PROJECT: CNC Charleston

	YES	NO	EXCEPTIONS	COMMENTS	RESOLUTION
1. CUSTODY SEALS PRESENT / INTACT?	☑	☑ broken	☐		
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?	☐	☐	☑	NA	
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 checks, results of pH checks required. If samples required pH adjustment, record volume and type of preservative added.

Katahdin ANALYTICAL SERVICES
P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN OF CUSTODY

PLEASE PRINT IN PEN

Client: TetraTech NUS
Contact: Bryn Howze
Phone #: (423) 483-9900
Fax #: ( )
Address: NH-21 Ave H
City: North Charleston
State: SC
Zip Code: 29405
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign):
Copies To:

LAB USE ONLY
WORK ORDER #: WR2502
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: Pahs + Naph 8010C	Filt. Y N: TAL metals 6010B	Filt. Y N: BTEX, EDB 8260B, 9071A	Filt. Y N: Grain Size Hydrometer	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N: FID Headspace
	34SLB01-0203	5/18/0935	S	5	X		X							[illegible]
	32SLB02-0506	5/18/0820	S	5	X		X							25
	32SLB04-0506	5/18/0830	S	5	X		X							0
	32SLB01-0506	5/18/0810	S	5	X		X							0
	32SLB03-0506D	5/18/0850	S	5	X		X							10
	34SLB03-0304	5/18/1025	S	5	X		X							0
	34SLB02-0304D	5/18/1010	S	5	X		X							100
	32SLB03-0506	5/18/0850	S	5	X		X							10
	32SLB09-0506	5/18/0840	S	6	X		X	X						4
	34SLB02-0304	5/18/1010	S	5	X		X							100
	34SLB05-0203	5/18/0958	S	6	X		X	X						3
	34SLB04-0304	5/18/0950	S	5	X		X							0
	33SLB05-0304	5/18/1235	S	5	X		X							1
	33SLB04-0304D	5/18/1200	S	5	X		X							2
	33SLB04-0304	5/18/1220	S	5	X		X							2
	33SLB08-0405	5/18/1205	S	6	X		X	X						1

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	5/18/99 1430	Fed Ex 8091609650276			5-19-99 0900 [signature]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					00000038

ORIGINAL

Katahdin ANALYTICAL SERVICES
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN OF CUSTODY

PLEASE PRINT IN PEN

Client: Tetra Tech NUS
Contact: Bryn Howze
Phone #: (423) 483-9900
Fax #: ( )
Address: NH-21 Ave H
City: North Charleston
State: SC
Zip Code: 29405
Purchase Order #:
Proj. Name / No.:
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign):
Copies To:

LAB USE ONLY
WORK ORDER #: WP2502
KATAHDIN PROJECT MANAGER:

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	PAHs + Naph 8070C	TAL metals 6010B	BTEX, EDB 8260B 9071A	Grain Size Hydrometer						FID Headspace
					Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O
	33SLB06-0405	5/18/1155	S	5	X		X							O
	33SLB01-0304	5/18/1145	S	5	X		X							O
	D4TL00104	5/3/1515	W	2			X							
	01E00101	5/18/1405	W	2	X	X	X							
	01F00101	5/18/1400	W	2	X	X	X							
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		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	5/18/99 1430	Fed Ex 809609650276			Shelby Wilk[illegible]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					0000009

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP2502-1	34SLB01-0203	18 MAY 0935	19 MAY	SL
	WP2502-2	32SLB02-0506	18 MAY 0820		
	WP2502-3	32SLB04-0506	18 MAY 0830		
	WP2502-4	32SLB01-0506	18 MAY 0810		
	WP2502-5	32SLB03-0506D	18 MAY 0850		
	WP2502-7	34SLB02-0304D	18 MAY 1010		
	WP2502-9	34SLB02-0304	18 MAY 1010		
	WP2502-10	34SLB04-0304	18 MAY 0950		
	WP2502-12	33SLB04-0304D	18 MAY 1220		
	WP2502-13	33SLB04-0304	18 MAY 1220		
	WP2502-14	33SLB06-0405	18 MAY 1155		
	WP2502-15	33SLB01-0304	18 MAY 1145		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	12	0.00	0.00
Volatile Organics by 8260B	SW8260	12	85.00	1020.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	12	135.00	1620.00
TOTALS		12	220.00	2640.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP2502-16	32SLB09-0506	18 MAY 0840	19 MAY	SL
	WP2502-17	34SLB05-0203	18 MAY 0958		
	WP2502-18	33SLB08-0405	18 MAY 1205		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	110.00	330.00
TOTALS		3	330.00	990.00

LABORATORY ORDER CONTINUED ON PAGE 2

000010

KK 6/14/99

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-[redacted]9
FAX: 850/385-[redacted]0
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP2502-19	04TL00104	03 MAY 1515	19 MAY	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP2502-20	01E00101	18 MAY 1405	19 MAY	AQ
	WP2502-21	01F00101	18 MAY 1400		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP2502-6	34SLB03-0304	18 MAY 1025	19 MAY	SL
	WP2502-8	32SLB03-0506	18 MAY 0850		
	WP2502-11	33SLB05-0304	18 MAY 1235		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	135.00	405.00
Total Combustible Organics	ASTM D2974	3	30.00	90.00
TOTALS		3	385.00	1155.00

LABORATORY ORDER CONTINUED ON PAGE 3

000001

[illegible]

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ORDER NOTE: QC-IV NFESC-D
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $5,020.00
This is NOT an Invoice

C/BKR/WEST.AJC(dw)
06-14Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

0000012

Mr Calligan

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
$	'$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis 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
#	'#' flag denotes surrogate compound recovery is out of criteria.
DL	'DL' flag denotes inability to calculate surrogate recovery due to sample dilution.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmedmatrix interference.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-1
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB01-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	54	%	1.4		
2-FLUOROBIPHENYL	54	%	1.4		
TERPHENYL-D14	70	%	1.4		

Report Notes:

RATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 6/25/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/28/99	HMP	5035	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<850	ug/Kgdrywt	170	850	5
TOLUENE	<850	ug/Kgdrywt	170	850	5
1,2-DIBROMOETHANE	<850	ug/Kgdrywt	170	850	5
ETHYLBENZENE	<850	ug/Kgdrywt	170	850	5
NAPHTHALENE	<850	ug/Kgdrywt	170	850	5
MTBE	<850	ug/Kgdrywt	170	850	5
TOTAL XYLENES	<850	ug/Kgdrywt	170	850	5
DIBROMOFLUOROMETHANE	92	%	170		
1,2-DICHLOROETHANE-D4	87	%	170		
TOLUENE-D8	94	%	170		
P-BROMOFLUOROBENZENE	97	%	170		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-6
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB03-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1
Total Combustible Organics	11.	wt %	1.0	0.1	ASTM D2974-8	06/07/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF
(2) Sample Preparation on 06/04/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

RATANDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	62	%	1.3		
2-FLUOROBIPHENYL	57	%	1.3		
TERPHENYL-D14	69	%	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: WP2502-6
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	8	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	84	%	1.4		
1,2-DICHLOROETHANE-D4	79	%	1.4		
TOLUENE-D8	96	%	1.4		
P-BROMOFLUOROBENZENE	135	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-7
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304D	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	73.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	470	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	490	ug/Kg	1.4	460	330
PYRENE	J360	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	J280	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	58	%	1.4		
2-FLUOROBIPHENYL	55	%	1.4		
TERPHENYL-D14	79	%	1.4		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.3	6	5
TOLUENE	<6	ug/Kg	1.3	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.3	6	5
ETHYLBENZENE	<6	ug/Kg	1.3	6	5
NAPHTHALENE	<6	ug/Kg	1.3	6	5
MTBE	<6	ug/Kg	1.3	6	5
TOTAL XYLENES	<6	ug/Kg	1.3	6	5
DIBROMOFLUOROMETHANE	88	%	1.3		
1,2-DICHLOROETHANE-D4	83	%	1.3		
TOLUENE-D8	82	%	1.3		
P-BROMOFLUOROBENZENE	75	%	1.3		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-9
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	J280	ug/Kg	1.3	430	330
ANTHRACENE	<430	ug/Kg	1.3	430	330
FLUORANTHENE	J410	ug/Kg	1.3	430	330
PYRENE	J300	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	68	%	1.3		
2-FLUOROBIPHENYL	64	%	1.3		
TERPHENYL-D14	75	%	1.3		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	<7	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	79	%	1.4		
1,2-DICHLOROETHANE-D4	82	%	1.4		
TOLUENE-D8	86	%	1.4		
P-BROMOFLUOROBENZENE	66	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-10
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB04-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	62	%	1.4		
2-FLUOROBIPHENYL	61	%	1.4		
TERPHENYL-D14	67	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	<8	ug/Kg	1.7	8	5
TOTAL XYLENES	<8	ug/Kg	1.7	8	5
DIBROMOFLUOROMETHANE	84	%	1.7		
1,2-DICHLOROETHANE-D4	78	%	1.7		
TOLUENE-D8	77	%	1.7		
P-BROMOFLUOROBENZENE	$52	%	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: WP2502-10RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	70	%	1.9		
1,2-DICHLOROETHANE-D4	$65	%	1.9		
TOLUENE-D8	$81	%	1.9		
P-BROMOFLUOROBENZENE	$36	%	1.9		

Report Notes: $

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-17
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB05-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	53.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

CONFIRMATION

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

PROJECT: CTO #68

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

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP2502-1	34SLB01-0203	18 MAY 0935	19 MAY	SL
	WP2502-2	32SLB02-0506	18 MAY 0820		
	WP2502-3	32SLB04-0506	18 MAY 0830		
	WP2502-4	32SLB01-0506	18 MAY 0810		
	WP2502-5	32SLB03-0506D	18 MAY 0850		
	WP2502-7	34SLB02-0304D	18 MAY 1010		
	WP2502-9	34SLB02-0304	18 MAY 1010		
	WP2502-10	34SLB04-0304	18 MAY 0950		
	WP2502-12	33SLB04-0304D	18 MAY 1220		
	WP2502-13	33SLB04-0304	18 MAY 1220		
	WP2502-14	33SLB06-0405	18 MAY 1155		
	WP2502-15	33SLB01-0304	18 MAY 1145		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	12	0.00	0.00
Volatile Organics by 8260B	SW8260	12	85.00	1020.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	12	135.00	1620.00
TOTALS		12	220.00	2640.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP2502-16	32SLB09-0506	18 MAY 0840	19 MAY	SL
	WP2502-17	34SLB05-0203	18 MAY 0958		
	WP2502-18	33SLB08-0405	18 MAY 1205		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	110.00	330.00
TOTALS		3	330.00	990.00

LABORATORY ORDER CONTINUED ON PAGE 2

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KC 6/14/99

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

ORDER NOTE: QC-IV NFESC-D
DD(KAS007QC-DB3)
CNC CHARLESTON

REPORT COPY: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.
PITTSBURGH,PA 15220
REPORT & DISK

INVOICE: With Report

TOTAL ORDER AMOUNT $5,020.00
This is NOT an Invoice

C/BKR/WEST.AJC(dw)
06-14Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

00000012

Mr Calligan

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
$	'$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
E	'E' flag indicates an estimated value. The analyte was detected in the sample at a concentration greater than the standard calibration range.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis 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.

ORDER NO WP-2502

Project Manager: Andrea J. Colby
ORDER DATE: 05/19/99
PHONE: 850/385-[illegible]9
FAX: 850/385-[illegible]0
DUE: 18 JUN
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.
661 ANDERSEN DRIVE, FOSTER PLAZA VII
PITTSBURGH, PA 15220-2745

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

PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 18 JUL

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP2502-19	04TL00104	03 MAY 1515	19 MAY	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP2502-20	01E00101	18 MAY 1405	19 MAY	AQ
	WP2502-21	01F00101	18 MAY 1400		

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP2502-6	34SLB03-0304	18 MAY 1025	19 MAY	SL
	WP2502-8	32SLB03-0506	18 MAY 0850		
	WP2502-11	33SLB05-0304	18 MAY 1235		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Solids-Total Residue (TS)	CLP/CIP SO	3	0.00	0.00
Volatile Organics by 8260B	SW8260	3	85.00	255.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	3	135.00	405.00
Wet Lab Subcontract		3	135.00	405.00
Total Combustible Organics	ASTM D2974	3	30.00	90.00
TOTALS		3	385.00	1155.00

LABORATORY ORDER CONTINUED ON PAGE 3

000001

K/ 6/11/99

KATAHDIN ANALYTICAL SERVICES

Summary of Report Notes

Report Note	Note Text
#	'#' flag denotes surrogate compound recovery is out of criteria.
DL	'DL' flag denotes inability to calculate surrogate recovery due to sample dilution.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-1	Sample dilution required due to matrix interference, sample viscosity or other matrix-related problem; therefore, standard laboratory Practical Quantitation Level (PQL) could not be achieved.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmedmatrix interference.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-1
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB01-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

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
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	54	%	1.4		
2-FLUOROBIPHENYL	54	%	1.4		
TERPHENYL-D14	70	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/28/99	HMP	5035	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<850	ug/Kgdrywt	170	850	5
TOLUENE	<850	ug/Kgdrywt	170	850	5
1,2-DIBROMOETHANE	<850	ug/Kgdrywt	170	850	5
ETHYLBENZENE	<850	ug/Kgdrywt	170	850	5
NAPHTHALENE	<850	ug/Kgdrywt	170	850	5
MTBE	<850	ug/Kgdrywt	170	850	5
TOTAL XYLENES	<850	ug/Kgdrywt	170	850	5
DIBROMOFLUOROMETHANE	92	%	170		
1,2-DICHLOROETHANE-D4	87	%	170		
TOLUENE-D8	94	%	170		
P-BROMOFLUOROBENZENE	97	%	170		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-6
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB03-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1
Total Combustible Organics	11.	wt %	1.0	0.1	ASTM D2974-8	06/07/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF
(2) Sample Preparation on 06/04/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

RATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	62	%	1.3		
2-FLUOROBIPHENYL	57	%	1.3		
TERPHENYL-D14	69	%	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: WP2502-6
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	8	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	84	%	1.4		
1,2-DICHLOROETHANE-D4	79	%	1.4		
TOLUENE-D8	96	%	1.4		
P-BROMOFLUOROBENZENE	135	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-7
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304D	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	73.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	470	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	490	ug/Kg	1.4	460	330
PYRENE	J360	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	J280	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	58	%	1.4		
2-FLUOROBIPHENYL	55	%	1.4		
TERPHENYL-D14	79	%	1.4		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.3	6	5
TOLUENE	<6	ug/Kg	1.3	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.3	6	5
ETHYLBENZENE	<6	ug/Kg	1.3	6	5
NAPHTHALENE	<6	ug/Kg	1.3	6	5
MTBE	<6	ug/Kg	1.3	6	5
TOTAL XYLENES	<6	ug/Kg	1.3	6	5
DIBROMOFLUOROMETHANE	88	%	1.3		
1,2-DICHLOROETHANE-D4	83	%	1.3		
TOLUENE-D8	82	%	1.3		
P-BROMOFLUOROBENZENE	75	%	1.3		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-9
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
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340 County Road No. 5
P.O. Box 720, Westbrook, ME 04098
Tel: (207) 874-2400 Fax: (207) 775-4029

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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: WP2502-9
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	J280	ug/Kg	1.3	430	330
ANTHRACENE	<430	ug/Kg	1.3	430	330
FLUORANTHENE	J410	ug/Kg	1.3	430	330
PYRENE	J300	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	68	%	1.3		
2-FLUOROBIPHENYL	64	%	1.3		
TERPHENYL-D14	75	%	1.3		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	<7	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	79	%	1.4		
1,2-DICHLOROETHANE-D4	82	%	1.4		
TOLUENE-D8	86	%	1.4		
P-BROMOFLUOROBENZENE	66	%	1.4		

Report Notes:

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-10
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB04-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	62	%	1.4		
2-FLUOROBIPHENYL	61	%	1.4		
TERPHENYL-D14	67	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	<8	ug/Kg	1.7	8	5
TOTAL XYLENES	<8	ug/Kg	1.7	8	5
DIBROMOFLUOROMETHANE	84	%	1.7		
1,2-DICHLOROETHANE-D4	78	%	1.7		
TOLUENE-D8	77	%	1.7		
P-BROMOFLUOROBENZENE	$52	%	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: WP2502-10RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	70	%	1.9		
1,2-DICHLOROETHANE-D4	$65	%	1.9		
TOLUENE-D8	$61	%	1.9		
P-BROMOFLUOROBENZENE	$36	%	1.9		

Report Notes: $

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-17
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB05-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	53.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<16000	ug/Kg	47	16000	330
2-METHYLNAPHTHALENE	<16000	ug/Kg	47	16000	330
ACENAPHTHYLENE	<16000	ug/Kg	47	16000	330
ACENAPHTHENE	<16000	ug/Kg	47	16000	330
FLUORENE	<16000	ug/Kg	47	16000	330
PHENANTHRENE	<16000	ug/Kg	47	16000	330
ANTHRACENE	<16000	ug/Kg	47	16000	330
FLUORANTHENE	<16000	ug/Kg	47	16000	330
PYRENE	<16000	ug/Kg	47	16000	330
BENZO[A]ANTHRACENE	<16000	ug/Kg	47	16000	330
CHRYSENE	<16000	ug/Kg	47	16000	330
BENZO[B]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[K]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[A]PYRENE	<16000	ug/Kg	47	16000	330
INDENO[1,2,3-CD]PYRENE	<16000	ug/Kg	47	16000	330
DIBENZ[A,H]ANTHRACENE	<16000	ug/Kg	47	16000	330
BENZO[G,H,I]PERYLENE	<16000	ug/Kg	47	16000	330
NITROBENZENE-D5	DL	%	47		
2-FLUOROBIPHENYL	DL	%	47		
TERPHENYL-D14	DL	%	47		

Report Notes: DL, O-1

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<13	ug/Kg	2.6	13	5
TOLUENE	<13	ug/Kg	2.6	13	5
1,2-DIBROMOETHANE	<13	ug/Kg	2.6	13	5
ETHYLBENZENE	<13	ug/Kg	2.6	13	5
NAPHTHALENE	J8	ug/Kg	2.6	13	5
MTBE	<13	ug/Kg	2.6	13	5
TOTAL XYLENES	<13	ug/Kg	2.6	13	5
DIBROMOFLUOROMETHANE	96	%	2.6		
1,2-DICHLOROETHANE-D4	88	%	2.6		
TOLUENE-D8	96	%	2.6		
P-BROMOFLUOROBENZENE	73	%	2.6		

Report Notes: J

Southern Analytical Laboratories
Quality Control Report

Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP2502

			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)
TS -Total Residue	19-May-99	20-May-99	wt %	<	0.10	<	0.10	0.10	wt %	90	89.8	100	80-120	
	19-May-99	20-May-99	wt %	<	0.10	<	0.10	0.10	wt %	90	90	100	80-120	
TCO-Total Combustible Organics	04-Jun-99	07-Jun-99	wt %	<	0.10	<	0.10	0.10	wt %	NA	NA	NA		

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

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

5000003

[redacted]

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client:	Tetra Tech NUS
Work Order:	WP2502

			DUPLICATE RESULTS					*MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*									
			Sample Measurements		Mean		Acceptance Range	Concentration or Quantity				Matrix Spike Recovery (%)					
Parameter	Sample No	Units	Rep 1	Rep 2	Conc	RPD (%)	for RPD (%)	Units	Sampl Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
TS	WP2502-6	wt%	78.6	78.9	78.8	0.4	0-20	MS/MSD Not Applicable for this Parameter									
TS	WP2502-16	wt%	83.6	82.2	82.9	1.7	0-20	MS/MSD Not Applicable for this Parameter									

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

DATA QUALITY COMMENTS:

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

5000004

2A

SOIL SEMIVOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (NBZ) #	SMC2 (FBP) #	SMC3 (TPH) #	Total Out
SBLK;052999	SBLK;052999	74	79	86	0
LCS;052999	LCS;052999	68	70	72	0
32SLB04-0506	WP2502-3	59	62	64	0
32SLB03-0506D	WP2502-5	64	58	70	0
32SLB01-0506	WP2502-4	76	78	86	0
32SLB03-0506	WP2502-8	59	63	74	0
34SLB01-0203	WP2502-1	54	54	70	0
34SLB01-0203MS	WP2502-1MS	58	59	74	0
34SLB01-0203MSD	WP2502-1MSD	68	70	72	0
33SLB05-0304	WP2502-11	78	68	84	0
33SLB04-0304D	WP2502-12	83	80	89	0
33SLB06-0405	WP2502-14	85	80	90	0
33SLB04-0304	WP2502-13	78	73	84	0
32SLB09-0506	WP2502-16	67	63	77	0
33SLB08-0405	WP2502-18	68	79	68	0
34SLB04-0304	WP2502-10	62	61	67	0
33SLB05-0304	WP2502-11RA	82	57	86	0
33SLB04-0304D	WP2502-12RA	64	55	77	0
33SLB04-0304	WP2502-13RA	71	62	75	0
33SLB06-0405	WP2502-14RA	71	66	71	0
34SLB03-0304	WP2502-6	62	57	69	0
34SLB02-0304D	WP2502-7	58	55	79	0
33SLB08-0405	WP2502-18RA	99	81	124 *	1
SBLKA;052999	SBLKA;052999	85	82	88	0
34SLB02-0304	WP2502-9	68	64	75	0
33SLB01-0304	WP2502-15	72	71	85	0
32SLB02-0506	WP2502-2	DL	DL	DL	0
34SLB05-0203	WP2502-17	DL	DL	DL	0

QC LIMITS

SMC1	(NBZ)	=	NITROBENZENE-D5	(14-107)
SMC2	(FBP)	=	2-FLUOROBIPHENYL	(32-109)
SMC3	(TPH)	=	TERPHENYL-D14	(26-116)

Column to be used to flag recovery value

* Values are outside of QC limits

FORM II SVOA-1

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: SBLK;052999
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 7/3/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	74	%	1.0		
2-FLUOROBIPHENYL	79	%	1.0		
TERPHENYL-D14	86	%	1.0		

Report Notes:

2000326

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: SBLKA;052999
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLKA;052999	SL	-	-	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	85	%	1.0		
2-FLUOROBIPHENYL	82	%	1.0		
TERPHENYL-D14	88	%	1.0		

Report Notes:

2000330

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: K1561 **Sample ID:** LCS;052999 **Date Run:** 7/3/99

Analyst: KRT **Time Injected:** 6:47:00 PM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	1667	1200	72	60-140
ACENAPHTHENE	1667	1290	77	60-140
ACENAPHTHYLENE	1667	1170	70	60-140
ANTHRACENE	1667	1240	74	60-140
BENZO[A]ANTHRACENE	1667	1290	77	60-140
BENZO[A]PYRENE	1667	1220	74	60-140
BENZO[B]FLUORANTHENE	1667	1240	74	60-140
BENZO[G,H,I]PERYLENE	1667	1500	90	60-140
BENZO[K]FLUORANTHENE	1667	1340	81	60-140
CHRYSENE	1667	1330	80	60-140
DIBENZ[A,H]ANTHRACENE	1667	1390	84	60-140
FLUORANTHENE	1667	1390	84	60-140
FLUORENE	1667	1200	72	60-140
INDENO[1,2,3-CD]PYRENE	1667	1530	92	60-140
NAPHTHALENE	1667	1220	73	60-140
PHENANTHRENE	1667	1320	79	60-140
PYRENE	1667	1130	68	60-140

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP2502-1	K1572	7/6/99	2:44:00 PM	KRT	SL	8270_99
WP2502-1MS	K1573	7/6/99	3:30:00 PM	KRT	SL	8270_99
WP2502-1MSD	K1574	7/6/99	4:17:00 PM	KRT	SL	8270_99

Compound Name	Native (ug/Kg)	MS Spk 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	2320	2320	1580	1730	68	75	60-140	9.1	50
ACENAPHTHENE	0	2320	2320	1500	1700	64	73	60-140	12	50
ACENAPHTHYLENE	0	2320	2320	1440	1620	62	70	60-140	12	50
ANTHRACENE	0	2320	2320	1540	1660	66	72	60-140	7.5	50
BENZO[A]ANTHRACENE	0	2320	2320	1590	1640	68	71	60-140	3.1	50
BENZO[A]PYRENE	0	2320	2320	1530	1750	66	75	60-140	13	50
BENZO[B]FLUORANTHENE	0	2320	2320	1630	1960	70	84	60-140	18	50
2-METHYLNAPHTHALENE	0	2320	2320	1370	1500	*59	65	60-140	9.0	50
BENZO[K]FLUORANTHENE	0	2320	2320	1750	1940	76	84	60-140	10	50
PYRENE	0	2320	2320	1560	1500	67	64	60-140	3.9	50
DIBENZ[A,H]ANTHRACENE	0	2320	2320	1320	1400	*57	60	60-140	5.9	50
FLUORANTHENE	0	2320	2320	1660	1800	72	77	60-140	8.1	50
FLUORENE	0	2320	2320	1560	1690	67	73	60-140	8.0	50
INDENO[1,2,3-CD]PYRENE	0	2320	2320	1290	1240	*56	*53	60-140	4.0	50
NAPHTHALENE	0	2320	2320	1360	1540	*59	66	60-140	12	50
[illegible]NANTHRENE	0	2320	2320	1590	1780	69	77	60-140	11	50
[illegible]ZO[G,H,I]PERYLENE	0	2320	2320	1320	1490	*57	64	60-140	12	50

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

* Out of Limits

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: WATER

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
LCSF26B	LCSF26B	85	83	86	90	0
VBLKF26B	VBLKF26B	84	84	87	82	0
01E00101	WP2502-20	83	82	88	84	0
01F00101	WP2502-21	83	82	88	83	0
LCSF01A	LCSF01A	92	98	88	96	0
VBLKF01A	VBLKF01A	89	91	91	86	0
LCSQ28A	LCSQ28A	104	100	97	100	0
VBLKQ28A	VBLKQ28A	93	90	97	95	0

QC LIMITS

SMC1	(DFM)	=	DIBROMOFLUOROMETHANE	(75-129)
SMC2	(DCA)	=	1,2-DICHLOROETHANE-D4	(65-135)
SMC3	(TOL)	=	TOLUENE-D8	(82-120)
SMC4	(BFB)	=	P-BROMOFLUOROBENZENE	(69-125)

Column to be used to flag recovery value

* Values are outside of QC limits

2A
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
04TL00104	WP2502-19	83	83	86	81	0
32SLB02-0506DL	WP2502-2DL	88	89	87	130	0
MBLK060199	MBLK060199	90	88	86	83	0
LCSM27C	LCSM27C	121	126	120	119	0
VBLKM27C	VBLKM27C	122	122	122	120	0
33SLB05-0304	WP2502-11	88	104	62 *	60 *	2
33SLB04-0304D	WP2502-12	89	109	80	77	0
33SLB04-0304	WP2502-13	94	109	80	57 *	1
34SLB01-0203	WP2502-1	92	87	94	97	0
LCSZ27B	LCSZ27B	94	92	96	81	0
VBLKZ27A	VBLKZ27A	105	104	105	83	0
32SLB04-0506	WP2502-3	88	86	92	88	0
32SLB01-0506	WP2502-4	90	87	78	67	0
32SLB03-0506D	WP2502-5	95	88	94	83	0
34SLB02-0304D	WP2502-7	88	83	82	75	0
32SLB03-0506	WP2502-8	12 *	18 *	2 *	5 *	4
34SLB04-0304	WP2502-10	84	78	77	52 *	1
33SLB01-0304	WP2502-15	80	74	76	62 *	1
LCSZ28A	LCSZ28A	96	92	109	102	0
VBLKZ28A	VBLKZ28A	86	90	85	90	0
34SLB03-0304	WP2502-6	84	79	96	135	0
32SLB03-0506RE	WP2502-8RE	49 *	45 *	47 *	43 *	4
34SLB02-0304	WP2502-9	79	82	86	66	0
34SLB04-0304RE	WP2502-10RE	70	65 *	61 *	36 *	3
33SLB05-0304RE	WP2502-11RE	81	85	73	59 *	1
33SLB04-0304DRE	WP2502-12RE	64 *	64 *	43 *	17 *	4
33SLB04-0304RE	WP2502-13RE	84	85	66 *	52 *	2
LCSZ29A	LCSZ29A	104	103	103	89	0
VBLKZ29B	VBLKZ29B	120	119	102	79	0
32SLB01-0506RE	WP2502-4RE	74	73	60 *	44 *	2
LCSZ01A	LCSZ01A	89	97	87	90	0
VBLKZ01A	VBLKZ01A	103	103	108	90	0
32SLB02-0506	WP2502-2	105	103	109	198 *	1

QC LIMITS

SMC1	(DFM)	=	DIBROMOFLUOROMETHANE	(69-148)
SMC2	(DCA)	=	1,2-DICHLOROETHANE-D4	(66-149)
SMC3	(TOL)	=	TOLUENE-D8	(68-147)
SMC4	(BFB)	=	P-BROMOFLUOROBENZENE	(64-152)

Column to be used to flag recovery value

* Values are outside of QC limits

2A
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Katahdin Analytical Services

SDG No.: WP2502

Matrix: SOIL

Client Sample ID	Lab Sample ID	SMC1 (DFM) #	SMC2 (DCA) #	SMC3 (TOL) #	SMC4 (BFB) #	Total Out
33SLB06-0405	WP2502-14	91	84	86	60 *	1
34SLB05-0203	WP2502-17	96	88	96	73	0
33SLB08-0405	WP2502-18	47 *	48 *	13 *	1 *	4
33SLB06-0405RE	WP2502-14RE	86	83	70	43 *	1
32SLB09-0506	WP2502-16	96	94	90	72	0
33SLB08-0405RE	WP2502-18RE	24 *	28 *	4 *	1 *	4
33SLB01-0304RE	WP2502-15RE	97	91	86	57 *	1
LCS	LCS	109	106	116	167 *	1
LCSD	LCSD	112	108	117	109	0

QC LIMITS

SMC1	(DFM)	=	DIBROMOFLUOROMETHANE	(69-148)
SMC2	(DCA)	=	1,2-DICHLOROETHANE-D4	(66-149)
SMC3	(TOL)	=	TOLUENE-D8	(68-147)
SMC4	(BFB)	=	P-BROMOFLUOROBENZENE	(64-152)

Column to be used to flag recovery value

* Values are outside of QC limits

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKF26B
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF26B	AQ	-	-	5/26/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	84	%	1.0		
1,2-DICHLOROETHANE-D4	84	%	1.0		
TOLUENE-D8	87	%	1.0		
P-BROMOFLUOROBENZENE	82	%	1.0		

Report Notes:

4000602

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ27A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ27A	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	105	%	1.0		
1,2-DICHLOROETHANE-D4	104	%	1.0		
TOLUENE-D8	105	%	1.0		
P-BROMOFLUOROBENZENE	83	%	1.0		

Report Notes:

4000608

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKM27C
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/27/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM27C	SL	-	-	5/27/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample 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	122	%	1.0		
1,2-DICHLOROETHANE-D4	122	%	1.0		
TOLUENE-D8	122	%	1.0		
P-BROMOFLUOROBENZENE	120	%	1.0		

Report Notes:

4000613

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKQ28A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKQ28A	AQ	-	-	5/28/99	HMP	5030	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	93	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	97	%	1.0		
P-BROMOFLUOROBENZENE	95	%	1.0		

Report Notes:

4000618

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ28A
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ28A	SL	-	-	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	86	%	1.0		
1,2-DICHLOROETHANE-D4	90	%	1.0		
TOLUENE-D8	85	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

4000626

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: VBLKZ01A
SDG: WP2502
Report Date: 6/25/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKZ01A	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample 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	103	%	1.0		
1,2-DICHLOROETHANE-D4	103	%	1.0		
TOLUENE-D8	108	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

4000649

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: VBLKF01A
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF01A	AQ	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	89	%	1.0		
1,2-DICHLOROETHANE-D4	91	%	1.0		
TOLUENE-D8	91	%	1.0		
P-BROMOFLUOROBENZENE	86	%	1.0		

Report Notes:

4000658

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: MBLK060199
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
MBLK060199	SL	-	-	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<600	ug/Kgdrywt	120	600	5
TOLUENE	<600	ug/Kgdrywt	120	600	5
1,2-DIBROMOETHANE	<600	ug/Kgdrywt	120	600	5
ETHYLBENZENE	<600	ug/Kgdrywt	120	600	5
NAPHTHALENE	<600	ug/Kgdrywt	120	600	5
MTBE	<600	ug/Kgdrywt	120	600	5
TOTAL XYLENES	<600	ug/Kgdrywt	120	600	5
DIBROMOFLUOROMETHANE	90	%	120		
1,2-DICHLOROETHANE-D4	88	%	120		
TOLUENE-D8	86	%	120		
P-BROMOFLUOROBENZENE	83	%	120		

Report Notes:

4000665

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0520 **Sample ID: LCSF26B** **Date Run: 5/26/99**

Analyst: JSS **Time Injected 5:55:00 PM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	43.4	87	60-140
BENZENE	50	42.0	84	60-140
ETHYLBENZENE	50	43.7	87	60-140
MTBE	50	45.0	90	60-140
NAPHTHALENE	50	45.2	90	60-140
TOLUENE	50	43.3	87	60-140
TOTAL XYLENES	150	130	86	60-140

*** Out of Limits** *1*

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0870 **Sample ID: LCSZ27B** **Date Run: 5/27/99**

Analyst: JSS **Time Injected 4:25:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	44.8	90	60-140
BENZENE	50	44.0	88	60-140
ETHYLBENZENE	50	51.3	102	60-140
MTBE	50	50.4	101	60-140
NAPHTHALENE	50	48.0	96	60-140
TOLUENE	50	43.4	87	60-140
TOTAL XYLENES	150	157	105	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M0484 **Sample ID: LCSM27C** **Date Run: 5/27/99**

Analyst: JSS **Time Injected 5:24:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	57.1	114	60-140
BENZENE	50	53.4	107	60-140
ETHYLBENZENE	50	52.0	104	60-140
MTBE	50	58.1	116	60-140
NAPHTHALENE	50	59.8	120	60-140
TOLUENE	50	54.3	108	60-140
TOTAL XYLENES	150	152	102	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0889 **Sample ID:** LCSZ28A **Date Run:** 5/28/99

Analyst: JSS **Time Injected** 9:14:00 AM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.8	94	60-140
BENZENE	50	51.2	102	60-140
ETHYLBENZENE	50	66.3	133	60-140
MTBE	50	55.7	111	60-140
NAPHTHALENE	50	78.8	*158	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	204	136	60-140

* Out of Limits

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Q5312 **Sample ID: LCSQ28A** **Date Run: 5/28/99**

Analyst: HMP **Time Injected 9:39:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	47.7	95	60-140
BENZENE	50	49.2	98	60-140
ETHYLBENZENE	50	50.0	100	60-140
MTBE	50	43.5	87	60-140
NAPHTHALENE	50	46.5	93	60-140
TOLUENE	50	48.6	97	60-140
TOTAL XYLENES	150	136	91	60-140

*** Out of Limits**

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: Z0922 **Sample ID:** LCSZ01A **Date Run:** 6/1/99

Analyst: KRT **Time Injected** 7:46:00 AM **Matrix:** SL

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	52.5	105	60-140
BENZENE	50	48.7	97	60-140
ETHYLBENZENE	50	59.1	118	60-140
MTBE	50	56.7	113	60-140
NAPHTHALENE	50	56.0	112	60-140
TOLUENE	50	52.5	105	60-140
TOTAL XYLENES	150	183	122	60-140

* Out of Limits

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F0637 **Sample ID:** LCSF01A **Date Run:** 6/1/99

Analyst: KRT **Time Injected** 11:12:00 AM **Matrix:** AQ

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	46.3	93	60-140
BENZENE	50	43.4	87	60-140
ETHYLBENZENE	50	46.0	92	60-140
MTBE	50	47.4	95	60-140
NAPHTHALENE	50	43.4	87	60-140
TOLUENE	50	44.8	90	60-140
TOTAL XYLENES	150	132	88	60-140

*** Out of Limits**

Katahdin Analytical Services

LCS/LCSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
LCS	Z0934	6/1/99	15:42	KRT	SL	8260
LCSD	Z0935	6/1/99	16:19	KRT	SL	8260

Compound Name	Spk Amt ug/Kg	LCS Result ug/Kg	LCSD Result ug/Kg	LCS Rec (%)	LCSD Rec (%)	Rec. Limits (%)	RPD (%)	RPD Limit (%)
1,2-DIBROMOETHANE	50	52.8	53.0	100	110	60-140	9.5	30
BENZENE	50	55.7	57.0	110	110	60-140	0	30
ETHYLBENZENE	50	66.6	67.2	130	130	60-140	0	30
MTBE	50	50.2	53.6	100	110	60-140	9.5	30
NAPHTHALENE	50	49.8	54.3	100	110	60-140	9.5	30
TOLUENE	50	60.1	60.5	120	120	60-140	0	30
TOTAL XYLENES	150	207	208	140	140	60-140	0	30

RPD = (lcs rec - lcsd rec) /[(lcsd rec +lcsd rec)/2] * 100

* Out of Limits

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

June 2, 1999

Ms. Andrea Colby
Katahdin Analytical
340 County Rd
Westbrook, ME 04092

Dear Ms. Colby:

Enclosed is a data package for samples from the former Charleston Naval Complex site. The samples were analyzed for general chemistry.

General Engineering Laboratories appreciates this opportunity to provide you with analytical results, and trusts that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171.

Yours very truly,

Valerie S. Davis
Project Manager

enclosure

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

(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

CASE NARRATIVE
for
Katahdin Analytical
Former Charleston Naval Complex Site
SDG #95606

June 2, 1999

Laboratory Identification:

General Engineering Laboratories, Inc. (GEL)

Mailing Address:

PO Box 30712
Charleston, SC 29417

Express Mail Delivery and Shipping Address:

2040 Savage Rd
Charleston, SC 29414

Telephone Number:

(843) 769-7391

Summary:

Sample receipt

The samples from the former Charleston Naval Complex site arrived at General Engineering Laboratories, Inc., Charleston, SC on May 18, 1999, for environmental analyses. The sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The following samples were received by the laboratory:

Laboratory Identification	Sample Description
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304

General Narrative:

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

Internal Chain of Custody:

Custody was maintained for the samples.

Data Package:

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

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

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

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

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

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

The QL is always $\geq$ DL.

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

Valerie S. Davis
Project Manager

fc:9905606%

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

Printed on recycled paper.

Case Narrative for
KATA
SDG# 95606

TOTAL ORGANIC CARBON

Analytical Batch Number: 150121

Analytical Method: SW846 9060 Modified

Laboratory Number	Sample Description
9905606-01	17SLB03-0506
9905606-02	18SLB03-0506
9905606-03	19SLB16-0203
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC615649	Duplicate of 9905519-05
QC615649	Post Spike of 9905519-05
QC615647	Blank
QC615650	Laboratory Control Sample

Sample Preparation:

The method quoted is for aqueous samples only. It is modified to accommodate soils analysis.

Instrument Calibration:

The instrument used was a Dohrmann DC-80 TOC analyzer. The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

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

Spike Analyses:

The post spike was run on the following Sample Number.

9905519-05

The analyte recovery in the post spike was within the required acceptance limits.

Laboratory Control Samples:

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 150797

Analytical Method: SW846 9071A

Laboratory Number	Sample Description
9905606-01	17SLB03-0506
9905606-04	32SLB03-0506
9905606-05	34SLB03-0304
9905606-06	33SLB05-0304
QC618246	Blank
QC618247	Laboratory Control Sample
QC618248	Matrix Spike of 9905606-06
QC618249	Duplicate of 9905606-06

Instrument Calibration:

The instrument was properly calibrated.

Holding Time:

All samples were analyzed within the required holding time.

Blanks:

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

Spike Analyses:

The matrix spike was run on the following Sample Number.

9905606-06

The analyte recovery in the matrix spike was within the required acceptance limits.

Laboratory Control Samples:

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

9905606-06

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

The above narrative has been reviewed by: [signature] Date: 06/13/99

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

Sample No. 17, SILTY CLAY, WP-2502-17

Sieve Size	Percent Passing	PROJECT Specifications %
1 "	100.0	
3/4 "	96.3	
1/2 "	96.2	
1/4 "	91.6	
# 4	90.7	
# 10	87.1	
# 20	81.5	
# 40	76.5	
# 60	72.2	
# 100	61.0	
# 200	51.9	

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

9905606 1/2

Page 1 of 1

Client Name/Facility Name: Katahdin Analytical (TetraTech NUS)

Collected by/Company: Charleston Naval Complex

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

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

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TPH		Remarks	4326
01	17SLB03-0506	5/17	1210		X		X	2		X														X			.1
02	18SLB03-0506	5/17	1550		X		X	1		X																	.2
03	19SLB16-0203	5/17	1640		X		X	1		X																	.2
04	32SLB03-0506	5/18	0850		X		X	2		X														X			.1
05	34SLB03-0304	5/18	1025		X		X	2		X														X			.1
06	33SLB05-0304	5/18	1235		X		X	2		X														X			.1

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
[illegible]	5/18/99	3:55 pm					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[illegible]	5/18/99	1555	

White - lab; Yellow - file; Pink - with report

FEDERAL SAMPLE RECEIPT REVIEW

Client KAFA Received by [illegible] Date 5/18/99

GEL COOLER___ GEL POLY COOLER___ CLIENT COOLER___ OTHER___

SAMPLE REVIEW CRITERIA	YES	NO	COMMENTS/QUALIFIERS
1. Were shipping containers received intact and sealed? Call project Manager if No	✓		
2. Was the Shipment screened following the radiochemistry survey procedure (EPI SOP S-007)?		✓	
Were the survey results negative? Call Project Manager if No	—	—	
Are any of the samples identified by the client as radioactive? If yes, did client provide RAD activity?	—	—	
3. Were chain of custody documents included?	✓		
4. Were chain of custody documents completed properly ? (Ink, signed, match containers)	✓		
5. Did all samples container arrive intact? (sealed , unbroken)? Call Project Manager if No	✓		
6. Were all sample containers properly labeled?	✓		
7. Were proper sample containers received?	✓		
8. Preserved samples checked for proper pH?	—		
9. Were samples preserved properly? If no, list samples & tests	—		SO2
10. Shipping container temperature checked?	✓		
11. Was shipping container temperature within specifications (4+2C) If no, Call Project Manager	✓		4°C
12. Were samples received within holding time? if No, Call Project Manager	✓		
13. Were VOA vials free of headspace?	—	—	
14. ARCOC# IF REQUIRED	—	—	
15. SDG# IF REQUIRED	✓		

REVIEW [illegible] DATE 5/18/99 SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

Client:	Katahdin Analytical
	340 County Road
	Westbrook, Maine 04092
Contact:	Ms. Andrea Colby
Project Description:	Former Naval Complex

cc: KATA00199 Report Date: June 13, 1999

Sample ID	: 34SLB03-0304
Lab ID	: 9905606-05
Matrix	: Soil
Date Collected	: 05/18/99
Date Received	: 05/18/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		464	175	350	mg/kg	1.0	AAT	06/11/99	1030	150797	1
Evaporative Loss @ 105 C		43.0	1.00	1.00	wt%	1.0	GJ	05/19/99	1540	149550	2
Total Organic Carbon		16600	43.1	100	mg/kg	1.0	LS	05/28/99	1247	150121	3

M = Method	Method-Description
M 1	SW846 9071A
M 2	EPA 3550
M 3	SW846 9060 Modified

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

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

QC Summary Report

Project Description: Former Naval Complex

cc: KATA00199 Lab. Sample ID: 9905606-06 Report Date: June 11, 1999

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC618246	BLANK	150797											
Total Rec. Petro. Hydrocarbons						150	mg/kg				AAT	06/11/99	1030
QC618249	9905606-06DUP	150797											
Total Rec. Petro. Hydrocarbons				233		267	mg/kg	13.3					
QC618247	LCS	150797											
Total Rec. Petro. Hydrocarbons			11200			10700	mg/kg		95.3	(70.0 - 116.)			
QC618248	9905606-06MS	150797											
Total Rec. Petro. Hydrocarbons			13400	233		11500	mg/kg		84.2	(70.0 - 130.)			
QC613273	BLANK	149550											
Evaporative Loss @ 105 C						0.00	wt%				GJ	05/19/99	1540
QC613272	9905606-06DUP	149550											
Evaporative Loss @ 105 C				10.0		9.00	wt%	10.5					
QC615647	BLANK	150121											
Total Organic Carbon						1.62	mg/kg				LS	05/28/99	1055
QC615650	LCS	150121											
Total Organic Carbon			3750			4340	mg/kg		116	(88.0 - 130.)	LS	05/28/99	1051

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

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

Site 34

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

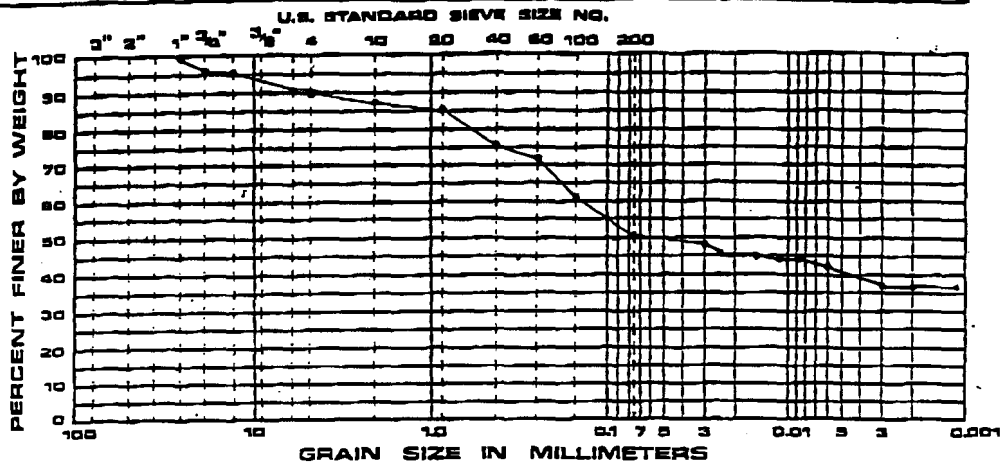
Sample No. 17, SILTY CLAY, WP-2502-17

Sieve Size	Percent Passing	PROJECT Specifications %
1 "	100.0	
3/4 "	96.3	
1/2 "	96.2	
1/4 "	91.6	
# 4	90.7	
# 10	87.1	
# 20	81.5	
# 40	76.5	
# 60	72.2	
# 100	61.0	
# 200	51.9	

GRAIN SIZE ANALYSIS

Site 34

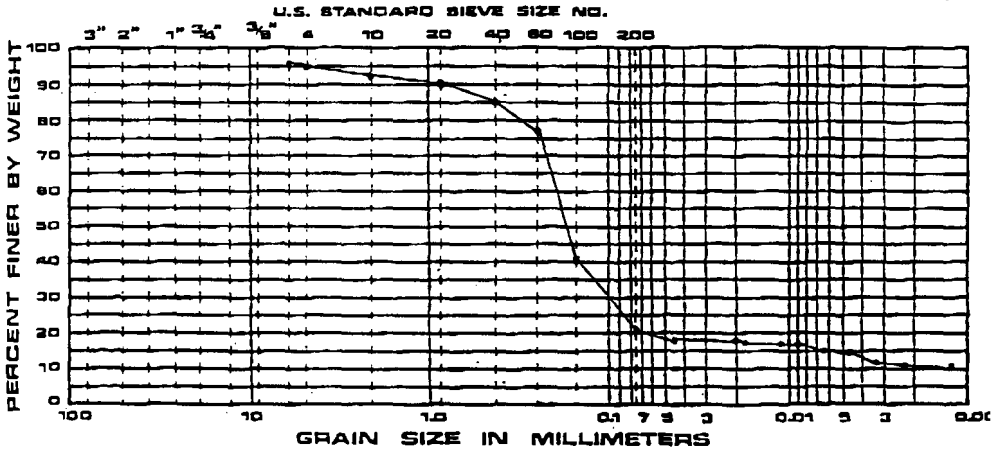
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WA-25-27	17				

GRAIN SIZE ANALYSIS

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WA-25-27-18	18				

Katahdin
ANALYTICAL SERVICES

SDG NARRATIVE
KATAHDIN ANALYTICAL SERVICES
TETRA TECH NUS
CASE CNC CHARLESTON

Sample Receipt

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

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

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

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

Katahdin
ANALYTICAL SERVICES

October 7, 1999

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

RE: Katahdin Lab Number: WP3850
Project ID: CNC Charleston
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: September 9, 1999

Dear Mr. Calligan:

Please find enclosed the Table of Contents (TOC) for work order WP3850. It was inadvertently omitted from your original report. The TOC has been paginated to be inserted into the original report. We apologize for any inconvenience this may have caused you.

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

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

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Mary S. Morrill
Authorized Signature

10·7·99
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

S. W. COLE ENGINEERING, INC.

REPORT OF GRADATION
ASTM C-117, C-136

Project No. 99008
Date 05/20/1999

Project MISCELLANEOUS

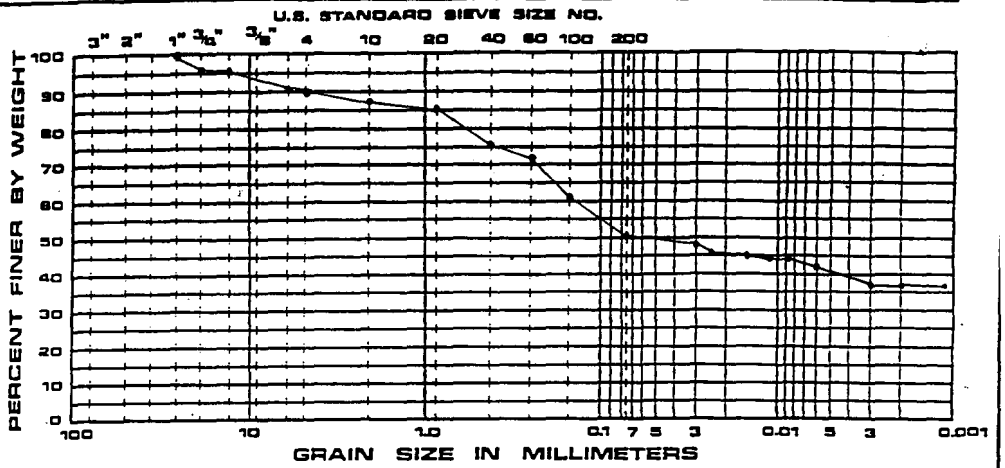
Client KATAHDIN ANALYTICAL

Sample No. 17, SILTY CLAY, WP-2502-17

Sieve Size	Percent Passing	PROJECT Specifications %
1 "	100.0	
3/4 "	96.3	
1/2 "	96.2	
1/4 "	91.6	
# 4	90.7	
# 10	87.1	
# 20	81.5	
# 40	76.5	
# 60	72.2	
# 100	61.0	
# 200	51.9	

GRAIN SIZE ANALYSIS

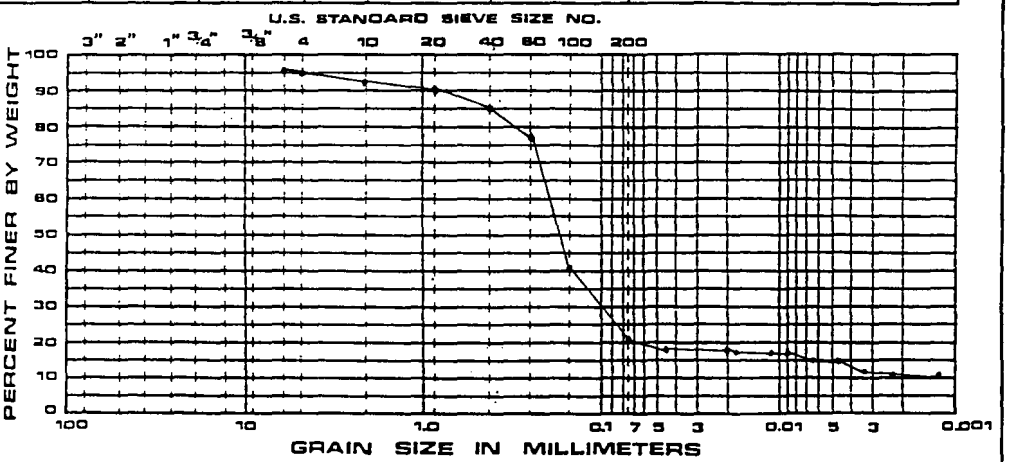
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WB2002M	17				

GRAIN SIZE ANALYSIS

COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
▲	WB2002-18	18				

Katahdin
ANALYTICAL SERVICES

October 6, 1999

Mr. Paul Calligan

Tetra Tech Nus

1401 Oven Park Dr., Suite 102

Tallahassee, FL 32308

RE: Katahdin Lab Number: WP3850

Project ID: CNC Charleston

Project Manager: Ms. Andrea J.Colby

Sample Receipt Date(s): 9/9/99

Dear Mr. Calligan:

Please find enclosed the following information:

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

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

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

Sincerely,

KATAHDIN ANALYTICAL SERVICES

Mary S. Morrill
Authorized Signature

10·6·99
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 9, 1999 and were logged in under Katahdin Analytical Services work order number WP3850 for a hardcopy due date of October 8, 1999.

KATAHDIN Sample No.	TTNUS Sample Identification
WP3850-1	15GLM0101
WP3850-2	34GLM0101
WP3850-3	34GLM0201
WP3850-4	34GLM0301
WP3850-5	15GLM0201D
WP3850-6	24GLM0301D
WP3850-7	24GLM0501
WP3850-8	24TL00201
WP3850-9	15GLM0201
WP3850-10	15GLM0301
WP3850-11	24GLM0301
WP3850-12	21GLM0101
WP3850-13	21GLM0601
WP3850-14	21GLM0401
WP3850-15	24GLM0101
WP3850-16	24GLM0201

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

Sixteen aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on September 9, 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. Matrix spike/matrix spike duplicate analyses were performed on samples WP3850-5, and WP3850-9.

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

Eleven aqueous samples were received by Katahdin Analytical Services laboratory on September 9, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the samples occurred following USEPA method 3510 on September 10, 1999. A laboratory control spike was extracted in the batch, along with a site-specific MS/MSD pair on sample WP3850-6.

Analysis of sample WP3850-9 yielded a low recovery of the surrogate terphenyl-d14. Reextraction of this sample occurred on September 28, 1999, outside of extraction holding times, following USEPA method 3510. Surrogate recoveries in this reextracted sample met QC limits. 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 WP3850 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 No. WP3850-7 was digested for ICP analysis on 09/10/99 (QC Batch PI10ICW1) in accordance with USEPA Method 3010A. The measured barium (8.89 ug/L) and sodium (242 ug/L) concentrations of the preparation blank that is associated with this QC batch exceed the laboratory's acceptance limits. Because the measured barium and sodium concentrations of Katahdin Sample No. WP3850-7 were more than ten times those of the preparation blank, no corrective action was taken.

Katahdin
ANALYTICAL SERVICES

ICP analyses of Katahdin Work Order WP3850 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 No. WP3850-7 was digested for mercury analysis on 09/17/99 (QC Batch PI17HGW0) in accordance with USEPA Method 7470A. This sample was digested with duplicate matrix-spiked aliquots.

Mercury analyses of Katahdin Work Order WP3850 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, Kelly Johnson-Carper approved alternate methods for the analysis of nitrate and sulfate. The Nitrate analyses (325.5) and the 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. All analyses were performed within analytical hold times.

The Wet Chemistry staff noted no protocol deviations.

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) # WP3850

PAGE: 1 OF 3

COOLER: 1 OF 3

COC# –
SDG# –
DATE / TIME RECEIVED: 9-9-99 0920
DELIVERED BY: FedEx
RECEIVED BY: Sa
LIMS ENTRY BY: BKK
LIMS REVIEW BY / PM: AJC

CLIENT: TetraTech

PROJECT: CNC

	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)= 0.7	AJC notified Paul Callagan 9/9/99 & was told to proceed
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]:

0000067

(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) # WP3850

PAGE: 2 OF 3

COOLER: 2 OF 3

COC# –
SDG# –
DATE / TIME RECEIVED: 9-9-99 0920
DELIVERED BY: Fed Ex
RECEIVED BY: Sa
LIMS ENTRY BY: BKW
LIMS REVIEW BY / PM: AJC

CLIENT: Tetra Tech

PROJECT: CNC

	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)=	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☐	☑	☐	COOLER TEMP (°C)= 0.1 NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	AJC notified Paul Calligan 9/9/99 & was told to proceed
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]: 24GLM0501: 10FL PAH containers rcvd broken. – AJC notified Paul Calligan 9/9/99

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

00000068

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

LAB (WORK ORDER) #: WP3850

PAGE: 3 OF 3

COOLER: 3 OF 3

COC#: —
SDG#: —
DATE / TIME RECEIVED: 9-9-99 0920
DELIVERED BY: FedEx
RECEIVED BY: Sam
LIMS ENTRY BY: BKR
LIMS REVIEW BY / PM: AJC

CLIENT: Tetra Tech

PROJECT: CNC

	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?		✓		(1)	AJC contacted Paul Calligan was told to add sampling to COC
5. TEMPERATURE BLANKS PRESENT?	✓			TEMP BLANK TEMP (°C)= 1.2	AJC notified Paul Calligan 9/9/99 & was told to proceed
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]: One sample: 15GLM0201, client write 15GLM0301 on 3 voas and ~~nutrients~~ ANIONS (BK) bottles. Times determined that samples were, in fact, 15GLM0201

(1) X-TRA samples sent: Sample IDs: A.) 24GLM0201 B.) 24GLM0101 > (PAH, Methane, BTEX/MTBE, ANIONS) sent, but not on C.O.C

6900000

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

Katahdin ANALYTICAL SERVICES
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
Contact: Paul Calligan
Phone #: (850) 385-9899
Fax #: (850) 385-986

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): PAUL HALVERSON
Copies To:

LAB USE ONLY
WORK ORDER #: WP3850
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	Filt. Y N PAH	Filt. Y N MTBE HCL	Filt. Y N KETONES HCL	Filt. Y N DIS. ARSENIC HCL	Filt. Y N DISOLVED METALS HCL	Filt. Y N METALS HNO3	Filt. Y N	Filt. Y N	Filt. Y N	Filt. Y N
	15GLM0101	9/8/99/1200	GW	1	1	0	2	0		0					
	15GLM0201	9/8/99/1001	GW	9	1	2	3			3					
	15GLM0301	9/8/99/1050	GW	9	1	2	3			3					
	15GLM0201D	9/8/99/Ø	GW	8	0	2	3			0					
	24GLM0501	9/8/99/1700	GW	6	0	2	3	0		0	1				
	24GLM0301	9/8/99/1752	GW	9	1	2	3			3					
	24GLM0301D	9/8/99/0000	GW	5		2	3								
	24TL00201	9/8/99/—	W	2			2					TRIP BLANK			
	24GLM0101	9/8/99/1707	GW	9	1	2	3			3					
	24GLM0201	9/8/99/1705	GW	9	1	2	3			3					
		/													
		/													
		/													
		/													
		/													
		/													

COMMENTS
PUT ON ICE 4°C
FED EX: 813451738831

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[signature]	9/8/99 1240	fedex 813451738831		9-9-99 0920	Shelley Wilkins
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

P.O. Box 720
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

CHAIN OF CUSTODY

PLEASE PRINT IN PEN

Page ____ of ____

Client	Contact	Phone #	Fax #
TTNUS	Paul Callaran	(850) 385-7866	(850) 385-7860

Address: 1401 Oven Park Drive, Ste 100 City: Tallahassee State: FL Zip Code: 32312

Purchase Order #: Proj. Name / No.: CNC Site 34 / NC164 Katahdin Quote #:

Bill (if different than above): Address:

Sampler (Print / Sign): Thomas Thompson Copies To:

LAB USE ONLY WORK ORDER #: 00F3850

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.	Arsenic	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N
	34GLM01C1	9-8-99/1725	H_2O	1	1										
	34GLM02C1	9-8-99/1740	H_2O	1	1										
	34GLM03C1	9-8-99/1840	H_2O	1	1										
		/													
		/													
		/													
		/													
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		/													
		/													
		/													
		/													

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
[illegible]	9/8/99 1930	Fedex 813457173831		9-9-99 0930	[illegible]
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

CHAIN OF CUSTODY

ANALYTICAL SERVICES
Westbrook, ME 04098
Tel: (207) 874-2400
Fax: (207) 775-4029

PLEASE PRINT IN PEN

Page ____ of __

Client: Tetra Tech NUS Inc.
Contact:
Phone #: ( )
Fax #: ( )
Address: ~~80~~ 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. Shell / Jerry Krieger
Copies To:

LAB USE ONLY
WORK ORDER #: WP3850
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. PAHs	Anions (Nitrate, Sulfate)	Dissolved Methane						
					Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N
	21GLM0101	9/8/99 1040	G.W	9	3	2	1	3						
	21GLM0601	1120		9	3	2	1	3						
	21GLM0401	1210		9	3	2	1	3						
		/												
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		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
J. Krieger	9/8/99 1900	FEDEX 813451773883			Shelly Wilkinson
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

ORDER NO WP-3850

Project Manager: Andrea J. Colby
ORDER DATE: 09/09/99
PHONE: 850/385-9[illegible]9
FAX: 850/385-9[illegible]0
DUE: 08 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,JR HEBL,J.KRIEGER,T.THOMPSONDELIVERED BY: FEDEXDISPOSE:

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3850-1	15GLM0101	08 SEP 1200	09 SEP	AQ
	WP3850-2	34GLM0101	08 SEP 1725		
	WP3850-3	34GLM0201	08 SEP 1748		
	WP3850-4	34GLM0301	08 SEP 1848		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Nitrate as N	353.2	4	30.00	120.00
Sulfate	375.4	4	0.00	0.00
TOTALS		4	30.00	120.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP3850-5	15GLM0201D	08 SEP	09 SEP	[illegible]
	WP3850-6	24GLM0301D	08 SEP		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	125.00	250.00
Volatile Organics by 8260B	SW8260	2	75.00	150.00
TOTALS		2	200.00	400.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP3850-7	24GLM0501	08 SEP 1700	09 SEP	AQ

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	125.00	125.00
Volatile Organics by 8260B	SW8260	1	75.00	75.00
Target Analyte List Metals, Total		1	100.00	100.00
TOTALS		1	300.00	300.00

LABORATORY ORDER CONTINUED ON PAGE 2

ORDER NO WP-3850

Project Manager: Andrea J. Colby
ORDER DATE: 09/09/99
PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 08 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,JR HEBL,J.KRIEGER,T.THOMPSONDELIVERED BY: FEDEXDISPOSE:

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP3850-8	24TL00201	08 SEP	09 SEP	AQ

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

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP3850-9	15LGM0201	08 SEP 1001	09 SEP	AQ
	WP3850-10	15GLM0301	08 SEP 1050		
	WP3850-11	24GLM0301	08 SEP 1752		
	WP3850-12	21GLM0101	08 SEP 1040		
	WP3850-13	21GLM0601	08 SEP 1120		
	WP3850-14	21GLM0401	08 SEP 1210		
	WP3850-15	24GLM0101	08 SEP 1707		
	WP3850-16	24GLM0201	08 SEP 1705		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	8	75.00	600.00
Methane Subcontract		8	95.00	760.00
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
TOTALS		8	325.00	2600.00

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 $3,495.00
This is NOT an Invoice

AJC/BKR
09-09Please 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.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3850-2
Report Date: 10/06/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34GLM0101	Aqueous	P.HALVERSON,JR HEBL,J.KRIEGER,T .THOMPSON	09/08/99	09/09/99

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	41.	mg/L	5.0	1.0	375.4	09/18/99	VN	

* 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.

10/06/99

LJO/baeajc(dw)/msm
PI10NOW1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3850-3
Report Date: 10/06/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34GLM0201	Aqueous	P.HALVERSON,JR HEBL,J.KRIEGER,T .THOMPSON	09/08/99	09/09/99

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	32.	mg/L	2.0	1.0	375.4	09/18/99	VN	

* 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.

10/06/99

LJO/baeajc(dw)/msm
PI10NOW1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3850-4
Report Date: 10/06/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34GLM0301	Aqueous	P.HALVERSON,JR HEBL,J.KRIEGER,T .THOMPSON	09/08/99	09/09/99

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	17.	mg/L	1.0	1.0	375.4	09/18/99	VN	

* 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.

10/06/99

LJO/baeajc(dw)/msm
PI10NOW1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin Analytical Services, Inc.
Quality Control Report

Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP3850

			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	0.824	82.4	80-120	
Sulfate	18-Sep-99	18-Sep-99	mg/L	<	1.0	<	1.0	1.0	mg/L	250	270	108.0	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.

Katahdin Analytical Services, Inc.
Quality Control Report

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client: Tetra Tech NUS
Work Order: WP3850

			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	WP3850-13	mg/L					0-20	mg/L	<0.050	0.5	0.372		74.4	*		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.

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 6

COOLER: 1 OF 6

CLIENT: TETRATECH

PROJECT: CNC CHARLESTON

COC#: —
SDG#: —
DATE / TIME RECEIVED: 09-10-99 ~ 1000
DELIVERED BY: FEDEX
RECEIVED BY: RVC
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)= 0.9	RJC 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]:
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.

000098

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

LAB (WORK ORDER) # WP38T7

PAGE: 2 OF 6

COOLER: 2 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)= 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]:

6600000

(1) Use this space (and additional sheets if necessary) to document samples that are received broken, compromised, C-O-C discrepancies, radiation checks, residual chlorine check, 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: 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: BKH
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)

00001000

(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

COC# —

SDG# —

DATE / TIME RECEIVED: 09-10-99 ~ 1000

DELIVERED BY: FEDEX

RECEIVED BY: BKL

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)= 1.5	AJC notified Paul Callyan 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

Diss Meth sent for 19GL01B01 but not on COC

on COC, 19GL01B01 has anions listed but no containers sent

" " 19GL01B01 does not list anions, but bottle sent for anions

1 of 3 voa vials for 19GLM0601 arrived broken

*On chain: 18GLM03D01, on all bottles: 18GLM0301

HNO_3 added to metals for: ~~18GLM03~~ 18GLM0301, 18GLM0201, 18GLM0201D, 18GLO1E01, 18GLM0101

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

0000101

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

LAB (WORK ORDER) # WP3877

PAGE: 5 OF 6

COOLER: 5 OF 6

COC# –

SDG# –

DATE / TIME RECEIVED: 09-10-99 ~ 1000

DELIVERED BY: FEDEX

RECEIVED BY: BRK

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)= 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 containers 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 Vance Calligan 9/10/99
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, compromised, C-O-C discrepancies, radiation checks, residual chlorine check, results, pH check if required. If samples required pH adjustment, record volume and type of preservative added.

0000103

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 1 of 1

Client: Tetra Tech NUS, Inc.
Contact: Paul Calligan
Phone #: (850) 385-9899
Fax #: (850) 385-981
Address: 1401 Oven Park Drive
City: Tallahassee
State: FL
Zip Code: 32312
Purchase Order #:
Proj. Name / No.: CNC / ~~N0144~~ N0164
Katahdin Quote #:
Bill (if different than above):
Address:
Sampler (Print / Sign): JASON McGAUN
Copies To:

LAB USE ONLY
WORK ORDER #: WP8877
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.	PAH (wave)	Trex, EDB, MTBE, Total Nap. (HCl)	Dis. methane (HCl)								
	34 GLM0101	9/8/99/1725	GW	~~4~~ 3	0	0	3								
	34 GLM0201	9/8/99/1748	GW	~~4~~ 8	2	3	3								
	34 GLM0301	9/8/99/1848	GW	~~4~~ 8	2	3	3								
	34 GLM0201D	9/8/99/—	GW	~~4~~ 8	2	3	3								
	34 TL00201	9/8/99/—	—	1		Trip	Blank								
		/													
		/													
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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 813457338800		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

0000104

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 1 of

Client: Tetra Tech NUS | Contact: Paul Calligan | Phone #: (850) 385-9899 | Fax #: (850) 385-986

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. O Y O N: Anions (none)	Filt. O Y O N: PAH (none)	Filt. O Y O N: BTEX, EDB, MTBE, Total Nonhalogenated (HCL)	Filt. O Y O N: BSS. Methane (HCL)	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N
	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/ø	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): Thomas 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, Naph	PAH	Total Lead	Anions nitrate, sulfate	Dissolved Methane					
					Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O N	Filt. O Y O
	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									
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Cooler 5 of 6

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
Kulgn	9/9/99 1900	FAX 8134517388 20		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
Contact: PAUL CALLAGAN
Phone #: (850) 385-9899
Fax #: (850) 386-9862
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): R. 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 Q	ANIONS Q	DISSOLVED METALS HCL	METALS HNO3					
	19GL01B01	9/9/99/1040	GW	9	3	2	~~1~~ HCL	~~3~~ HCL						
	19GM0601	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						
	19GM0301	9/9/99/1059	GW	9	3	2	1	3						
	19GL01C01	9/9/99/1033	GW	5	3	2								
	18GM03D01	9/9/99/1601	GW	6	3	2			1					
	18GL01E01	9/9/99/1605	GW	10	3	2	1	3	1					
	18GM0201	9/9/99/1517	GW	6	3	2			1					
	18GM0201D	9/9/99/0000	GW	6	3	2			1					
	18GM0201M	9/9/99/1517	GW	6	3	2			1					
	18GM0101	9/9/99/1550	GW	10	3	2	1	3	1					
T	18TL00101	9/9/99	TRIP BLANK											
		/												
		/												
		/												

Cooler 4 of 6

COMMENTS
PUT ON ICE 4°C

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	9/9/99 1830	FED EX 813451938820		9-10-99 1000	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

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: 850/385-9[illegible]9
FAX: 850/385-9[illegible]0
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
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: 850/385-9[redacted]
FAX: 850/385-9[redacted]
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 Invo[redacted]

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: WP3877-2
SDG: WP3877
Report Date: 10/5/99
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
34GLM0201	AQ	9/8/99	9/10/99	9/13/99	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	63	%	1.0		
2-FLUOROBIPHENYL	61	%	1.0		
TERPHENYL-D14	84	%	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: WP3877-2
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
34GLM0201	AQ	9/8/99	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	99	%	1.0		
1,2-DICHLOROETHANE-D4	96	%	1.0		
TOLUENE-D8	90	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3877-3
SDG: WP3877
Report Date: 10/5/99
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
34GLM0301	AQ	9/8/99	9/10/99	9/13/99	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	70	%	1.0		
2-FLUOROBIPHENYL	66	%	1.0		
TERPHENYL-D14	79	%	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: WP3877-3
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
34GLM0301	AQ	9/8/99	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	99	%	1.0		
1,2-DICHLOROETHANE-D4	95	%	1.0		
TOLUENE-D8	88	%	1.0		
P-BROMOFLUOROBENZENE	86	%	1.0		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3877-4
SDG: WP3877
Report Date: 10/5/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: EPA 8270
Date Analyzed: 9/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34GLM0201D	AQ	9/8/99	9/10/99	9/13/99	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	65	%	1.0		
2-FLUOROBIPHENYL	64	%	1.0		
TERPHENYL-D14	81	%	1.0		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3877-4
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
34GLM0201D	AQ	9/8/99	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	100	%	1.0		
1,2-DICHLOROETHANE-D4	97	%	1.0		
TOLUENE-D8	88	%	1.0		
P-BROMOFLUOROBENZENE	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: WP3877-6
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
34TL00201	AQ	9/8/99	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	100	%	1.0		
1,2-DICHLOROETHANE-D4	94	%	1.0		
TOLUENE-D8	87	%	1.0		
P-BROMOFLUOROBENZENE	88	%	1.0		

Report Notes:

4B
SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;091399

Lab Name: Katahdin Analytical Services SDG No.: WP3877

Lab File ID: Z2065

Lab Sample ID: SBLK;091399

Instrument ID: 5972-Z

Date Extracted: 9/13/99

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

Date Analyzed: 09/16/99

Matrix: (soil/water) WATER

Time Analyzed: 20:31

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;091399	LCS;091399	Z2070	9/17/99	10:59:00 AM
LCSD;091399	LCSD;091399	Z2071	9/17/99	11:47:00 AM
34GLM0201	WP3877-2	Z2138	9/24/99	11:10:00 PM
34GLM0301	WP3877-3	Z2139	9/24/99	11:56:00 PM
34GLM0201D	WP3877-4	Z2140	9/25/99	12:44:00 AM
14GLM0301D	WP3877-5	Z2141	9/25/99	1:32:00 AM
14GLM0201	WP3877-11	Z2142	9/25/99	2:19:00 AM
14GLM0301	WP3877-12	Z2143	9/25/99	3:06:00 AM
19GLO1B01	WP3877-13	Z2144	9/25/99	3:54:00 AM
19GLM0301	WP3877-14	Z2145	9/25/99	4:42:00 AM
19GLM0601	WP3877-15	Z2146	9/25/99	5:30:00 AM
19GLO1D01	WP3877-16	Z2148	9/27/99	9:45:00 AM
19GLO1C01	WP3877-17	Z2149	9/27/99	10:32:00 AM
18GLO1F01	WP3877-18	Z2150	9/27/99	11:18:00 AM
18GLM03D01	WP3877-19	Z2151	9/27/99	12:04:00 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;091399
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;091399	AQ	-	-	9/13/99	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	67	%	1.0		
TERPHENYL-D14	66	%	1.0		

Report Notes:

Katahdin Analytical Services

LCS/LCSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
LCS;091399	Z2070	9/17/99	10:59	KRT	AQ	8270
LCSD;091399	Z2071	9/17/99	11:47	KRT	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	30.5	30.4	*61	*61	70-130	0	30
ACENAPHTHENE	50	31.7	30.9	*63	*62	70-130	1.6	30
ACENAPHTHYLENE	50	31.8	31.2	*64	*62	70-130	3.2	30
ANTHRACENE	50	33.9	31.2	*68	*62	70-130	9.2	30
BENZO[A]ANTHRACENE	50	34.2	31.8	*68	*64	70-130	6.1	30
BENZO[A]PYRENE	50	33.7	31.2	*67	*62	70-130	7.8	30
BENZO[B]FLUORANTHENE	50	30.0	27.5	*60	*55	70-130	8.7	30
BENZO[G,H,I]PERYLENE	50	34.9	33.7	70	*67	70-130	4.4	30
BENZO[K]FLUORANTHENE	50	39.4	35.2	79	70	70-130	12	30
CHRYSENE	50	38.2	35.3	76	71	70-130	6.8	30
DIBENZ[A,H]ANTHRACENE	50	33.1	32.3	*66	*65	70-130	1.5	30
FLUORANTHENE	50	34.6	32.2	*69	*64	70-130	7.5	30
FLUORENE	50	31.9	30.8	*64	*62	70-130	3.2	30
[illegible]ENO[1,2,3-CD]PYRENE	50	34.8	35.0	70	70	70-130	0	30
[illegible]PHTHALENE	50	31.2	31.0	*62	*62	70-130	0	30
PHENANTHRENE	50	34.0	32.0	*68	*64	70-130	6.1	30
PYRENE	50	36.4	33.3	73	*67	70-130	8.6	30

RPD = (lcs rec - lcsd rec) /[(lcsd rec +lcsd rec)/2] * 100

* Out of Limits

1

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** *1*

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
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/28/99	HMP	5035	HMP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<850	ug/Kgdrywt	170	850	5
TOLUENE	<850	ug/Kgdrywt	170	850	5
1,2-DIBROMOETHANE	<850	ug/Kgdrywt	170	850	5
ETHYLBENZENE	<850	ug/Kgdrywt	170	850	5
NAPHTHALENE	<850	ug/Kgdrywt	170	850	5
MTBE	<850	ug/Kgdrywt	170	850	5
TOTAL XYLENES	<850	ug/Kgdrywt	170	850	5
DIBROMOFLUOROMETHANE	92	%	170		
1,2-DICHLOROETHANE-D4	87	%	170		
TOLUENE-D8	94	%	170		
P-BROMOFLUOROBENZENE	97	%	170		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	8	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	84	%	1.4		
1,2-DICHLOROETHANE-D4	79	%	1.4		
TOLUENE-D8	96	%	1.4		
P-BROMOFLUOROBENZENE	135	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-7
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.3	6	5
TOLUENE	<6	ug/Kg	1.3	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.3	6	5
ETHYLBENZENE	<6	ug/Kg	1.3	6	5
NAPHTHALENE	<6	ug/Kg	1.3	6	5
MTBE	<6	ug/Kg	1.3	6	5
TOTAL XYLENES	<6	ug/Kg	1.3	6	5
DIBROMOFLUOROMETHANE	88	%	1.3		
1,2-DICHLOROETHANE-D4	83	%	1.3		
TOLUENE-D8	82	%	1.3		
P-BROMOFLUOROBENZENE	75	%	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: WP2502-9
SDG: WP2502
Report Date: 6/25/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<7	ug/Kg	1.4	7	5
TOLUENE	<7	ug/Kg	1.4	7	5
1,2-DIBROMOETHANE	<7	ug/Kg	1.4	7	5
ETHYLBENZENE	<7	ug/Kg	1.4	7	5
NAPHTHALENE	<7	ug/Kg	1.4	7	5
MTBE	<7	ug/Kg	1.4	7	5
TOTAL XYLENES	<7	ug/Kg	1.4	7	5
DIBROMOFLUOROMETHANE	79	%	1.4		
1,2-DICHLOROETHANE-D4	82	%	1.4		
TOLUENE-D8	86	%	1.4		
P-BROMOFLUOROBENZENE	66	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	<8	ug/Kg	1.7	8	5
TOTAL XYLENES	<8	ug/Kg	1.7	8	5
DIBROMOFLUOROMETHANE	84	%	1.7		
1,2-DICHLOROETHANE-D4	78	%	1.7		
TOLUENE-D8	77	%	1.7		
P-BROMOFLUOROBENZENE	$52	%	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: WP2502-10RE
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 5/28/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/28/99	JSS	5030	JSS

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	70	%	1.9		
1,2-DICHLOROETHANE-D4	$65	%	1.9		
TOLUENE-D8	$61	%	1.9		
P-BROMOFLUOROBENZENE	$36	%	1.9		

Report Notes: $

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 6/26/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: SW8260
Date Analyzed: 6/1/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	6/1/99	KRT	5030	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<13	ug/Kg	2.6	13	5
TOLUENE	<13	ug/Kg	2.6	13	5
1,2-DIBROMOETHANE	<13	ug/Kg	2.6	13	5
ETHYLBENZENE	<13	ug/Kg	2.6	13	5
NAPHTHALENE	J8	ug/Kg	2.6	13	5
MTBE	<13	ug/Kg	2.6	13	5
TOTAL XYLENES	<13	ug/Kg	2.6	13	5
DIBROMOFLUOROMETHANE	96	%	2.6		
1,2-DICHLOROETHANE-D4	88	%	2.6		
TOLUENE-D8	96	%	2.6		
P-BROMOFLUOROBENZENE	73	%	2.6		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-1
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/6/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB01-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	54	%	1.4		
2-FLUOROBIPHENYL	54	%	1.4		
TERPHENYL-D14	70	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-6
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB03-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	62	%	1.3		
2-FLUOROBIPHENYL	57	%	1.3		
TERPHENYL-D14	69	%	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: WP2502-7
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 73
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304D	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	470	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	490	ug/Kg	1.4	460	330
PYRENE	J360	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	J280	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	58	%	1.4		
2-FLUOROBIPHENYL	55	%	1.4		
TERPHENYL-D14	79	%	1.4		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-9
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 79
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB02-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	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	J280	ug/Kg	1.3	430	330
ANTHRACENE	<430	ug/Kg	1.3	430	330
FLUORANTHENE	J410	ug/Kg	1.3	430	330
PYRENE	J300	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	68	%	1.3		
2-FLUOROBIPHENYL	64	%	1.3		
TERPHENYL-D14	75	%	1.3		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-10
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/7/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB04-0304	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<460	ug/Kg	1.4	460	330
2-METHYLNAPHTHALENE	<460	ug/Kg	1.4	460	330
ACENAPHTHYLENE	<460	ug/Kg	1.4	460	330
ACENAPHTHENE	<460	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	<460	ug/Kg	1.4	460	330
ANTHRACENE	<460	ug/Kg	1.4	460	330
FLUORANTHENE	<460	ug/Kg	1.4	460	330
PYRENE	<460	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	<460	ug/Kg	1.4	460	330
CHRYSENE	<460	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	<460	ug/Kg	1.4	460	330
INDENO[1,2,3-CD]PYRENE	<460	ug/Kg	1.4	460	330
DIBENZ[A,H]ANTHRACENE	<460	ug/Kg	1.4	460	330
BENZO[G,H,I]PERYLENE	<460	ug/Kg	1.4	460	330
NITROBENZENE-D5	62	%	1.4		
2-FLUOROBIPHENYL	61	%	1.4		
TERPHENYL-D14	67	%	1.4		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP2502-17
SDG: WP2502
Report Date: 7/19/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 53
Method: EPA 8270
Date Analyzed: 7/8/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
34SLB05-0203	SL	5/18/99	5/19/99	5/29/99	DPD	EPA 3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<16000	ug/Kg	47	16000	330
2-METHYLNAPHTHALENE	<16000	ug/Kg	47	16000	330
ACENAPHTHYLENE	<16000	ug/Kg	47	16000	330
ACENAPHTHENE	<16000	ug/Kg	47	16000	330
FLUORENE	<16000	ug/Kg	47	16000	330
PHENANTHRENE	<16000	ug/Kg	47	16000	330
ANTHRACENE	<16000	ug/Kg	47	16000	330
FLUORANTHENE	<16000	ug/Kg	47	16000	330
PYRENE	<16000	ug/Kg	47	16000	330
BENZO[A]ANTHRACENE	<16000	ug/Kg	47	16000	330
CHRYSENE	<16000	ug/Kg	47	16000	330
BENZO[B]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[K]FLUORANTHENE	<16000	ug/Kg	47	16000	330
BENZO[A]PYRENE	<16000	ug/Kg	47	16000	330
INDENO[1,2,3-CD]PYRENE	<16000	ug/Kg	47	16000	330
DIBENZ[A,H]ANTHRACENE	<16000	ug/Kg	47	16000	330
BENZO[G,H,I]PERYLENE	<16000	ug/Kg	47	16000	330
NITROBENZENE-D5	DL	%	47		
2-FLUOROBIPHENYL	DL	%	47		
TERPHENYL-D14	DL	%	47		

Report Notes: DL, O-1

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-1
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB01-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-6
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB03-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1
Total Combustible Organics	11.	wt %	1.0	0.1	ASTM D2974-8	06/07/99	JF	2

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF
(2) Sample Preparation on 06/04/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-7
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304D	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	73.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-9
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB02-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	79.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-10
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB04-0304	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	72.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS0
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-2502-17
Report Date: 07/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
34SLB05-0203	Solid	CLIENT	05/18/99	05/19/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	53.	wt %	1.0	0.10	CLP/CIP SOW	05/20/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 05/19/99 by JF

07/19/99

LJO/baeajc(dw)/msm
PE19TSS1
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

APPENDIX D
AQUIFER CALCULATIONS

SUMMARY OF SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #: 17754 **COUNTY:** Charleston

FACILITY NAME: Charleston Naval Complex Site 34, USTNH1137-2 at Building NH 1137

Slug Data

See Appendix: X **Table:** **Figure:** **for a list of all data measurements.**
(water level logs, etc.) (Complete as appropriate.)

Water Level Recovery Data was measured by NA
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method).

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in well(s) number	044001	044006	047001	047003
Initial Rise/Drawdown in well (feet)	1.414	1.684	3.263	4.369
Radius of Well Casing (feet)	0.0833	0.0833	0.0833	0.0833
Effective Radius of Well (feet)	0.333	0.333	0.333	0.35
Static Saturated Aquifer Thickness (feet)	10.5	12.07	8.7	10.3
Length of Well Screen (feet)	10	10	8.7	10
Static Height of Water Column in Well (ft)	10.5	12.07	8.7	10.3

Calculations

See Appendix: **Table:** **Figure:** **for calculations. (Complete as appropriate.)**

The method for aquifer calculations was: Bouwer-Rice **(i.e. Bouwer-Rice, Cooper, etc.)**

Calculated values by well were as follows:

Slug Test Conducted in well(s) number	044001	044006	047001	047003
Hydraulic Conductivity (ft/min)	0.001908	0.0008453	0.009843	0.003599

Thickness of the aquifer used to calculate hydraulic conductivity was 10.05 **feet.**
The aquifer is **confined** **semi-confined** X **Water table (Check as appropriate.)**
The estimated seepage velocity is 23 **feet per year based on**
a hydraulic conductivity of 4.38 ft/d **, a hydraulic gradient of** 0.005 **, and**
a porosity of 34.5 **per cent for** sand **Soil (list type i.e., silty sand, clay, etc).**

SUMMARY OF SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #: 17754 **COUNTY:** Charleston

FACILITY NAME: Charleston Naval Complex Site 34, UST NH 1137-2 at Building NH 1137

Slug Data

See Appendix: **Table:** **Figure:** X **for a list of all data measurements.**
(water level logs, etc.) (Complete as appropriate.)

Water Level Recovery Data was measured by ND
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method).

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in well(s) number	047006	510-01	523-01	GDC-01
[redacted]/Drawdown in well (feet)	1.6	1.19	2.77	1.94
Radius of Well Casing (feet)	0.0833	0.083	0.083	0.083
Effective Radius of Well (feet)	0.35	0.35	0.35	0.35
Static Saturated Aquifer Thickness (feet)	7.4	5.9	7.8	3.4
Length of Well Screen (feet)	7.4	5.9	7.8	3.4
Static Height of Water Column in Well (ft)	7.4	5.9	7.8	3.4

Calculations

See Appendix: **Table:** **Figure:** [redacted] **for calculations. (Complete as appropriate.)**

The method for aquifer calculations was: Bouwer-Rice **(i.e. Bouwer-Rice, Cooper, etc.)**

Calculated values by well were as follows:

Slug Test Conducted in well(s) number	047006	510-01	523-01	GDC-01
Hydraulic Conductivity (ft/min)	0.002016	0.00612	0.002004	0.0003653

Thickness of the aquifer used to calculate hydraulic conductivity was feet.
The aquifer is confined semi-confined Water table (Check as appropriate.)
The estimated seepage velocity is feet per year based on
a hydraulic conductivity of , a hydraulic gradient of , and
a porosity of per cent for soil (list type i.e., silty sand, clay, etc).

SUMMARY OF SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #: 17754 **COUNTY:** Charleston

FACILITY NAME: Charleston Naval Complex Site 34, UST NH 1137-2 at Building NH 1137

Slug Data

See Appendix: **Table:** **Figure:** X **for a list of all data measurements.**
(water level logs, etc.) (Complete as appropriate.)

Water Level Recovery Data was measured by ND
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method).

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in well(s) number	GDC-02	GDC-1D		
[redacted]/Drawdown in well (feet)	2.4	3.99		
Radius of Well Casing (feet)	0.083	0.083		
Effective Radius of Well (feet)	0.35	0.35		
Static Saturated Aquifer Thickness (feet)	7.6	26.8		
Length of Well Screen (feet)	7.6	10		
Static Height of Water Column in Well (ft)	7.6	26.8		

Calculations

See Appendix: **Table:** **Figure:** X **for calculations. (Complete as appropriate.)**

The method for aquifer calculations was: Bouwer-Rice **(i.e. Bouwer-Rice, Cooper, etc.)**

Calculated values by well were as follows:

Slug Test Conducted in well(s) number	GDC-02	GDC-1D	**Geo-Mean**
Hydraulic Conductivity (ft/min)	0.002395	0.002677	**0.003**

Thickness of the aquifer used to calculate hydraulic conductivity was feet.
The aquifer is confined semi-confined X **Water table (Check as appropriate.)**
The estimated seepage velocity is feet per year based on
a hydraulic conductivity of , a hydraulic gradient of , and
a porosity of per cent for soil (list type i.e., silty sand, clay, etc).

APPENDIX E

SOIL AND WATER DISPOSAL MANIFESTS

All soil cuttings and purge water were containerized,
The containers labeled, and the containers moved
to a staging area for final disposal by Charleston Naval Complex.

APPENDIX F

RBCA CALCULATIONS

Minimum Construction Worker RBSLs

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

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

Prepared By: _____

Reviewed By: gds 11/1/99

Construction Worker Dermal RBSLs

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

	BW	AT	EV	ED	EF	SA	CSF derm	Rfd derm	Target	RBSL	RBSL
	kg	day	events/day	yrs	days/yr	cm^2	$(mg/kg\text{-}day)^{-1}$	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
Toluene	70	365	1	1	90	4500	NA	1.60E-01	1.0	2.40E+01	
Ethylbenzene	70	365	1	1	90	4500	NA	9.70E-02	1.0	6.05E+00	
Xylene*	70	365	1	1	90	4500	NA	1.84E+00	1.0	1.02E+02	
Naphthalene	70	365	1	1	90	4500	NA	3.20E-02	1.0	1.63E+00	

* Kow and MW values for xylene, m-

Prepared By: _____

Reviewed By: gdz 11/1/99

Construction Worker Incidental Ingestion RBSLs

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

Prepared By: _____

Reviewed By: gas 11/1/99

Construction Worker Inhalation RBSLs

Chemical	TR (carc)	HI (nonc)	BWadult	AT	Sfi (carc)	RfD (nonc)	IR air	EF	ED	RBSLair	H	RBSLwater
			kg	yr	$[mg/kg\text{-}day]^{-1}$	[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
Toluene	NA	1	70	1	NA	1.14E-01	20	90	1	1.62E+00	3.01E-01	5.38
Ethylbenzene	NA	1	70	1	NA	2.86E-01	20	90	1	4.06E+00	2.80E-01	14.50
Xylenes	NA	1	70	1	NA	NA*	20	90	1	NA*	2.78E-01	NA*
Naphthalene	NA	1	70	1	NA	3.71E-04	20	90	1	5.27E-03	2.00E-03	2.63

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

Prepared By: _____

Reviewed By: gdb 11/1/99

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #	17754	COUNTY	Charleston
FACILITY NAME	Site 34, Building NH1137		
STREET ADDRESS	Turnbull Ave, Charleston Naval Complex, North Charleston, SC		

Soil Risk Evaluation Data

					Figure
TPH		**464**	mg/kg		
Soil % SAND (Estimated)		**48**	%		
Soil % CLAY (Estimated)		**40**	%		
Worst Case	Benzene	**0.85**	mg/kg	Cs	
Soil Analyses	Toluene	**0.85**	mg/kg	Cs	
	Ethylbenzene	**0.85**	mg/kg	Cs	
	Xylenes	**0.85**	mg/kg	Cs	
	Naphthalene	**0.85**	mg/kg	Cs	
			mg/kg	Cs	
Natural Organic Carbon Content		**16,600**	mg/kg	foc	
Average Annual Recharge		25	cm	Hw	
Distance from highest Soil Impact to water table		**107**	cm	L	
Bulk Density of Soil		*1.59*	g/cc	Bd	1
Wetting Front Suction		*28*	cm	Hf	2
Soil Hydraulic Conductivity		*4.20E-05*	cm/sec	Kf	3
Porosity		*0.45*	decimal %	Φ	4
Residual Water Content		*0.08*	decimal %	Wr	5

List possible human exposure pathways from surface soil.
Soil leaching to groundwater - off-site ingestion or irrigational use of shallow groundwater.

Bold indicates site specific input

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR BENZENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: [redacted]

Location: [redacted]

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

		0.82		
COC	Chemical of Concern	0.85		BENZENE
Bd	Soil Bulk Density (1)		g/cm3	1.59
Crsbl	Risk Based Screening Level		mg/L	0.15
Cs	Concentration of COC in soil		mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)		unitless	2
foc	Organic Carbon Content in Soil (3)		mg/kg	16600
H'	Henry's Law Constant (4)		unitless	0.23
Hf	Wetting front suction head (always negative) (5)		cm	-28
Hw	Average Annual Recharge (3)		cm	25.00
Kf	Soil Hydraulic Conductivity (6)		cm/s	4.20E-05
Koc	Soil/Water Partioning Coefficient (2)		ml/g	81
L	Depth between soil sample with greatest COC concentration to groundwater.		cm	107
Φ	Porosity (7)		unitless	0.45
t1/2	Biodegradation "half life" (2)		days	16
TPH	Total Petroleum Hydrocarbons, EPA Method 3550		mg/kg	464
Wr	Residual Water Content (8)		volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = **0.0169** decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = **0.6076** mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = **0.37** decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-((Hw-Hf)*(ln((Hw + L-Hf)/(Hw-Hf))))) = **424,860** seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = **259** ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = **1.3446** ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migretion.

Vc = Vw/(1 + ((Bd*Kd)/ø)) = **45** ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = **28.31** days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = **0.5112** mg/l

COC concentration in soil pore water (Cw) is less than concentration necessary to protect groundwater (Cp). Not necessary to calculate SSTL

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for BENZENE in soil = Cp*DAF*(((Bd*Koc*fcs)+Wr+(F*'H'''))/(Wr*1g/cc+Bd)) = **1.430** mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754
FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: BENZENE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	16	days	t 1/2	1
Soil/water partitioning coefficient	81	ml/g	K oc	1

Results

				Equation Set	Step
	0.82				
	0.85				
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	0.608	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	1.3446	ml/g	K d	III	1
Contaminant Percolation Rate	45	ft/year	V c	III	2
Time to Reach Groundwater	28.31	days	T c	IV	1
Concentration reaching Groundwater	5.112E-01	mg/l	C p	IV	2
Site Specific Target Level	**1.430**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ **YES** X **NO**

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR TOLUENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 34, Building NH1137

Location: Turnbull Ave, Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Patroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

		0.82		
COC	Chemical of Concern	0.85		TOLUENE
Bd	Soil Bulk Density (1)		g/cm3	1.59
Crsbl	Risk Based Screening Level		mg/L	5.19
Cs	Concentration of COC in soil		mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)		unitless	2
foc	Organic Carbon Content in Soil (3)		mg/kg	16600
H'	Henry's Law Constant (4)		unitless	0.30
Hf	Wetting front suction head (always negative) (5)		cm	-28
Hw	Average Annual Recharge (3)		cm	25
Kf	Soil Hydraulic Conductivity (6)		cm/s	4.20E-05
Koc	Soil/Water Partioning Coefficient (2)		ml/g	133
L	Depth between soil sample with greatest COC concentration to groundwater.		cm	107
ø	Porosity (7)		unitless	0.45
t1/2	Biodegradation "half life" (2)		days	22
TPH	Total Petroleum Hydrocarbons, EPA Method 3550		mg/kg	464
Wr	Residual Water Content (8)		volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = 0.0169 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.37 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw + ((L-Hf)/(Hw-Hf)))) = 424,860 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 259 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 2.2078 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1 + ((Bd*Kd)/ø)) = 29 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = **43.33** days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = **20.3133** mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for TOLUENE in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H'''))/(Wr*1g/cc + Bd)) = **91.438847** mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA

Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754

FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: TOLUENE

(BTEX, Napth.)

				Table
Bioremediation "half-life"	22	days	t 1/2	1
Soil/water partitioning coefficient	133	ml/g	K oc	1

Results

				Equation Set	Step
	0.82				
	0.85				
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	0.029	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	2.2078	ml/g	K d	III	1
Contaminant Percolation Rate	29	ft/year	V c	III	2
Time to Reach Groundwater	43	days	T c	IV	1
Concentration reaching Groundwater	2.031E+01	mg/l	Cp	IV	2
Site Specific Target Level	**91**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ **YES** X _____ **NO**

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR ETHYLBENZENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 34, Building NH1137

Location: Turnbull Ave, Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

				ETHYLBENZENE
		0.82		
COC	Chemical of Concern	0.85		
Bd	Soil Bulk Density (1)		g/cm3	1.59
Crsbl	Risk Based Screening Level		mg/L	6.05
Cs	Concentration of COC in soil		mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)		unitless	2
foc	Organic Carbon Content in Soil (3)		mg/kg	16600
H'	Henry's Law Constant (4)		unitless	0.28
Hf	Wetting front suction head (always negative) (5)		cm	-28
Hw	Average Annual Recharge (3)		cm	25
Kf	Soil Hydraulic Conductivity (6)		cm/s	4.20E-05
Koc	Soil/Water Partioning Coefficient (2)		ml/g	176
L	Depth between soil sample with greatest COC concentration to groundwater.		cm	107
ø	Porosity (7)		unitless	0.45
t1/2	Biodegradation "half life" (2)		days	10
TPH	Total Petroleum Hydrocarbons, EPA Method 3550		mg/kg	464
Wr	Residual Water Content (8)		volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = 0.0169 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0.0220461 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = Ø - Wr = 0.37 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw + ((L-Hf)/(Hw-Hf)))) = 424,860 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 259 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 2.9216 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1 + ((Bd*Kd)/ø)) = 23 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 55.74 days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl)+((Tc/2.3)*(0.693/t1/2))) = 289.28 mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for THYLBENZENE in soil = Cp*DAF*(((Bd*Koc*fcs)+Wr+(F*'H'''))/(Wr*1g/cc+Bd)) = 1699.022616 mg/kg

PREPARED BY: _____

Date

CHECKED BY: _____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754
FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: ETHYLBENZENE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	10	days	t 1/2	1
Soil/water partitioning coefficient	176	ml/g	K oc	1

Results

				Equation Set	Step
	0.82				
	0.85				
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	2.20E-02	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	2.9216	ml/g	K d	III	1
Contaminant Percolation Rate	23	ft/year	V c	III	2
Time to Reach Groundwater	56	days	T c	IV	1
Concentration reaching Groundwater	2.893E+02	mg/l	C p	IV	2
Site Specific Target Level	**1699**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ **YES** X **NO**

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR XYLENES

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 34, Building NH1137

Location: Turnbull Ave, Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Paremeters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

			XYLENES
COC	Chemical of Concern		
Bd	Soil Bulk Density (1)	g/cm3	1.59
Crsbl	Risk Based Screening Level	mg/L	69.194
Cs	Concentration of COC in soil	mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)	unitless	2
foc	Organic Carbon Content in Soil (3)	mg/kg	16600
H'	Henry's Law Constant (4)	unitless	0.28
Hf	Wetting front suction head (always negative) (5)	cm	-28
Hw	Average Annual Recharge (3)	cm	25
Kf	Soil Hydraulic Conductivity (6)	cm/s	4.20E-05
Koc	Soil/Water Partioning Coefficient (2)	ml/g	639
L	Depth between soil sample with greatest COC concentration to groundwater.	cm	107
ø	Porosity (7)	unitless	0.45
t1/2	Biodegradation "half life" (2)	days	28
TPH	Total Petroleum Hydrocarbons, EPA Method 3550	mg/kg	464
Wr	Residual Water Content (8)	volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = 0.0169 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.37 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw + ((L-Hf)/(Hw-Hf)))) = 424,860 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 259 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 10.6074 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1 + ((Bd*Kd)/ø)) = 7 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 189.43 days

Step 2 - Calculate estimated concentretion of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = 7560.33 mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for XYLENES in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H''))/(Wr*1g/cc + Bd)) = 1.57E+05 mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754
FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: XYLENES
(BTEX, Napth.)

				Table
Bioremediation "half-life"	28	days	t 1/2	1
Soil/water partitioning coefficient	639	ml/g	K oc	1

Results

				Equation Set	Step
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	0.0062	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	10.6074	ml/g	K d	III	1
Contaminant Percolation Rate	7	ft/year	V c	III	2
Time to Reach Groundwater	189	days	T c	IV	1
Concentration reaching Groundwater	7.560E+03	mg/l	C p	IV	2
Site Specific Target Level	**156839**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ YES X _____ NO

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR NAPHTHALENE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: [redacted]

Location: [redacted]

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Parameters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

			NAPHTHALENE
COC	Chemical of Concern		
Bd	Soil Bulk Density (1)	g/cm3	1.59
Crsbl	Risk Based Screening Level	mg/L	1.63
Cs	Concentration of COC in soil	mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)	unitless	2
foc	Organic Carbon Content in Soil (3)	mg/kg	16600
H'	Henry's Law Constant (4)	unitless	0.23
Hf	Wetting front suction head (always negative) (5)	cm	-28
Hw	Average Annual Recharge (3)	cm	25
Kf	Soil Hydraulic Conductivity (6)	cm/s	4.20E-05
Koc	Soil/Water Partioning Coefficient (2)	ml/g	1543
L	Depth between soil sample with greatest COC concentration to groundwater.	cm	107
Ø	Porosity (7)	unitless	0.45
t1/2	Biodegradation "half life" (2)	days	48
TPH	Total Petroleum Hydrocarbons, EPA Method 3550	mg/kg	464
Wr	Residual Water Content (8)	volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = 0.0169 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr *1g/cc + Bd)/((Bd*Koc*fcs) + Wr + ((ø-Wr)*H'))) = 0.00 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.37 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw + ((L-Hf)/(Hw-Hf)))) = 424,860 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 259 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 25.6138 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1 + ((Bd*Kd)/ø)) = 3 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 450.46 days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = 1096.03 mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for NAPHTHALENE in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H''))/(Wr*1g/cc + Bd)) = 5.45E+04 mg/kg

PREPARED BY: _____

Date

CHECKED BY: _____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754
FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: NAPHTHALENE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	48	days	t 1/2	1
Soil/water partitioning coefficient	1543	ml/g	K oc	1

Results

				Equation Set	Step
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	0.003	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	25.61	ml/g	K d	III	1
Contaminant Percolation Rate	3	ft/year	V c	III	2
Time to Reach Groundwater	450	days	T c	IV	1
Concentration reaching Groundwater	1096.03	mg/l	C p	IV	2
Site Specific Target Level	**54,539**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ YES X NO

IN-SITU SOIL RISK EVALUATION

SOIL LEACHABILITY MODEL FOR MTBE

RISK-BASED CORRECTIVE ACTION FOR PETROLEUM RELEASES

SITE INFORMATION:

Site: Site 34, Building NH1137

Location: Turnbull Ave, Charleston Naval Complex, North Charleston, SC

REFERENCES:

(1) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 1.
(2) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 2.
(3) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Input Paremeters.
(4) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Table 1.
(5) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 2.
(6) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 3.
(7) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 4.
(8) SCDHEC, RBCA For Petroleum Releases, June 1995, Appendix B, Figure 5.

INPUT:

COC	Chemical of Concern		MTBE
Bd	Soil Bulk Density (1)	g/cm3	1.59
Crsbl	Risk Based Screening Level	mg/L	0.277
Cs	Concentration of COC in soil	mg/kg	0.85
DAF	Dilution/Attenuation Factor (2)	unitless	2
foc	Organic Carbon Content in Soil (3)	mg/kg	16600
H'	Henry's Law Constant (4)	unitless	0.04
Hf	Wetting front suction head (always negative) (5)	cm	-28
Hw	Average Annual Recharge (3)	cm	25
Kf	Soil Hydraulic Conductivity (6)	cm/s	0.0000
Koc	Soil/Water Partioning Coefficient (2)	ml/g	12
L	Depth between soil sample with greatest COC concentration to groundwater.	cm	107
ø	Porosity (7)	unitless	0.45
t1/2	Biodegradation "half life" (2)	days	183
TPH	Total Petroleum Hydrocarbons, EPA Method 3550	mg/kg	464
Wr	Residual Water Content (8)	volume fraction	0.08

CALCULATIONS:

Equation Set I - Determine soil pore water concentration resulting from physical partioning (Cw).

Step 1 - Calculate the total organic carbon content (fcs) of the soil.

fcs = (foc + TPH/1.724)*1E-6 = 0.0169 decimal %

Step 2 - Calculate the concentration of COC in soil pore water (Cw) directly in contact with the contaminate soil.

Cw = Cs*((Wr*1g/cc+Bd)/((Bd*Koc*fcs)+Wr+((ø-Wr)*H'))) = 0.27 mg/l

Equation Set II - Determine the velocity of the soil pore water (Vw)

Step 1 - Calculate the air filled porosity (f) in decimal percent.

f = ø - Wr = 0.37 decimal %

Step 2 - Determine the time for water to percolate through the vadose zone soil (from depth of worst case soil sample to the water table at site).

t = (f/Kf)*(L-(Hw-Hf))*(ln(Hw+((L-Hf)/(Hw-Hf)))) = 424,860 seconds

Step 3 - Determine the velocity of the water (Vw) in feet per year.

Vw = (L/30.48cm/ft)/(t/31,500,000sec/year) = 259 ft/year

Equation Set III - Determine the organic retardation effect (Vc) of the contaminant.

Step 1 - Calculate the soil/water distribution coefficient (Kd) (ml/g) for uncontaminated soil.

Kd = Koc*foc*1E-6 = 0.1909 ml/g

Step 2 - Calculate the retardation effect of natural soil organic matter on COC migration.

Vc = Vw*(1+((Bd*Kd)/ø)) = 155 ft/year

Equation Set IV - Determine biodegradation rates and provide final COC concentration (Cf) at depth of concern.

Step 1 - Calculate the time (Tc) in days required for the COC to reach groundwater.

Tc = 365 day/yr*((L/30.48cm/ft)/Vc) = 8.24 days

Step 2 - Calculate estimated concentration of COC in the soil pore water (Cp) necessary to protect groundwater.

Cp = 10^(log (Crsbl) + ((Tc/2.3)*(0.693/t1/2))) = 0.29 mg/l

COC concentration in soil pore water (Cp) is greater than Crsbl, therefore the SSTL must be calculated.

Equation Set V - Calculate the Site Specific Target Level (SSTL) for the COC in soil.

Csstl for MTBE in soil = Cp*DAF*(((Bd*Koc*fcs) + Wr + (F*'H''))/(Wr*1g/cc + Bd)) = 0.138235 mg/kg

PREPARED BY:_____

Date

CHECKED BY:_____

Date

IN-SITU SOIL RISK EVALUATION

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 17754
FACILITY NAME Site 34, Building NH1137

Instructions

Provide results, separately, for each constituent in the worst case soil analysis.

Data

List Constituent: MTBE
(BTEX, Napth.)

				Table
Bioremediation "half-life"	183	days	t 1/2	1
Soil/water partitioning coefficient	12	ml/g	K oc	1

Results

				Equation Set	Step
Total Organic Carbon Content	0.0169	decimal %	f cs	I	1
Leachate Concentration	0.268	mg/l	C w	I	2
Air Filled Porosity	0.37	decimal %	f	II	1
Infiltration Rate Time	424,860	seconds	t	II	2
Velocity of Water	259	ft/year	V w	II	3
Soil/Water Distribution Coefficient	0.19	ml/g	K d	III	1
Contaminant Percolation Rate	155	ft/year	V c	III	2
Time to Reach Groundwater	8	days	T c	IV	1
Concentration reaching Groundwater	0.29	mg/l	C p	IV	2
Site Specific Target Level	**0.138**	mg/kg	C sstl	V	

Conclusions

Does concentration of chemical of concern in soil exceed SSTL? NO

Risk of Human Exposure due to contaminated soil.

_____ YES X NO

IN-SITU SOIL RISK EVALUATION