N61165.AR.003942
CNC CHARLESTON
5090.3a

INITIAL GROUNDWATER ASSESSMENT REPORT FOR SITE 35 BUILDING NS28 ZONE I
CNC CHARLESTON SC
3/1/2000
TETRA TECH

Rev.1
03/08/00

Initial Ground-Water Assessment Report for Site 35, Building NS28

Zone I
Charleston Naval Complex
North Charleston, South Carolina

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order 0103

March 2000

Rev.1
03/08/00

INITIAL GROUND-WATER ASSESSMENT REPORT
FOR
SITE 35, BUILDING 28

ZONE I, 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 0103

MARCH 2000

PREPARED UNDER THE SUPERVISION OF:

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

APPROVED FOR SUBMITTAL BY:

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

EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Rapid Assessment for Site 35 which includes one underground storage tank (UST) system for Building 28 at Charleston Naval Complex (CNC) Zone I, in North Charleston, South Carolina. The UST was used as fuel oil for Building 28, the former Bachelor Officer's Quarters. The 10,000-gallon steel UST was removed in March 1997. The assessment 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 June 3, 1999. After determining all laboratory analytical results were below the risk-based screening levels (RBSLs), the reporting format was reduced from a Rapid Assessment Report to an Initial Ground-Water Assessment (IGWA) report format.

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 NS 28A to determine boring locations and monitoring well placement.
- Conducted site survey to identify utilities and to construct a site plan.
- Installed three shallow soil borings (5, 8, and 12 feet below land surface [bls]) using direct push technology (DPT) and hand auger.
- Collected soil samples for field screening using an organic vapor analyzer.
- 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 two 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 soil samples from one boring for grain size analysis, total organic carbon using USEPA Method 415.1, and total recoverable petroleum hydrocarbon using USEPA Method 9071.
- Installed one shallow permanent monitoring well to 11 feet bls using hollow stem auger.
- Collected groundwater samples from newly installed, permanent monitoring well for laboratory analysis at a fixed-base analytical laboratory.

- Analyzed groundwater samples for BTEX, methyl tert-butyl ether (MTBE), and naphthalene using USEPA Method 8260 and PAHs using USEPA Method 8270.
- Surveyed monitoring well and top of casing elevation and collected depth to groundwater measurement (to evaluate regional groundwater flow direction).

Conclusions

On-site mobile laboratory screening results of soil and groundwater samples collected during the DPT investigation did not reveal the need for a full Rapid Assessment. Therefore, additional soil borings and monitoring wells were not installed. However, soil samples were collected from two confirmation soil borings on June 23, 1999, and analyzed for BTEX and PAHs by a fixed-base laboratory. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene were detected in SB-02 from the west end of the UST pit at a depth of 3 to 4 feet. However, the chemicals of concern (CoCs) were not detected at concentrations exceeding the RBSLs for sandy soils (or clay-rich soils) where depth to groundwater is less than 5 feet bls.

A groundwater sample was collected from the newly installed monitoring well on July 14, 1999. No dissolved CoCs were detected in the well.

Recommendation

Based upon the results of the Rapid Assessment performed in 1999 and reported in the following IGWA, no further action is requested for Site 35, UST 28A, Building 28, of Zone I, CNC. The CoCs that were detected in the fixed-base soil sample were well below their respective RBSLs. In addition, the monitoring well groundwater sample collected at the site did not contain any CoCs.

INITIAL GROUND-WATER ASSESSMENT REPORT

Facility Name: Charleston Naval Base, Zone I, Site 35, UST 28A, Building 28

Site ID Number: 00964

UST Owner or Operator's Name: U.S. Navy Southern Division (SouthDiv) Naval Facilities Engineering Command (NAVFAC)

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

Phone Number: 843-820-7307

Contractor: Tetra Tech NUS, Inc., Gregory D. Swanson, P.E. Cert. # 24

Address: 800 Oak Ridge Turnpike, Oak Ridge, TN 37830

Phone Number: (423) 483-9900

Well Driller: Rod Fuller, Custom Drilling – Hollow Stem Auger. Randolph Brand, Columbia Technologies- Direct Push. Cert. # 1240

1485

Receptor and Site Data
Please place a check in the appropriate answer block for each question:

Receptor Survey Questions	No	Yes*
Is there a drinking water supply well (public or private) or surface water supply intake within 1,000 feet of the UST?	**X**	
Are irrigation or other non-drinking water wells located within 1,000 feet of the UST?		**X**
Are there other potential receptors (i.e., utilities, surface waters, wetlands) less than 500 feet from the UST?		**X**

* If "yes" provide additional information:

There are monitoring wells within 1,000 feet of the site.
Water utility lines are located approximately 170 feet south, 200 feet east, and 260 feet east of the site.
A sanitary sewer service line from Building NS 28 is approximately 200 feet southwest of the site and connects to the sewer main which is approximately 300 feet southwest of the site.

The Cooper River is approximately 350 feet east from the site.

Were any water wells within 250-ft radius sampled? ____ Yes **X** No

Is the current use of the site and surrounding properties commercial, residential, agricultural, or industrial?

Site: Commercial & Industrial Adjacent Properties: Commercial & Industrial

Soil and Monitoring Well Data

Primary Soil Type: Silty sand, sandy clay

Well Installation Method and Date: Hollow-stem auger; July 12, 1999

Development Method: Surge and purge using centrifugal pump

Soil Samples Obtained at 3 to 4 feet

NOTE: ***Soil samples were collected from two soil borings. A duplicate sample was collected from one of the soil borings.***

SOIL ANALYTICAL DATA

Sample	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl-benzene (ug/kg)	Xylenes (ug/kg)	Naphthalene (ug/kg)
CNC35-B01/ SLB010304	<6	<6	<6	<6	<6
CNC35-B02/ 35SLB020304	<6	<6	<6	<6	<6
CNC35-B02/ 35SLB020304D	<6	<6	<6	<6	<6

Sample	Benzo(a)-anthracene (ug/kg)	Benzo(b)-fluoranthene (ug/kg)	Benzo(k)-fluoranthene (ug/kg)	Chrysene (ug/kg)	Dibenz(a,h)-anthracene (ug/kg)
CNC35-B01/ 35SLB010304	<360	<360	<360	<360	<360
CNC35-B02/ 35SLB020304	580	590	<460	640	<460
CNC35-B02/ 35SLB020304D	1800	2000	780	1700	<400

Ground-Water Data

Depth to Ground Water: 4.29 feet

Well Purging/Sampling Method: Low flow using peristaltic pump

Date Sampled: 7/14/99

Free Product Thickness: None

Soil/Water Disposal Method: 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.

GROUND-WATER ANALYTICAL DATA

Sample	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	EDB (ug/L)	Naphthalene (ug/L)
CNC35M-01/ 35GLM0101	<5	<5	<5	<5	<5	<5

Sample	Benzo(a)-anthracene (ug/L)	Benzo(b)-fluoranthene (ug/L)	Benzo(k)-fluoranthene (ug/L)	Chrysene (ug/L)	Dibenz(a,h)-anthracene (ug/L)
CNC35M-01/ 35GLM0101	<10	<10	<10	<10	<10

Appendices

The appendices required for this report are as follows:

Appendix A. Well Construction and Soil Boring Logs

Appendix B. Laboratory Data

Appendix C. Topographic Map With Site Location

Appendix D. Site Base Maps

NOTE: ***Appendices E, F, and G are not required.***

Report Completed By: Gregory D. Swanson (signature) S.C. Reg. # 24

Date: 1/26/00

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

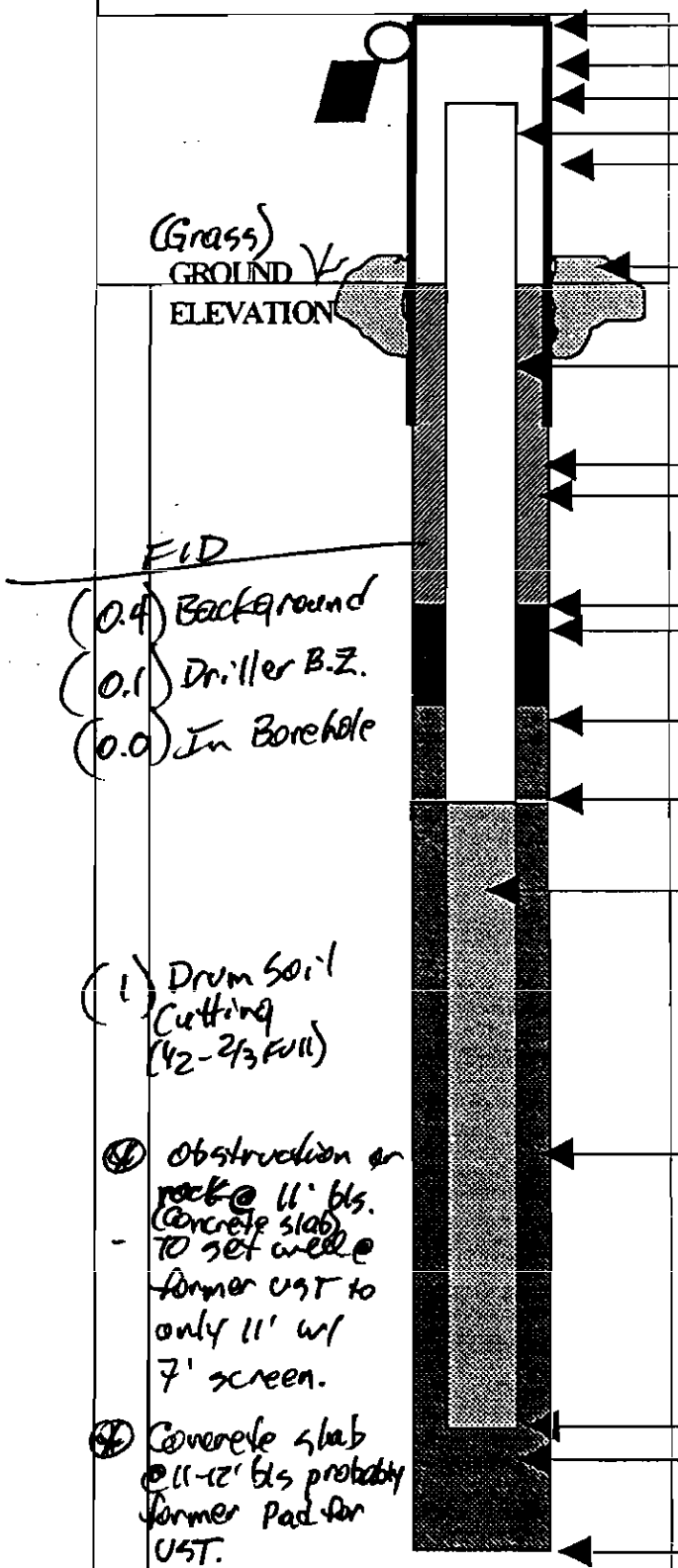
APPENDIX A

WELL CONSTRUCTION AND SOIL BORING LOGS

BORING NO.: CNC35-MW01

OVERBURDEN MONITORING WELL SHEET

PROJECT: CNC Site 35 Bldg. N528	LOCATION: Site 35/Zone I	DRILLER: Custom Drilling
PROJECT NO.: N0270 Zone 1	BORING: CNC35-MW01	METHOD: ~~DPT~~ 4.25" ID HSA
ELEVATION:	DATE: 7/12/99	DRILLING: Rod Foller
FIELD GEOLOGIST: Mark Dorrington		DEVELOPMENT: NA



ELEVATION OF TOP OF SURFACE CASING: —

ELEVATION OF TOP OF RISER PIPE: —

STICK-UP TOP OF SURFACE CASING: Flush

STICK-UP RISER PIPE: Flush

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

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

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

RISER PIPE I.D.: 2 in.

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

BOREHOLE DIAMETER: 8.25 in (4.25" ID HSA)

TYPE OF SEAL: Portland Cement Type I

ELEVATION / DEPTH OF SEAL: 12'

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

DEPTH TOP OF SAND PACK: 3'

ELEVATION / DEPTH TOP OF SCREEN: 14'

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

SLOT SIZE X LENGTH: 0.010 in x 7 ft.

I.D. OF SCREEN: 2 in.

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

ELEVATION / DEPTH BOTTOM OF SCREEN: 11 ~~11.4~~

ELEVATION / DEPTH BOTTOM OF SAND PACK: ~~11.4~~ 11

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

ELEVATION / DEPTH OF HOLE: ~~11.4~~ 11

BORING LOG

PROJECT NAME: CTO 0103 CNC Zone 1 BORING NUMBER: 35B01
PROJECT NUMBER: N0270 Site 35 Bldg. N528 DATE: 6/17/99
DRILLING COMPANY: Columbia GEOLOGIST:
DRILLING RIG: Strato probe DRILLER: K. Brand

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole**	Drilling BZ**
	1					Tan	Silty Sand		Moist				
	2					↓	↓		↓				
	3					↓	↓		↓				
X	4		2 1/4				—						
0927	5												
	6					Tan	Silty Sand		Moist				
	7					↓	↓		Saturated				
	8		1.5/4				—		↓				
0931	9						—						
	10					Tan	Silty Sand						
	11					Gry	Clay Rock		↓				
	12		2/4			↓	↓						
0938													

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

Page 1 of 1

PROJECT NAME: CTO 0103 C NE Zone 1 | BORING NUMBER: 35 B Ø 2
PROJECT NUMBER: N0270 Site 35 Bldg. N528 | DATE: 6/17/99
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): Blank	Sample	Backfill	Drill Bit
	1					Tan	Silty Sand		Moist				
	2					Olive Gray	Sandy Clay						
	3												
N	4		3.5/4										
0447	5												
	6					Olive Gray	Sandy Clay		Moist				
	7								Saturated				
	8		2/4										
0451	9												
	10												
	11												
	12												

* When rock coring, enter rock brokeness.

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

Drilling Area Background (ppm):

Remarks:

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

BORING LOG

PROJECT NAME: CTO 0103 CNC Zone 1 BORING NUMBER: 35 B03
PROJECT NUMBER: ND270 Site 35 Bldg. N528 DATE: 6/21/99
DRILLING COMPANY: Tetra Tech NUS GEOLOGIST:
DRILLING RIG: JH DRILLER:

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

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

Drilling Area Background (ppm):

Remarks:

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

Hand Auger

APPENDIX B

LABORATORY DATA

Katahdin
ANALYTICAL SERVICES

August 23, 1999

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

RE: Katahdin Lab Number: WP-3277
Project ID: CNC Charleston
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: July 15, 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

Hana Crouch
Authorized Signature

08/23/99
Date

0000001

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 July 15, 1999 and were logged in under Katahdin Analytical Services work order number WP3277 for a hardcopy due date of August 14, 1999.

KATAHDIN Sample No.	TTNUS Sample Identification
WP3277-1	35GLM0101
WP3277-2	37GLM0201
WP3277-3	37GLM0101
WP3277-4	2IRL00101
WP3277-5	37TL00301

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

Five aqueous samples were received by the Katahdin Analytical Services, Inc. GC/MS laboratory on July 15, 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-M 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%.

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) 436-3556

In the calibration curve analyzed in this SDG, the average %RSD for all analytes was 14.7%, 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 Organic Analysis

Four aqueous samples were received by Katahdin Analytical Services laboratory on July 15, 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 19, 1999. A laboratory control spike consisting of all PAH analytes spiked into organic free water, was extracted in the batch.

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.

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) # WP3277

PAGE: 1 OF 1

COOLER: 1 OF 1

CLIENT: Tetra Tech

PROJECT: CNC Charleston

COC# —
SDG#
DATE / TIME RECEIVED: 7-15-99 1000
DELIVERED BY: FedEx
RECEIVED BY: SAV
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)= 5.6	
6. SAMPLES RECEIVED AT 4°C +/- 2? ICE / ICE PACKS PRESENT (Y) or N?	☑	☐	☐	COOLER TEMP (°C)= NA (RECORD COOLER TEMP ONLY IF TEMP BLANK IS NOT PRESENT)	
7. VOLATILES FREE OF HEADSPACE?	☑	☐	☐		
8. TRIP BLANK PRESENT IN THIS COOLER	☑	☐	☐		
9. PROPER SAMPLE CONTAINERS AND VOLUME?	☑	☐	☐		
10. SAMPLES WITHIN HOLD TIME UPON RECEIPT?	☑	☐	☐		
11. SAMPLES PROPERLY PRESERVED[1]?	☐	☐	☑		
12. CORRECTIVE ACTION REPORT FILED?	☐	☑	N/A		

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

LOG - IN NOTES[1]:

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

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 #
Tetra Tech NUS	Bryne Howze	(843) 814-9080	( )

Address	City	State	Zip Code
NH21 Ave. H	N. Charleston	SC	29405

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

Bill (if different than above) Address

Sampler (Print / Sign) Emily Harrison Emily Harrison

Copies To:

LAB USE ONLY

WORK ORDER #: WP3277

KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

★	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE PRESERVATIVES: Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
					PAH	BTEX/naph/MTBE preserv. - HCl								
	35GLM0101	7/14/99/1420	GW	5	2	3								
	37GLM0201	7/14/99/1135	GW	5	2	3								
	37GLM0101	7/14/99/0930	GW	5	2	3								
	37TL00301	7/14/99/—	AQ	2		2								
	IRL00101	7/14/99/1515	AQ	5	2	3								
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
E. Harrison	7/14/99 1600	813402904613		7-15-99 1000	Shelley Wilkerson
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
					000021

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

ORDER NO WP-3277 Project Manager: Andrea J. Colby
ORDER DATE: 07/15/99

REPORT TO: Paul Calligan
Tetra Tech NUS
1401 Oven Park Dr., Suite 102
Tallahassee, FL 32308
PHONE: 850/385-9
FAX: 850/385-9
DUE: 14 AUG
FAC.ID: CNC CHARLESTON

INVOICE: ACCOUNTS PAYABLE
TETRA TECH NUS, INC.
FOSTER PLAZA 7, 661 ANDERSEN DR.
PITTSBURGH, PA 15220
PHONE: 412/921-7090
PO: N7912-P99264
PROJECT: CTO #68

SAMPLED BY: CLIENT DELIVERED BY: FEDEX DISPOSE: AFTER 13 SEP

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3277-1	35GLM0101	14 JUL 1420	15 JUL	AQ
	WP3277-2	37GLM0201	14 JUL 1135		
	WP3277-3	37GLM0101	14 JUL 0930		
	WP3277-4	2IRL00101	14 JUL 1515		

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
TOTALS		4	200.00	800.00

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
2	WP3277-5	37TL00301	14 JUL	15 JUL	

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 $875.
This is NOT an Invoice

AJC
07-15Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

0000022

Addition

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.

000004

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: WP3277-1
SDG: WP3277
Report Date: 8/12/99
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
35GLM0101	AQ	7/14/99	7/15/99	7/19/99	DPD	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	58	%	1.0		
2-FLUOROBIPHENYL	56	%	1.0		
TERPHENYL-D14	52	%	1.0		

Report Notes:

000005

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: WP3277-1
SDG: WP3277
Report Date: 8/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 7/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35GLM0101	AQ	7/14/99	7/15/99	7/20/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	103	%	1.0		
1,2-DICHLOROETHANE-D4	105	%	1.0		
TOLUENE-D8	102	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

000006

4B

SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;071999

Lab Name: Katahdin Analytical Services SDG No.: WP3277

Lab File ID: Z1600

Lab Sample ID: SBLK;071999

Instrument ID: 5972-Z

Date Extracted: 7/19/99

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

Date Analyzed: 08/02/99

Matrix: (soil/water) WATER

Time Analyzed: 17:43

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;071999	LCS;071999	Z1601	8/2/99	6:31:00 PM
35GLM0101	WP3277-1	Z1602	8/2/99	7:18:00 PM
37GLM0201	WP3277-2	Z1603	8/2/99	8:06:00 PM
37GLM0101	WP3277-3	Z1604	8/2/99	8:52:00 PM
2IRL00101	WP3277-4	Z1608	8/3/99	11:27:00 AM

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;071999
SDG: WP3277
Report Date: 8/12/99
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
SBLK;071999	AQ	-	-	7/19/99	DPD	SW3510	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<10	ug/L	1.0	10	10
2-METHYLNAPHTHALENE	<10	ug/L	1.0	10	10
ACENAPHTHYLENE	<10	ug/L	1.0	10	10
ACENAPHTHENE	<10	ug/L	1.0	10	10
FLUORENE	<10	ug/L	1.0	10	10
PHENANTHRENE	<10	ug/L	1.0	10	10
ANTHRACENE	<10	ug/L	1.0	10	10
FLUORANTHENE	<10	ug/L	1.0	10	10
PYRENE	<10	ug/L	1.0	10	10
BENZO[A]ANTHRACENE	<10	ug/L	1.0	10	10
CHRYSENE	<10	ug/L	1.0	10	10
BENZO[B]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[K]FLUORANTHENE	<10	ug/L	1.0	10	10
BENZO[A]PYRENE	<10	ug/L	1.0	10	10
INDENO[1,2,3-CD]PYRENE	<10	ug/L	1.0	10	10
DIBENZ[A,H]ANTHRACENE	<10	ug/L	1.0	10	10
BENZO[G,H,I]PERYLENE	<10	ug/L	1.0	10	10
NITROBENZENE-D5	68	%	1.0		
2-FLUOROBIPHENYL	68	%	1.0		
TERPHENYL-D14	83	%	1.0		

eport Notes:

000015

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z1601 **Sample ID: LCS;071999** **Date Run: 8/2/99**

Analyst: KRT **Time Injected 6:31:00 PM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	50	36.5	73	70-130
ACENAPHTHENE	50	37.7	75	70-130
ACENAPHTHYLENE	50	38.2	76	70-130
ANTHRACENE	50	45.1	90	70-130
BENZO[A]ANTHRACENE	50	41.5	83	70-130
BENZO[A]PYRENE	50	40.6	81	70-130
BENZO[B]FLUORANTHENE	50	38.8	78	70-130
BENZO[G,H,I]PERYLENE	50	39.4	79	70-130
BENZO[K]FLUORANTHENE	50	44.3	88	70-130
CHRYSENE	50	43.0	86	70-130
DIBENZ[A,H]ANTHRACENE	50	40.0	80	70-130
FLUORANTHENE	50	47.0	94	70-130
FLUORENE	50	39.4	79	70-130
INDENO[1,2,3-CD]PYRENE	50	42.3	84	70-130
NAPHTHALENE	50	34.6	*69	70-130
PHENANTHRENE	50	43.1	86	70-130
PYRENE	50	37.4	75	70-130

*** Out of Limits**

000016

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKM20B

Lab Name: Katahdin Analytical Services SDG No.: WP3277

Lab File ID: M1061 Lab Sample ID: VBLKM20B

Date Analyzed: 07/20/99 Time Analyzed: 10:17

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

Instrument ID: 5972-M

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

Client Sample ID	Lab Sample ID	Lab Data File	Date Injected	Time Injected
LCSM20A	LCSM20A	M1059	7/20/99	8:58:00 AM
37TL00301	WP3277-5	M1063	7/20/99	11:37:00 AM
35GLM0101	WP3277-1	M1069	7/20/99	3:29:00 PM
37GLM0201	WP3277-2	M1070	7/20/99	4:07:00 PM
37GLM0101	WP3277-3	M1071	7/20/99	4:45:00 PM
2IRL00101	WP3277-4	M1072	7/20/99	5:22:00 PM

000017

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: VBLKM20B
SDG: WP3277
Report Date: 8/12/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: N/A
Method: SW8260
Date Analyzed: 7/20/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKM20B	AQ	-	-	7/20/99	DJP	5030	DJP

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/L	1.0	5	5
TOLUENE	<5	ug/L	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/L	1.0	5	5
ETHYLBENZENE	<5	ug/L	1.0	5	5
NAPHTHALENE	<5	ug/L	1.0	5	5
MTBE	<5	ug/L	1.0	5	5
TOTAL XYLENES	<5	ug/L	1.0	5	5
DIBROMOFLUOROMETHANE	101	%	1.0		
1,2-DICHLOROETHANE-D4	100	%	1.0		
TOLUENE-D8	99	%	1.0		
P-BROMOFLUOROBENZENE	90	%	1.0		

Report Notes:

000018

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: M1059 **Sample ID: LCSM20A** **Date Run: 7/20/99**

Analyst: DJP **Time Injected 8:58:00 AM** **Matrix: AQ**

Compound Name	Spike Amt (ug/L)	Result (ug/L)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	51.7	103	60-140
BENZENE	50	50.1	100	60-140
ETHYLBENZENE	50	55.0	110	60-140
MTBE	50	48.1	96	60-140
NAPHTHALENE	50	63.8	128	60-140
TOLUENE	50	54.2	108	60-140
TOTAL XYLENES	150	164	109	60-140

*** Out of Limits**

000019

Katahdin
ANALYTICAL SERVICES

August 19, 1999

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

RE: Katahdin Lab Number: WP-3035
Project ID: CNC Charleston
Project Manager: Ms. Andrea J. Colby
Sample Receipt Date: June 23 and 24, 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

08/19/99
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 June 24, 1999 and were logged in under Katahdin Analytical Services work order number WP3035 for a hardcopy due date of July 24, 1999.

KATAHDIN Sample No.	TTNUS Sample Identification	GEL Sample No.
WP3035-1	35SLB020304	9906802-01
WP3035-2	35SLB020304D	9906802-02
WP3035-3	21SLB080607D	9906802-04
WP3035-4	35SLB010304	
WP3035-5	21SLB080607	9906802-03
WP3035-6	21SLB040405	9906802-05
WP3035-7	21SLB050506	
WP3035-8	21SLB090708	
WP3035-9	21TL00201	
WP3035-10	21SLB040405D	9906802-06

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

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

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

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

Two initial calibration curves are reported in this workorder. Both calibrations had several analytes exceeding the maximum allowable 15% RSD. Since the average %RSD values were 8.5% and 11.2%, respectively, the curves were acceptable.

Initial analyses of samples WP3035-2 and -3 yielded surrogate recovery deviations and internal standard area recovery deviations. Reanalyses yielded similar results, confirming matrix interference. Both sets of data are included in the data package for each sample.

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

Eight soil/sediment samples were received by Katahdin Analytical Services laboratory on June 24, 1999 for analysis in accordance with 8270C for a client specified PAH list of analytes.

Extraction of the samples occurred following USEPA method 3550 on June 28, 1999. A laboratory control spike, consisting of all PAH analytes spiked into organic free sand, was extracted in the batch, along with a site specific MS/MSD pair on sample WP3035-7.

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.

Initial analysis of sample WP3035-6 yielded internal standard area recovery deviations and a concentration of the target analyte 2-methylnaphthalene over the upper limit of the calibration curve. Reanalysis occurred at a 1:4 dilution successfully. Both sets of data for this sample are included in this data package.

Sample WP3035-8 was analyzed at a 1:10 dilution only due to the matrix and target analyte concentrations, resulting in elevated reporting limits.

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 WP3035 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 WP3035 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.

Subcontracted Analysis

Analyses for Total Organic Carbon, Total Petroleum Hydrocarbons, and Grain size were subcontracted to outside laboratories.

KATAHDIN ANALYTICAL SERVICES, INC.
SAMPLE RECEIPT CONDITION REPORT

Tel. (207) 874-2400
Fax (207) 775-4029

LAB (WORK ORDER) # WP 3035

PAGE: 1 OF 1

COOLER: 1 OF 1

CLIENT: T-Tech-SC

COC# —

SDG#

PROJECT: CNC Charleston

DATE / TIME RECEIVED: 06-24-99 ~0925

DELIVERED BY: FEDEX

RECEIVED BY: BKM

LIMS ENTRY BY: San

LIMS REVIEW BY / PM: AZC

	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	AZC notified Paul Calligan by fax 6/24/99.
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]:

0000053

(1) Use this area (and additional sheets if necessary) to document samples that are received broke compromised, C-O-C discrepancies, radiation checks, residual chlorine check, re: f pH check if n d. If samples required pH adjustment, record volume and type of preservative ad

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

CHAIN of CUSTODY

PLEASE PRINT IN PEN Page ____ of ____

Client	Contact	Phone #	Fax #
Tetra Tech NUS	Roger Franklin	(843) 554-9925	( )

Address: NH-21 Hwy H City: N. Charleston State: SC Zip Code: 29405

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

Bill (if different than above) Address

Sampler (Print / Sign): Roger Franklin / Roger Franklin Copies To:

LAB USE ONLY WORK ORDER #: WP3035

KATAHDIN PROJECT MANAGER

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	ANALYSIS AND CONTAINER TYPE / PRESERVATIVES: Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
		1994			ISTEX 1803	PAH Naphthalene FDC	Chain Site							FID Readings
	21TLΦΦ201	6/23/—	H_2O	2	X									1
	35SLBΦ2Φ3Φ4	6/23/1030	Soil	5	X	X	X							0
	35SLBΦ2Φ3Φ4D	6/23/1030	Soil	5	X	X	X							0
	35SLBΦ1Φ3Φ4	6/23/1015	Soil	6	X	X		X						0
	SLBΦ8Φ6Φ7	6/23/0850	Soil	6	X	X	X	X						130
	21SLBΦ8Φ6Φ7D	6/23/0850	Soil	5	X	X	X							130 20
	21SLBΦ4Φ4Φ5	6/23/0755	Soil	5	X	X								20
	21SLBΦ5Φ5Φ6	6/23/0815	Soil	5	X	X								10
	21SLBΦ9Φ7Φ8	6/23/0930	Soil	5	X	X								2
		/												
		/												
		/												
		/												
		/												
		/												
		/												

COMMENTS

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
	6/23/94 1600			06/24/94 0925	
Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)

ORDER NO WP-3035

Project Manager: Andrea J. Colby
ORDER DATE: 06/24/99

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

PHONE: 850/385-98[illegible]
FAX: 850/385-98[illegible]
DUE: 24 JUL
FAC.ID: CNC CHARLESTON

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

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

SAMPLED BY: R. FRANKLIN DELIVERED BY: FEDEX DISPOSE: AFTER 24 JUL

ITEM	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
1	WP3035-1	35SLB020304	23 JUN 1030	24 JUN	SL
	WP3035-2	35SLB020304D	23 JUN 1030		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	85.00	170.00
Solids-Total Residue (TS)	CLP/CIP SO	2	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	135.00	270.00
Total Combustible Organics	ASTM D2974	2	30.00	60.00
Wet Lab Subcontract		2	135.00	270.00
TOTALS		2	385.00	770.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATR
2	WP3035-4	35SLB010304	23 JUN 1015	24 JUN	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Wet Lab Subcontract		1	110.00	110.00
TOTALS		1	330.00	330.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
3	WP3035-5	21SLB080607	23 JUN 0850	24 JUN	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Total Combustible Organics	ASTM D2974	1	30.00	30.00
Wet Lab Subcontract		1	170.00	170.00
TOTALS		1	420.00	420.00

LABORATORY ORDER CONTINUED ON PAGE 2

0900055[illegible]

ORDER NO WP-3035

Project Manager: Andrea J. Colby
ORDER DATE: 06/24/99

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

PHONE: 850/385-9899
FAX: 850/385-9860
DUE: 24 JUL
FAC.ID: CNC CHARLESTON

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

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

SAMPLED BY: R. FRANKLIN DELIVERED BY: FEDEX DISPOSE: AFTER 24 JUL

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
4	WP3035-7	21SLB050506	23 JUN 0815	24 JUN	SL
	WP3035-8	21SLB090708	23 JUN 0930		

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	2	85.00	170.00
Solids-Total Residue (TS)	CLP/CIP SO	2	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	2	135.00	270.00
TOTALS		2	220.00	440.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
5	WP3035-9	21TL00201	23 JUN	24 JUN	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
6	WP3035-10	21SLB040405D	23 JUN 0755	23 JUN	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Wet Lab Subcontract		1	75.00	75.00

LABORATORY ORDER CONTINUED ON PAGE 3

9999956

ORDER NO WP-3035

Project Manager: Andrea J. Colby
ORDER DATE: 06/24/99

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

PHONE: 850/385-98[illegible]
FAX: 850/385-98[illegible]
DUE: 24 JUL
FAC.ID: CNC CHARLESTON

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

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

PROJECT: CTO #68

SAMPLED BY: R. FRANKLIN DELIVERED BY: FEDEX DISPOSE: AFTER 24 JUL

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
7	WP3035-3	21SLB080607D	23 JUN 0850	24 JUN	SL

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Wet Lab Subcontract		1	60.00	60.00
Total Combustible Organics	ASTM D2974	1	30.00	30.00
TOTALS		1	310.00	310.00

	LOG NUMBER	SAMPLE DESCRIPTION	SAMPLED DATE/TIME	RECEIVED	MATRIX
8	WP3035-6	21SLB040405	23 JUN 0755	23 JUN	

DETERMINATION	METHOD	QTY	PRICE	AMOUNT
Volatile Organics by 8260B	SW8260	1	85.00	85.00
Solids-Total Residue (TS)	CLP/CIP SO	1	0.00	0.00
Polynuclear Aromatic Hydrocarbons	EPA 8270	1	135.00	135.00
Wet Lab Subcontract		1	75.00	75.00
TOTALS		1	295.00	295.00

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

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

[illegible]

INVOICE: With Report

TOTAL ORDER AMOUNT $2,725.0[illegible]
This is NOT an Invoi[illegible]

AJC/BKR/WEST.AJC(dw)
06-28Please contact KATAHDIN ANALYTICAL SERVICES promptly if you have any questi

[illegible]

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-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

Summary of Report Notes

Report Note	Note Text
$	'$' flag denotes surrogate compound recovery is out of criteria. Re-extraction or re-analysis confirmed matrix interference.
J	'J' flag denotes an estimated value less than the Laboratory's Practical Quantitation Level.
O-13	Internal standard area(s) are out of criteria. Reanalysis confirmedmatrix interference.

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3035-1
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
35SLB020304	Solid	R. FRANKLIN	06/23/99	06/24/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	74.	wt %	1.0	0.10	CLP/CIP SOW	06/28/99	JF	1
Total Combustible Organics	7.7	wt %	1.0	0.1	ASTM D2974-8	06/28/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 06/25/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF25VSS4
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: WP3035-1
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: EPA 8270
Date Analyzed: 7/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB020304	SL	6/23/99	6/24/99	6/28/99	PMM	SW3550	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	J420	ug/Kg	1.4	460	330
FLUORENE	<460	ug/Kg	1.4	460	330
PHENANTHRENE	860	ug/Kg	1.4	460	330
ANTHRACENE	J280	ug/Kg	1.4	460	330
FLUORANTHENE	1400	ug/Kg	1.4	460	330
PYRENE	1300	ug/Kg	1.4	460	330
BENZO[A]ANTHRACENE	580	ug/Kg	1.4	460	330
CHRYSENE	640	ug/Kg	1.4	460	330
BENZO[B]FLUORANTHENE	590	ug/Kg	1.4	460	330
BENZO[K]FLUORANTHENE	<460	ug/Kg	1.4	460	330
BENZO[A]PYRENE	J370	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	53	%	1.4		
2-FLUOROBIPHENYL	57	%	1.4		
TERPHENYL-D14	76	%	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: WP3035-1
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 72
Method: SW8260
Date Analyzed: 6/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB020304	SL	6/23/99	6/24/99	6/24/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.2	6	5
TOLUENE	<6	ug/Kg	1.2	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.2	6	5
ETHYLBENZENE	<6	ug/Kg	1.2	6	5
NAPHTHALENE	<6	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	86	%	1.2		
1,2-DICHLOROETHANE-D4	90	%	1.2		
LUENE-D6	86	%	1.2		
P-BROMOFLUOROBENZENE	70	%	1.2		

Report Notes:

0000009

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3035-2
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
35SLB020304D	Solid	R. FRANKLIN	06/23/99	06/24/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	85.	wt %	1.0	0.10	CLP/CIP SOW	06/28/99	JF	1
Total Combustible Organics	6.8	wt %	1.0	0.1	ASTM D2974-8	06/28/99	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 '<' valu
(1) Sample Preparation on 06/25/99 by JF

08/19/99

LJO/baeajc(dw)/mrc/msm
PF25VSS4
CC: MS. LEE LECK
TETRA TECH NUS
FOSTER PLAZA 7
661 ANDERSEN DR.

560 Cumberland Ave.
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: WP3035-2
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 85
Method: EPA 8270
Date Analyzed: 7/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB020304D	SL	6/23/99	6/24/99	6/28/99	PMM	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<400	ug/Kg	1.2	400	330
2-METHYLNAPHTHALENE	<400	ug/Kg	1.2	400	330
ACENAPHTHYLENE	<400	ug/Kg	1.2	400	330
ACENAPHTHENE	J320	ug/Kg	1.2	400	330
FLUORENE	<400	ug/Kg	1.2	400	330
PHENANTHRENE	1800	ug/Kg	1.2	400	330
ANTHRACENE	480	ug/Kg	1.2	400	330
FLUORANTHENE	3700	ug/Kg	1.2	400	330
PYRENE	3700	ug/Kg	1.2	400	330
NZO[A]ANTHRACENE	1800	ug/Kg	1.2	400	330
CHRYSENE	1700	ug/Kg	1.2	400	330
BENZO[B]FLUORANTHENE	2000	ug/Kg	1.2	400	330
BENZO[K]FLUORANTHENE	780	ug/Kg	1.2	400	330
BENZO[A]PYRENE	1200	ug/Kg	1.2	400	330
INDENO[1,2,3-CD]PYRENE	J370	ug/Kg	1.2	400	330
DIBENZ[A,H]ANTHRACENE	<400	ug/Kg	1.2	400	330
BENZO[G,H,I]PERYLENE	460	ug/Kg	1.2	400	330
NITROBENZENE-D5	55	%	1.2		
2-FLUOROBIPHENYL	60	%	1.2		
TERPHENYL-D14	77	%	1.2		

Report Notes: J

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3035-2
SDG: WP3035
Report Date: 8/17/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 85
Method: SW8260
Date Analyzed: 6/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB020304D	SL	6/23/99	6/24/99	6/24/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.1	6	5
TOLUENE	<6	ug/Kg	1.1	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.1	6	5
ETHYLBENZENE	<6	ug/Kg	1.1	6	5
NAPHTHALENE	<6	ug/Kg	1.1	6	5
MTBE	<6	ug/Kg	1.1	6	5
TOTAL XYLENES	<6	ug/Kg	1.1	6	5
DIBROMOFLUOROMETHANE	89	%	1.1		
1,2-DICHLOROETHANE-D4	92	%	1.1		
TOLUENE-D8	77	%	1.1		
P-BROMOFLUOROBENZENE	$52	%	1.1		

Report Notes: $, O-13

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3035-2RE
SDG: WP3035
Report Date: 6/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 85
Method: SW8260
Date Analyzed: 6/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB020304D	SL	6/23/99	6/24/99	6/25/99	KMC	5030	KMC

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	96	%	1.3		
1,2-DICHLOROETHANE-D4	100	%	1.3		
TOLUENE-D8	64	%	1.3		
P-BROMOFLUOROBENZENE	$55	%	1.3		

Report Notes: $

0000013

Katahdin
ANALYTICAL SERVICES

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

Lab Number : WP-3035-4
Report Date: 08/19/99
PO No. : N7912-P99264
Project : CTO #68

WIC#: CNC CHARLESTON REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
35SLB010304	Solid	R. FRANKLIN	06/23/99	06/24/99

PARAMETER	RESULT	UNITS	DF	*PQL	METHOD	ANALYZED	BY	NOTES
Solids-Total Residue (TS)	93.	wt %	1.0	0.10	CLP/CIP SOW	06/28/99	JF	1

* PQL (Practical Quantitation Level) represents laboratory reporting limits and may not reflect sample-specific reporting limits. Sample-specific limits are indicated by results annotated with '<' values.
(1) Sample Preparation on 06/25/99 by JF

08/19/99

LJO/baeajc(dw)/msm
PF25TSS2
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: WP3035-4
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 93
Method: EPA 8270
Date Analyzed: 7/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB010304	SL	6/23/99	6/24/99	6/28/99	PMM	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<360	ug/Kg	1.1	360	330
2-METHYLNAPHTHALENE	<360	ug/Kg	1.1	360	330
ACENAPHTHYLENE	<360	ug/Kg	1.1	360	330
ACENAPHTHENE	<360	ug/Kg	1.1	360	330
FLUORENE	<360	ug/Kg	1.1	360	330
PHENANTHRENE	<360	ug/Kg	1.1	360	330
ANTHRACENE	<360	ug/Kg	1.1	360	330
FLUORANTHENE	<360	ug/Kg	1.1	360	330
PYRENE	<360	ug/Kg	1.1	360	330
BENZO[A]ANTHRACENE	<360	ug/Kg	1.1	360	330
CHRYSENE	<360	ug/Kg	1.1	360	330
BENZO[B]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[K]FLUORANTHENE	<360	ug/Kg	1.1	360	330
BENZO[A]PYRENE	<360	ug/Kg	1.1	360	330
INDENO[1,2,3-CD]PYRENE	<360	ug/Kg	1.1	360	330
DIBENZ[A,H]ANTHRACENE	<360	ug/Kg	1.1	360	330
BENZO[G,H,I]PERYLENE	<360	ug/Kg	1.1	360	330
NITROBENZENE-D5	40	%	1.1		
2-FLUOROBIPHENYL	44	%	1.1		
TERPHENYL-D14	85	%	1.1		

Report Notes:

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Proj. ID: CNC CHARLESTON

Lab Number: WP3035-4
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 93
Method: SW8260
Date Analyzed: 6/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
35SLB010304	SL	6/23/99	6/24/99	6/25/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<6	ug/Kg	1.2	6	5
TOLUENE	<6	ug/Kg	1.2	6	5
1,2-DIBROMOETHANE	<6	ug/Kg	1.2	6	5
ETHYLBENZENE	<6	ug/Kg	1.2	6	5
NAPHTHALENE	<6	ug/Kg	1.2	6	5
MTBE	<6	ug/Kg	1.2	6	5
TOTAL XYLENES	<6	ug/Kg	1.2	6	5
DIBROMOFLUOROMETHANE	101	%	1.2		
1,2-DICHLOROETHANE-D4	101	%	1.2		
TOLUENE-D8	101	%	1.2		
P-BROMOFLUOROBENZENE	93	%	1.2		

Report Notes:

Method Blank and Laboratory Control Sample Results

Client:	Tetra Tech NUS
Work Order:	WP3035

			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	25-Jun-99	28-Jun-99	wt %	<	0.10	<	0.10	0.10	wt %	90	90	100.0	60-140	
	25-Jun-99	28-Jun-99	wt %	<	0.10	<	0.10	0.10						
TCO - Total Combustible	25-Jun-99	28-Jun-99	wt %	<	0.10	<	0.10	0.10						

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

DATA QUALITY COMMENTS:

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

[redacted]

Duplicate and Matrix Spike/Matrix Spike Duplicate Results

Client:	Tetra Tech NUS
Work Order:	WP3035

DUPLICATE RESULTS *MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS*

Parameter	Sample No	Units	Sample Measurements Rep 1	Sample Measurements Rep 2	Mean Conc	RPD (%)	Acceptance Range for RPD (%)	Concentration or Quantity Units	Sample Only	Spike Added	Sample +Spike Dup 1	Sample +Spike Dup 2	Matrix Spike Recovery (%) Sample +Spike Dup 1	Sample +Spike Dup 2	Acceptance Range (%)	RPD (%)	Acceptance Range (%)
TS	WP3035-1	wt%	94.9	95.3	95.1	0.4	0-20	MS/MSD Not Applicable for this Parameter									
	WP3035-8	wt%	73.6	72.6	73.1	1.4	0-20	MS/MSD Not Applicable for this Parameter									
TCO	WP3035-1	wt%	7.7	7.9	7.8	2.4	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%.

Because of the large uncertainty (i.e., 33% or greater) associated with measurements made near the detection level, the acceptance range for relative percent difference for duplicate measurements at such low concentrations is 0-100%.

DATA QUALITY COMMENTS:

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

4B

SEMIVOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLK;062899

Lab Name: Katahdin Analytical Services SDG No.: WP3035

Lab File ID: Z1515

Lab Sample ID: SBLK;062899

Instrument ID: 5972-Z

Date Extracted: 6/29/99

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

Date Analyzed: 07/26/99

Matrix: (soil/water) SOIL

Time Analyzed: 12:27

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;062899	LCS;062899	Z1516	7/26/99	1:14:00 PM
35SLB020304	WP3035-1	Z1523	7/26/99	6:43:00 PM
35SLB020304D	WP3035-2	Z1524	7/26/99	7:29:00 PM
21SLB080607D	WP3035-3	Z1525	7/26/99	8:16:00 PM
35SLB010304	WP3035-4	Z1526	7/26/99	9:02:00 PM
21SLB080607	WP3035-5	Z1544	7/28/99	12:59:00 PM
21SLB040405	WP3035-6	Z1545	7/28/99	1:44:00 PM
21SLB050506	WP3035-7	Z1546	7/28/99	2:30:00 PM
21SLB050506MS	WP3035-7MS	Z1547	7/28/99	3:15:00 PM
21SLB050506MSD	WP3035-7MSD	Z1548	7/28/99	4:00:00 PM
21SLB090708	WP3035-8	Z1549	7/28/99	4:46:00 PM
21SLB040405	WP3035-6DL	Z1561	7/29/99	8:42:00 AM

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;062899
SDG: WP3035
Report Date: 8/17/99
PO No.: N7912-P99264
Project: CTO #68
% Solids: 100
Method: EPA 8270
Date Analyzed: 7/26/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
SBLK;062899	SL	-	-	6/29/99	PMM	SW3550	KRT

Compound	Result	Units	DF	Sample PQL	Method PQL
NAPHTHALENE	<330	ug/Kg	1.0	330	330
2-METHYLNAPHTHALENE	<330	ug/Kg	1.0	330	330
ACENAPHTHYLENE	<330	ug/Kg	1.0	330	330
ACENAPHTHENE	<330	ug/Kg	1.0	330	330
FLUORENE	<330	ug/Kg	1.0	330	330
PHENANTHRENE	<330	ug/Kg	1.0	330	330
ANTHRACENE	<330	ug/Kg	1.0	330	330
FLUORANTHENE	<330	ug/Kg	1.0	330	330
PYRENE	<330	ug/Kg	1.0	330	330
BENZO[A]ANTHRACENE	<330	ug/Kg	1.0	330	330
CHRYSENE	<330	ug/Kg	1.0	330	330
BENZO[B]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[K]FLUORANTHENE	<330	ug/Kg	1.0	330	330
BENZO[A]PYRENE	<330	ug/Kg	1.0	330	330
INDENO[1,2,3-CD]PYRENE	<330	ug/Kg	1.0	330	330
DIBENZ[A,H]ANTHRACENE	<330	ug/Kg	1.0	330	330
BENZO[G,H,I]PERYLENE	<330	ug/Kg	1.0	330	330
NITROBENZENE-D5	69	%	1.0		
2-FLUOROBIPHENYL	69	%	1.0		
TERPHENYL-D14	75	%	1.0		

Report Notes:

Katahdin Analytical Services
8270 LCS Recovery Sheet

Lab File: Z1516 **Sample ID: LCS;062899** **Date Run: 7/26/99**

Analyst: KRT **Time Injected 1:14:00 PM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
2-METHYLNAPHTHALENE	1667	1180	71	60-140
ACENAPHTHENE	1667	1180	71	60-140
ACENAPHTHYLENE	1667	1140	68	60-140
ANTHRACENE	1667	1380	83	60-140
BENZO[A]ANTHRACENE	1667	1310	79	60-140
BENZO[A]PYRENE	1667	1220	73	60-140
BENZO[B]FLUORANTHENE	1667	1260	76	60-140
BENZO[G,H,I]PERYLENE	1667	1080	65	60-140
BENZO[K]FLUORANTHENE	1667	1380	83	60-140
CHRYSENE	1667	1360	81	60-140
DIBENZ[A,H]ANTHRACENE	1667	1100	66	60-140
FLUORANTHENE	1667	1440	86	60-140
FLUORENE	1667	1240	74	60-140
INDENO[1,2,3-CD]PYRENE	1667	1080	65	60-140
NAPHTHALENE	1667	1140	68	60-140
PHENANTHRENE	1667	1310	78	60-140
PYRENE	1667	1240	74	60-140

*** Out of Limits** *1*

Katahdin Analytical Services

MS/MSD Report

Sample	File Name	Date Acquired	Time inj	Analyst	Matrix	Method
WP3035-7	Z1546	7/28/99	2:30:00 PM	KRT	SL	8270_99
WP3035-7MS	Z1547	7/28/99	3:15:00 PM	KRT	SL	8270_99
WP3035-7MSD	Z1548	7/28/99	4:00:00 PM	KRT	SL	8270_99

Compouud 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	1700	1700	1230	1190	72	70	60-140	3.3	50
ACENAPHTHENE	0	1700	1700	1010	1060	*59	62	60-140	4.8	50
ACENAPHTHYLENE	0	1700	1700	979	1010	*58	*59	60-140	3.1	50
ANTHRACENE	0	1700	1700	1250	1220	73	72	60-140	2.4	50
BENZO[A]ANTHRACENE	0	1700	1700	1140	1140	67	67	60-140	0	50
BENZO[A]PYRENE	0	1700	1700	1110	1080	65	64	60-140	2.7	50
BENZO[B]FLUORANTHENE	0	1700	1700	1060	1010	62	60	60-140	4.8	50
2-METHYLNAPHTHALENE	0	1700	1700	966	1020	*57	60	60-140	5.4	50
BENZO[K]FLUORANTHENE	0	1700	1700	1240	1230	73	72	60-140	0.81	50
PYRENE	0	1700	1700	1200	1170	71	69	60-140	2.5	50
DIBENZ[A,H]ANTHRACENE	0	1700	1700	1030	1050	60	62	60-140	1.9	50
FLUORANTHENE	0	1700	1700	1190	1180	70	70	60-140	0.84	50
FLUORENE	0	1700	1700	1070	1100	63	64	60-140	2.8	50
INDENO[1,2,3-CD]PYRENE	0	1700	1700	1050	1100	62	65	60-140	4.6	50
NAPHTHALENE	0	1700	1700	945	984	*56	*58	60-140	4.0	50
PHENANTHRENE	0	1700	1700	1190	1180	70	69	60-140	0.84	50
BENZO[G,H,I]PERYLENE	0	1700	1700	1120	1160	66	68	60-140	3.5	50

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

*** Out of Limits**

1

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKF24A

Lab Name: Katahdin Analytical Services SDG No.: WP3035

Lab File ID: F1086 Lab Sample ID: VBLKF24A

Date Analyzed: 06/24/99 Time Analyzed: 10:27

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

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
LCSF24A	LCSF24A	F1085	6/24/99	9:42:00 AM
35SLB020304	WP3035-1	F1097	6/24/99	5:26:00 PM
35SLB020304D	WP3035-2	F1098	6/24/99	6:03:00 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: VBLKF24A
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/24/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF24A	SL	-	-	6/24/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	111	%	1.0		
1,2-DICHLOROETHANE-D4	123	%	1.0		
TOLUENE-D8	98	%	1.0		
P-BROMOFLUOROBENZENE	104	%	1.0		

Report Notes:

Katahdin Analytical Services
8260 LCS Recovery Sheet

Lab File: F1085 **Sample ID: LCSF24A** **Date Run: 6/24/99**

Analyst: KMC **Time Injected 9:42:00 AM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	50.1	100	60-140
BENZENE	50	40.9	82	60-140
ETHYLBENZENE	50	48.3	96	60-140
MTBE	50	48.8	98	60-140
NAPHTHALENE	50	63.8	128	60-140
TOLUENE	50	43.3	86	60-140
TOTAL XYLENES	150	146	98	60-140

*** Out of Limits** *1*

4A

VOLATILE ORGANICS METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKF25A

Lab Name: Katahdin Analytical Services SDG No.: WP3035

Lab File ID: F1101 Lab Sample ID: VBLKF25A

Date Analyzed: 06/25/99 Time Analyzed: 9:33

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

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
LCSF25A	LCSF25A	F1100	6/25/99	8:42:00 AM
21SLB080607D	WP3035-3	F1102	6/25/99	10:33:00 AM
35SLB010304	WP3035-4	F1103	6/25/99	11:10:00 AM
21SLB080607	WP3035-5	F1104	6/25/99	11:46:00 AM
21SLB040405	WP3035-6	F1105	6/25/99	12:23:00 PM
21SLB050506	WP3035-7	F1106	6/25/99	1:00:00 PM
35SLB020304D	WP3035-2RE	F1107	6/25/99	1:36:00 PM
21SLB080607D	WP3035-3RE	F1113	6/25/99	5:15:00 PM
21SLB090708	WP3035-8	F1114	6/25/99	5:52:00 PM

KATAHDIN ANALYTICAL SERVICES
REPORT OF ANALYTICAL RESULTS

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

Lab Number: VBLKF25A
SDG: WP3035
Report Date: 8/17/99
PO No. : N7912-P99264
Project: CTO #68
% Solids: 100
Method: SW8260
Date Analyzed: 6/25/99

Sample Description	Matrix	Sampled Date	Rec'd Date	Ext. Date	Ext'd By	Ext. Method	Analyst
VBLKF25A	SL	-	-	6/25/99	KMC	5030	KMC

Compound	Result	Units	DF	Sample PQL	Method PQL
BENZENE	<5	ug/Kg	1.0	5	5
TOLUENE	<5	ug/Kg	1.0	5	5
1,2-DIBROMOETHANE	<5	ug/Kg	1.0	5	5
ETHYLBENZENE	<5	ug/Kg	1.0	5	5
NAPHTHALENE	<5	ug/Kg	1.0	5	5
MTBE	<5	ug/Kg	1.0	5	5
TOTAL XYLENES	<5	ug/Kg	1.0	5	5
DIBROMOFLUOROMETHANE	107	%	1.0		
1,2-DICHLOROETHANE-D4	112	%	1.0		
TOLUENE-D8	105	%	1.0		
4-BROMOFLUOROBENZENE	102	%	1.0		

Report Notes:

Katahdin Analytical Services

8260 LCS Recovery Sheet

Lab File: F1100 **Sample ID: LCSF25A** **Date Run: 6/25/99**

Analyst: KMC **Time Injected 8:42:00 AM** **Matrix: SL**

Compound Name	Spike Amt (ug/Kg)	Result (ug/Kg)	Rec (%)	Limits (%)
1,2-DIBROMOETHANE	50	51.8	104	60-140
BENZENE	50	45.9	92	60-140
ETHYLBENZENE	50	49.6	99	60-140
MTBE	50	49.1	98	60-140
NAPHTHALENE	50	52.8	106	60-140
TOLUENE	50	45.6	91	60-140
TOTAL XYLENES	150	149	99	60-140

*** Out of Limits** *1*

CASE NARRATIVE
for
Katahdin Analytical
Westbrook, ME
Former Charleston Naval Complex Site
SDG #96802

July 20, 1999

Laboratory Identification:

General Engineering Laboratories, Inc. (GEL)

Mailing Address:

P.O. Box 30712
Charleston, SC 29417

Express Mail Delivery and Shipping Address:

2040 Savage Rd
Charleston, SC 29414

Telephone Number:

(843) 556-8171

Summary:

Sample receipt

The samples from the former Charleston Naval Complex site arrived at General Engineering Laboratories, Inc., Charleston, SC on June 23, 1999, for environmental analyses. All sample containers arrived without any visible signs of tampering or breakage. The samples were delivered with chain of custody documentation and signatures.

The following samples were received by the laboratory:

Laboratory Identification	Sample Description
9906802-01	35SLB020304
9906802-02	35SLB020304D
9906802-03	21SLB080607
9906802-04	21SLB080607D
9906802-05	21SLB040405

Case Narrative

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

Internal Chain of Custody:

Custody was maintained for all samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, 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:saic9906802%

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

Printed on recycled paper.

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9906802/L

Page 1 of 1

Client Name/Facility Name: Kiawah

Collected by/Company: Tetra Tech NUS

	SAMPLE ID	DATE 1994	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	355L13Φ2Φ3Φ4	6/23	1030				X	2		X														X		4101.1
02	355L13Φ2Φ3Φ4D	6/23	1030				X	2		X														X		.1
03	215L13Φ5Φ6Φ7	6/23	0550				X	1		X																.2
04	215L13Φ5Φ6Φ7D	6/23	0550				X	1		X																.2
05	215L13Φ4Φ4Φ5	6/23	0755				X	1																	X	.3
06	215L13Φ4Φ4Φ5D	6/23	0755				X	1																	X	.3

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

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

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
M. Tuke	6/23/94	1138					
Relinquished by:	**Date:**	**Time:**	**Received by lab by:**	**Date:**	**Time:**	**Remarks:**	
				6/23/94	1138		

White = sample collector Yellow = file Pink = with report

6

FEDERAL SAMPLE RECEIPT REVIEW

Client KAIA Received by [illegible] Date 6/23/99

GEL COOLER___ GEL POLY COOLER___ CLIENT COOLER___ OTHER___

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

REVIEW [signature] DATE 6/23/99 SA - SEALS ATTACHED NSA - NO SEALS ATTACHED

Case Narrative for
KATA
SDG# 96802

TOTAL ORGANIC CARBON

Analytical Batch Number: 152320

Analytical Method: SW846 9060 Modified

Laboratory Number	Sample Description
9906802-01	35SLB020304
9906802-02	35SLB020304D
9906802-03	21SLB080607
9906802-04	21SLB080607D
QC624116	Blank
QC624117	Duplicate of 9906802-01
QC624118	Post Spike of 9906802-01
QC624119	Laboratory Control Sample

Sample Preparation:

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

Instrument Calibration:

The instrument used was a Dohrmann DC-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.

9906802-01

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

Laboratory Control Samples:

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

Additional Comments:

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

TOTAL PETROLEUM HYDROCARBONS

Analytical Batch Number: 152814

Analytical Method: SW846 9071A

Laboratory Number	Sample Description
9906802-01	35SLB020304
9906802-02	35SLB020304D
9906802-05	21SLB040405
9906802-06	21SLB040405D
QC625958	Blank
QC625959	Laboratory Control Sample
QC625960	Matrix Spike of 9906759-04
QC625961	Duplicate of 9906759-04

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.

9906759-04

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

Laboratory Control Samples:

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

Sample Duplicates:

All sample duplicate results were within the required acceptance limits.

Dilutions:

None of the samples were diluted.

Non Conformance Reports:

There were no Nonconformance Reports associated with this batch.

The preceding narratives have been reviewed by: _____ Date: 07/19/19

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

cc: KATA00199 Report Date: July 19, 1999

Sample ID	: 35SLB020304
Lab ID	: 9906802-01
Matrix	: Soil
Date Collected	: 06/23/99
Date Received	: 06/23/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		410	139	278	mg/kg	1.0	AAT	07/13/99	1300	152814	1
Evaporative Loss @ 105 C		28.0	1.00	1.00	wt%	1.0	TSM2	07/19/99	0920	153640	2
Total Organic Carbon		13600	0.110	0.500	mg/l	1.0	LIB	07/02/99	1328	152320	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: July 19, 1999

Sample ID	: 35SLB020304D
Lab ID	: 9906802-02
Matrix	: Soil
Date Collected	: 06/23/99
Date Received	: 06/23/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		286	130	260	mg/kg	1.0	AAT	07/13/99	1300	152814	1
Evaporative Loss @ 105 C		23.0	1.00	1.00	wt%	1.0	TSM2	07/19/99	0920	153640	2
Total Organic Carbon		13200	0.110	0.500	mg/l	1.0	LIB	07/02/99	1418	152320	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: 9906802% Report Date: July 19, 1999

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
General Chemistry													
QC625958	BLANK	152814											
Total Rec. Petro. Hydrocarbons						145	mg/kg				AAT	07/13/99	1300
QC625959	LCS	152814											
Total Rec. Petro. Hydrocarbons			10800			10900	mg/kg		101	(70.0 - 116.)			
QC629172	BLANK	153640											
Evaporative Loss @ 105 C						0.00	wt%				TSM	07/19/99	0920
QC629171	9906802-04DUP	153640											
Evaporative Loss @ 105 C				43.0		39.0	wt%	9.76					
QC624116	BLANK	152320											
Total Organic Carbon						3.35	mg/l				LIB	07/02/99	1307
QC624117	9906802-01DUP	152320											
Total Organic Carbon				13600		14000	mg/l	2.39			LIB	07/02/99	1341
QC624119	LCS	152320											
Total Organic Carbon			3750			4160	mg/l		111	(85.0 - 115.)	LIB	07/02/99	1314
QC624118	9906802-01PS	152320											
Total Organic Carbon			9410	13600		24200	mg/l		112	(77.0 - 127.)	LIB	07/02/99	1402

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

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

S. W. COLE ENGINEERING, INC.

R E P O R T O F G R A D A T I O N
ASTM C-117, C-136

Project No. 99008
Date 06/30/1999

Project MISCELLANEOUS

Client KATAHDIN ANALYTICAL

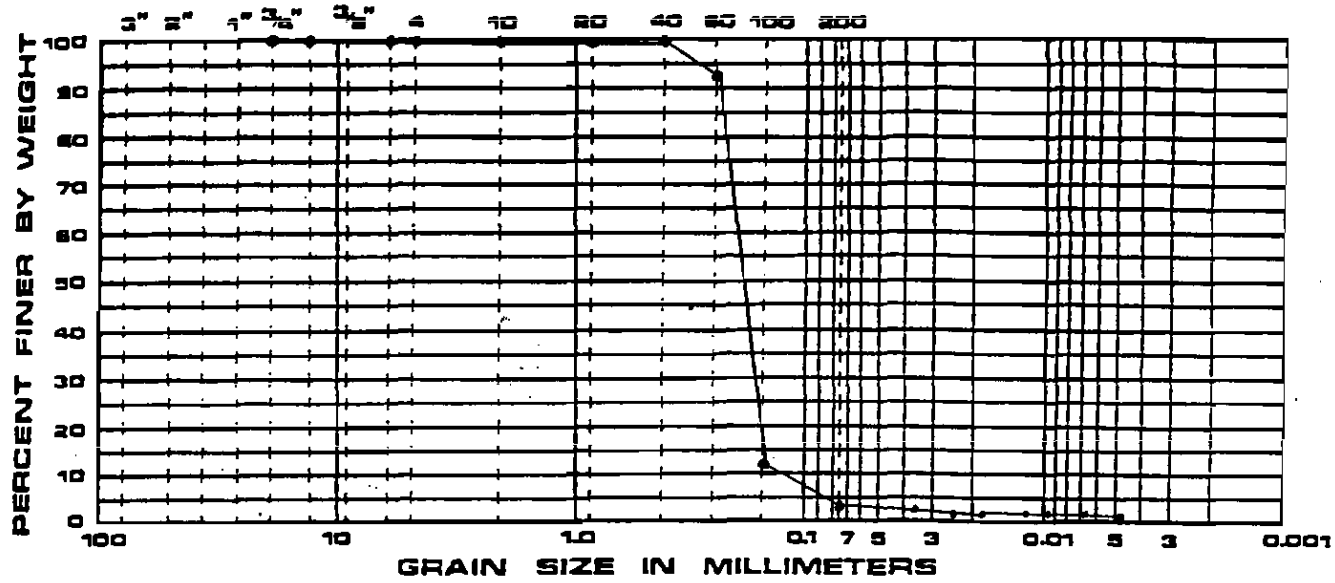
Sample No. 30, SILTY SAND, WP3035-4

Sieve Size	Percent Passing	PROJECT Specifications %
3/4 "	100.0	
1/2 "	99.9	
1/4 "	99.9	
# 4	99.9	
# 10	99.8	
# 20	99.6	
# 40	99.5	
# 60	93.3	
# 100	12.5	
# 200	3.1	

JOB NO: 24-008

GRAIN SIZE ANALYSIS

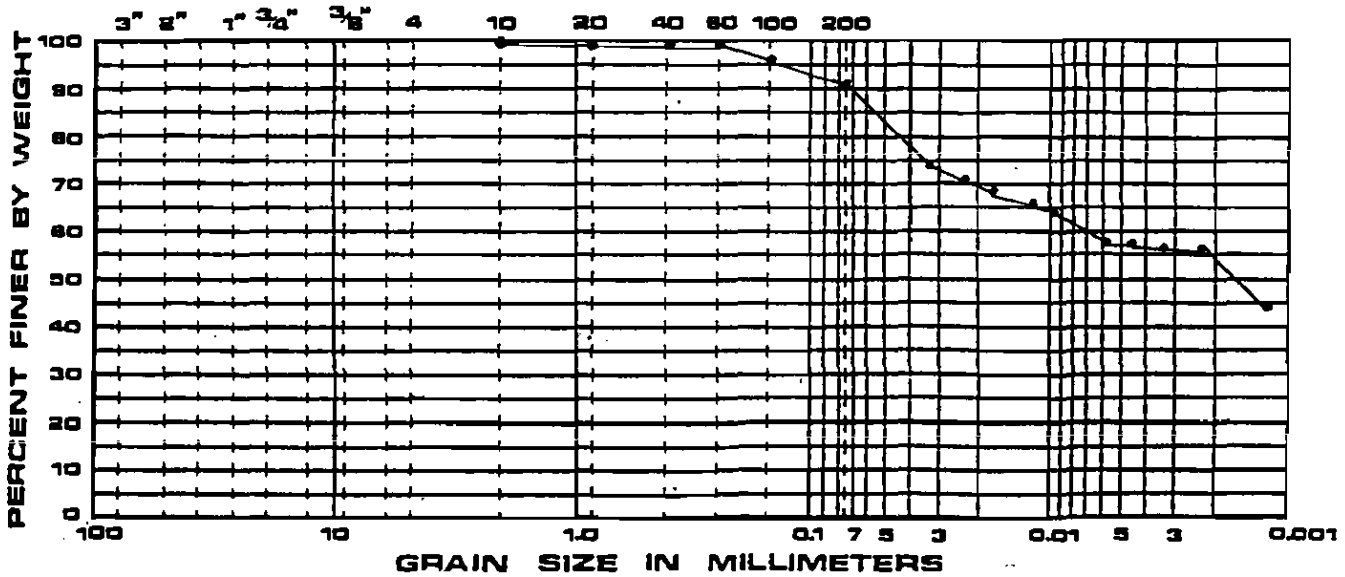
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WB1035-4	S9D				

GRAIN SIZE ANALYSIS

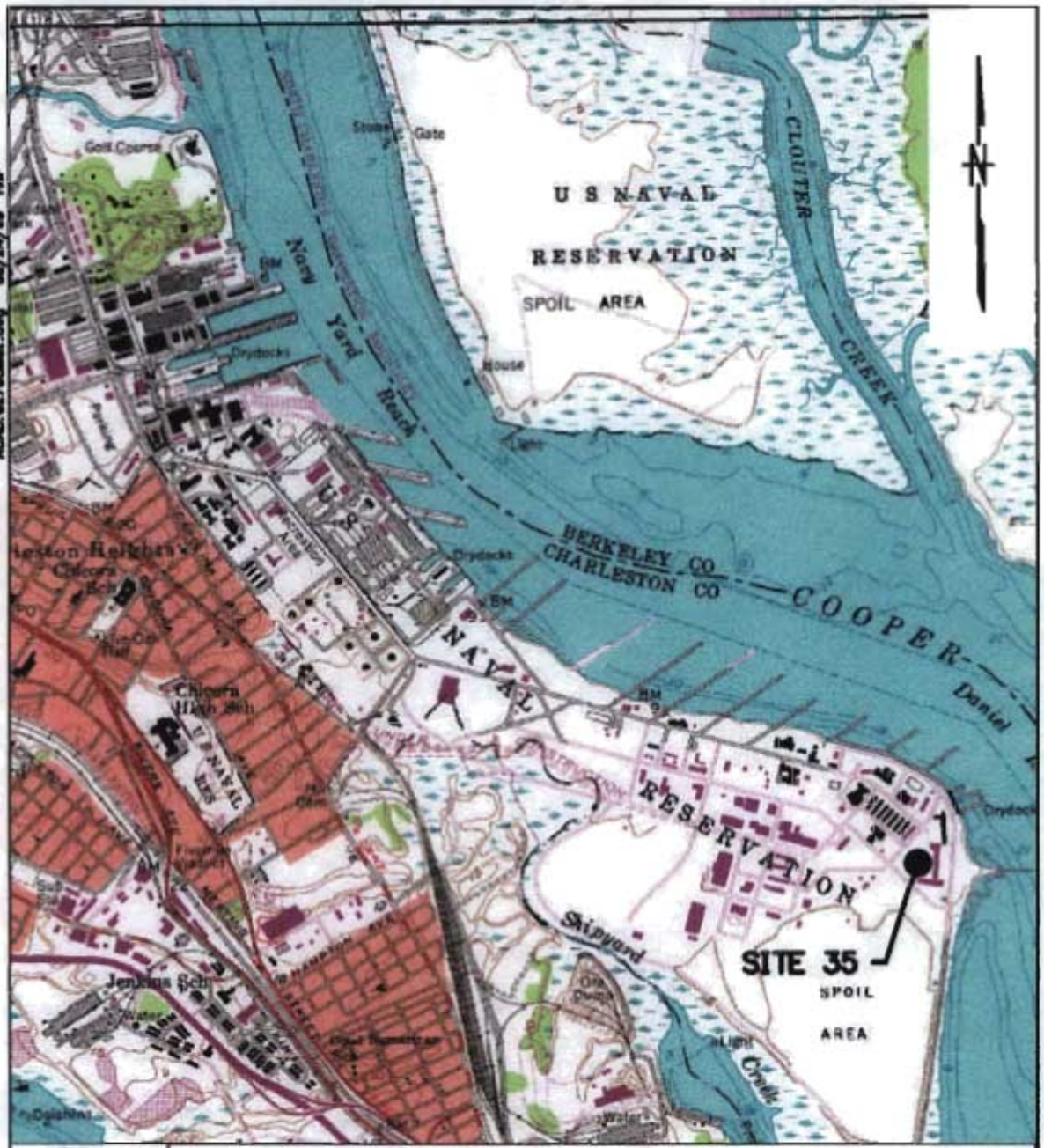
COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COA.	MEDIUM	FINE	



PLOT	SOURCE	SAMP.	DEPTH	CLASSIFICATION		W
•	WB1035-5	S3I				

APPENDIX C

TOPOGRAPHIC MAP WITH SITE LOCATION



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

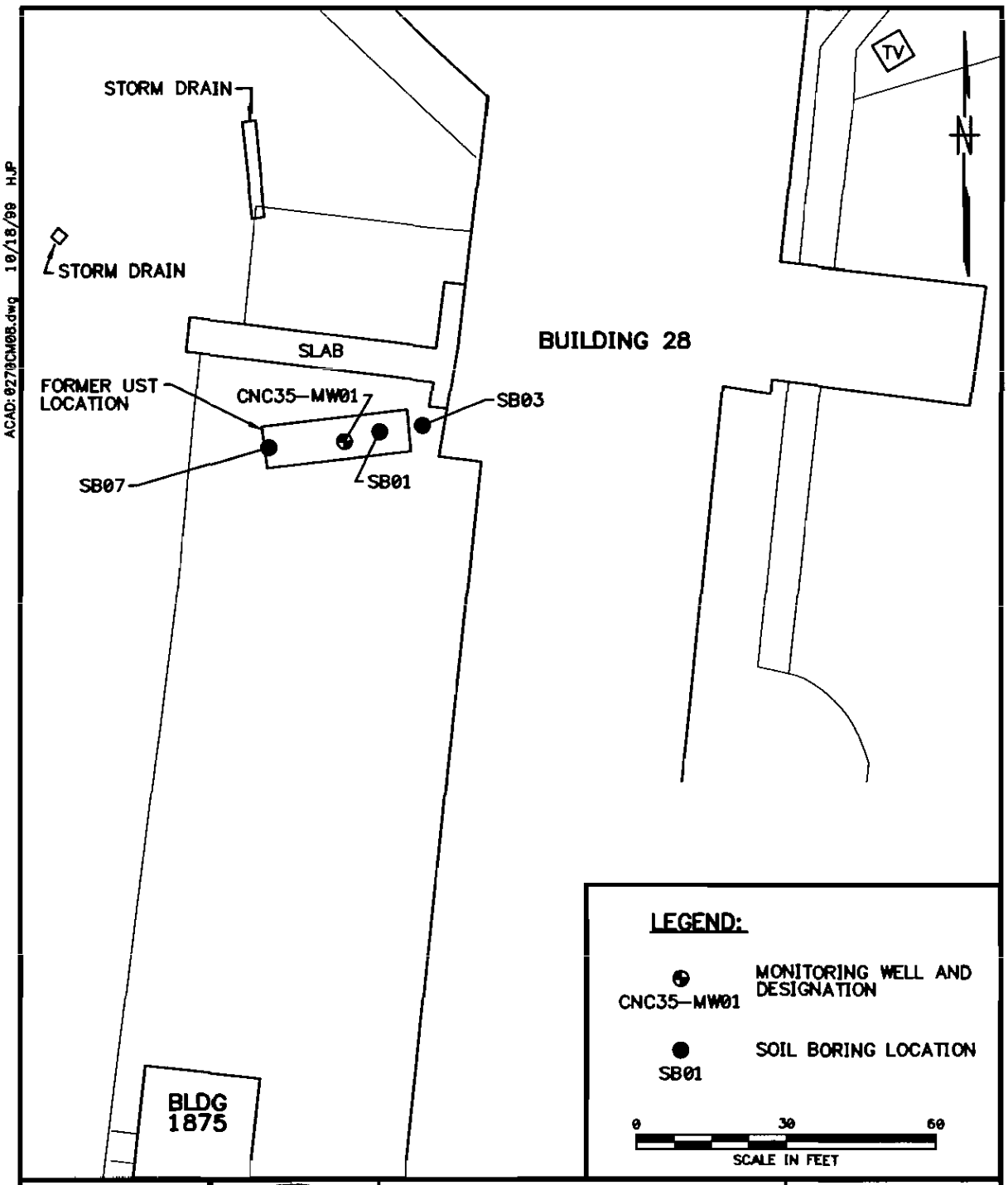
0 2000 4000
SCALE IN FEET

DRAWN BY HJP DATE 8/20/99	SITE LOCATION MAP SITE 35, BUILDING NS28-A, ZONE I CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SC	CONTRACT NO. N0270
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE AS NOTED		DRAWING NO. FIGURE 1 REV. 0

FORM CADD NO. SSEV_JV2M6 - REV 6 - 1/28/98

APPENDIX D

SITE BASE MAPS

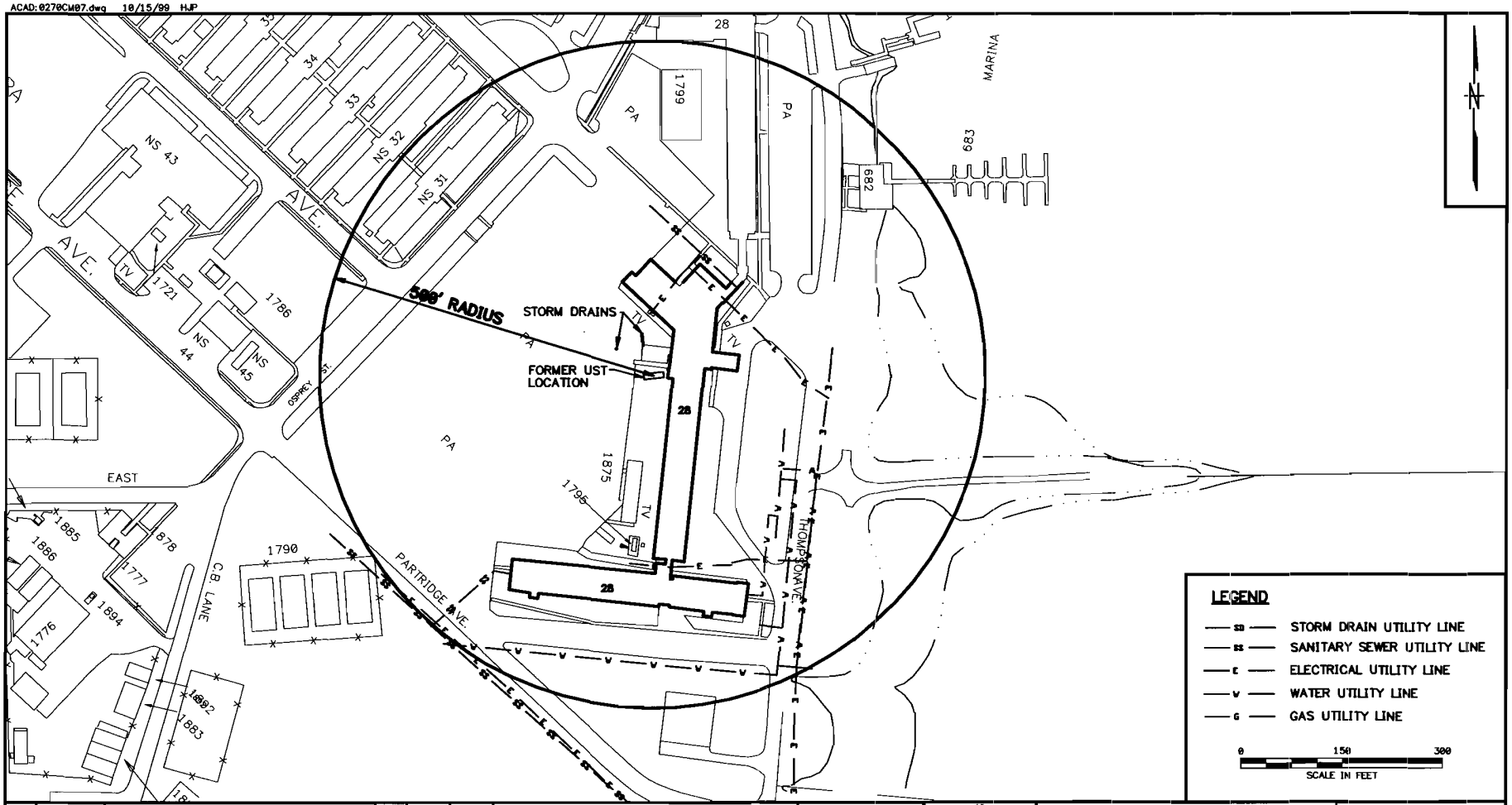


ACAD: 0278CM08.dwg 10/18/99 HJP

DRAWN BY MF DATE 9/10/99		SITE MAP SITE 35, BUILDING 28 ZONE I, CHARLESTON NAVAL COMPLEX CHARLESTON NAVAL COMPLEX NORTH CHARLESTON, SOUTH CAROLINA	CONTRACT NO. 0124
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:0270CM07.dwg 10/15/99 HJP



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJP 8/24/99 DATE
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE VICINITY MAP
SITE 35, BUILDING NS 28
ZONE 1, CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA

CONTRACT NO. 0270
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2
REV. 0

FORM CADD MEL SDIV_BH.DWG - REV 0 - 1/20/98