Analytical Resources, Incorporated
Analytical Chemists and Consultants

September 30, 2011

John Long
AMEC/Geomatrix
600 University Suite 600
Seattle, WA 98101

AMEC E&E
Received
OCT 3 2011
SEATTLE ORG. 5008

RE: Client Project: Former Rhone Poulenc- 8769 Shoreline Investigation
ARI Job Numbers: TL89, TL90

Dear John:

Please find enclosed the final data package for samples for the project referenced above. ARI received four water samples and one trip blank on September 12, 2011.

Please refer to the case narrative for details on the analyses of these samples.

An electronic copy of this package will be kept on file at ARI. If you have questions or problems, please feel free to contact me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

Enclosures

cc: file TL89, TL90

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: TL89, TL90

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 7289
Turn-around Requested: STANDARD
Page: 1 of 1
ARI Client Company: AMEC
Phone: (206) 342-1773
Date: 9/12/11
Ice Present? X
Client Contact: NIK BACHER / JOHN LONG
No. of Coolers: 1
Cooler Temps: 2.8
Client Project Name: FRP 2011 SHORELINE INVESTIGATION
Client Project #: 8769
Samplers: DEVIN O'REILLY

Sample ID	Date	Time	Matrix	No. Containers	TOTAL METALS 6010B	MERCURY 7470A	pH 150.1	VOCs 8260C	CATIONS CHEMISTRY 200.8	ANIONS-CHEMISTRY 300.0	SULFIDE SM 4500	AMMONIA 350.1	ALKALINITY SM 2320	SPECIFIC GRAVITY ASTM D-2198
FRP-091211-001	9/12/11	1000	H_2O	5	X	X	X	X						
FRP-091211-002	↓	1110	↓	5	X	X	X	X						
FRP-091211-003		1415		11	X	X	X	X	X	X	X	X	X	X
FRP-091211-004		1600		5	X	X	X	X						
TRIP BLANK	↓		↓	2				X						

Comments/Special Instructions
METALS INCLUDE: Al, As, Ca, Cr, Cu, Pb, Ni, Se, Th, V, Zn
AND VOAS NOT PRESERVED
HEADSPACE ON -002 VOAS

Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Printed Name: DEVIN O'REILLY	Printed Name: C. OREIRO	Printed Name:	Printed Name:
Company: AMEC	Company: ARI	Company:	Company:
Date & Time: 9/12/11 1640	Date & Time: 9/12/11 1640	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Amec

Project Name: FRP 2011 Shore line investig

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: TL89

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? ..... YES NO

Were custody papers properly filled out (ink, signed, etc.) ..... YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 2.8

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877952

Cooler Accepted by: TB Date: 9-12-11 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:

Was sufficient ice used (if appropriate)? ..... NA YES NO

Were all bottles sealed in individual plastic bags? ..... YES NO

Did all bottles arrive in good condition (unbroken)? ..... YES NO

Were all bottle labels complete and legible? ..... YES NO

Did the number of containers listed on COC match with the number of containers received? ..... YES NO

Did all bottle labels and tags agree with custody papers? ..... YES NO

Were all bottles used correct for the requested analyses? ..... YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? ..... NA YES NO

Was sufficient amount of sample sent in each bottle? ..... YES NO

Date VOC Trip Blank was made at ARI..... NA 9-12-11

Was Sample Split by ARI : NA YES Date/Time: Equipment: Split by:

Samples Logged by: TS Date: 9-12-11 Time: 1700

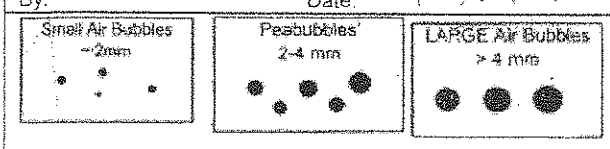
*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

FRP_091211-002 2"lg"

By: TS Date: 9-12-11



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 09/12/11

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TL89**

PC: Kelly
VTSR: 09/12/11

Inquiry Number: NONE
Analysis Requested: 09/13/11
Contact: Long, John
Client: AMEC Geomatrix
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: 8769
Project: FRP 2011 Shoreline Investigation
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-19804 **TL89A**	FRP-091211-001						TOT Pass															
11-19805 **TL89B**	FRP-091211-002						TOT															
11-19806 **TL89C**	FRP-091211-004						TOT															
11-19807 **TL89D**	FRP-091211-003			Pass			TOT						Fail					S2	>2	6N NaOH 7059C	2ml	9-12-11
11-19809 **TL89F**	FRP-091211-003						TOT						Fail									

Checked By TS Date 9-12-11

TL89 00005

PRESERVATION VERIFICATION 09/12/11

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TL89**

PC: Kelly
VTSR: 09/12/11

Inquiry Number: NONE
Analysis Requested: 09/13/11
Contact: Long, John
Client: AMEC Geomatrix
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: 8769
Project: FRP 2011 Shoreline Investigation
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-19804 **TL89A**	FRP-091211-001						TOT Fail															
11-19805 **TL89B**	FRP-091211-002						TOT Fail															
11-19806 **TL89C**	FRP-091211-004						TOT Pass															
11-19807 **TL89D**	FRP-091211-003			Pass			TOT Pass						Fail									
11-19809 **TL89F**	FRP-091211-003						TOT Fail															

ALL Samples Present (RECEIVED)
checked BY DM 9/13/11

TL89:000088

Checked By TS Date 9-12-11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Amec

Project Name: FRP 2011 Shore line investig

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ~~TL99~~ TL90

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) ~~4.3~~ 2.8 ____ ____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: JS Date: 9-12-11 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	9-12-11	

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 9-12-11 Time: 1700

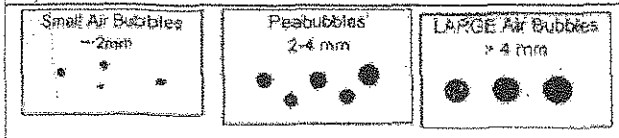
*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

FRP_091211-002 2"Lg"

By: JS Date: 9-12-11



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 09/12/11

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TL90**

Inquiry Number: NONE
Analysis Requested: 09/13/11
Contact: Long, John
Client: AMEC Geomatrix
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Kelly
VTSR: 09/12/11

Project #: 8769
Project: FRP 2011 Shoreline Investigation
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-19810 **TL90A**	FRP-091211-001						TOT Fail															
11-19811 **TL90B**	FRP-091211-002						TOT Fail															
11-19812 **TL90C**	FRP-091211-004						TOT Pass															
11-19813 **TL90D**	FRP-091211-003						TOT Pass															

All Samples Preserved (RECEIVED)
Checked BY DM 9/13/11

Checked By TS Date 9-12-11

TL90 : 000000

AMEC EBS
Received
JAN 24 2012
SEATTLE ORG

Subject: FW: FRP Metals Changes
From: "Neirby, Crystal" <Crystal.Neirby@amec.com>
Date: 12/28/2011 10:33 AM
To: Eric Branson <eric@arilabs.com>
CC: Kelly Bottem <kellyb@arilabs.com>, "Long, John" <John.Long@amec.com>

Hi Eric,
First, can you send me the log-ins for the porewater samples? I want to make sure everything got logged in correctly.

Second, I had emailed the below to Kelly and she said it could be done and asked me to forward the email along with the information to you. We would like iron and manganese added to the following five samples:
SDG TL89 – FRP-091211-003
SDG TM07 – FRP-091311-002 and FRP-091311-003
SDG TL76 – FRP-090911-002
SDG TM24 – FRP-091411-002

Hopefully there are very few affected pages. It is ok with me if you send revised pages to add into the existing packages. I will also need revised EDDs or just one EDD with the iron and manganese results for the above samples.

Thanks!
Crystal

Crystal Neirby | Project Scientist
AMEC | 600 University St, Suite 600 | Seattle, WA 98101
206.838.8469 (direct) | 781.724.1019 (cell) | **crystal.neirby@amec.com**

From: Neirby, Crystal
Sent: Wednesday, December 28, 2011 10:06 AM
To: 'Kelly Bottem'
Subject: FRP Metals Changes

Hi Kelly,
Are you in this week at all? I might need to change the metals list for five samples (collected in August and September). Possibly just adding iron and manganese. Is this feasible??

Let me know and we can discuss details.

Crystal

Crystal Neirby | Project Scientist
AMEC | 600 University St, Suite 600 | Seattle, WA 98101
206.838.8469 (direct) | 781.724.1019 (cell) | **crystal.neirby@amec.com**

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TI 80: 00008Ar

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TL89, TL90

Case Narrative

AMEC/Geomatrix
Client Project: Former Rhone Poulenc- 8769 Shoreline Investigation
ARI Job Numbers: TL89, TL90
September 30, 2011

Sample Receipt:

Please find enclosed the original Chain-of-Custody (COC) record, sample receipt documentation, and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted four water samples and one trip blank in good condition on 9/12/11. Please see the enclosed Cooler Receipt Form for further details.

Volatiles by 8260C

The samples were analyzed between 9/13/11 and 9/15/11- within the method recommended holding time.

Initial calibration (s): All analytes of interest were within method acceptance criteria.

Continuing calibration (s): The 9/13/11 VOCs CCAL is out of control for low for Acrolein. All associated samples that contain these analytes have been flagged with a "Q" qualifier.

LCS/LCSD/RPDs: All percent recoveries and RPDs were within compliance.

Surrogates: All surrogate recoveries were within control limits.

Method Blank (s): The 9/13/2011 method blank contained 1,2,3-Trichlorobenzene at a value less than the reporting limit. The 9/15/2011 method blank contained Hexachlorobutadiene, 1,2,4-Trichlorobenzene, Naphthalene and 1,2,3-Trichlorobenzene at values less than the reporting limits. All associated samples that contain this analyte have been flagged with a "B" qualifier.

Samples: There were no anomalies associated with these samples.

Metals Analysis (6010, 200.8 and 7000 series)

The samples were digested on 9/14/11 and 9/15/11 - within the method recommended holding time and analyzed on 9/19/11, 9/20/11 and 9/21/11.

Initial calibration (s): All analytes of interest were within method acceptance criteria.

Continuing calibration (s): All analytes of interest were within method acceptance criteria.

Internal Standards: Internal standard areas were in control.

LCS/LCSD/RPDs: The percent recoveries and RPDs are in control.

Method Blank (s): The method blank was free of contamination.

Samples: There were no anomalies associated with these samples.

Matrix spike/ Sample duplicate/ RPD(s): The percent recovery for selenium was outside of control limits low. A post spike was analyzed with acceptable results.

General Chemistry

The samples were analyzed between 9/12/11 and 9/20/11 within method recommended holding times.

Method Blank (s): The method blanks were free of contamination.

Initial calibration (s): All analytes of interest were within method acceptance criteria.

LCS/LCSD/RPDs: The percent recoveries are in control.

Sample duplicate/ RPD(s): The RPDs were in control with the exception of the sulfide analysis. The sulfide replicate RPD was outside of control limits high following the initial analysis. The replicate was re-analyzed with similar results. No further corrective action was taken.

SRM(s): The percent recoveries were in control.

Matrix spike (s): The percent recoveries were within control limits. The duplicate RPD for sulfide was outside the control limit for sample **FRP-091211-003**.

Geotechnical

A laboratory specific narrative follows.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: AMEC Geomatrix	**ARI Project No.:** TL89
Client Project: FRP 2011 Shoreline Investigation	**Client Project No.:** 8769

Case Narrative

1. One sample was submitted for density of a liquid determination using a hydrometer on September 13, 2011, and was in good condition.
2. The density is dependent on the analysis temperature. All reported values have been corrected to 20°C.
3. The data is provided in a summary table.
4. There were no noted anomalies in this project.

Released by: _____ Date: Sept. 24, 2011
Technician

Reviewed by: _____ Date: Sept. 24, 2011
Technician

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TL89
Client: Amec Geomatrix Inc.
Project Event: 8769
Project Name: FRP 2011 Shoreline Investigation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	FRP-091211-001	TL89A	11-19804	Water	09/12/11 10:00	09/12/11 16:40
2.	FRP-091211-002	TL89B	11-19805	Water	09/12/11 11:10	09/12/11 16:40
3.	FRP-091211-004	TL89C	11-19806	Water	09/12/11 16:00	09/12/11 16:40
4.	FRP-091211-003	TL89D	11-19807	Water	09/12/11 14:15	09/12/11 16:40
5.	Trip Blanks	TL89E	11-19808	Water	09/12/11	09/12/11 16:40
6.	FRP-091211-003	TL89F	11-19809	Water	09/12/11 14:15	09/12/11 16:40
7.	FRP-091211-003	TL89G	11-19855	Water	09/12/11 14:15	09/12/11 16:40

Printed 09/13/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TL90
Client: AMEC Geomatrix
Project Event: 8769
Project Name: FRP 2011 Shoreline Investigation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	FRP-091211-001	TL90A	11-19810	Water	09/12/11 10:00	09/12/11 16:40
2.	FRP-091211-002	TL90B	11-19811	Water	09/12/11 11:10	09/12/11 16:40
3.	FRP-091211-004	TL90C	11-19812	Water	09/12/11 16:00	09/12/11 16:40
4.	FRP-091211-003	TL90D	11-19813	Water	09/12/11 14:15	09/12/11 16:40

Printed 09/12/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U Indicates that the target analyte was not detected at the reported concentration

* Duplicate RPD is not within established control limits

B Reported value is less than the CRDL but ≥ the Reporting Limit

N Matrix Spike recovery not within established control limits

NA Not Applicable, analyte not spiked

H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U Indicates that the target analyte was not detected at the reported concentration

* Flagged value is not within established control limits

B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J Estimated concentration when the value is less than ARI's established reporting limits

D The spiked compound was not detected due to sample extract dilution

E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TL89 : 00015

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TL89 : 00016

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

TL89:00017

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1889-3	ABN	100/150	MEOH	03/01/12
B	1874-2	SIM PNA	15/75	ACETONE	10/05/11
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1887-1	LOW PCB	0.2	ACETONE	12/16/11
E	1771-3	HERB	62.5	MEOH	10/06/11
F	1791-3	PCP	12.5	ACETONE	12/09/11
G	1863-2	d8-DIOXANE	100	MEOH	11/19/11
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1868-3	LOW S. PNA	1.5	ACETONE	10/05/11
J	1787-2	TBT-PORE	0.125	MECL2	11/27/11
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1862-3	TBT	2.5	MECL2	11/27/11
M	1888-4	EPH	1500	MECL2	04/04/12
N	1876-3	PCB	2	ACETONE	12/16/11
O	1879-2	TPH	450	MECL2	02/04/12
P	1868-1	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

TL89:99018

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1888-2	PCB 1660	20	ACETONE	08/30/12
2#	NA	BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1779-1	EPH	1500	MECL2	11/11/11
6	1791-5	PCP	12.5/125	ACETONE	12/10/11
7	1888-1	ABN	100	MEOH	08/30/12
8	1785-3	TBT	2.5	MECL2	11/27/11
9	1786-3	PORE TBT	.125/.25	MECL2	11/27/11
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1879-3	1,4-DIOXANE	100	MEOH	02/05/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#	NA	DIPHENYL	100	MEOH	NA
26	1869-1	OP-PEST	25	MEOH	10/01/11
27	NA	STEROLS	200	MEOH	NA
28#	1807-1	ADD. PEST	2	ACETONE	08/31/11
29#	NA	DECANES	100	MEOH	NA

TL89 : 00019

LCS SOLUTIONS

30	NA	EDB/DBCP	0.2	MEOH	NA
31	1835-2	TERPINEOL	100	MEOH	09/02/11
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33	NA	RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36	NA	ALKYL PNA B	10	MEOH	NA
37	1773-1	CAR/PERY	100	ACETONE	10/14/11
38	1872-2	ABN ACID	200-450	MEOH	12/29/11
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1757-4	FULL RESIN	250	ACETONE	08/14/11
51	1772-1	DDTS	0.01	ACETONE	04/24/11
52	NA	1232 PCB	20	ACETONE	NA
53	1852-2	DALAPON	50	MEOH	12/03/11
54	1753-1	T-CHLORDANE	10	ACETONE	07/21/11
55	1753-2	TOXAPHENE	50	ACETONE	07/21/11
56	1874-1	ABN BASE	50-200	MEOH	01/05/12
	#=PROJECT SPECIFIC SOLUTION				
	*=REVERIFIED SOLUTION				

TL89:00029

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Volatile Organic Compounds (VOA) EPA SW-846 Methods 8260C 10 mL Purge Volume [1,6]

Effective: 8/30/2010

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI Control Limits	ARI ME Control Limits[2]
LCS Spike Recovery [5]		
Dichlorodifluoromethane	69 - 122	60 - 131
Chloromethane	76 - **120**	69 - 123
Vinyl Chloride	**80 - 120**	75 - 123
Bromomethane	71 - 120	63 - 129
Chloroethane	**80 - 120**	75 - 124
1,1,2-Trichloro-1,2,2-trifluoroethane	**80** - 121	76 - 128
Acrolein	69 - 126	60 - 136
Acetone	71 - **120**	64 - **120**
1,1-Dichloroethene	**80 - 120**	79 - 122
Bromoethane	**80 - 120**	80 - 121
Methyl Iodide	76 - 120	69 - 127
Methylene Chloride	**80 - 120**	77 - **120**
Acrylonitrile	79 - **120**	74 - **120**
Methyl tert-Butyl Ether	**80 - 120**	77 - 121
Carbon Disulfide	**80 - 120**	78 - 121
trans-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Vinyl Acetate	**80 - 120**	76 - **120**
1,1-Dichloroethane	**80 - 120**	**80 - 120**
2-Butanone	**80 - 120**	76 - **120**
2,2-Dichloropropane	**80 - 120**	77 - 120
cis-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Chloroform	**80 - 120**	**80 - 120**
Bromodichloromethane	**80 - 120**	**80 - 120**
1,1,1-Trichloroethane	**80 - 120**	**80 - 120**
1,1-Dichloropropene	**80 - 120**	**80 - 120**
Carbon Tetrachloride	**80 - 120**	**80** - 123
1,2-Dichloroethane	**80 - 120**	**80 - 120**
Benzene	**80 - 120**	**80 - 120**
Trichloroethene	**80 - 120**	**80** - 120
1,2-Dichloropropane	**80 - 120**	**80 - 120**
Bromochloromethane	**80 - 120**	**80 - 120**
Dibromomethane	**80 - 120**	**80 - 120**
2-Chloroethylvinylether	**80 - 120**	75 - **120**
4-Methyl-2-Pentanone	**80 - 120**	78 - **120**
cis-1,3-Dichloropropene	**80 - 120**	**80 - 120**
Toluene	**80 - 120**	**80 - 120**
trans-1,3-Dichloropropene	**80 - 120**	**80 - 120**

TLBS : 000621

2-Hexanone	80 - 120	75 - 120
1,1,2-Trichloroethane	80 - 120	80 - 120
1,3-Dichloropropane	80 - 120	80 - 120
Tetrachloroethene	80 - 120	80 - 120
Dibromochloromethane	80 - 120	80 - 120
Ethylene Dibromide	80 - 120	80 - 120
Chlorobenzene	80 - 120	80 - 120
Ethylbenzene	80 - 120	80 - 121
1,1,2,2-Tetrachloroethane	80 - 120	78 - 120
m,p-Xylene	80 - 120	80 - 120
o-Xylene	80 - 120	80 - 120
Styrene	80 - 120	80 - 122
Trichlorofluoromethane	80 - 120	78 123
Isopropylbenzene	80 - 120	79 - 121
Bromoform	80 - 120	79 - 120
1,1,1,2-Tetrachloroethane	80 - 120	80 - 120
1,2,3-Trichloropropane	80 - 120	77 - 120
trans-1,4-Dichloro-2-butene	74 - 122	66 - 130
n-Propylbenzene	80 - 120	80 - 120
Bromobenzene	80 - 120	78 - 120
1,3,5-Trimethylbenzene	80 - 120	80 - 120
2-Chlorotoluene	80 - 120	80 - 120
4-Chlorotoluene	80 - 120	80 - 120
tert-Butylbenzene	80 - 120	80 - 121
1,2,4-Trimethylbenzene	80 - 120	80 - 120
sec-Butylbenzene	80 - 120	80 - 121
4-Isopropyltoluene	80 - 120	80 - 123
1,3-Dichlorobenzene	80 - 120	80 - 120
1,4-Dichlorobenzene	80 - 120	80 - 120
n-Butylbenzene	80 - 120	80 - 122
1,2-Dichlorobenzene	80 - 120	80 - 120
1,2-Dibromo-3-chloropropane	76 - 120	71 - 120
1,2,4-Trichlorobenzene	77 - 120	71 - 120
Hexachloro-1,3-butadiene	77 - 120	70 - 127
Naphthalene	76 - 120	70 - 120
1,2,3-Trichlorobenzene	79 - 120	74 - 120
MB/LCS Surrogate Recovery		
Dibromofluoromethane	80 - 120	(3)
d4-1,2-Dichloroethane	80 - 120	(3)
d8-Toluene	80 - 120	(3)
4-Bromofluorobenzene	80 - 120	(3)
d4-1,2-Dichlorobenzene	80 - 120	(3)
Sample Surrogate Recovery		
Dibromofluoromethane	80 - 120	(3)

TL85 : 00022

d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
D4-1,2-Dichlorobenzene	**80 - 120**	(3)

(1) Control Limits calculated using all data generated 7/1/09 through 6/30/10.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard[4] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances require corrective action.
(3) Marginal Exceedances not allowed for surrogate standards. A corrective action is required for each surrogate recovery outside of the control limit range.
(4) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(5) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(6) Highlighted control limits (**bold font**) are adjusted from the calculated values as follows:

a) ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.

b) Control limits for analyzes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.

TL89 : 00023

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Summary of Laboratory Control Limits Metals Analyses (All Methods & Sample Matrices)

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Element	Matrix Spike Recovery	LCS Recovery	Replicate RPD
Aluminum	75 - 125	80 - 120	≤ 20%
Antimony	75 - 125	80 - 120	≤ 20%
Arsenic	75 - 125	80 - 120	≤ 20%
Barium	75 - 125	80 - 120	≤ 20%
Beryllium	75 - 125	80 - 120	≤ 20%
Boron	75 - 125	80 - 120	≤ 20%
Cadmium	75 - 125	80 - 120	≤ 20%
Calcium	75 - 125	80 - 120	≤ 20%
Chromium	75 - 125	80 - 120	≤ 20%
Cobalt	75 - 125	80 - 120	≤ 20%
Copper	75 - 125	80 - 120	≤ 20%
Iron	75 - 125	80 - 120	≤ 20%
Lead	75 - 125	80 - 120	≤ 20%
Magnesium	75 - 125	80 - 120	≤ 20%
Manganese	75 - 125	80 - 120	≤ 20%
Mercury	75 - 125	80 - 120	≤ 20%
Nickel	75 - 125	80 - 120	≤ 20%
Potassium	75 - 125	80 - 120	≤ 20%
Selenium	75 - 125	80 - 120	≤ 20%
Silica	75 - 125	80 - 120	≤ 20%
Silver	75 - 125	80 - 120	≤ 20%
Sodium	75 - 125	80 - 120	≤ 20%
Strontium	75 - 125	80 - 120	≤ 20%
Thallium	75 - 125	80 - 120	≤ 20%
Vanadium	75 - 125	80 - 120	≤ 20%
Zinc	75 - 125	80 - 120	≤ 20%

TL89 : 00024

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

TL89:000625

Volatile Analysis
Report and Summary QC Forms

ARI Job ID: TL89, TL90

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-001**
 SAMPLE

Lab Sample ID: TL89A
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/15/11 11:22

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	**Carbon Disulfide**	**0.09**	**0.2**	**0.2 J**
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	**Toluene**	**0.06**	**0.2**	**0.2 J**
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-001**
 SAMPLE

Lab Sample ID: TL89A
LIMS ID: 11-19804
Matrix: Water
Date Analyzed: 09/15/11 11:22

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	**4-Isopropyltoluene**	**0.08**	**0.2**	**0.2 J**
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	95.9%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-002**
 SAMPLE

Lab Sample ID: TL89B
LIMS ID: 11-19805
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/15/11 11:49

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	**Acetone**	**0.72**	**5.0**	**~~1.5 J~~** 5.0U
75-15-0	**Carbon Disulfide**	**0.09**	**0.2**	**0.3**
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	**Chloroform**	**0.08**	**0.2**	**~~0.2 J~~** 0.2U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	**Benzene**	**0.06**	**0.2**	**0.1 J**
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U R
108-88-3	**Toluene**	**0.06**	**0.2**	**10**
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	**m,p-Xylene**	**0.14**	**0.4**	**0.2 J**
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	**1,4-Dichlorobenzene**	**0.06**	**0.2**	**0.1 J**
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-002**
 SAMPLE

Lab Sample ID: TL89B
LIMS ID: 11-19805
Matrix: Water
Date Analyzed: 09/15/11 11:49

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	**4-Isopropyltoluene**	**0.08**	**0.2**	**0.9**
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	97.5%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-004**
 SAMPLE

Lab Sample ID: TL89C
LIMS ID: 11-19806
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/15/11 12:16

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	**Methylene Chloride**	**0.39**	**0.5**	**0.5**
67-64-1	**Acetone**	**0.72**	**5.0**	**9.4**
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	**Chloroform**	**0.08**	**0.2**	**1.2**
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U R
108-88-3	**Toluene**	**0.06**	**0.2**	**0.2 J**
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	**Styrene**	**0.07**	**0.2**	**0.1 J**
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-004**
 SAMPLE

Lab Sample ID: TL89C
LIMS ID: 11-19806
Matrix: Water
Date Analyzed: 09/15/11 12:16

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	94.6%
Bromofluorobenzene	99.2%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-003**
 SAMPLE

Lab Sample ID: TL89D
LIMS ID: 11-19807
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/15/11 12:42

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	**Carbon Disulfide**	**0.09**	**0.2**	**0.4**
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U R
108-88-3	**Toluene**	**0.06**	**0.2**	**~~0.1 J~~ 0.2 U**
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	**1,4-Dichlorobenzene**	**0.06**	**0.2**	**0.1 J**
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FRP-091211-003**
 SAMPLE

Lab Sample ID: TL89D
LIMS ID: 11-19807
Matrix: Water
Date Analyzed: 09/15/11 12:42

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	94.3%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blanks**
 SAMPLE

Lab Sample ID: TL89E
LIMS ID: 11-19808
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/13/11 15:08

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 UR
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 UJ
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: Trip Blanks**
 SAMPLE

Lab Sample ID: TL89E
LIMS ID: 11-19808
Matrix: Water
Date Analyzed: 09/13/11 15:08

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	1,2,3-Trichlorobenzene	0.09	0.5	< 0.5 U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	95.2%
Bromofluorobenzene	99.3%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-091511	Method Blank	10	104%	99.3%	99.5%	101%	0
LCS-091511	Lab Control	10	102%	97.6%	101%	99.8%	0
LCSD-091511	Lab Control Dup	10	100%	95.4%	101%	99.6%	0
TL89A	FRP-091211-001	10	107%	95.9%	100%	100%	0
TL89B	FRP-091211-002	10	109%	97.5%	102%	104%	0
TL89C	FRP-091211-004	10	107%	94.6%	99.2%	102%	0
TL89D	FRP-091211-003	10	105%	94.3%	100%	102%	0
MB-091311	Method Blank	10	100%	96.6%	100%	102%	0
LCS-091311	Lab Control	10	102%	96.0%	99.6%	100%	0
LCSD-091311	Lab Control Dup	10	97.5%	97.3%	100%	100%	0
TL89E	Trip Blanks	10	100%	95.2%	99.3%	103%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-19804 to 11-19808

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-091311**

LAB CONTROL SAMPLE

Lab Sample ID: LCS-091311
LIMS ID: 11-19808
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/PKC
LCSD: NT3/PKC
Date Analyzed LCS: 09/13/11 10:46
LCSD: 09/13/11 11:34

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.5	10.0	95.0%	9.4	10.0	94.0%	1.1%
Bromomethane	8.0	10.0	80.0%	8.8	10.0	88.0%	9.5%
Vinyl Chloride	9.2	10.0	92.0%	9.2	10.0	92.0%	0.0%
Chloroethane	8.4	10.0	84.0%	8.8	10.0	88.0%	4.7%
Methylene Chloride	9.3	10.0	93.0%	9.5	10.0	95.0%	2.1%
Acetone	48.2	50.0	96.4%	46.4	50.0	92.8%	3.8%
Carbon Disulfide	9.2	10.0	92.0%	9.2	10.0	92.0%	0.0%
1,1-Dichloroethene	9.2	10.0	92.0%	9.2	10.0	92.0%	0.0%
1,1-Dichloroethane	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
trans-1,2-Dichloroethene	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
cis-1,2-Dichloroethene	9.2	10.0	92.0%	9.4	10.0	94.0%	2.2%
Chloroform	9.8	10.0	98.0%	9.5	10.0	95.0%	3.1%
1,2-Dichloroethane	9.4	10.0	94.0%	9.2	10.0	92.0%	2.2%
2-Butanone	50.2	50.0	100%	46.3	50.0	92.6%	8.1%
1,1,1-Trichloroethane	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
Carbon Tetrachloride	9.4	10.0	94.0%	9.5	10.0	95.0%	1.1%
Vinyl Acetate	10.3	10.0	103%	9.7	10.0	97.0%	6.0%
Bromodichloromethane	9.5	10.0	95.0%	9.0	10.0	90.0%	5.4%
1,2-Dichloropropane	9.7	10.0	97.0%	9.2	10.0	92.0%	5.3%
cis-1,3-Dichloropropene	9.8	10.0	98.0%	9.2	10.0	92.0%	6.3%
Trichloroethene	9.5	10.0	95.0%	9.5	10.0	95.0%	0.0%
Dibromochloromethane	10.0	10.0	100%	9.4	10.0	94.0%	6.2%
1,1,2-Trichloroethane	9.5	10.0	95.0%	9.4	10.0	94.0%	1.1%
Benzene	9.8	10.0	98.0%	9.7	10.0	97.0%	1.0%
trans-1,3-Dichloropropene	9.3	10.0	93.0%	9.1	10.0	91.0%	2.2%
2-Chloroethylvinylether	9.2	10.0	92.0%	9.2	10.0	92.0%	0.0%
Bromoform	9.5	10.0	95.0%	9.2	10.0	92.0%	3.2%
4-Methyl-2-Pentanone (MIBK)	49.0	50.0	98.0%	45.4	50.0	90.8%	7.6%
2-Hexanone	52.9	50.0	106%	48.2	50.0	96.4%	9.3%
Tetrachloroethene	10.0	10.0	100%	9.6	10.0	96.0%	4.1%
1,1,2,2-Tetrachloroethane	9.6	10.0	96.0%	9.2	10.0	92.0%	4.3%
Toluene	9.6	10.0	96.0%	9.4	10.0	94.0%	2.1%
Chlorobenzene	10.0	10.0	100%	9.7	10.0	97.0%	3.0%
Ethylbenzene	10.1	10.0	101%	10.0	10.0	100%	1.0%
Styrene	10.1	10.0	101%	10.0	10.0	100%	1.0%
Trichlorofluoromethane	9.2	10.0	92.0%	9.4	10.0	94.0%	2.2%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.4	10.0	94.0%	9.2	10.0	92.0%	2.2%
m,p-Xylene	20.1	20.0	100%	20.1	20.0	100%	0.0%
o-Xylene	10.0	10.0	100%	9.9	10.0	99.0%	1.0%
1,2-Dichlorobenzene	9.8	10.0	98.0%	9.5	10.0	95.0%	3.1%
1,3-Dichlorobenzene	9.9	10.0	99.0%	9.7	10.0	97.0%	2.0%
1,4-Dichlorobenzene	9.6	10.0	96.0%	9.6	10.0	96.0%	0.0%
Acrolein	42.8 Q	50.0	85.6%	40.0 Q	50.0	80.0%	6.8%
Methyl Iodide	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%
Bromoethane	10.4	10.0	104%	9.9	10.0	99.0%	4.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-091311**

LAB CONTROL SAMPLE

Lab Sample ID: LCS-091311
LIMS ID: 11-19808
Matrix: Water

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	9.6	10.0	96.0%	9.2	10.0	92.0%	4.3%
1,1-Dichloropropene	9.7	10.0	97.0%	9.6	10.0	96.0%	1.0%
Dibromomethane	9.7	10.0	97.0%	9.2	10.0	92.0%	5.3%
1,1,1,2-Tetrachloroethane	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
1,2-Dibromo-3-chloropropane	10.0	10.0	100%	8.7	10.0	87.0%	13.9%
1,2,3-Trichloropropane	9.9	10.0	99.0%	9.2	10.0	92.0%	7.3%
trans-1,4-Dichloro-2-butene	8.9	10.0	89.0%	8.8	10.0	88.0%	1.1%
1,3,5-Trimethylbenzene	10.2	10.0	102%	10.1	10.0	101%	1.0%
1,2,4-Trimethylbenzene	10.2	10.0	102%	10.0	10.0	100%	2.0%
Hexachlorobutadiene	10.1	10.0	101%	9.9	10.0	99.0%	2.0%
Ethylene Dibromide	9.9	10.0	99.0%	9.0	10.0	90.0%	9.5%
Bromochloromethane	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
2,2-Dichloropropane	9.3	10.0	93.0%	9.2	10.0	92.0%	1.1%
1,3-Dichloropropane	10.2	10.0	102%	9.7	10.0	97.0%	5.0%
Isopropylbenzene	10.0	10.0	100%	10.1	10.0	101%	1.0%
n-Propylbenzene	10.1	10.0	101%	10.2	10.0	102%	1.0%
Bromobenzene	9.9	10.0	99.0%	9.6	10.0	96.0%	3.1%
2-Chlorotoluene	9.8	10.0	98.0%	9.8	10.0	98.0%	0.0%
4-Chlorotoluene	10.1	10.0	101%	9.8	10.0	98.0%	3.0%
tert-Butylbenzene	10.1	10.0	101%	10.1	10.0	101%	0.0%
sec-Butylbenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
4-Isopropyltoluene	10.0	10.0	100%	10.1	10.0	101%	1.0%
n-Butylbenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
1,2,4-Trichlorobenzene	10.2	10.0	102%	9.7	10.0	97.0%	5.0%
Naphthalene	10.2	10.0	102%	9.7	10.0	97.0%	5.0%
1,2,3-Trichlorobenzene	10.4 B	10.0	104%	9.7 B	10.0	97.0%	7.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	102%	97.5%
d8-Toluene	96.0%	97.3%
Bromofluorobenzene	99.6%	100%
d4-1,2-Dichlorobenzene	100%	100%

TL89:00039

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-091511**

LAB CONTROL SAMPLE

Lab Sample ID: LCS-091511
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/PKC
LCSD: NT3/PKC
Date Analyzed LCS: 09/15/11 09:54
LCSD: 09/15/11 10:21

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.6	10.0	96.0%	9.6	10.0	96.0%	0.0%
Bromomethane	8.2	10.0	82.0%	8.1	10.0	81.0%	1.2%
Vinyl Chloride	8.8	10.0	88.0%	9.3	10.0	93.0%	5.5%
Chloroethane	8.5	10.0	85.0%	8.5	10.0	85.0%	0.0%
Methylene Chloride	9.4	10.0	94.0%	9.7	10.0	97.0%	3.1%
Acetone	49.0	50.0	98.0%	47.7	50.0	95.4%	2.7%
Carbon Disulfide	9.1	10.0	91.0%	9.3	10.0	93.0%	2.2%
1,1-Dichloroethene	9.0	10.0	90.0%	9.3	10.0	93.0%	3.3%
1,1-Dichloroethane	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
trans-1,2-Dichloroethene	9.2	10.0	92.0%	9.3	10.0	93.0%	1.1%
cis-1,2-Dichloroethene	9.3	10.0	93.0%	9.8	10.0	98.0%	5.2%
Chloroform	9.7	10.0	97.0%	10.0	10.0	100%	3.0%
1,2-Dichloroethane	9.9	10.0	99.0%	9.9	10.0	99.0%	0.0%
2-Butanone	49.2	50.0	98.4%	52.4	50.0	105%	6.3%
1,1,1-Trichloroethane	9.3	10.0	93.0%	9.5	10.0	95.0%	2.1%
Carbon Tetrachloride	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
Vinyl Acetate	10.1	10.0	101%	10.2	10.0	102%	1.0%
Bromodichloromethane	9.9	10.0	99.0%	10.1	10.0	101%	2.0%
1,2-Dichloropropane	9.8	10.0	98.0%	9.8	10.0	98.0%	0.0%
cis-1,3-Dichloropropene	10.1	10.0	101%	10.0	10.0	100%	1.0%
Trichloroethene	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
Dibromochloromethane	10.4	10.0	104%	10.1	10.0	101%	2.9%
1,1,2-Trichloroethane	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
Benzene	10.1	10.0	101%	10.0	10.0	100%	1.0%
trans-1,3-Dichloropropene	10.1	10.0	101%	9.9	10.0	99.0%	2.0%
2-Chloroethylvinylether	9.7	10.0	97.0%	9.4	10.0	94.0%	3.1%
Bromoform	10.5	10.0	105%	10.4	10.0	104%	1.0%
4-Methyl-2-Pentanone (MIBK)	50.6	50.0	101%	50.6	50.0	101%	0.0%
2-Hexanone	52.0	50.0	104%	52.3	50.0	105%	0.6%
Tetrachloroethene	9.5	10.0	95.0%	9.6	10.0	96.0%	1.0%
1,1,2,2-Tetrachloroethane	9.8	10.0	98.0%	9.9	10.0	99.0%	1.0%
Toluene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
Chlorobenzene	9.8	10.0	98.0%	9.9	10.0	99.0%	1.0%
Ethylbenzene	10.0	10.0	100%	10.0	10.0	100%	0.0%
Styrene	9.8	10.0	98.0%	10.1	10.0	101%	3.0%
Trichlorofluoromethane	9.1	10.0	91.0%	9.4	10.0	94.0%	3.2%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.1	10.0	91.0%	9.5	10.0	95.0%	4.3%
m,p-Xylene	20.0	20.0	100%	20.3	20.0	102%	1.5%
o-Xylene	9.8	10.0	98.0%	10.0	10.0	100%	2.0%
1,2-Dichlorobenzene	9.9	10.0	99.0%	9.8	10.0	98.0%	1.0%
1,3-Dichlorobenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
1,4-Dichlorobenzene	9.8	10.0	98.0%	9.8	10.0	98.0%	0.0%
Acrolein	49.7	50.0	99.4%	47.6	50.0	95.2%	4.3%
Methyl Iodide	9.2	10.0	92.0%	9.6	10.0	96.0%	4.3%
Bromoethane	9.9	10.0	99.0%	10.2	10.0	102%	3.0%

TL89:00046

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-091511**

LAB CONTROL SAMPLE

Lab Sample ID: LCS-091511
LIMS ID: 11-19804
Matrix: Water

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	10.3	10.0	103%	9.9	10.0	99.0%	4.0%
1,1-Dichloropropene	10.1	10.0	101%	10.1	10.0	101%	0.0%
Dibromomethane	10.0	10.0	100%	9.8	10.0	98.0%	2.0%
1,1,1,2-Tetrachloroethane	10.0	10.0	100%	10.0	10.0	100%	0.0%
1,2-Dibromo-3-chloropropane	9.6	10.0	96.0%	9.9	10.0	99.0%	3.1%
1,2,3-Trichloropropane	10.4	10.0	104%	9.6	10.0	96.0%	8.0%
trans-1,4-Dichloro-2-butene	10.0	10.0	100%	9.4	10.0	94.0%	6.2%
1,3,5-Trimethylbenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
1,2,4-Trimethylbenzene	10.2	10.0	102%	10.1	10.0	101%	1.0%
Hexachlorobutadiene	11.5 B	10.0	115%	10.0 B	10.0	100%	14.0%
Ethylene Dibromide	9.7	10.0	97.0%	10.0	10.0	100%	3.0%
Bromochloromethane	9.8	10.0	98.0%	10.2	10.0	102%	4.0%
2,2-Dichloropropane	9.3	10.0	93.0%	9.5	10.0	95.0%	2.1%
1,3-Dichloropropane	10.1	10.0	101%	10.4	10.0	104%	2.9%
Isopropylbenzene	10.0	10.0	100%	10.2	10.0	102%	2.0%
n-Propylbenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
Bromobenzene	10.0	10.0	100%	9.9	10.0	99.0%	1.0%
2-Chlorotoluene	9.9	10.0	99.0%	9.9	10.0	99.0%	0.0%
4-Chlorotoluene	10.1	10.0	101%	10.1	10.0	101%	0.0%
tert-Butylbenzene	10.1	10.0	101%	10.1	10.0	101%	0.0%
sec-Butylbenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
4-Isopropyltoluene	10.1	10.0	101%	10.1	10.0	101%	0.0%
n-Butylbenzene	10.5	10.0	105%	10.3	10.0	103%	1.9%
1,2,4-Trichlorobenzene	10.7 B	10.0	107%	10.3 B	10.0	103%	3.8%
Naphthalene	10.4 B	10.0	104%	10.4 B	10.0	104%	0.0%
1,2,3-Trichlorobenzene	10.9 B	10.0	109%	10.2 B	10.0	102%	6.6%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	102%	100%
d8-Toluene	97.6%	95.4%
Bromofluorobenzene	101%	101%
d4-1,2-Dichlorobenzene	99.8%	99.6%

TL89:00041

4A
VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB0913

Lab Name: ANALYTICAL RESOURCES INC

Client: AMEC GEOMATRIX

ARI Job No: TL89

Project: FRP 2011 SHORELINE INVE

Lab File ID: MB0913A

Lab Sample ID: MB0913

Date Analyzed: 09/13/11

Time Analyzed: 1243

Instrument ID: NT3

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS0913	LCS0913	LCS0913	1046
02	LCS0913	LCS0913	LCS0913A	1134
03	TRIP BLANKS	TL89E	TL89E	1508
04				
05				
06				
07				
08				
09				
10				
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30				

COMMENTS:

FORM IV VOA

OLM3.2M

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-091311**

METHOD BLANK

Lab Sample ID: MB-091311
LIMS ID: 11-19808
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/13/11 12:43

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-091311**

METHOD BLANK

Lab Sample ID: MB-091311
LIMS ID: 11-19808
Matrix: Water
Date Analyzed: 09/13/11 12:43

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	Hexachlorobutadiene	0.11	0.5	< 0.5 U
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	1,2,4-Trichlorobenzene	0.10	0.5	< 0.5 U
91-20-3	Naphthalene	0.07	0.5	< 0.5 U
87-61-6	**1,2,3-Trichlorobenzene**	**0.09**	**0.5**	**0.1 J**

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	96.6%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

4A
VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB0915

Lab Name: ANALYTICAL RESOURCES INC

Client: AMEC GEOMATRIX

ARI Job No: TL89

Project: FRP 2011 SHORELINE INVE

Lab File ID: MB0915

Lab Sample ID: MB0915

Date Analyzed: 09/15/11

Time Analyzed: 1048

Instrument ID: NT3

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS0915	LCS0915	LCS0915	0954
02	LCS0915	LCS0915	LCS0915A	1021
03	FRP-091211-0	TL89A	TL89A	1122
04	FRP-091211-0	TL89B	TL89B	1149
05	FRP-091211-0	TL89C	TL89C	1216
06	FRP-091211-0	TL89D	TL89D	1242
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COMMENTS:

FORM IV VOA

OLM3.2M

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-091511**
 METHOD BLANK

Lab Sample ID: MB-091511
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/16/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/PKC
Date Analyzed: 09/15/11 10:48

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	MDL	RL	Result
74-87-3	Chloromethane	0.10	0.5	< 0.5 U
74-83-9	Bromomethane	0.04	1.0	< 1.0 U
75-01-4	Vinyl Chloride	0.08	0.2	< 0.2 U
75-00-3	Chloroethane	0.15	0.2	< 0.2 U
75-09-2	Methylene Chloride	0.39	0.5	< 0.5 U
67-64-1	Acetone	0.72	5.0	< 5.0 U
75-15-0	Carbon Disulfide	0.09	0.2	< 0.2 U
75-35-4	1,1-Dichloroethene	0.09	0.2	< 0.2 U
75-34-3	1,1-Dichloroethane	0.05	0.2	< 0.2 U
156-60-5	trans-1,2-Dichloroethene	0.08	0.2	< 0.2 U
156-59-2	cis-1,2-Dichloroethene	0.10	0.2	< 0.2 U
67-66-3	Chloroform	0.08	0.2	< 0.2 U
107-06-2	1,2-Dichloroethane	0.08	0.2	< 0.2 U
78-93-3	2-Butanone	0.81	5.0	< 5.0 U
71-55-6	1,1,1-Trichloroethane	0.09	0.2	< 0.2 U
56-23-5	Carbon Tetrachloride	0.08	0.2	< 0.2 U
108-05-4	Vinyl Acetate	0.07	1.0	< 1.0 U
75-27-4	Bromodichloromethane	0.05	0.2	< 0.2 U
78-87-5	1,2-Dichloropropane	0.09	0.2	< 0.2 U
10061-01-5	cis-1,3-Dichloropropene	0.06	0.2	< 0.2 U
79-01-6	Trichloroethene	0.08	0.2	< 0.2 U
124-48-1	Dibromochloromethane	0.09	0.2	< 0.2 U
79-00-5	1,1,2-Trichloroethane	0.04	0.2	< 0.2 U
71-43-2	Benzene	0.06	0.2	< 0.2 U
10061-02-6	trans-1,3-Dichloropropene	0.06	0.2	< 0.2 U
110-75-8	2-Chloroethylvinylether	0.09	1.0	< 1.0 U
75-25-2	Bromoform	0.07	0.2	< 0.2 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.38	5.0	< 5.0 U
591-78-6	2-Hexanone	0.31	5.0	< 5.0 U
127-18-4	Tetrachloroethene	0.09	0.2	< 0.2 U
79-34-5	1,1,2,2-Tetrachloroethane	0.07	0.2	< 0.2 U
108-88-3	Toluene	0.06	0.2	< 0.2 U
108-90-7	Chlorobenzene	0.04	0.2	< 0.2 U
100-41-4	Ethylbenzene	0.09	0.2	< 0.2 U
100-42-5	Styrene	0.07	0.2	< 0.2 U
75-69-4	Trichlorofluoromethane	0.09	0.2	< 0.2 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.11	0.2	< 0.2 U
179601-23-1	m,p-Xylene	0.14	0.4	< 0.4 U
95-47-6	o-Xylene	0.06	0.2	< 0.2 U
95-50-1	1,2-Dichlorobenzene	0.06	0.2	< 0.2 U
541-73-1	1,3-Dichlorobenzene	0.04	0.2	< 0.2 U
106-46-7	1,4-Dichlorobenzene	0.06	0.2	< 0.2 U
107-02-8	Acrolein	0.29	5.0	< 5.0 U
74-88-4	Methyl Iodide	0.04	1.0	< 1.0 U
74-96-4	Bromoethane	0.09	0.2	< 0.2 U
107-13-1	Acrylonitrile	0.18	1.0	< 1.0 U
563-58-6	1,1-Dichloropropene	0.09	0.2	< 0.2 U
74-95-3	Dibromomethane	0.08	0.2	< 0.2 U
630-20-6	1,1,1,2-Tetrachloroethane	0.07	0.2	< 0.2 U
96-12-8	1,2-Dibromo-3-chloropropane	0.21	0.5	< 0.5 U

TL89:00045

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-091511**
 METHOD BLANK

Lab Sample ID: MB-091511
LIMS ID: 11-19804
Matrix: Water
Date Analyzed: 09/15/11 10:48

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

CAS Number	Analyte	MDL	RL	Result
96-18-4	1,2,3-Trichloropropane	0.23	0.5	< 0.5 U
110-57-6	trans-1,4-Dichloro-2-butene	0.24	1.0	< 1.0 U
108-67-8	1,3,5-Trimethylbenzene	0.06	0.2	< 0.2 U
95-63-6	1,2,4-Trimethylbenzene	0.06	0.2	< 0.2 U
87-68-3	**Hexachlorobutadiene**	**0.11**	**0.5**	**0.3 J**
106-93-4	Ethylene Dibromide	0.08	0.2	< 0.2 U
74-97-5	Bromochloromethane	0.07	0.2	< 0.2 U
594-20-7	2,2-Dichloropropane	0.08	0.2	< 0.2 U
142-28-9	1,3-Dichloropropane	0.02	0.2	< 0.2 U
98-82-8	Isopropylbenzene	0.06	0.2	< 0.2 U
103-65-1	n-Propylbenzene	0.08	0.2	< 0.2 U
108-86-1	Bromobenzene	0.05	0.2	< 0.2 U
95-49-8	2-Chlorotoluene	0.04	0.2	< 0.2 U
106-43-4	4-Chlorotoluene	0.07	0.2	< 0.2 U
98-06-6	tert-Butylbenzene	0.06	0.2	< 0.2 U
135-98-8	sec-Butylbenzene	0.08	0.2	< 0.2 U
99-87-6	4-Isopropyltoluene	0.08	0.2	< 0.2 U
104-51-8	n-Butylbenzene	0.11	0.2	< 0.2 U
120-82-1	**1,2,4-Trichlorobenzene**	**0.10**	**0.5**	**0.2 J**
91-20-3	**Naphthalene**	**0.07**	**0.5**	**0.3 J**
87-61-6	**1,2,3-Trichlorobenzene**	**0.09**	**0.5**	**0.3 J**

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	99.3%
Bromofluorobenzene	99.5%
d4-1,2-Dichlorobenzene	101%

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC GEOMATRIX

Lab Code: ARI Case No.: FRP 2011 SHORELINE INVESTIGATION SDG No.: TL89

Lab File ID: BFB0901 BFB Injection Date: 09/01/11

Instrument ID: NT3 BFB Injection Time: 1058

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.3
75	30.0 - 66.0% of mass 95	48.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.2
173	Less than 2.0% of mass 174	0.3 (0.4)1
174	50.0 - 101.0% of mass 95	76.7
175	4.0 - 9.0% of mass 174	5.5 (7.1)1
176	93.0 - 101.0% of mass 174	74.2 (96.7)1
177	5.0 - 9.0% of mass 176	4.9 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD0.2	VSTD0.2	00_20901	09/01/11	1147
02	VSTD0.5	VSTD0.5	00_50901	09/01/11	1214
03	VSTD01	VSTD01	01_00901	09/01/11	1241
04	VSTD02	VSTD02	02_00901	09/01/11	1308
05	VSTD10	VSTD10	10_00901	09/01/11	1334
06	VSTD20	VSTD20	20_00901	09/01/11	1402
07	VSTD40	VSTD40	40_00901	09/01/11	1428
08	VSTD80	VSTD80	80_00901	09/01/11	1455
09	ICV10	ICV10	ICV0901	09/01/11	1548
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FORM V VOA OLM3.2M

TL89:00048

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC GEOMATRIX

Lab Code: ARI Case No.: FRP 2011 SHORELINE INVESTIGATION SDG No.: TL89

Lab File ID: BFB0913 BFB Injection Date: 09/13/11

Instrument ID: NT3 BFB Injection Time: 0948

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	15.4
75	30.0 - 66.0% of mass 95	48.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.4 (0.5)1
174	50.0 - 101.0% of mass 95	79.8
175	4.0 - 9.0% of mass 174	5.5 (6.9)1
176	93.0 - 101.0% of mass 174	75.4 (94.5)1
177	5.0 - 9.0% of mass 176	4.8 (6.4)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC0913	CC0913	CC0913	09/13/11	1019
02	LCS0913	LCS0913	LCS0913	09/13/11	1046
03	LCS0913	LCS0913	LCS0913A	09/13/11	1134
04	MB0913	MB0913	MB0913A	09/13/11	1243
05	TRIP BLANKS	TL89E	TL89E	09/13/11	1508
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FORM V VOA OLM3.2M

TL89:00049

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: AMEC GEOMATRIX

Lab Code: ARI Case No.: FRP 2011 SHORELINE INVESTIGATION SDG No.: TL89

Lab File ID: BFB0915 BFB Injection Date: 09/15/11

Instrument ID: NT3 BFB Injection Time: 0854

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	16.1
75	30.0 - 66.0% of mass 95	47.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.7 (0.9)1
174	50.0 - 101.0% of mass 95	80.4
175	4.0 - 9.0% of mass 174	5.5 (6.8)1
176	93.0 - 101.0% of mass 174	76.8 (95.5)1
177	5.0 - 9.0% of mass 176	4.6 (5.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC0915	CC0915	CC0915	09/15/11	0928
02	LCS0915	LCS0915	LCS0915	09/15/11	0954
03	LCS0915	LCS0915	LCS0915A	09/15/11	1021
04	MB0915	MB0915	MB0915	09/15/11	1048
05	FRP-091211-001	TL89A	TL89A	09/15/11	1122
06	FRP-091211-002	TL89B	TL89B	09/15/11	1149
07	FRP-091211-004	TL89C	TL89C	09/15/11	1216
08	FRP-091211-003	TL89D	TL89D	09/15/11	1242
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FORM V VOA OLM3.2M

TL89:00050

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF0.2: 00_20901 RF0.5: 00_50901 RF1: 01_00901
RF2: 02_00901 RF10: 10_00901

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
Chloromethane	0.531	0.556	0.498	0.490	0.489
Vinyl Chloride	0.652	0.660	0.641	0.595	0.596
Bromomethane		0.375	0.409	0.351	0.381
Chloroethane	0.444	0.412	0.401	0.368	0.370
Trichlorofluoromethane	0.870	0.860	0.849	0.829	0.828
Acrolein		0.025	0.028	0.025	0.026
112Trichloro122Trifluoroetha	0.745	0.629	0.583	0.568	0.573
Acetone		0.042	0.039	0.035	0.037
1,1-Dichloroethene	0.553	0.517	0.524	0.474	0.486
Bromoethane	0.406	0.461	0.396	0.400	0.423
Iodomethane		0.902	0.907	0.823	0.870
Methylene Chloride		0.882	0.683	0.546	0.478
Acrylonitrile			0.030	0.050	0.048
Carbon Disulfide	2.027	1.704	1.684	1.574	1.647
Trans-1,2-Dichloroethene	0.640	0.576	0.566	0.546	0.553
Vinyl Acetate			0.281	0.259	0.282
1,1-Dichloroethane	0.940	0.837	0.872	0.823	0.846
2-Butanone		0.051	0.059	0.052	0.055
2,2-Dichloropropane	0.900	0.794	0.826	0.754	0.760
Cis-1,2-Dichloroethene	0.614	0.563	0.543	0.530	0.531
Chloroform	0.814	0.900	0.873	0.843	0.860
Bromochloromethane	0.194	0.191	0.207	0.190	0.208
1,1,1-Trichloroethane	0.977	0.932	0.909	0.856	0.912
1,1-Dichloropropene	0.480	0.475	0.450	0.422	0.451
Carbon Tetrachloride	0.497	0.497	0.462	0.445	0.486
1,2-Dichloroethane	0.276	0.280	0.282	0.265	0.256
Benzene	1.241	1.298	1.268	1.244	1.249
Trichloroethene	0.420	0.372	0.378	0.370	0.367
1,2-Dichloropropane	0.225	0.274	0.249	0.244	0.251
Bromodichloromethane	0.333	0.316	0.333	0.310	0.317
Dibromomethane	0.101	0.116	0.112	0.116	0.105
2-Chloroethyl Vinyl Ether		0.076	0.079	0.068	0.082
4-Methyl-2-Pentanone		0.094	0.090	0.095	0.099
Cis 1,3-dichloropropene	0.348	0.355	0.359	0.338	0.362
Toluene	0.935	0.850	0.873	0.870	0.844
Trans 1,3-Dichloropropene	0.277	0.304	0.269	0.271	0.289
2-Hexanone		0.058	0.064	0.066	0.067

TL89:00051

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF0.2: 00_20901 RF0.5: 00_50901 RF1: 01_00901
RF2: 02_00901 RF10: 10_00901

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
1,1,2-Trichloroethane	0.153	0.160	0.163	0.168	0.161
1,3-Dichloropropane	0.278	0.260	0.291	0.280	0.283
Tetrachloroethene	0.466	0.416	0.422	0.398	0.398
Chlorodibromomethane	0.174	0.188	0.192	0.188	0.205
1,2-Dibromoethane	0.134	0.157	0.152	0.152	0.162
Chlorobenzene	1.013	1.012	1.035	1.002	0.984
Ethyl Benzene	1.976	1.852	1.847	1.803	1.820
1,1,1,2-Tetrachloroethane	0.283	0.327	0.316	0.307	0.315
m,p-xylene	0.781	0.742	0.704	0.716	0.727
o-Xylene	0.725	0.681	0.728	0.707	0.716
Styrene	1.071	0.954	1.053	1.028	1.080
Bromoform	0.172	0.149	0.156	0.161	0.169
1,1,2,2-Tetrachloroethane	0.292	0.316	0.349	0.313	0.309
1,2,3-Trichloropropane		0.103	0.103	0.108	0.096
Trans-1,4-Dichloro 2-Butene			0.082	0.074	0.076
N-Propyl Benzene	4.033	3.815	3.775	3.775	3.693
Bromobenzene	0.622	0.714	0.702	0.660	0.670
Isopropyl Benzene	3.644	3.370	3.421	3.240	3.226
2-Chloro Toluene	2.361	2.429	2.335	2.289	2.303
4-Chloro Toluene	2.378	2.364	2.370	2.287	2.284
T-Butyl Benzene	2.674	2.679	2.543	2.534	2.536
1,3,5-Trimethyl Benzene	2.939	2.931	2.863	2.861	2.862
1,2,4-Trimethylbenzene	3.083	3.024	2.922	2.872	2.905
S-Butyl Benzene	3.988	3.888	3.750	3.756	3.652
4-Isopropyl Toluene	3.593	3.238	3.210	3.209	3.160
1,3-Dichlorobenzene	1.715	1.599	1.551	1.541	1.525
1,4-Dichlorobenzene	1.654	1.631	1.556	1.504	1.494
N-Butyl Benzene	2.998	2.865	2.818	2.743	2.737
1,2-Dichlorobenzene	1.335	1.374	1.330	1.326	1.293
1,2-Dibromo 3-Chloropropane		0.057	0.053	0.053	0.050
1,2,4-Trichlorobenzene		0.872	0.839	0.855	0.867
Hexachloro 1,3-Butadiene		0.488	0.508	0.458	0.416
Naphthalene		0.977	1.064	1.052	1.157
1,2,3-Trichlorobenzene		0.641	0.618	0.640	0.648
Dichlorodifluoromethane	0.589	0.606	0.551	0.516	0.540
Methyl tert butyl ether	0.748	0.932	1.000	0.903	0.946

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF0.2: 00_20901 RF0.5: 00_50901 RF1: 01_00901
RF2: 02_00901 RF10: 10_00901

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
d4-1,2-Dichloroethane	0.336	0.366	0.360	0.365	0.365
d8-Toluene	1.309	1.268	1.258	1.255	1.269
4-Bromofluorobenzene	0.484	0.504	0.507	0.515	0.508
d4-1,2-Dichlorobenzene	0.822	0.865	0.848	0.851	0.846
Dibromofluoromethane	0.418	0.444	0.432	0.439	0.439

TL89:00053

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF20: 20_00901 RF40: 40_00901 RF80: 80_00901

COMPOUND	RF20	RF40	RF80
Chloromethane	0.498	0.520	0.483
Vinyl Chloride	0.605	0.635	0.610
Bromomethane	0.368	0.389	0.357
Chloroethane	0.381	0.404	0.353
Trichlorofluoromethane	0.850	0.881	0.822
Acrolein	0.027	0.029	0.028
112Trichloro122Trifluoroetha	0.585	0.616	0.567
Acetone	0.039	0.041	0.040
1,1-Dichloroethene	0.491	0.526	0.488
Bromoethane	0.424	0.443	0.412
Iodomethane	0.891	0.913	0.852
Methylene Chloride	0.470	0.487	0.456
Acrylonitrile	0.052	0.056	0.054
Carbon Disulfide	1.670	1.746	1.596
Trans-1,2-Dichloroethene	0.566	0.591	0.558
Vinyl Acetate	0.296	0.317	0.332
1,1-Dichloroethane	0.854	0.895	0.846
2-Butanone	0.056	0.059	0.059
2,2-Dichloropropane	0.756	0.800	0.707
Cis-1,2-Dichloroethene	0.544	0.570	0.539
Chloroform	0.874	0.905	0.866
Bromochloromethane	0.202	0.210	0.203
1,1,1-Trichloroethane	0.906	0.968	0.895
1,1-Dichloropropene	0.452	0.470	0.443
Carbon Tetrachloride	0.488	0.518	0.482
1,2-Dichloroethane	0.256	0.267	0.252
Benzene	1.231	1.282	1.158
Trichloroethene	0.360	0.374	0.350
1,2-Dichloropropane	0.247	0.260	0.249
Bromodichloromethane	0.324	0.346	0.333
Dibromomethane	0.109	0.114	0.108
2-Chloroethyl Vinyl Ether	0.084	0.086	0.086
4-Methyl-2-Pentanone	0.096	0.101	0.095
Cis 1,3-dichloropropene	0.368	0.396	0.378
Toluene	0.854	0.884	0.810
Trans 1,3-Dichloropropene	0.297	0.317	0.302
2-Hexanone	0.067	0.068	0.066

TL89:00054

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF20: 20_00901 RF40: 40_00901 RF80: 80_00901

COMPOUND	RF20	RF40	RF80
1,1,2-Trichloroethane	0.162	0.169	0.160
1,3-Dichloropropane	0.273	0.288	0.279
Tetrachloroethene	0.390	0.405	0.386
Chlorodibromomethane	0.208	0.223	0.222
1,2-Dibromoethane	0.162	0.169	0.162
Chlorobenzene	0.978	0.997	0.920
Ethyl Benzene	1.793	1.796	1.545
1,1,1,2-Tetrachloroethane	0.318	0.338	0.330
m,p-xylene	0.720	0.729	0.648
o-Xylene	0.705	0.742	0.703
Styrene	1.075	1.116	1.043
Bromoform	0.178	0.193	0.195
1,1,2,2-Tetrachloroethane	0.313	0.322	0.314
1,2,3-Trichloropropane	0.099	0.103	0.100
Trans-1,4-Dichloro 2-Butene	0.079	0.081	0.084
N-Propyl Benzene	3.617	3.527	2.893
Bromobenzene	0.656	0.679	0.655
Isopropyl Benzene	3.189	3.150	2.675
2-Chloro Toluene	2.252	2.240	2.056
4-Chloro Toluene	2.268	2.284	2.054
T-Butyl Benzene	2.503	2.540	2.236
1,3,5-Trimethyl Benzene	2.864	2.850	2.439
1,2,4-Trimethylbenzene	2.897	2.903	2.457
S-Butyl Benzene	3.612	3.555	2.890
4-Isopropyl Toluene	3.150	3.109	2.591
1,3-Dichlorobenzene	1.502	1.539	1.435
1,4-Dichlorobenzene	1.476	1.506	1.402
N-Butyl Benzene	2.767	2.770	2.359
1,2-Dichlorobenzene	1.280	1.300	1.225
1,2-Dibromo 3-Chloropropane	0.051	0.055	0.055
1,2,4-Trichlorobenzene	0.894	0.906	0.881
Hexachloro 1,3-Butadiene	0.446	0.452	0.442
Naphthalene	1.217	1.228	1.184
1,2,3-Trichlorobenzene	0.662	0.666	0.645
Dichlorodifluoromethane	0.550	0.574	0.524
Methyl tert butyl ether	0.955	0.993	0.932

TL89:000055

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: AMEC GEOMATRIX

ARI Job No: TL89 Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 Calibration Date: 09/01/11

LAB FILE ID: RF20: 20_00901 RF40: 40_00901 RF80: 80_00901

COMPOUND	RF20	RF40	RF80
d4-1,2-Dichloroethane	0.360	0.363	0.377
d8-Toluene	1.263	1.294	1.269
4-Bromofluorobenzene	0.516	0.509	0.518
d4-1,2-Dichlorobenzene	0.832	0.836	0.827
Dibromofluoromethane	0.455	0.451	0.459

TL89:00056

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC | Client: AMEC GEOMATRIX

ARI Job No: TL89 | Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 | Calibration Date: 09/01/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
Chloromethane	AVRG	0.508	5.0
Vinyl Chloride	AVRG	0.624	4.2
Bromomethane	AVRG	0.376	5.2
Chloroethane	AVRG	0.392	7.5
Trichlorofluoromethane	AVRG	0.849	2.5
Acrolein	AVRG	0.027	5.5
112Trichloro122Trifluoroetha	AVRG	0.608	9.8
Acetone	AVRG	0.039	6.5
1,1-Dichloroethene	AVRG	0.508	5.2
Bromoethane	AVRG	0.421	5.3
Iodomethane	AVRG	0.880	3.8
Methylene Chloride	LINR		0.9987
Acrylonitrile	AVRG	0.048	19.6
Carbon Disulfide	AVRG	1.706	8.3
Trans-1,2-Dichloroethene	AVRG	0.575	5.2
Vinyl Acetate	AVRG	0.294	9.0
1,1-Dichloroethane	AVRG	0.864	4.3
2-Butanone	AVRG	0.056	6.1
2,2-Dichloropropane	AVRG	0.787	7.4
Cis-1,2-Dichloroethene	AVRG	0.554	5.1
Chloroform	AVRG	0.867	3.4
Bromochloromethane	AVRG	0.200	4.0
1,1,1-Trichloroethane	AVRG	0.919	4.3
1,1-Dichloropropene	AVRG	0.455	4.2
Carbon Tetrachloride	AVRG	0.484	4.6
1,2-Dichloroethane	AVRG	0.267	4.3
Benzene	AVRG	1.246	3.4
Trichloroethene	AVRG	0.374	5.6
1,2-Dichloropropane	AVRG	0.250	5.6
Bromodichloromethane	AVRG	0.326	3.6
Dibromomethane	AVRG	0.110	4.9
2-Chloroethyl Vinyl Ether	AVRG	0.080	8.1
4-Methyl-2-Pentanone	AVRG	0.096	3.5
Cis 1,3-dichloropropene	AVRG	0.363	5.0
Toluene	AVRG	0.865	4.2
Trans 1,3-Dichloropropene	AVRG	0.291	5.9
2-Hexanone	AVRG	0.065	5.3

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

TL89:00057

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Calibration Date: 09/01/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
1,1,2-Trichloroethane	AVRG	0.162	3.1
1,3-Dichloropropane	AVRG	0.279	3.4
Tetrachloroethene	AVRG	0.410	6.2
Chlorodibromomethane	AVRG	0.200	8.7
1,2-Dibromoethane	AVRG	0.156	6.8
Chlorobenzene	AVRG	0.993	3.5
Ethyl Benzene	AVRG	1.804	6.7
1,1,1,2-Tetrachloroethane	AVRG	0.317	5.3
m,p-xylene	AVRG	0.721	5.2
o-Xylene	AVRG	0.713	2.6
Styrene	AVRG	1.053	4.6
Bromoform	AVRG	0.172	9.6
1,1,2,2-Tetrachloroethane	AVRG	0.316	5.0
1,2,3-Trichloropropane	AVRG	0.102	3.6
Trans-1,4-Dichloro 2-Butene	AVRG	0.080	4.6
N-Propyl Benzene	AVRG	3.641	9.3
Bromobenzene	AVRG	0.670	4.3
Isopropyl Benzene	AVRG	3.239	8.6
2-Chloro Toluene	AVRG	2.283	4.8
4-Chloro Toluene	AVRG	2.286	4.6
T-Butyl Benzene	AVRG	2.531	5.4
1,3,5-Trimethyl Benzene	AVRG	2.826	5.7
1,2,4-Trimethylbenzene	AVRG	2.883	6.5
S-Butyl Benzene	AVRG	3.636	9.2
4-Isopropyl Toluene	AVRG	3.158	8.7
1,3-Dichlorobenzene	AVRG	1.551	5.2
1,4-Dichlorobenzene	AVRG	1.528	5.4
N-Butyl Benzene	AVRG	2.757	6.6
1,2-Dichlorobenzene	AVRG	1.308	3.4
1,2-Dibromo 3-Chloropropane	AVRG	0.053	4.8
1,2,4-Trichlorobenzene	AVRG	0.873	2.6
Hexachloro 1,3-Butadiene	AVRG	0.458	6.7
Naphthalene	AVRG	1.126	8.5
1,2,3-Trichlorobenzene	AVRG	0.646	2.4
Dichlorodifluoromethane	AVRG	0.556	5.6
Methyl tert butyl ether	AVRG	0.926	8.5

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

TL89:000058

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC | Client: AMEC GEOMATRIX

ARI Job No: TL89 | Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 | Calibration Date: 09/01/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
d4-1,2-Dichloroethane	AVRG	0.362	3.2
d8-Toluene	AVRG	1.273	1.5
4-Bromofluorobenzene	AVRG	0.508	2.1
d4-1,2-Dichlorobenzene	AVRG	0.841	1.7
Dibromofluoromethane	AVRG	0.442	3.0

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/13/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 1019

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Chloromethane	0.508	0.465	0.100	AVRG	-8.5	
Vinyl Chloride	0.624	0.546	0.010	AVRG	-12.5	
Bromomethane	0.376	0.304	0.010	AVRG	-19.1	
Chloroethane	0.392	0.330	0.010	AVRG	-15.8	
Trichlorofluoromethane	0.849	0.772	0.010	AVRG	-9.1	
Acrolein	0.027	0.021	0.010	AVRG	-22.2	<-
112Trichloro122Trifluoroetha	0.608	0.561	0.010	AVRG	-7.7	
Acetone	0.039	0.036	0.010	AVRG	-7.7	
1,1-Dichloroethene	0.507	0.466	0.010	AVRG	-8.1	
Bromoethane	0.421	0.418	0.010	AVRG	-0.7	
Iodomethane	0.880	0.817	0.010	AVRG	-7.2	
Methylene Chloride	10.000	9.152	0.010	LINR	-8.5	
Acrylonitrile	0.048	0.044	0.010	AVRG	-8.3	
Carbon Disulfide	1.706	1.541	0.010	AVRG	-9.7	
Trans-1,2-Dichloroethene	0.574	0.523	0.010	AVRG	-8.9	
Vinyl Acetate	0.294	0.272	0.010	AVRG	-7.5	
1,1-Dichloroethane	0.864	0.809	0.100	AVRG	-6.4	
2-Butanone	0.056	0.049	0.010	AVRG	-12.5	
2,2-Dichloropropane	0.787	0.734	0.010	AVRG	-6.7	
Cis-1,2-Dichloroethene	0.554	0.514	0.010	AVRG	-7.2	
Chloroform	0.867	0.832	0.010	AVRG	-4.0	
Bromochloromethane	0.201	0.187	0.010	AVRG	-7.0	
1,1,1-Trichloroethane	0.919	0.847	0.010	AVRG	-7.8	
1,1-Dichloropropene	0.455	0.464	0.010	AVRG	2.0	
Carbon Tetrachloride	0.484	0.456	0.010	AVRG	-5.8	
1,2-Dichloroethane	0.267	0.253	0.010	AVRG	-5.2	
Benzene	1.246	1.237	0.010	AVRG	-0.7	
Trichloroethene	0.374	0.368	0.010	AVRG	-1.6	
1,2-Dichloropropane	0.250	0.238	0.010	AVRG	-4.8	
Bromodichloromethane	0.326	0.309	0.010	AVRG	-5.2	
Dibromomethane	0.110	0.108	0.010	AVRG	-1.8	
2-Chloroethyl Vinyl Ether	0.080	0.071	0.010	AVRG	-11.2	
4-Methyl-2-Pentanone	0.096	0.090	0.010	AVRG	-6.2	
Cis 1,3-dichloropropene	0.363	0.338	0.010	AVRG	-6.9	
Toluene	0.865	0.823	0.010	AVRG	-4.8	
Trans 1,3-Dichloropropene	0.291	0.263	0.010	AVRG	-9.6	
2-Hexanone	0.065	0.064	0.010	AVRG	-1.5	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/13/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 1019

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
1,1,2-Trichloroethane	0.162	0.150	0.010	AVRG	-7.4	
1,3-Dichloropropane	0.279	0.274	0.010	AVRG	-1.8	
Tetrachloroethene	0.410	0.407	0.010	AVRG	-0.7	
Chlorodibromomethane	0.200	0.192	0.010	AVRG	-4.0	
1,2-Dibromoethane	0.156	0.151	0.010	AVRG	-3.2	
Chlorobenzene	0.993	0.987	0.300	AVRG	-0.6	
Ethyl Benzene	1.804	1.818	0.010	AVRG	0.8	
1,1,1,2-Tetrachloroethane	0.317	0.296	0.010	AVRG	-6.6	
m,p-xylene	0.721	0.729	0.010	AVRG	1.1	
o-Xylene	0.713	0.713	0.010	AVRG	0.0	
Styrene	1.052	1.060	0.010	AVRG	0.8	
Bromoform	0.172	0.163	0.100	AVRG	-5.2	
1,1,2,2-Tetrachloroethane	0.316	0.295	0.300	AVRG	-6.6	*
1,2,3-Trichloropropane	0.102	0.096	0.010	AVRG	-5.9	
Trans-1,4-Dichloro 2-Butene	0.079	0.071	0.010	AVRG	-10.1	
N-Propyl Benzene	3.641	3.856	0.010	AVRG	5.9	
Bromobenzene	0.670	0.675	0.010	AVRG	0.7	
Isopropyl Benzene	3.239	3.372	0.010	AVRG	4.1	
2-Chloro Toluene	2.283	2.317	0.010	AVRG	1.5	
4-Chloro Toluene	2.286	2.344	0.010	AVRG	2.5	
T-Butyl Benzene	2.531	2.614	0.010	AVRG	3.3	
1,3,5-Trimethyl Benzene	2.826	2.955	0.010	AVRG	4.6	
1,2,4-Trimethylbenzene	2.883	2.996	0.010	AVRG	3.9	
S-Butyl Benzene	3.636	3.744	0.010	AVRG	3.0	
4-Isopropyl Toluene	3.158	3.282	0.010	AVRG	3.9	
1,3-Dichlorobenzene	1.551	1.528	0.010	AVRG	-1.5	
1,4-Dichlorobenzene	1.528	1.488	0.010	AVRG	-2.6	
N-Butyl Benzene	2.757	2.929	0.010	AVRG	6.2	
1,2-Dichlorobenzene	1.308	1.292	0.010	AVRG	-1.2	
1,2-Dibromo 3-Chloropropane	0.053	0.049	0.010	AVRG	-7.5	
1,2,4-Trichlorobenzene	0.873	0.869	0.010	AVRG	-0.4	
Hexachloro 1,3-Butadiene	0.458	0.473	0.010	AVRG	3.3	
Naphthalene	1.126	1.064	0.010	AVRG	-5.5	
1,2,3-Trichlorobenzene	0.646	0.627	0.010	AVRG	-2.9	
Dichlorodifluoromethane	0.556	0.471	0.010	AVRG	-15.3	
Methyl tert butyl ether	0.926	0.829	0.010	AVRG	-10.5	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

TL89:00061

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/13/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 1019

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.362	0.346	0.010	AVRG	-4.4
d8-Toluene	1.273	1.229	0.010	AVRG	-3.4
4-Bromofluorobenzene	0.508	0.505	0.010	AVRG	-0.6
d4-1,2-Dichlorobenzene	0.841	0.852	0.010	AVRG	1.3
Dibromofluoromethane	0.442	0.437	0.010	AVRG	-1.1

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

TL89:00062

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/15/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 0928

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Chloromethane	0.508	0.484	0.100	AVRG	-4.7
Vinyl Chloride	0.624	0.560	0.010	AVRG	-10.2
Bromomethane	0.376	0.320	0.010	AVRG	-14.9
Chloroethane	0.392	0.334	0.010	AVRG	-14.8
Trichlorofluoromethane	0.849	0.804	0.010	AVRG	-5.3
Acrolein	0.027	0.024	0.010	AVRG	-11.1
112Trichloro122Trifluoroetha	0.608	0.565	0.010	AVRG	-7.1
Acetone	0.039	0.036	0.010	AVRG	-7.7
1,1-Dichloroethene	0.507	0.462	0.010	AVRG	-8.9
Bromoethane	0.421	0.417	0.010	AVRG	-1.0
Iodomethane	0.880	0.829	0.010	AVRG	-5.8
Methylene Chloride	10.000	9.306	0.010	LINR	-6.9
Acrylonitrile	0.048	0.047	0.010	AVRG	-2.1
Carbon Disulfide	1.706	1.580	0.010	AVRG	-7.4
Trans-1,2-Dichloroethene	0.574	0.538	0.010	AVRG	-6.3
Vinyl Acetate	0.294	0.278	0.010	AVRG	-5.4
1,1-Dichloroethane	0.864	0.834	0.100	AVRG	-3.5
2-Butanone	0.056	0.053	0.010	AVRG	-5.4
2,2-Dichloropropane	0.787	0.763	0.010	AVRG	-3.0
Cis-1,2-Dichloroethene	0.554	0.520	0.010	AVRG	-6.1
Chloroform	0.867	0.841	0.010	AVRG	-3.0
Bromochloromethane	0.201	0.193	0.010	AVRG	-4.0
1,1,1-Trichloroethane	0.919	0.866	0.010	AVRG	-5.8
1,1-Dichloropropene	0.455	0.462	0.010	AVRG	1.5
Carbon Tetrachloride	0.484	0.473	0.010	AVRG	-2.3
1,2-Dichloroethane	0.267	0.252	0.010	AVRG	-5.6
Benzene	1.246	1.246	0.010	AVRG	0.0
Trichloroethene	0.374	0.362	0.010	AVRG	-3.2
1,2-Dichloropropane	0.250	0.246	0.010	AVRG	-1.6
Bromodichloromethane	0.326	0.309	0.010	AVRG	-5.2
Dibromomethane	0.110	0.101	0.010	AVRG	-8.2
2-Chloroethyl Vinyl Ether	0.080	0.072	0.010	AVRG	-10.0
4-Methyl-2-Pentanone	0.096	0.088	0.010	AVRG	-8.3
Cis 1,3-dichloropropene	0.363	0.359	0.010	AVRG	-1.1
Toluene	0.865	0.834	0.010	AVRG	-3.6
Trans 1,3-Dichloropropene	0.291	0.275	0.010	AVRG	-5.5
2-Hexanone	0.065	0.063	0.010	AVRG	-3.1

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/15/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 0928

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
1,1,2-Trichloroethane	0.162	0.152	0.010	AVRG	-6.2	
1,3-Dichloropropane	0.279	0.272	0.010	AVRG	-2.5	
Tetrachloroethene	0.410	0.408	0.010	AVRG	-0.5	
Chlorodibromomethane	0.200	0.198	0.010	AVRG	-1.0	
1,2-Dibromoethane	0.156	0.147	0.010	AVRG	-5.8	
Chlorobenzene	0.993	0.983	0.300	AVRG	-1.0	
Ethyl Benzene	1.804	1.821	0.010	AVRG	0.9	
1,1,1,2-Tetrachloroethane	0.317	0.308	0.010	AVRG	-2.8	
m,p-xylene	0.721	0.727	0.010	AVRG	0.8	
o-Xylene	0.713	0.697	0.010	AVRG	-2.2	
Styrene	1.052	1.047	0.010	AVRG	-0.5	
Bromoform	0.172	0.172	0.100	AVRG	0.0	
1,1,2,2-Tetrachloroethane	0.316	0.292	0.300	AVRG	-7.6	*
1,2,3-Trichloropropane	0.102	0.092	0.010	AVRG	-9.8	
Trans-1,4-Dichloro 2-Butene	0.079	0.078	0.010	AVRG	-1.3	
N-Propyl Benzene	3.641	3.825	0.010	AVRG	5.0	
Bromobenzene	0.670	0.651	0.010	AVRG	-2.8	
Isopropyl Benzene	3.239	3.351	0.010	AVRG	3.4	
2-Chloro Toluene	2.283	2.278	0.010	AVRG	-0.2	
4-Chloro Toluene	2.286	2.335	0.010	AVRG	2.1	
T-Butyl Benzene	2.531	2.612	0.010	AVRG	3.2	
1,3,5-Trimethyl Benzene	2.826	2.938	0.010	AVRG	4.0	
1,2,4-Trimethylbenzene	2.883	2.966	0.010	AVRG	2.9	
S-Butyl Benzene	3.636	3.800	0.010	AVRG	4.5	
4-Isopropyl Toluene	3.158	3.251	0.010	AVRG	2.9	
1,3-Dichlorobenzene	1.551	1.513	0.010	AVRG	-2.4	
1,4-Dichlorobenzene	1.528	1.480	0.010	AVRG	-3.1	
N-Butyl Benzene	2.757	2.910	0.010	AVRG	5.5	
1,2-Dichlorobenzene	1.308	1.249	0.010	AVRG	-4.5	
1,2-Dibromo 3-Chloropropane	0.053	0.049	0.010	AVRG	-7.5	
1,2,4-Trichlorobenzene	0.873	0.870	0.010	AVRG	-0.3	
Hexachloro 1,3-Butadiene	0.458	0.464	0.010	AVRG	1.3	
Naphthalene	1.126	1.047	0.010	AVRG	-7.0	
1,2,3-Trichlorobenzene	0.646	0.593	0.010	AVRG	-8.2	
Dichlorodifluoromethane	0.556	0.482	0.010	AVRG	-13.3	
Methyl tert butyl ether	0.926	0.830	0.010	AVRG	-10.4	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

TL89:00064

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIG

Instrument ID: NT3 — Cont. Calib. Date: 09/15/11

Init. Calib. Date: 09/01/11 — Cont. Calib. Time: 0928

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.362	0.349	0.010	AVRG	-3.6
d8-Toluene	1.273	1.246	0.010	AVRG	-2.1
4-Bromofluorobenzene	0.508	0.504	0.010	AVRG	-0.8
d4-1,2-Dichlorobenzene	0.841	0.834	0.010	AVRG	-0.8
Dibromofluoromethane	0.442	0.437	0.010	AVRG	-1.1

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

TL89:00065

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIGA

Ical Midpoint ID: 10_00901 — Ical Date: 09/01/11

Instrument ID: NT3 — Project Run Date: 09/13/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	220246	5.25	342057	5.64	343287	7.71
	UPPER LIMIT	440492	5.75	684114	6.14	686574	8.21
	LOWER LIMIT	110123	4.75	171028	5.14	171644	7.21
	Sample ID						
01	LCS0913	215602	5.25	343760	5.64	322803	7.71
02	LCS0913	209983	5.25	332058	5.64	314746	7.71
03	MB0913	213908	5.25	326579	5.64	318203	7.71
04	TRIP BLANKS	214984	5.25	333005	5.64	317750	7.71
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IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIGA

Ical Midpoint ID: 10_00901 — Ical Date: 09/01/11

Instrument ID: NT3 — Project Run Date: 09/13/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	212149	9.41				
	UPPER LIMIT	424298	9.91				
	LOWER LIMIT	106074	8.91				
	Sample ID						
01	LCS0913	199535	9.41				
02	LCS0913	194647	9.41				
03	MB0913	194608	9.41				
04	TRIP BLANKS	190782	9.41				
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IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIGA

Ical Midpoint ID: 10_00901 — Ical Date: 09/01/11

Instrument ID: NT3 — Project Run Date: 09/15/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	220246	5.25	342057	5.64	343287	7.71
	UPPER LIMIT	440492	5.75	684114	6.14	686574	8.21
	LOWER LIMIT	110123	4.75	171028	5.14	171644	7.21
	Sample ID						
01	LCS0915	222016	5.25	341914	5.64	332483	7.71
02	LCS0915	219473	5.25	346536	5.64	331047	7.71
03	MB0915	215623	5.25	331166	5.64	332252	7.71
04	FRP-091211-0	210456	5.25	330053	5.64	323670	7.71
05	FRP-091211-0	209514	5.26	329504	5.65	326923	7.71
06	FRP-091211-0	210341	5.25	333087	5.65	326828	7.72
07	FRP-091211-0	216778	5.26	339875	5.65	328553	7.72
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22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC — Client: AMEC GEOMATRIX

ARI Job No: TL89 — Project: FRP 2011 SHORELINE INVESTIGA

Ical Midpoint ID: 10_00901 — Ical Date: 09/01/11

Instrument ID: NT3 — Project Run Date: 09/15/11

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	212149	9.41				
	UPPER LIMIT	424298	9.91				
	LOWER LIMIT	106074	8.91				
	Sample ID						
01	LCS0915	201347	9.41				
02	LCS0915	203591	9.41				
03	MB0915	200802	9.41				
04	FRP-091211-0	201868	9.41				
05	FRP-091211-0	198311	9.41				
06	FRP-091211-0	197527	9.41				
07	FRP-091211-0	199039	9.41				
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IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TL89, TL90

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
FRP-091211-001	TL89A	11-19804	
FRP-091211-001D	TL89ADUP	11-19804	
FRP-091211-001S	TL89ASPK	11-19804	
FRP-091211-002	TL89B	11-19805	
PBW	TL89MB1	11-19805	
LCSW	TL89MB1SPK	11-19805	
FRP-091211-004	TL89C	11-19806	
FRP-091211-003	TL89D	11-19807	
FRP-091211-003	TL89F	11-19809	
PBW	TL89MB2	11-19809	
LCSW	TL89MB2SPK	11-19809	
FRP-091211-003	TL89G	11-19855	
PBW	TL89MB3	11-19855	
LCSW	TL89MB3SPK	11-19855	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 9/22/11 Title: Inorganics Director

TL89:00071

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-001
SAMPLE

Lab Sample ID: TL89A
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/21/11	**7429-90-5**	**Aluminum**	25.7	50	**88,800**	
200.8	09/15/11	200.8	09/20/11	**7440-38-2**	**Arsenic**	0.048	0.5	**40.3**	
3010A	09/15/11	6010B	09/21/11	7440-43-9	Cadmium	0.18	2	2	U
3010A	09/15/11	6010B	09/21/11	**7440-47-3**	**Chromium**	1.24	5	**253**	
3010A	09/15/11	6010B	09/21/11	**7440-50-8**	**Copper**	0.92	2	**255**	
200.8	09/15/11	200.8	09/20/11	**7439-92-1**	**Lead**	0.046	0.1	**24.5**	
3010A	09/15/11	6010B	09/21/11	**7440-02-0**	**Nickel**	3.9	10	**100**	
3010A	09/15/11	6010B	09/21/11	7782-49-2	Selenium	5.0	50	50	UJ
3010A	09/15/11	6010B	09/21/11	7440-28-0	Thallium	3.1	50	50	U
3010A	09/15/11	6010B	09/21/11	**7440-62-2**	**Vanadium**	0.27	3	**342**	
3010A	09/15/11	6010B	09/21/11	**7440-66-6**	**Zinc**	1.4	10	**290**	

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-001
MATRIX SPIKE

Lab Sample ID: TL89A
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	88,800	88,800	2,000	NR	H
Arsenic	200.8	40.3	64.3	25.0	96.0%	
Cadmium	6010B	2.00 U	550	500	110%	
Chromium	6010B	253	790	500	107%	
Copper	6010B	255	813	500	112%	
Lead	200.8	24.5	47.0	25.0	90.0%	
Nickel	6010B	104	606	500	100%	
Selenium	6010B	50.0 U	1,120	2,000	56.0%	N
Thallium	6010B	50.0 U	2,160	2,000	108%	
Vanadium	6010B	342	832	500	98.0%	
Zinc	6010B	286	796	500	102%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-001
DUPLICATE

Lab Sample ID: TL89A
LIMS ID: 11-19804
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: 09/12/11
Date Received: 09/12/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	88,800	87,400	1.6%	+/- 20%	
Arsenic	200.8	40.3	41.3	2.5%	+/- 20%	
Cadmium	6010B	2 U	2 U	0.0%	+/- 2	L
Chromium	6010B	253	256	1.2%	+/- 20%	
Copper	6010B	255	260	1.9%	+/- 20%	
Lead	200.8	24.5	22.8	7.2%	+/- 20%	
Nickel	6010B	100	100	0.0%	+/- 20%	
Selenium	6010B	50 U	50 U	0.0%	+/- 50	L
Thallium	6010B	50 U	50 U	0.0%	+/- 50	L
Vanadium	6010B	342	345	0.9%	+/- 20%	
Zinc	6010B	290	290	0.0%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-002
SAMPLE

Lab Sample ID: TL89B
LIMS ID: 11-19805
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	**7429-90-5**	**Aluminum**	25.7	50	**9,460**	
200.8	09/15/11	200.8	09/21/11	**7440-38-2**	**Arsenic**	0.120	0.5	**13.4**	
3010A	09/15/11	6010B	09/20/11	7440-43-9	Cadmium	0.18	2	2	U
3010A	09/15/11	6010B	09/20/11	**7440-47-3**	**Chromium**	1.24	5	**39**	
3010A	09/15/11	6010B	09/20/11	**7440-50-8**	**Copper**	0.92	2	**38**	
200.8	09/15/11	200.8	09/20/11	**7439-92-1**	**Lead**	0.046	0.1	**3.7**	
3010A	09/15/11	6010B	09/20/11	**7440-02-0**	**Nickel**	3.9	10	**20**	
3010A	09/15/11	6010B	09/20/11	7782-49-2	Selenium	5.0	50	50	UJ
3010A	09/15/11	6010B	09/20/11	7440-28-0	Thallium	3.1	50	50	U
3010A	09/15/11	6010B	09/20/11	**7440-62-2**	**Vanadium**	0.27	3	**219**	
3010A	09/15/11	6010B	09/20/11	**7440-66-6**	**Zinc**	1.4	10	**20**	

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-004
SAMPLE

Lab Sample ID: TL89C
LIMS ID: 11-19806
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	7429-90-5	Aluminum	25.7	50	50	U
200.8	09/15/11	200.8	09/21/11	7440-38-2	Arsenic	0.048	0.2	0.2	U
3010A	09/15/11	6010B	09/20/11	7440-43-9	Cadmium	0.18	2	2	U
3010A	09/15/11	6010B	09/20/11	7440-47-3	Chromium	1.24	5	5	U
3010A	09/15/11	6010B	09/20/11	7440-50-8	Copper	0.92	2	2	U
200.8	09/15/11	200.8	09/20/11	7439-92-1	Lead	0.046	0.1	0.1	U
3010A	09/15/11	6010B	09/20/11	7440-02-0	Nickel	3.9	10	10	U
3010A	09/15/11	6010B	09/20/11	7782-49-2	Selenium	5.0	50	50	UJ
3010A	09/15/11	6010B	09/20/11	7440-28-0	Thallium	3.1	50	50	U
3010A	09/15/11	6010B	09/20/11	7440-62-2	Vanadium	0.27	3	3	U
3010A	09/15/11	6010B	09/20/11	7440-66-6	Zinc	1.4	10	10	U

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

CM 2/24/12

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-003
SAMPLE

Lab Sample ID: TL89D
LIMS ID: 11-19807
Matrix: Water
Data Release Authorized:
Reported: 01/17/12

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	**7429-90-5**	**Aluminum**	0.0076	0.05	**6.11**	
200.8	09/15/11	200.8	09/20/11	**7440-38-2**	**Arsenic**	0.000048	0.0002	**0.0037**	
3010A	09/15/11	6010B	09/20/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/15/11	6010B	09/20/11	**7440-47-3**	**Chromium**	0.00124	0.005	**0.038**	
3010A	09/15/11	6010B	09/20/11	**7440-50-8**	**Copper**	0.00092	0.002	**0.117**	
3010A	09/15/11	6010B	09/20/11	**7439-89-6**	**Iron**	0.0075	0.05	**4.50**	
200.8	09/15/11	200.8	09/20/11	**7439-92-1**	**Lead**	0.000046	0.0001	**0.0061**	
3010A	09/15/11	6010B	09/20/11	**7439-96-5**	**Manganese**	0.00028	0.001	**0.078**	
3010A	09/15/11	6010B	09/20/11	7440-02-0	Nickel	0.0039	0.01	0.01	U
3010A	09/15/11	6010B	09/20/11	7782-49-2	Selenium	0.0050	0.05	0.05	UJ
3010A	09/15/11	6010B	09/20/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/15/11	6010B	09/20/11	**7440-62-2**	**Vanadium**	0.00027	0.003	**0.221**	
3010A	09/15/11	6010B	09/20/11	**7440-66-6**	**Zinc**	0.0014	0.01	**0.01**	

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

FORM-I

TL 89 · 220 SC 4/24/12

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TL89LCS
LIMS ID: 11-19805
Matrix: Water
Data Release Authorized:
Reported: 01/17/12

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2.00	2.00	100%	
Arsenic	200.8	0.0247	0.0250	98.8%	
Cadmium	6010B	0.515	0.500	103%	
Chromium	6010B	0.526	0.500	105%	
Copper	6010B	0.519	0.500	104%	
Iron	6010B	2.08	2.00	104%	
Lead	200.8	0.0268	0.0250	107%	
Manganese	6010B	0.486	0.500	97.2%	
Nickel	6010B	0.50	0.50	100%	
Selenium	6010B	1.93	2.00	96.5%	
Thallium	6010B	1.95	2.00	97.5%	
Vanadium	6010B	0.510	0.500	102%	
Zinc	6010B	0.50	0.50	100%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%

TL89: 78R BC 1/17/12

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: TL89MB
LIMS ID: 11-19805
Matrix: Water
Data Release Authorized:
Reported: 01/17/12

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	7429-90-5	Aluminum	0.0076	0.05	0.05	U
200.8	09/15/11	200.8	09/20/11	7440-38-2	Arsenic	0.000048	0.0002	0.0002	U
3010A	09/15/11	6010B	09/20/11	7440-43-9	Cadmium	0.00018	0.002	0.002	U
3010A	09/15/11	6010B	09/20/11	7440-47-3	Chromium	0.00124	0.005	0.005	U
3010A	09/15/11	6010B	09/20/11	7440-50-8	Copper	0.00092	0.002	0.002	U
3010A	09/15/11	6010B	09/20/11	7439-89-6	Iron	0.0075	0.05	0.05	U
200.8	09/15/11	200.8	09/20/11	7439-92-1	Lead	0.000046	0.0001	0.0001	U
3010A	09/15/11	6010B	09/20/11	7439-96-5	Manganese	0.00028	0.001	0.001	U
3010A	09/15/11	6010B	09/20/11	7440-02-0	Nickel	0.0039	0.01	0.01	U
3010A	09/15/11	6010B	09/20/11	7782-49-2	Selenium	0.0050	0.05	0.05	U
3010A	09/15/11	6010B	09/20/11	7440-28-0	Thallium	0.0031	0.05	0.05	U
3010A	09/15/11	6010B	09/20/11	7440-62-2	Vanadium	0.00027	0.003	0.003	U
3010A	09/15/11	6010B	09/20/11	7440-66-6	Zinc	0.0014	0.01	0.01	U

Reported in mg/L (ppm).
U-Analyte undetected at given RL
RL-Reporting Limit

TL89: 790 BC 1/12/12

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-003
SAMPLE

Lab Sample ID: TL89F
LIMS ID: 11-19809
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	**7440-70-2**	**Calcium**	11.3	50	**5,140**	
3010A	09/15/11	6010B	09/20/11	**7439-95-4**	**Magnesium**	9.6	50	**1,000**	
3010A	09/15/11	6010B	09/20/11	**7440-09-7**	**Potassium**	65.7	500	**1,520**	
3010A	09/15/11	6010B	09/20/11	**7440-23-5**	**Sodium**	11.4	500	**318,000**	

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: TL89MB
LIMS ID: 11-19809
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	7440-70-2	Calcium	11.3	50	50	U
3010A	09/15/11	6010B	09/20/11	7439-95-4	Magnesium	9.6	50	50	U
3010A	09/15/11	6010B	09/20/11	7440-09-7	Potassium	65.7	500	500	U
3010A	09/15/11	6010B	09/20/11	7440-23-5	Sodium	11.4	500	500	U

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TL89LCS
LIMS ID: 11-19809
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Calcium	6010B	9810	10000	98.1%	
Magnesium	6010B	10100	10000	101%	
Potassium	6010B	10300	10000	103%	
Sodium	6010B	9910	10000	99.1%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-003
SAMPLE

Lab Sample ID: TL89G
LIMS ID: 11-19855
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-Amec Geomatrix Inc.
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	**7440-21-3**	**Silicon**	8.2	60	**26,500**	

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: METHOD BLANK

Lab Sample ID: TL89MB
LIMS ID: 11-19855
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-Amec Geomatrix Inc.
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	MDL	RL	Result	Q
3010A	09/15/11	6010B	09/20/11	7440-21-3	Silicon	8.2	60	60	U

Reported in ug/L (ppb).
U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TL89LCS
LIMS ID: 11-19855
Matrix: Water
Data Release Authorized:
Reported: 09/22/11

QC Report No: TL89-Amec Geomatrix Inc.
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Silicon	6010B	8900	10000	89.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TL89

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP092071	2000.0	1951.32	97.6	2000.0	2030.19	101.5	1961.67	98.1	1868.39	93.4	1856.68	92.8	1875.67	93.8
Arsenic	AS	PMS	MS092081	50.0	49.50	99.0	50.0	49.71	99.4	50.64	101.3	50.13	100.3	50.49	101.0	49.25	98.5
Cadmium	CD	ICP	IP092071	1000.0	1037.05	103.7	1000.0	1068.23	106.8	1051.49	105.1	1010.21	101.0	994.95	99.5	993.33	99.3
Calcium	CA	ICP	IP092071	2000.0	2044.88	102.2	2000.0	2096.97	104.8	2066.15	103.3	1990.34	99.5	1969.65	98.5	1999.94	100.0
Chromium	CR	ICP	IP092071	1000.0	1031.13	103.1	1000.0	1050.63	105.1	1039.00	103.9	995.35	99.5	988.76	98.9	1000.50	100.1
Copper	CU	ICP	IP092071	1000.0	1003.57	100.4	1000.0	1028.66	102.9	1022.11	102.2	980.71	98.1	971.64	97.2	976.60	97.7
Iron	FE	ICP	IP092071	2000.0	2026.93	101.3	2000.0	2093.62	104.7	2011.36	100.6	1939.04	97.0	1916.78	95.8	1950.01	97.5
Lead	PB	PMS	MS092081	50.0	50.98	102.0	50.0	50.92	101.8	50.62	101.2	52.04	104.1	51.72	103.4	52.53	105.1
Magnesium	MG	ICP	IP092071	2000.0	1973.62	98.7	2000.0	2024.95	101.2	1982.17	99.1	1897.74	94.9	1886.46	94.3	1920.74	96.0
Manganese	MN	ICP	IP092071	1000.0	1015.12	101.5	1000.0	1032.29	103.2	971.47	97.1	959.29	95.9	954.40	95.4	935.42	93.5
Nickel	NI	ICP	IP092071	1000.0	1013.40	101.3	1000.0	1029.83	103.0	1004.49	100.4	960.10	96.0	953.86	95.4	970.98	97.1
Potassium	K	ICP	IP092071	20000.0	20157.46	100.8	20000.0	20603.05	103.0	20450.64	102.3	19569.22	97.8	19688.30	98.4	20071.66	100.4
Selenium	SE	ICP	IP092071	2000.0	1979.55	99.0	2000.0	2008.87	100.4	1977.18	98.9	1893.78	94.7	1857.25	92.9	1852.41	92.6
Silicon	SI	ICP	IP092071	2000.0	2065.86	103.3	2000.0	2098.76	104.9	2066.86	103.3	2001.72	100.1	1996.54	99.8	2046.33	102.3
Sodium	NA	ICP	IP092071	50000.0	49715.46	99.4	50000.0	52115.63	104.2	49474.98	98.9	46481.65	93.0	46069.74	92.1	46682.48	93.4
Thallium	TL	ICP	IP092071	2000.0	1968.81	98.4	2000.0	2009.59	100.5	1969.32	98.5	1865.90	93.3	1842.72	92.1	1855.19	92.8
Vanadium	V	ICP	IP092071	1000.0	969.46	96.9	1000.0	991.83	99.2	984.14	98.4	940.76	94.1	931.41	93.1	938.79	93.9
Zinc	ZN	ICP	IP092071	1000.0	1000.30	100.0	1000.0	1019.61	102.0	1005.13	100.5	969.72	97.0	957.77	95.8	973.71	97.4

Control Limits: Mercury 80-120; Other Metals 90-110

TL89.00085

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

UNITS:ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP092071	2000.0	1941.24	97.1	1898.96	94.9	1859.10	93.0	1839.43	92.0	1871.66	93.6		
Arsenic	AS	PMS	MS092081	50.0	50.17	100.3	49.27	98.5	48.30	96.6	47.93	95.9	47.23	94.5		
Cadmium	CD	ICP	IP092071	1000.0	1019.06	101.9	993.10	99.3	986.82	98.7	978.41	97.8	988.18	98.8		
Calcium	CA	ICP	IP092071	2000.0	2067.56	103.4	2017.97	100.9	1979.99	99.0	1956.97	97.8	1978.33	98.9		
Chromium	CR	ICP	IP092071	1000.0	1037.82	103.8	1007.26	100.7	996.11	99.6	985.44	98.5	993.86	99.4		
Copper	CU	ICP	IP092071	1000.0	996.11	99.6	972.43	97.2	971.47	97.1	968.56	96.9	971.63	97.2		
Iron	FE	ICP	IP092071	2000.0	2030.36	101.5	1995.22	99.8	1956.71	97.8	1928.88	96.4	1950.92	97.5		
Lead	PB	PMS	MS092081	50.0	51.53	103.1	52.13	104.3	50.16	100.3	51.27	102.5	51.51	103.0		
Magnesium	MG	ICP	IP092071	2000.0	1972.02	98.6	1930.23	96.5	1889.48	94.5	1861.08	93.1	1883.17	94.2		
Manganese	MN	ICP	IP092071	1000.0	963.64	96.4	942.53	94.3	973.06	97.3	924.15	92.4	970.00	97.0		
Nickel	NI	ICP	IP092071	1000.0	1010.56	101.1	980.09	98.0	969.92	97.0	959.84	96.0	965.53	96.6		
Potassium	K	ICP	IP092071	20000.0	20514.03	102.6	20060.46	100.3	20077.13	100.4	19885.01	99.4	20037.80	100.2		
Selenium	SE	ICP	IP092071	2000.0	1885.30	94.3	1858.97	92.9	1819.39	91.0	1797.40	89.9	1795.25	89.8		
Silicon	SI	ICP	IP092071	2000.0	2083.16	104.2	2006.08	100.3	2000.17	100.0	1995.90	99.8	2035.46	101.8		
Sodium	NA	ICP	IP092071	50000.0	47454.80	94.9	45907.93	91.8	45972.62	91.9	45528.63	91.1	46434.43	92.9		
Thallium	TL	ICP	IP092071	2000.0	1898.45	94.9	1884.07	94.2	1843.46	92.2	1820.33	91.0	1817.66	90.9		
Vanadium	V	ICP	IP092071	1000.0	955.04	95.5	944.09	94.4	937.54	93.8	931.37	93.1	933.24	93.3		
Zinc	ZN	ICP	IP092071	1000.0	1009.40	100.9	983.15	98.3	972.32	97.2	955.33	95.5	968.12	96.8		

Control Limits: Mercury 80-120; Other Metals 90-110

FORM II (1)

TL89:000577

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP092175	2000.0	1974.71	98.7	2000.0	1995.14	99.8	2018.58	100.9	1975.98	98.8	1991.20	99.6		
Arsenic	AS	PMS	MS092182	50.0	50.34	100.7	50.0	50.24	100.5	49.59	99.2	50.35	100.7	50.23	100.5	50.27	100.5
Cadmium	CD	ICP	IP092175	1000.0	1028.50	102.9	1000.0	1050.29	105.0	1036.08	103.6	1030.30	103.0	1036.76	103.7		
Chromium	CR	ICP	IP092175	1000.0	1025.87	102.6	1000.0	1027.22	102.7	1048.41	104.8	1039.32	103.9	1033.62	103.4		
Copper	CU	ICP	IP092175	1000.0	1010.87	101.1	1000.0	1038.22	103.8	1017.64	101.8	1025.18	102.5	1026.41	102.6		
Nickel	NI	ICP	IP092175	1000.0	992.40	99.2	1000.0	988.78	98.9	1005.83	100.6	986.03	98.6	985.83	98.6		
Selenium	SE	ICP	IP092175	2000.0	1973.50	98.7	2000.0	2026.14	101.3	1984.57	99.2	1948.59	97.4	1958.18	97.9		
Thallium	TL	ICP	IP092175	2000.0	1947.84	97.4	2000.0	1989.25	99.5	1956.92	97.8	1915.03	95.8	1929.10	96.5		
Vanadium	V	ICP	IP092175	1000.0	962.19	96.2	1000.0	986.00	98.6	973.56	97.4	974.69	97.5	980.02	98.0		
Zinc	ZN	ICP	IP092175	1000.0	967.49	96.7	1000.0	968.17	96.8	993.99	99.4	978.24	97.8	975.48	97.5		

Control Limits: Mercury 80-120; Other Metals 90-110

FORM II (1)

TL89 : 000033

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TL89

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP092175	2000.0												
Arsenic	AS	PMS	MS092182	50.0	51.03	102.1										
Cadmium	CD	ICP	IP092175	1000.0												
Chromium	CR	ICP	IP092175	1000.0												
Copper	CU	ICP	IP092175	1000.0												
Nickel	NI	ICP	IP092175	1000.0												
Selenium	SE	ICP	IP092175	2000.0												
Thallium	TL	ICP	IP092175	2000.0												
Vanadium	V	ICP	IP092175	1000.0												
Zinc	ZN	ICP	IP092175	1000.0												

Control Limits: Mercury 80-120; Other Metals 90-110

FORM II (1)

TL89 . 00055

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TL89

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP092071	50.0	48.45	96.9	47.72	95.4	60.55	121.1						
Arsenic	AS	PMS	MS092081	0.2	0.19	95.0										
Cadmium	CD	ICP	IP092071	2.0	1.88	94.0	1.28	64.0	1.58	79.0						
Calcium	CA	ICP	IP092071	50.0	50.13	100.3	53.27	106.5	56.32	112.6						
Chromium	CR	ICP	IP092071	5.0	5.71	114.2	4.98	99.6	5.80	116.0						
Copper	CU	ICP	IP092071	2.0	1.75	87.5	1.61	80.5	1.86	93.0						
Iron	FE	ICP	IP092071	50.0	52.85	105.7	59.04	118.1	59.08	118.2						
Lead	PB	PMS	MS092081	0.1	0.12	120.0										
Magnesium	MG	ICP	IP092071	50.0	48.98	98.0	51.36	102.7	48.48	97.0						
Manganese	MN	ICP	IP092071	1.0	1.01	101.0	1.06	106.0	1.21	121.0						
Nickel	NI	ICP	IP092071	10.0	10.06	100.6	11.10	111.0	9.81	98.1						
Potassium	K	ICP	IP092071	500.0	517.18	103.4	579.23	115.8	600.39	120.1						
Selenium	SE	ICP	IP092071	50.0	54.26	108.5	57.19	114.4	54.08	108.2						
Silicon	SI	ICP	IP092071	60.0	65.02	108.4	81.44	135.7	87.09	145.2						
Sodium	NA	ICP	IP092071	500.0	497.80	99.6	656.79	131.4	664.02	132.8						
Thallium	TL	ICP	IP092071	50.0	47.42	94.8	39.16	78.3	42.37	84.7						
Vanadium	V	ICP	IP092071	3.0	2.85	95.0	2.09	69.7	1.71	57.0						
Zinc	ZN	ICP	IP092071	10.0	10.20	102.0	10.12	101.2	10.45	104.5						

Control Limits: no control limits have been established by the EPA at this time.

FORM II (2)

TL89.09692

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TL89

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP092175	50.0	52.58	105.2	54.66	109.3	53.79	107.6	61.16	122.3				
Arsenic	AS	PMS	MS092182	0.2	0.19	95.0										
Cadmium	CD	ICP	IP092175	2.0	1.81	90.5	1.44	72.0	1.45	72.5	1.67	83.5				
Chromium	CR	ICP	IP092175	5.0	5.52	110.4	5.37	107.4	4.86	97.2	5.43	108.6				
Copper	CU	ICP	IP092175	2.0	2.07	103.5	2.17	108.5	2.20	110.0	2.43	121.5				
Nickel	NI	ICP	IP092175	10.0	11.42	114.2	11.08	110.8	10.41	104.1	12.09	120.9				
Selenium	SE	ICP	IP092175	50.0	52.45	104.9	58.23	116.5	56.95	113.9	51.70	103.4				
Thallium	TL	ICP	IP092175	50.0	44.45	88.9	40.61	81.2	38.78	77.6	43.49	87.0				
Vanadium	V	ICP	IP092175	3.0	2.58	86.0	2.58	86.0	2.67	89.0	2.63	87.7				
Zinc	ZN	ICP	IP092175	10.0	9.84	98.4	10.67	106.7	9.80	98.0	9.46	94.6				

Control Limits: no control limits have been established by the EPA at this time.

FORM II (2)

TL89 : 000051

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TL89

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP092071	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS092081	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	ICP	IP092071	5.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Calcium	CA	ICP	IP092071	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Chromium	CR	ICP	IP092071	10.0	5.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Copper	CU	ICP	IP092071	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Iron	FE	ICP	IP092071	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Lead	PB	PMS	MS092081	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Magnesium	MG	ICP	IP092071	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Manganese	MN	ICP	IP092071	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Nickel	NI	ICP	IP092071	40.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
Potassium	K	ICP	IP092071	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Selenium	SE	ICP	IP092071	5.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Silicon	SI	ICP	IP092071	60.0	60.0	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U
Sodium	NA	ICP	IP092071	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	515.5	B
Thallium	TL	ICP	IP092071	10.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Vanadium	V	ICP	IP092071	50.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Zinc	ZN	ICP	IP092071	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TL89.000522

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TL89

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP092071	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Arsenic	AS	PMS	MS092081	10.0	0.2	0.2	U	0.2	U	0.2	B	0.2	U	0.2	U		
Cadmium	CD	ICP	IP092071	5.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Calcium	CA	ICP	IP092071	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Chromium	CR	ICP	IP092071	10.0	5.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
Copper	CU	ICP	IP092071	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Iron	FE	ICP	IP092071	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Lead	PB	PMS	MS092081	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U		
Magnesium	MG	ICP	IP092071	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Manganese	MN	ICP	IP092071	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
Nickel	NI	ICP	IP092071	40.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		
Potassium	K	ICP	IP092071	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U		
Selenium	SE	ICP	IP092071	5.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Silicon	SI	ICP	IP092071	60.0	60.0	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U		
Sodium	NA	ICP	IP092071	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U		
Thallium	TL	ICP	IP092071	10.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Vanadium	V	ICP	IP092071	50.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
Zinc	ZN	ICP	IP092071	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		

TL89.000037

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ug/L

SDG: TL89

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP092175	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Arsenic	AS	PMS	MS092182	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	ICP	IP092175	5.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Chromium	CR	ICP	IP092175	10.0	5.0	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
Copper	CU	ICP	IP092175	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Nickel	NI	ICP	IP092175	40.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		
Selenium	SE	ICP	IP092175	5.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Thallium	TL	ICP	IP092175	10.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Vanadium	V	ICP	IP092175	50.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
Zinc	ZN	ICP	IP092175	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		

TL89 : 000011

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ug/L

SDG: TL89

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP092175	200.0	50.0												
Arsenic	AS	PMS	MS092182	10.0	0.2	0.2	U										
Cadmium	CD	ICP	IP092175	5.0	2.0												
Chromium	CR	ICP	IP092175	10.0	5.0												
Copper	CU	ICP	IP092175	25.0	2.0												
Nickel	NI	ICP	IP092175	40.0	10.0												
Selenium	SE	ICP	IP092175	5.0	50.0												
Thallium	TL	ICP	IP092175	10.0	50.0												
Vanadium	V	ICP	IP092175	50.0	3.0												
Zinc	ZN	ICP	IP092175	20.0	10.0												

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ICS SOURCE: I.V.

PROJECT: FRP 2011 Shoreline I

RUNID: IP092071

SDG: TL89

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	199745.5	200676.1	**100.3**	186936.7	190508.9	**95.3**			
Antimony		1000	101.2	1094.3	**109.4**	80.5	1042.6	**104.3**			
Arsenic		1000	7.3	1028.7	**102.9**	1.8	995.5	**99.6**			
Barium		1000	-1.5	1044.9	**104.5**	-1.9	1002.1	**100.2**			
Beryllium		1000	0.1	1022.4	**102.2**	0.0	981.4	**98.1**			
Boron			-6.8	-8.3		-9.3	-7.9				
Cadmium		1000	0.8	1077.3	**107.7**	0.0	1050.6	**105.1**			
Calcium	100000	100000	104585.8	104538.5	**104.5**	99951.9	101355.8	**101.4**			
Chromium		1000	-1.3	1060.0	**106.0**	-1.5	1022.4	**102.2**			
Cobalt		1000	2.7	1049.5	**105.0**	3.2	1043.5	**104.4**			
Copper		1000	1.2	1090.4	**109.0**	0.9	1082.2	**108.2**			
Iron	200000	200000	203326.0	200559.4	**100.3**	191854.5	192630.0	**96.3**			
Lead		1000	-8.2	1021.6	**102.2**	-6.3	997.8	**99.8**			
Magnesium	100000	100000	102583.4	99005.1	**99.0**	98639.6	95211.4	**95.2**			
Manganese		1000	0.5	986.0	**98.6**	0.4	945.7	**94.6**			
Molybdenum			2.8	3.6		1.8	2.1				
Nickel		1000	-1.7	991.5	**99.2**	-1.2	947.4	**94.7**			
Potassium			35.9	228.3		99.6	264.0				
Selenium		1000	-41.9	978.2	**97.8**	-24.8	942.4	**94.2**			
Silicon			-2.5	-5.1		19.4	12.2				
Silver		1000	0.6	1067.7	**106.8**	0.7	1029.3	**102.9**			
Sodium			5.6	7.7		160.3	145.5				
Strontium			10.7	10.6		10.2	10.2				
Thallium		1000	35.2	1078.7	**107.9**	34.1	1045.1	**104.5**			
Tin			1.5	2.3		1.5	2.2				
Titanium			-8.5	-8.7		-8.5	-9.0				
Vanadium		1000	0.7	1017.9	**101.8**	-0.9	1015.9	**101.6**			
Zinc		1000	0.9	982.7	**98.3**	0.9	950.9	**95.1**			

TL89 000095

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

ICS SOURCE: I.V.

RUNID: MS092081

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.6	**98.0**						
Cadmium		20	0.0	20.1	**100.5**						
Chromium		20	0.9	20.7	**103.5**						
Cobalt		20	0.0	19.6	**98.0**						
Copper		20	0.5	20.0	**100.0**						
Manganese		20	0.7	20.6	**103.0**						
Molybdenum	400	400	415.5	417.9	**104.5**						
Nickel		20	0.6	19.7	**98.5**						
Selenium			0.0	-0.1							
Silver		20	0.0	19.0	**95.0**						
Vanadium			0.0	-0.5							
Zinc		20	1.0	19.9	**99.5**						

TL89 : 00057

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

ICS SOURCE: I.V.

RUNID: IP092175

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	198396.1	196836.9	**98.4**	195080.2	196515.1	**98.3**			
Antimony		1000	100.6	1061.1	**106.1**	91.3	1032.6	**103.3**			
Arsenic		1000	5.0	1000.2	**100.0**	4.6	966.9	**96.7**			
Barium		1000	-3.1	1004.3	**100.4**	-2.7	999.3	**99.9**			
Beryllium		1000	0.1	983.5	**98.4**	0.1	981.0	**98.1**			
Boron			-7.6	-7.3		-8.1	-6.9				
Cadmium		1000	0.5	1033.5	**103.4**	0.3	1017.5	**101.8**			
Calcium	100000	100000	102375.9	101814.8	**101.8**	102644.3	102776.2	**102.8**			
Chromium		1000	-2.7	1023.5	**102.4**	-0.4	1031.3	**103.1**			
Cobalt		1000	2.7	1006.2	**100.6**	2.8	1000.8	**100.1**			
Copper		1000	0.3	1065.6	**106.6**	0.8	1067.4	**106.7**			
Iron	200000	200000	197741.8	193226.6	**96.6**	195326.8	193345.5	**96.7**			
Lead		1000	-7.2	987.1	**98.7**	-5.7	967.6	**96.8**			
Magnesium	100000	100000	101395.3	96206.3	**96.2**	100271.0	96588.5	**96.6**			
Manganese		1000	0.3	957.3	**95.7**	0.3	945.6	**94.6**			
Molybdenum			3.7	4.0		3.1	2.9				
Nickel		1000	-1.5	939.3	**93.9**	-0.5	937.2	**93.7**			
Potassium			51.5	225.6		86.4	249.6				
Selenium		1000	-36.4	958.4	**95.8**	-33.3	930.9	**93.1**			
Silicon			-7.0	-4.7		11.7	4.4				
Silver		1000	0.4	1035.8	**103.6**	0.6	1007.4	**100.7**			
Sodium			13.0	6.9		80.2	77.2				
Strontium			10.5	10.3		10.4	10.4				
Thallium		1000	38.1	1029.2	**102.9**	29.2	1002.2	**100.2**			
Tin			3.3	1.4		1.8	2.7				
Titanium			-8.0	-8.3		-8.6	-8.4				
Vanadium		1000	3.9	985.4	**98.5**	0.7	984.9	**98.5**			
Zinc		1000	0.4	921.9	**92.2**	0.5	930.5	**93.1**			

TL89 : 000058

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

ICS SOURCE: I.V.

RUNID: MS092182

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.0	0.1							
Arsenic		20	0.0	19.4	**97.0**						
Cadmium		20	0.1	19.9	**99.5**						
Chromium		20	0.8	20.6	**103.0**						
Cobalt		20	0.0	19.5	**97.5**						
Copper		20	0.5	19.5	**97.5**						
Manganese		20	0.8	20.1	**100.5**						
Molybdenum	400	400	415.9	417.6	**104.4**						
Nickel		20	0.5	18.9	**94.5**						
Silver		20	0.0	19.1	**95.5**						
Vanadium			0.0	-0.4							
Zinc		20	1.2	19.7	**98.5**						

Post Digest Spike Sample Recovery

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: ICP

SDG: TL89

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	RUNID	SPIKED SAMPLE RESULT	C	SAMPLE RESULT	C	SPIKE ADDED	MATRIX	%R
Selenium	FRP-091211-001A	TL89APOST	IP092175	1899.17		50.00	U	2000	Water	95.0

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: ICP

SDG: TL89

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Aluminum	FRP-091211-001L	TL89A-L	Water	IP092175	88835.88		90428.65		1.8	
Cadmium	FRP-091211-001L	TL89A-L	Water	IP092175	0.41	U	10.00	U		
Chromium	FRP-091211-001L	TL89A-L	Water	IP092175	253.23		263.90		4.2	
Copper	FRP-091211-001L	TL89A-L	Water	IP092175	254.84		241.25		5.3	
Nickel	FRP-091211-001L	TL89A-L	Water	IP092175	103.53		101.75	B	1.7	
Selenium	FRP-091211-001L	TL89A-L	Water	IP092175	-9.52	U	250.00	U		
Thallium	FRP-091211-001L	TL89A-L	Water	IP092175	18.23	U	250.00	U		
Vanadium	FRP-091211-001L	TL89A-L	Water	IP092175	341.69		342.90		0.4	
Zinc	FRP-091211-001L	TL89A-L	Water	IP092175	285.88		303.50		6.2	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

ANALYSIS METHOD: PMS

SDG: TL89

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Arsenic	FRP-091211-001L	TL89A-L	Water	MS092081	40.26		40.57	B	0.8	
Lead	FRP-091211-001L	TL89A-L	Water	MS092081	24.47		25.90		5.8	

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Aluminum	AL	ICP	OPTIMA ICP 2	308.22		200	50.0	4/1/2011	250000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Cadmium	CD	ICP	OPTIMA ICP 2	228.80		5	2.0	4/1/2011	20000.0	8/3/2011
Calcium	CA	ICP	OPTIMA ICP 2	317.93		5000	50.0	4/1/2011	500000.0	8/3/2011
Chromium	CR	ICP	OPTIMA ICP 2	267.72		10	5.0	4/1/2011	100000.0	8/3/2011
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Iron	FE	ICP	OPTIMA ICP 2	259.94		100	50.0	4/1/2011	250000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Magnesium	MG	ICP	OPTIMA ICP 2	279.08		5000	50.0	4/1/2011	500000.0	8/3/2011
Manganese	MN	ICP	OPTIMA ICP 2	257.61		15	1.0	4/1/2011	30000.0	8/3/2011
Nickel	NI	ICP	OPTIMA ICP 2	231.60		40	10.0	4/1/2011	100000.0	8/3/2011
Potassium	K	ICP	OPTIMA ICP 2	766.49		5000	500.0	4/1/2011	500000.0	8/3/2011
Selenium	SE	ICP	OPTIMA ICP 2	196.02		5	50.0	4/1/2011	20000.0	8/3/2011
Silicon	SI	ICP	OPTIMA ICP 2	288.16		60	60.0	4/1/2011	90000.0	8/3/2011
Sodium	NA	ICP	OPTIMA ICP 2	589.00		5000	500.0	4/1/2011	5000000.0	8/3/2011
Thallium	TL	ICP	OPTIMA ICP 2	190.86		10	50.0	4/1/2011	30000.0	8/3/2011
Vanadium	V	ICP	OPTIMA ICP 2	292.40		50	3.0	4/1/2011	50000.0	8/3/2011
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

IEC DATE: 9/7/2011

SDG: TL89

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.0000000
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0773398	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.1892080	0.0000000	0.0000000	0.0622379
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0187178	0.0000000	0.0000000	0.0000000	0.0000000	-0.0439811
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0695283
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.1778670	0.0000000	0.0000000	0.0000000	-0.0252598	0.0000000	0.0000000	-2.3072100	1.2452600	0.0570036
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.1525560	0.0000000	-1.6380600	-1.2519300	0.0000000	0.6727000
Manganese	257.61	0.0051426	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0048944
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0228298	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0634207	0.0000000	0.3514040	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	6.5805300	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0678735	0.0000000	1.7836600	0.3510820	0.0000000	-0.1294840
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	-0.1147000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.1641450	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.1100040
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

IEC DATE: 9/7/2011

SDG: TL89

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0581570	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0080384	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0048376	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0148620	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0735290	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	-0.1460000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ANALYSIS METHOD: ICP

PROJECT: FRP 2011 Shoreline I

ARI PREP CODE: TWC

SDG: TL89

PREPDATE: 9/15/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-091211-001	TL89A	0.000	50.0	50.0
FRP-091211-001D	TL89ADUP	0.000	50.0	50.0
FRP-091211-001S	TL89ASPK	0.000	50.0	50.0
FRP-091211-002	TL89B	0.000	50.0	50.0
FRP-091211-004	TL89C	0.000	50.0	50.0
FRP-091211-003	TL89D	0.000	50.0	50.0
FRP-091211-003	TL89F	0.000	50.0	50.0
FRP-091211-003	TL89G	0.000	50.0	50.0
PBW	TL89MB1	0.000	50.0	50.0
LCSW	TL89MB1SPK	0.000	50.0	50.0
PBW	TL89MB2	0.000	50.0	50.0
LCSW	TL89MB2SPK	0.000	50.0	50.0
PBW	TL89MB3	0.000	50.0	50.0
LCSW	TL89MB3SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL89

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 9/15/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-091211-001	TL89A	0.000	50.0	25.0
FRP-091211-001D	TL89ADUP	0.000	50.0	25.0
FRP-091211-001S	TL89ASPK	0.000	50.0	25.0
FRP-091211-002	TL89B	0.000	50.0	25.0
FRP-091211-004	TL89C	0.000	50.0	25.0
FRP-091211-003	TL89D	0.000	50.0	25.0
PBW	TL89MB1	0.000	50.0	25.0
LCSW	TL89MB1SPK	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/20/2011

SDG: TL89 RUNID: IP092071 METHOD: ICP END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11261			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
S2	S2	1.00	11302									X		X	X					X												X	
S3	S3	1.00	11320																				X			X				X			X
S4	S4	1.00	11343																								X						
S5	S5	1.00	11364			X					X					X		X	X			X											
ICV	ICV	1.00	11385			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ICB	ICB	1.00	11423			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CRI	CRII	1.00	11464			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ICSA	ICSAI	1.00	11505			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ICSAB	ICSABI	1.00	11551			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCV	CCV1	1.00	11585			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB1	1.00	12023			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	TM64MB2	5.00	12064																														
ZZZZZZ	TM50MB2	5.00	12111																														
ZZZZZZ	TM50Bt	5.00	12154																														
ZZZZZZ	TM50AtDUP	5.00	12200																														
ZZZZZZ	TM50At	5.00	12241																														
ZZZZZZ	TM50AtSPK	5.00	12282																														
ZZZZZZ	TM64B	5.00	12324																														
ZZZZZZ	TM64AtDUP	5.00	12365																														
ZZZZZZ	TM64At	5.00	12410																														
ZZZZZZ	TM64AtSPK	5.00	12452																														
CCV	CCV2	1.00	12493			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB2	1.00	12532			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	DICHECK	1.00	12573																														
ZZZZZZ	TM02MB1	2.00	13014																														
ZZZZZZ	TL76A	1.00	13055																														
ZZZZZZ	TL76B	1.00	13101																														
ZZZZZZ	TL76C	1.00	13142																														
ZZZZZZ	TL76D	1.00	13182																														
ZZZZZZ	TM02ADUP	2.00	13225																														
ZZZZZZ	TM02A	5.00	13290																														
ZZZZZZ	TM02ASPK	5.00	13330																														
ZZZZZZ	TM02MB1SPK	2.00	13364																														
CCV	CCV3	1.00	13404			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X

FORM XIV

TL89-00182

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/20/2011

SDG: TL89 RUNID: IP092071 METHOD: ICP END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	13442			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	TL76MB1	1.00	13483																														
ZZZZZZ	TL76MB2	1.00	13524																														
ZZZZZZ	TL76G-L	5.00	13565																														
ZZZZZZ	TL76G	1.00	14013																														
ZZZZZZ	TL76GDUP	1.00	14052																														
ZZZZZZ	TL76GSPK	1.00	14092																														
ZZZZZZ	TL76E	1.00	14124																														
ZZZZZZ	TL76F	1.00	14170																														
ZZZZZZ	TL76MB1SPK	1.00	14212																														
ZZZZZZ	TL76MB2SPK	1.00	14251																														
CCV	CCV4	1.00	14292			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB4	1.00	14331			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	ZZZZZZ	5.00	14372																														
FRP-091211-001	TL89A	1.00	14413																														
FRP-091211-001D	TL89ADUP	1.00	14455																														
FRP-091211-001S	TL89ASPK	1.00	14501																														
FRP-091211-002	TL89B	1.00	14542			X						X		X	X								X			X				X		X	X
FRP-091211-004	TL89C	1.00	14585			X						X		X	X								X			X				X		X	X
FRP-091211-003	TL89D	1.00	15030			X						X		X	X	X				X			X			X				X		X	X
FRP-091211-003	TL89F	1.00	15073								X							X	X			X											
ZZZZZZ	TL76I	1.00	15120																														
LCSW	TL89MB1SPK	1.00	15160			X						X		X	X	X				X			X			X				X		X	X
CCV	CCV5	1.00	15195			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB5	1.00	15234			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
PBW	TL89MB1	1.00	15275			X						X		X	X	X				X			X			X				X		X	X
PBW	TL89MB2	1.00	15320								X							X	X			X											
PBW	TL89MB3	1.00	15361																								X						
FRP-091211-003	TL89G	1.00	15403																								X						
ZZZZZZ	TL76B	2.00	15445																														
ZZZZZZ	TL76C	5.00	15485																														
ZZZZZZ	TM02ADUP	5.00	15531																														
LCSW	TL89MB2SPK	1.00	15571								X							X	X			X											
LCSW	TL89MB3SPK	1.00	16011																								X						
CCV	CCV6	1.00	16052			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X

FORM XIV

TL89:09169K

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/20/2011

SDG: TL89 RUNID: IP092071 METHOD: ICP END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB6	1.00	16090			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CRI	CRIF	1.00	16131			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ICSA	ICSAF	1.00	16173			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ICSAB	ICSABF	1.00	16214			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCV	CCV7	1.00	16252			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB7	1.00	16291			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	TL91MB	2.00	16332																														
ZZZZZZ	ZZZZZZ	5.00	16373																														
ZZZZZZ	TM07B	1.00	16414																														
ZZZZZZ	TM07BDUP	1.00	16461																														
ZZZZZZ	TM07BSPK	1.00	16504																														
ZZZZZZ	TM07A	1.00	16545																														
ZZZZZZ	TM07C	1.00	16592																														
ZZZZZZ	TM07D	1.00	17035																														
ZZZZZZ	TL91A	2.00	17083																														
ZZZZZZ	TL91MBSPK	2.00	17122																														
CCV	CCV8	1.00	17162			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB8	1.00	17200			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	TM07E	1.00	17242																														
ZZZZZZ	TM07F	1.00	17285																														
ZZZZZZ	TM07G	1.00	17332																														
ZZZZZZ	TM07H	1.00	17380																														
ZZZZZZ	TM07I	1.00	17422																														
ZZZZZZ	TM07J	1.00	17464																														
ZZZZZZ	TM07L	1.00	17505																														
ZZZZZZ	TM07M	1.00	17552																														
ZZZZZZ	TM07MB1SPK	1.00	17595																														
ZZZZZZ	TM07MB2SPK	1.00	18034																														
CCV	CCV9	1.00	18075			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
CCB	CCB9	1.00	18114			X					X	X		X	X	X		X	X	X		X	X			X	X			X		X	X
ZZZZZZ	TM07MB1	1.00	18155																														
ZZZZZZ	TM07MB2	1.00	18200																														
FRP-091211-001S	TL89ASPK	1.00	18241																														
ZZZZZZ	ZZZZZZ	1.00	18282																														
ZZZZZZ	ZZZZZZ	1.00	18323																														

FORM XIV

TL89-001-02

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/21/2011

SDG: TL89 RUNID: IP092175 METHOD: ICP END DATE: 9/21/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11155			X						X		X	X								X			X				X		X	X
S2	S2	1.00	11200									X		X	X																	X	
S3	S3	1.00	11215																				X			X				X			X
S4	S4	1.00	11241																														
S5	S5	1.00	11262			X																											
ICV	ICV	1.00	11300			X						X		X	X								X			X				X		X	X
ICB	ICB	1.00	11335			X						X		X	X								X			X				X		X	X
CRI	CRII	1.00	11380			X						X		X	X								X			X				X		X	X
ICSA	ICSAI	1.00	11421			X						X		X	X								X			X				X		X	X
ICSAB	ICSABI	1.00	11460			X						X		X	X								X			X				X		X	X
CCV	CCV1	1.00	11495			X						X		X	X								X			X				X		X	X
CCB	CCB1	1.00	11533			X						X		X	X								X			X				X		X	X
ZZZZZZ	TM07MB1	1.00	11574																														
ZZZZZZ	TM97MB1	2.00	12020																														
ZZZZZZ	TM92MB	5.00	12061																														
ZZZZZZ	TM92ADUP	5.00	12104																														
ZZZZZZ	TM92A	5.00	12150																														
ZZZZZZ	TM92ASPK	5.00	12193																														
ZZZZZZ	TM97ADUP	2.00	12240																														
ZZZZZZ	TM97A	2.00	12274																														
ZZZZZZ	TM97ASPK	2.00	12314																														
ZZZZZZ	TM97MB1SPK	2.00	12353																														
CCV	CCV2	1.00	12392			X						X		X	X								X			X				X		X	X
CCB	CCB2	1.00	12431			X						X		X	X								X			X				X		X	X
FRP-091211-001L	TL89A-L	5.00	12472			X						X		X	X								X			X				X		X	X
FRP-091211-001	TL89A	1.00	12513			X						X		X	X								X			X				X		X	X
FRP-091211-001D	TL89ADUP	1.00	12555			X						X		X	X								X			X				X		X	X
FRP-091211-001S	TL89ASPK	1.00	13001			X						X		X	X								X			X				X		X	X
FRP-091211-001A	TL89APOST	1.00	13042																							X							
ZZZZZZ	TM07B-L	5.00	13083																														
ZZZZZZ	TM07B	1.00	13124																														
ZZZZZZ	TM07BDUP	1.00	13171																														
ZZZZZZ	TM07BSPK	1.00	13214																														
ZZZZZZ	TM07BPOST	1.00	13255																														
CCV	CCV3	1.00	13301			X						X		X	X								X			X				X		X	X

FORM XIV

TL89 : 000213

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: OPTIMA ICP 2 START DATE: 9/21/2011

SDG: TL89 RUNID: IP092175 METHOD: ICP END DATE: 9/21/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	13335			X						X		X	X								X			X				X		X	X
CRI	CRIF	1.00	13380			X						X		X	X								X			X				X		X	X
ICSA	ICSAF	1.00	13421			X						X		X	X								X			X				X		X	X
ICSAB	ICSABF	1.00	13463			X						X		X	X								X			X				X		X	X
CCV	CCV4	1.00	13501			X						X		X	X								X			X				X		X	X
CCB	CCB4	1.00	13535			X						X		X	X								X			X				X		X	X

TL89-001122

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 9/20/2011

SDG: TL89 RUNID: MS092081 METHOD: PMS END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09290				X																	X									
S1	S1	1.00	09360				X																	X									
S2	S2	1.00	09440				X																	X									
S3	S3	1.00	09520				X																	X									
S4	S4	1.00	10000				X																	X									
ZZZZZZ	Rinse Sampl	1.00	10070																														
ICV	MICV	1.00	10220				X																	X									
ICB	ICB	1.00	10290				X																	X									
CCV	MCCV1	1.00	10360				X																	X									
CCB	CCB1	1.00	10440				X																	X									
CRI	MCRI	1.00	10510				X																	X									
ICSA	ICSAI	1.00	10580				X																	X									
ICSAB	ICSABI	1.00	11060				X																	X									
ZZZZZZ	LR200	1.00	11130																														
ZZZZZZ	LR300	1.00	11200																														
CCV	MCCV2	1.00	11280				X																	X									
CCB	CCB2	1.00	11350				X																	X									
ZZZZZZ	TM19MB	10.00	11420																														
ZZZZZZ	TM75MB	2.00	11490																														
ZZZZZZ	TM75MBSPK	2.00	11560																														
ZZZZZZ	TM19ADUP	10.00	12020																														
ZZZZZZ	TM19A	10.00	12090																														
ZZZZZZ	TM19ASPK	20.00	12150																														
ZZZZZZ	TL50O	2.00	12220																														
ZZZZZZ	TL50R	2.00	12280																														
ZZZZZZ	TM75A	2.00	12350																														
ZZZZZZ	TL50ASPK	20.00	12420																														
CCV	MCCV3	1.00	12480				X																	X									
CCB	CCB3	1.00	12550				X																	X									
ZZZZZZ	TM66MB	10.00	13030																														
ZZZZZZ	TM66AaDUP	10.00	13090																														
ZZZZZZ	TM66Aa	10.00	13160																														
ZZZZZZ	TM66AaSPK	20.00	13220																														
ZZZZZZ	TM73B	20.00	13340																														
ZZZZZZ	TM73B	20.00	13420																														

FORM XIV

TL89.00119

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 9/20/2011

SDG: TL89 RUNID: MS092081 METHOD: PMS END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TM57B	20.00	13530																														
CCV	MCCV4	1.00	13590				X																	X									
CCB	CCB4	1.00	14060				X																	X									
ZZZZZZ	TL50MB2	2.00	14140																														
ZZZZZZ	TL50MB2SPK	2.00	14200																														
ZZZZZZ	TL50N-L	10.00	14270																														
ZZZZZZ	TL50N	2.00	14330																														
ZZZZZZ	TL50NDUP	2.00	14400																														
ZZZZZZ	TL50NSPK	2.00	14460																														
ZZZZZZ	TL84BDUP	20.00	14530																														
ZZZZZZ	TL84B	20.00	14590																														
ZZZZZZ	TL84BSPK	20.00	15060																														
ZZZZZZ	TL84A	20.00	15130																														
CCV	MCCV5	1.00	15190				X																	X									
CCB	CCB5	1.00	15260				X																	X									
S0	S0	1.00	15340				X																	X									
CCV	MCCV6	1.00	15420				X																	X									
CCB	CCB6	1.00	15490				X																	X									
ZZZZZZ	TL84MB	20.00	15560																														
ZZZZZZ	TL84MBSPK	20.00	16030																														
ZZZZZZ	TL50P	2.00	16090																														
ZZZZZZ	TL50Q	2.00	16160																														
ZZZZZZ	TL84C	20.00	16220																														
ZZZZZZ	TL84D	20.00	16290																														
ZZZZZZ	TL84E	20.00	16350																														
ZZZZZZ	TL84F	20.00	16420																														
ZZZZZZ	TL76D	2.00	16480																														
ZZZZZZ	TL76E	2.00	16550																														
CCV	MCCV7	1.00	17010				X																	X									
CCB	CCB7	1.00	17090				X																	X									
ZZZZZZ	TL76MB1	2.00	17160																														
ZZZZZZ	TL76MB1SPK	2.00	17220																														
ZZZZZZ	ZZZZZZ	10.00	17290																														
ZZZZZZ	TL76G	2.00	17360																														
ZZZZZZ	TL76GDUP	2.00	17420																														

FORM XIV

TL89:09414

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 9/20/2011

SDG: TL89 RUNID: MS092081 METHOD: PMS END DATE: 9/20/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TL76GSPK	2.00	17490																														
ZZZZZZ	TL76A	2.00	17550																														
ZZZZZZ	TL76B	2.00	18020																														
ZZZZZZ	TL76C	2.00	18080																														
ZZZZZZ	TL76F	2.00	18150																														
CCV	MCCV8	1.00	18210				X																	X									
CCB	CCB8	1.00	18290				X																	X									
ZZZZZZ	TL92MB1	20.00	18360																														
ZZZZZZ	TL92MB1SPK	20.00	18420																														
ZZZZZZ	TL92A	20.00	18490																														
ZZZZZZ	TL92C	20.00	18550																														
ZZZZZZ	TL92L	20.00	19020																														
ZZZZZZ	TL92M	20.00	19080																														
ZZZZZZ	TL92O	20.00	19150																														
ZZZZZZ	TL92P	20.00	19210																														
FRP-091211-002	TL89B	2.00	19280																					X									
FRP-091211-004	TL89C	2.00	19350																					X									
CCV	MCCV9	1.00	19410				X																	X									
CCB	CCB9	1.00	19480				X																	X									
PBW	TL89MB1	2.00	19560				X																	X									
LCSW	TL89MB1SPK	2.00	20020				X																	X									
FRP-091211-001L	TL89A-L	10.00	20090				X																	X									
FRP-091211-001	TL89A	2.00	20150				X																	X									
FRP-091211-001D	TL89ADUP	2.00	20220				X																	X									
FRP-091211-001S	TL89ASPK	2.00	20280				X																	X									
FRP-091211-003	TL89D	2.00	20350				X																	X									
ZZZZZZ	TL95A	2.00	20410																														
ZZZZZZ	TL95B	2.00	20480																														
ZZZZZZ	TL95C	2.00	20540																														
CCV	MCCV10	1.00	21010				X																	X									
CCB	CCB10	1.00	21080				X																	X									

TL89.00115

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 9/21/2011

SDG: TL89 RUNID: MS092182 METHOD: PMS END DATE: 9/21/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10212				X																										
S1	S1	1.00	10298				X																										
S2	S2	1.00	10376				X																										
S3	S3	1.00	10475				X																										
S4	S4	1.00	10561				X																										
S4	S4	1.00	11145				X																										
ICV	MICV	1.00	11311				X																										
ICB	ICB	1.00	11396				X																										
CCV	MCCV1	1.00	11468				X																										
CCB	CCB1	1.00	11541				X																										
CRI	MCRI	1.00	12012				X																										
ZZZZZZ	ZZZZZZ	1.00	12088																														
ICSA	ICSAI	1.00	12245				X																										
ICSAB	ICSABI	1.00	12317				X																										
ZZZZZZ	LR200	1.00	12397																														
ZZZZZZ	LR300	1.00	12465																														
CCV	MCCV2	1.00	12546				X																										
CCB	CCB2	1.00	13019				X																										
ZZZZZZ	TN02MB1	20.00	13081																														
ZZZZZZ	TN02MB1SPK	20.00	13164																														
ZZZZZZ	TN02C-L	100.00	13227																														
ZZZZZZ	TN02C	20.00	13290																														
ZZZZZZ	TN02DUP	20.00	13354																														
ZZZZZZ	TN02CSPK	20.00	13428																														
ZZZZZZ	TN02CPOST	20.00	13483																														
ZZZZZZ	TN02A	20.00	13558																														
ZZZZZZ	TN02B	20.00	14024																														
ZZZZZZ	TN02D	20.00	14080																														
CCV	MCCV3	1.00	14155				X																										
CCB	CCB3	1.00	14228				X																										
ZZZZZZ	TN02MB1	20.00	14291																														
ZZZZZZ	TN02E	20.00	14368																														
ZZZZZZ	TN02F	20.00	14422																														
ZZZZZZ	TN02G	20.00	14492																														
ZZZZZZ	TN02A	20.00	14553																														

FORM XIV

TL89 : 091115

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: PE ELAN 6000 MS START DATE: 9/21/2011

SDG: TL89 RUNID: MS092182 METHOD: PMS END DATE: 9/21/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TN02G	100.00	15024																														
CCV	MCCV4	1.00	15086				X																										
CCB	CCB4	1.00	15169				X																										
ZZZZZZ	TL84MBSPK	20.00	15312																														
ZZZZZZ	ZZZZZZ	25.00	15384																														
ZZZZZZ	TL50N	5.00	15449																														
ZZZZZZ	TL50NDUP	5.00	15513																														
ZZZZZZ	TL50NSPK	5.00	15576																														
ZZZZZZ	TL84BDUP	50.00	16041																														
ZZZZZZ	TL84B	50.00	16116																														
ZZZZZZ	TL84BSPK	50.00	16171																														
ZZZZZZ	TL84A	50.00	16247																														
ZZZZZZ	TL84C	50.00	16303																														
CCV	MCCV5	1.00	16379				X																										
CCB	CCB5	1.00	16442				X																										
ZZZZZZ	TL92MB1	20.00	16516																														
ZZZZZZ	TL92MB1SPK	20.00	16584																														
ZZZZZZ	TL94A	2.00	17057																														
ZZZZZZ	TL94B	2.00	17117																														
FRP-091211-002	TL89B	5.00	17188				X																										
FRP-091211-004	TL89C	2.00	17249				X																										
ZZZZZZ	TL92A	20.00	17311																														
ZZZZZZ	TL92C	20.00	17379																														
ZZZZZZ	TL84D	50.00	17441																														
ZZZZZZ	TL84E	50.00	17504																														
CCV	MCCV6	1.00	17578				X																										
CCB	CCB6	1.00	18041				X																										

TL89:0011 17

Mercury Analysis
Report and Summary QC Forms

ARI Job ID: TL89, TL90

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL90

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
FRP-091211-001	TL90A	11-19810	
FRP-091211-001D	TL90ADUP	11-19810	
FRP-091211-001S	TL90ASPK	11-19810	
FRP-091211-002	TL90B	11-19811	
PBW	TL90MB1	11-19811	
LCSW	TL90MB1SPK	11-19811	
FRP-091211-004	TL90C	11-19812	
FRP-091211-003	TL90D	11-19813	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: Jay Kuhn Name: Jay Kuhn

Date: 9/20/11 Title: Inorganics Director

TL90:00119

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Total Mercury by Method SW7470A

Data Release Authorized:
Reported: 09/19/11
Date Received: 09/12/11

QC Report No: TL90-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation
8769

Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	RL	Result
FRP-091211-001 TL90A 11-19810	09/12/11	Water	09/14/11 09/19/11	**20.0**	**511** J
FRP-091211-002 TL90B 11-19811	09/12/11	Water	09/14/11 09/19/11	**20.0**	**38.7** J
FRP-091211-004 TL90C 11-19812	09/12/11	Water	09/14/11 09/19/11	20.0	20.0 U
FRP-091211-003 TL90D 11-19813	09/12/11	Water	09/14/11 09/19/11	**20.0**	**41.1** J
MB-091411 Method Blank	NA	Water	09/14/11 09/19/11	20.0	20.0 U

Reported in ng/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

CM 2/27/12

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-001
MATRIX SPIKE

Lab Sample ID: TL90A
LIMS ID: 11-19810
Matrix: Water
Data Release Authorized:
Reported: 09/19/11

QC Report No: TL90-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7470A	511	640	100	129%	H

Reported in ng/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: FRP-091211-001
DUPLICATE

Lab Sample ID: TL90A
LIMS ID: 11-19810
Matrix: Water
Data Release Authorized:
Reported: 09/19/11

QC Report No: TL90-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7470A	511	531	3.8%	+/- 20%	

Reported in ng/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

TL89:00122

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: TL90LCS
LIMS ID: 11-19811
Matrix: Water
Data Release Authorized:
Reported: 09/19/11

QC Report No: TL90-AMEC Geomatrix
Project: FRP 2011 Shoreline Investigation 8769
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7470A	185	200	92.5%	

Reported in ng/L

N-Control limit not met
Control Limits: 80-120%

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS: ng/L

SDG: TL90

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Mercury	HG	CVL	HG091901	500.0	502.00	100.4	500.0	502.00	100.4	503.00	100.6	500.00	100.0	504.00	100.8	500.00	100.0

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ng/L

SDG: TL90

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Mercury	HG	CVL	HG091901	500.0	502.00	100.4										

Control Limits: Mercury 80-120; Other Metals 90-110

TLS9.00125

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL90

UNITS: ng/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Mercury	HG	CVL	HG091901	20.0	15.00	75.0										

Control Limits: no control limits have been established by the EPA at this time.

TL90.00128

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

UNITS:ng/L

SDG: TL90

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Mercury	HG	CVL	HG091901	25.0	20.0	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U

TL90.00127

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL90

UNITS:ng/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Mercury	HG	CVL	HG091901	25.0	20.0	20.0	U										

TLSG-000128

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I

SDG: TL90

UNITS: ng/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ng/L)	ICP LR DATE
Mercury	HG	CVL	CETAC MERCURY	253.70		25	20.0	4/1/2011		

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

ANALYSIS METHOD: CVL

PROJECT: FRP 2011 Shoreline I

ARI PREP CODE: TLM

SDG: TL90

PREPDATE: 9/14/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
FRP-091211-001	TL90A	0.000	20.0	20.0
FRP-091211-001D	TL90ADUP	0.000	20.0	20.0
FRP-091211-001S	TL90ASPK	0.000	20.0	20.0
FRP-091211-002	TL90B	0.000	20.0	20.0
FRP-091211-004	TL90C	0.000	20.0	20.0
FRP-091211-003	TL90D	0.000	20.0	20.0
PBW	TL90MB1	0.000	20.0	20.0
LCSW	TL90MB1SPK	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: CETAC MERCURY START DATE: 9/19/2011

SDG: TL90 RUNID: HG091901 METHOD: CVL END DATE: 9/19/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10113														X																
S20	S20	1.00	10142														X																
S50	S50	1.00	10170														X																
S100	S100	1.00	10194														X																
S200	S200	1.00	10222														X																
S400	S400	1.00	10250														X																
S1000	S1000	1.00	10275														X																
ICV	AICV	1.00	10321														X																
ICB	ICB	1.00	10345														X																
CCV	ACCV1	1.00	10373														X																
CCB	CCB1	1.00	10401														X																
CRA	CRA	1.00	10430														X																
ZZZZZZ	TL28MB1	1.00	10454																														
ZZZZZZ	TL28MB1SPK	1.00	10482																														
ZZZZZZ	TL28A	1.00	10510																														
ZZZZZZ	TL28ADUP	1.00	10534																														
ZZZZZZ	TL28ASPK	1.00	10562																														
ZZZZZZ	TL56MB1	1.00	10590																														
ZZZZZZ	TL56MB1SPK	1.00	11015																														
ZZZZZZ	TL56A	1.00	11043																														
ZZZZZZ	TL56B	1.00	11071																														
CCV	ACCV2	1.00	11100														X																
CCB	CCB2	1.00	11124														X																
ZZZZZZ	TL56C	1.00	11152																														
ZZZZZZ	TL56D	1.00	11180																														
ZZZZZZ	TL56E	1.00	11204																														
ZZZZZZ	TL77MB1	1.00	11233																														
ZZZZZZ	TL77MB1SPK	1.00	11261																														
ZZZZZZ	TL77A	1.00	11285																														
ZZZZZZ	TL77ADUP	1.00	11313																														
ZZZZZZ	TL77ASPK	1.00	11341																														
ZZZZZZ	TL77B	1.00	11365																														
ZZZZZZ	TL77C	1.00	11394																														
CCV	ACCV3	1.00	11422														X																
CCB	CCB3	1.00	11451														X																

FORM XIV

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: AMEC Geomatrix

PROJECT: FRP 2011 Shoreline I INSTRUMENT ID: CETAC MERCURY START DATE: 9/19/2011

SDG: TL90 RUNID: HG091901 METHOD: CVL END DATE: 9/19/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TL77D	1.00	11475																														
ZZZZZZ	TL77E	1.00	11511																														
ZZZZZZ	TL77F	1.00	11535																														
ZZZZZZ	TL77G	1.00	11563																														
PBW	TL90MB1	1.00	11591														X																
LCSW	TL90MB1SPK	1.00	12015														X																
FRP-091211-001	TL90A	1.00	12044														X																
FRP-091211-001D	TL90ADUP	1.00	12072														X																
FRP-091211-001S	TL90ASPK	1.00	12100														X																
FRP-091211-002	TL90B	1.00	12124														X																
CCV	ACCV4	1.00	12153														X																
CCB	CCB4	1.00	12181														X																
FRP-091211-004	TL90C	1.00	12210														X																
FRP-091211-003	TL90D	1.00	12234														X																
CCV	ACCV5	1.00	12262														X																
CCB	CCB5	1.00	12291														X																
ZZZZZZ	TL77C	2.00	12320																														
ZZZZZZ	TL77D	5.00	12344																														
FRP-091211-001	TL90A	1.00	12372																														
FRP-091211-001D	TL90ADUP	1.00	12400																														
FRP-091211-001S	TL90ASPK	1.00	12425																														
CCV	ACCV6	1.00	12453														X																
CCB	CCB6	1.00	12481														X																

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: TL89, TL90

SAMPLE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Client ID: FRP-091211-001
ARI ID: 11-19804 TL89A

Analyte	Date Batch	Method	Units	RL	Sample
pH	09/12/11 091211#1	EPA 150.1	std units	0.01	9.84

RL Analytical reporting limit
U Undetected at reported detection limit

TL89:00134

SAMPLE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Client ID: FRP-091211-002
ARI ID: 11-19805 TL89B

Analyte	Date Batch	Method	Units	RL	Sample
pH	09/12/11 091211#1	EPA 150.1	std units	0.01	10.1

RL Analytical reporting limit
U Undetected at reported detection limit

TL89:00135

SAMPLE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Client ID: FRP-091211-004
ARI ID: 11-19806 TL89C

Analyte	Date Batch	Method	Units	RL	Sample
pH	09/12/11 091211#1	EPA 150.1	std units	0.01	6.82

RL Analytical reporting limit
U Undetected at reported detection limit

TL89:00136

SAMPLE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Client ID: FRP-091211-003
ARI ID: 11-19807 TL89D

Analyte	Date Batch	Method	Units	RL	Sample
pH	09/12/11 091211#1	EPA 150.1	std units	0.01	9.03
Alkalinity	09/19/11 091911#1	SM 2320	mg/L CaCO3	1.0	431
Carbonate	09/19/11	SM 2320	mg/L CaCO3	1.0	73.8
Bicarbonate	09/19/11	SM 2320	mg/L CaCO3	1.0	357
Hydroxide	09/19/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Chloride	09/13/11 091311#1	EPA 300.0	mg/L	2.0	55.1
N-Nitrate	09/14/11 091411#1	EPA 300.0	mg-N/L	0.5	< 0.5 U
Ortho-Phosphorous	09/14/11 091411#1	EPA 300.0	mg-P/L	0.5	5.8
N-Ammonia	09/20/11 092011#1	EPA 350.1M	mg-N/L	0.050	1.13
Sulfate	09/14/11 091411#1	EPA 300.0	mg/L	5.0	171
Sulfide	09/16/11 091611#1	EPA 376.2	mg/L	0.050	0.136

RL Analytical reporting limit
U Undetected at reported detection limit

TL89:00137

MS/MSD RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: TL89D Client ID: FRP-091211-003							
N-Nitrate	EPA 300.0	09/14/11	mg-N/L	< 0.5	9.0	10.0	90.0%
Ortho-Phosphorous	EPA 300.0	09/14/11	mg-P/L	5.8	15.2	10.0	94.0%
Sulfate	EPA 300.0	09/14/11	mg/L	171	273	100	102.0%
Sulfide	EPA 376.2	09/16/11	mg/L	0.136	7.08	6.51	106.7%

TL89:00136

REPLICATE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: 09/12/11
Date Received: 09/12/11

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: TL89A Client ID: FRP-091211-001						
pH	EPA 150.1	09/12/11	std units	9.84	9.84	0.00
ARI ID: TL89D Client ID: FRP-091211-003						
Chloride	EPA 300.0	09/13/11	mg/L	55.1	54.6	0.9%
N-Nitrate	EPA 300.0	09/14/11	mg-N/L	< 0.5	0.5	NA
Ortho-Phosphorous	EPA 300.0	09/14/11	mg-P/L	5.8	5.8	0.0%
Sulfate	EPA 300.0	09/14/11	mg/L	171	171	0.0%
Sulfide	EPA 376.2	09/16/11	mg/L	0.136	0.370	92.5%

pH is evaluated as the Absolute Difference between the values rather than Relative Percent Difference

TL89:00139

METHOD BLANK RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Chloride	EPA 300.0	09/13/11	mg/L	< 0.1 U	
N-Nitrate	EPA 300.0	09/14/11	mg-N/L	< 0.1 U	
Ortho-Phosphorous	EPA 300.0	09/14/11	mg-P/L	< 0.1 U	
N-Ammonia	EPA 350.1M	09/20/11	mg-N/L	< 0.010 U	FB
Sulfate	EPA 300.0	09/14/11	mg/L	< 0.1 U	
Sulfide	EPA 376.2	09/16/11	mg/L	< 0.050 U	
		09/16/11		< 0.050 U	

FB Filtration Blank

TL89:00140

LAB CONTROL RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
pH EPA 150.1	ICVL	09/12/11	std units	7.00	7.00	0.00
Sulfide	ICVL	09/16/11	mg/L	0.525	0.500	105.0%
EPA 376.2	PREP	09/16/11		6.11	6.51	93.9%

pH is evaluated as the Absolute Difference between the values rather than Percent Recovery.

TL89:00141

STANDARD REFERENCE RESULTS-CONVENTIONALS
TL89-AMEC Geomatrix

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 09/23/11

Project: FRP 2011 Shoreline Investiga
Event: 8769
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Alkalinity ERA #P114506	SM 2320	09/19/11	mg/L CaCO3	49.9	49.2	101.4%
Chloride ERA #230109	EPA 300.0	09/13/11	mg/L	2.8	3.0	93.3%
N-Nitrate ERA #09127	EPA 300.0	09/14/11	mg-N/L	2.8	3.0	93.3%
Ortho-Phosphorous EAR #210109	EPA 300.0	09/14/11	mg-P/L	2.8	3.0	93.3%
N-Ammonia ERA #15125	EPA 350.1M	09/20/11	mg-N/L	0.474	0.500	94.8%
Sulfate ERA #220109	EPA 300.0	09/14/11	mg/L	2.9	3.0	96.7%

Geotechnical Analysis
Report and Summary QC Forms

ARI Job ID: TL89, TL90

TL89:00143

AMEC Geomatrix
FRP 2011 Shoreline Investigation

Density of Liquid According to ASTM D1298

Sample ID	Density (g/ml at 20°C)
DI BLANK	0.992
FRP-091211-003	0.989
FRP-091211-003	0.989
FRP-091211-003	0.989

TL89