



Clarus Environmental Services, LLC
A Subsidiary of Koniag, Inc.

2100.26.202
ADEC File No.

December 10, 2010

Mr. Russell Grandel
Alaska Railroad Corporation
P.O. Box 107500
Anchorage, Alaska 99510-7500

**Re: Groundwater Monitoring Report
Former Mammoth Trucking Facility
Anchorage, Alaska
D-0012-01**

RECEIVED
DEC 14 2010
DEPT. OF ENVIRONMENTAL
CONSERVATION

Dear Mr. Grandel:

This letter report presents the results of the groundwater monitoring performed by Clarus Environmental Services, LLC (Clarus), at the former Mammoth Trucking Facility, located at 1048 Whitney Road in Anchorage, Alaska (Figure 1). The purpose of the monitoring was to characterize potential contaminants associated with former gasoline and diesel underground storage tank (UST) removals.

The work was performed in accordance with our September 22, 2010, Work Plan, which was accepted by the Alaska Railroad Corporation (ARRC) and approved by Grant Lidren of the Alaska Department of Environmental Conservation (ADEC) on October 1, 2010.

This letter report provides brief background information pertaining to the site, describes the scope of work implemented, the methods used to accomplish the field tasks, and the results of laboratory analyses.

BACKGROUND INFORMATION

In 1990, one 500-gallon gasoline UST, one 2,000-gallon diesel UST, one 12,000-gallon diesel UST, and two used oil USTs were removed from the ARRC former Mammoth Trucking property. Upon removal of the tanks, obvious soil contamination was noted (Northern Test Lab 1991).

In 1994, Laidlaw Transit, Inc. (Laidlaw), assumed the lease for the property in 1994. As part of the lease agreement, Laidlaw contracted with EMCON Alaska, Inc. (EMCON), to perform a baseline site assessment, including the installation of four monitoring wells. Groundwater analysis results revealed diesel-range organics (DRO), gasoline-range organics (GRO), and volatile organic compounds (VOCs), including vinyl chloride and tetrachloroethene (PCE), were above the ADEC groundwater cleanup levels (EMCON 1994).

In late 1997, CH2M HILL began monitoring MW-1 (on the east side of building; Figure 2) for odor, sheen, and depth to groundwater. Both monitoring and sampling were performed as part of

a scope of work for another site investigation. The purpose was to monitor the well to help determine if floating free product and/or solvents have been migrating toward Ship Creek from an upgradient source north or east of Whitney Road. Although monitoring did not detect free product, PCE was detected in samples collected in 1997 and 1998 (CH2M HILL 1999a).

In 1998, CH2M HILL attempted to locate the wells installed in 1994 after several years placement of fill and the subsequent regrading of the operations yard. One well remained intact (MW-1), one was found damaged; however, it could not be sampled, and the other two wells were not found (CH2M HILL 1998a). Monitoring wells were installed in five of the nine soil borings drilled (CH2M HILL 1998b). In December 1998, groundwater samples were collected for DRO; residual-range organics (RRO); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and other VOCs. DRO, benzene, and PCE were above the ADEC groundwater cleanup levels (CH2M HILL 1999a).

In 1999, groundwater samples were collected and analyzed for DRO, GRO, RRO, BTEX, and VOCs. Groundwater samples were collected on August 18, 1999, from five monitoring wells located at the former Mammoth Trucking Facility. DRO, RRO, and VOCs, including benzene, vinyl chloride, PCE, and Trichloroethene (TCE), were above the ADEC groundwater cleanup levels (CH2M HILL 1999b). A comparison of sampling activities was completed on October 28, 1999 (CH2M HILL 1999c).

Table 1. Highest Historic Concentrations of Petroleum Hydrocarbons and VOCs in Groundwater Samples from the Former Mammoth Trucking Facility

Analyte	Highest Concentration Detected in mg/L	Reference	ADEC Cleanup Level in mg/L
Petroleum Hydrocarbons			
DRO	26.6	(CH2M HILL 1999a)	1.5
RRO	11.9	(CH2M HILL 1999b)	1.1
GRO	3.1	(EMCON 1994)	2.2
VOCs			
Benzene	0.007	(CH2M HILL 1999b)	0.005
Vinyl chloride	0.014	(EMCON 1994)	0.002
PCE	0.044	(CH2M HILL 1999b)	0.005
TCE	0.02	(CH2M HILL 1999b)	0.005

Notes: ADEC cleanup levels taken from 18 AAC 75.345, Table C.
 mg/L = milligrams per liter

WORK PERFORMED

Clarus performed work using qualified personnel, as per 18 AAC 75, in accordance with the ADEC's 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, dated October 9, 2008, and in accordance with our September 22, 2010, Work Plan. The work performed under

this Work Plan included the purging and sampling of groundwater in five wells at the site (MW-1, CHMWE1, CHMWE2, CHMWE4, and CHMWE5).

After three wetted-casing volumes of water were removed using a peristaltic pump and the temperature, pH, dissolved oxygen, oxidation-reduction (redox) potential, and conductivity parameters had stabilized, samples for laboratory analyses were collected. Parameters measured in the field are recorded on Groundwater Sample Forms as Attachment A. Samples were collected using a peristaltic pump at a low flow rate so that laminar flow into sample containers is achieved, thus minimizing sample aeration. Purge water was disposed of at the ARRC oil/water separator.

One groundwater sample was collected from each monitoring well on October 27, 2010. Water samples were submitted to TestAmerica (TA) in Anchorage, Alaska. The samples were analyzed for GRO, DRO, and RRO using Alaska Methods AK 101, AK 102, and AK 103, respectively. In addition, each sample was analyzed for BTEX using U.S. Environmental Protection Agency (EPA) Method 8021B and for VOCs using EPA Method 8260B. One duplicate sample was collected and submitted to the laboratory for each analytical method. A trip blank accompanied samples to the laboratory and was analyzed for GRO, BTEX, and VOC content.

GROUNDWATER SAMPLE ANALYTICAL RESULTS

The groundwater analytical results are summarized in Table 2. Laboratory data reports have been included in Attachment B. Compounds that were detected above the ADEC groundwater cleanup levels consisted of PCE in CHMWE1; DRO, RRO, TCE, and vinyl chloride in CHMWE2; and vinyl chloride in CHMWE4 and CHMWE5. No compounds were detected above the ADEC groundwater cleanup levels in MW-1. A site plan depicting sampling locations is included as Figure 2.

DATA QUALITY REVIEW

The analytical data quality was evaluated. The laboratory work was performed by TA under Work Order ATJ0093. Sample data reports were evaluated to assess chemical data quality and the usability of the data. Based on Clarus' review of the data, the analytical data are sufficient quality for the purposes of this project.

A summary of laboratory data quality is provided in the ADEC laboratory data review checklist in Attachment C.

CONCLUSIONS

Concentrations of DRO, RRO, PCE, TCE, and vinyl chloride above the ADEC groundwater cleanup levels were detected in the samples collected. DRO and RRO were detected at 5.72 milligrams per liter (mg/L) and 2.39 mg/L in CHMWE2, exceeding the ADEC cleanup levels of 1.5 mg/L and 1.1 mg/L, respectively. PCE was detected at 0.0307 mg/L in CHMWE1,

REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2008. 18 AAC 75, Oil and Other Hazardous Substances Pollution Control. Revised October 9.

CH2M HILL 1998a. Search for Wells at Mammoth Site, and Groundwater Measurements. July 17.

CH2M HILL 1998b. Former Mammoth Trucking Facility, 1048 Whitney Road Release Investigation Work Plan. Prepared for Alaska Railroad Corporation. July.

CH2M HILL 1999a. Former Mammoth Trucking Release Investigation. February.

CH2M HILL 1999b. Mammoth Groundwater Results Memorandum. October 1.

CH2M HILL 1999c. Mammoth Groundwater Results Memorandum. October 28.

EMCON Alaska, Inc. 1994. Phase I and II Site Assessment Report – 1048 Whitney Road. September.

Northern Test Lab 1991. Mammoth of Alaska Mammoth Trucking UST Assessment Report. December.

Attachments:

Table 2 Concentrations of Analytes Detected in Groundwater Samples

Figure 1 Site Vicinity Map

Figure 2 Groundwater Sampling Locations

Attachment A Groundwater Sample Forms

Attachment B Laboratory Analytical Results

Attachment C Data Quality Assessment

Tables



Table 2 - Concentrations of Analytes Detected in Groundwater Samples
Former Mammoth Trucking Facility
Anchorage, Alaska

Analyte	Analytical Method	ADEC Groundwater Cleanup Level ¹ in mg/L	Groundwater Sample Concentrations in mg/L					
			CHMW-E1	CHMW-E2	CHMW-E4	CHMW-E5	MW-01-01	MW-01-02 (duplicate of MW-01-01)
DRO	Alaska Method AK 102	1.5	0.394 U	5.72	0.481 U	0.588	0.407 U	0.427 U
GRO	Alaska Method AK 101	2.2	0.080 U	0.107	0.080 U	0.080 U	0.080 U	0.080 U
RRO	Alaska Method AK 103	1.1	0.394 U	2.39	0.484	0.431 U	0.407 U	0.427 U
Benzene	EPA Method 8021B	0.005	0.00050 U	0.000813	0.000966	0.00355	0.00050 U	0.00050 U
Toluene	EPA Method 8021B	1.0	0.00050 U	0.00050 U	0.00050 U	0.00235	0.00050 U	0.00050 U
Ethylbenzene	EPA Method 8021B	0.7	0.00050 U	0.00108	0.00050 U	0.00050 U	0.00050 U	0.00050 U
Xylenes (total)	EPA Method 8021B	10	0.00100 U	0.00270	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Benzene	EPA Method 8260B	0.005	0.00100 U	0.00100 U	0.00105	0.00373	0.00100 U	0.00100 U
sec-Butylbenzene	EPA Method 8260B	0.37	0.00100 U	0.00148	0.00100 U	0.00100 U	0.00100 U	0.00100 U
cis-1,2-Dichloroethene	EPA Method 8260B	0.07	0.00100 U	0.0118	0.0190	0.00137	0.00100 U	0.00100 U
Isopropylbenzene	EPA Method 8260B	3.7	0.00200 U	0.00280	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Tetrachloroethene (PCE)	EPA Method 8260B	0.005	0.0307	0.00100 U	0.00100 U	0.00100 U	0.00156	0.00162
Toluene	EPA Method 8260B	1.0	0.00100 U	0.00100 U	0.00100 U	0.00280	0.00100 U	0.00100 U
Trichloroethene (TCE)	EPA Method 8260B	0.005	0.00141	0.00949	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Vinyl chloride	EPA Method 8260B	0.002	0.00100 U	0.00395	0.0119	0.0179	0.00100 U	0.00100 U

Notes:
¹18 AAC 75.345, Table C.
ADEC = Alaska Department of Environmental Conservation.
DRO = Diesel-range organics.
GRO = Gasoline-range organics.
EPA = U.S. Environmental Protection Agency.
mg/L = Milligrams per liter.
RRO = Residual-range organics.
U = Not detected at the Method Reporting Limit shown.

Figures



Site Vicinity Map

Former Mammoth Trucking Facility
Anchorage, Alaska

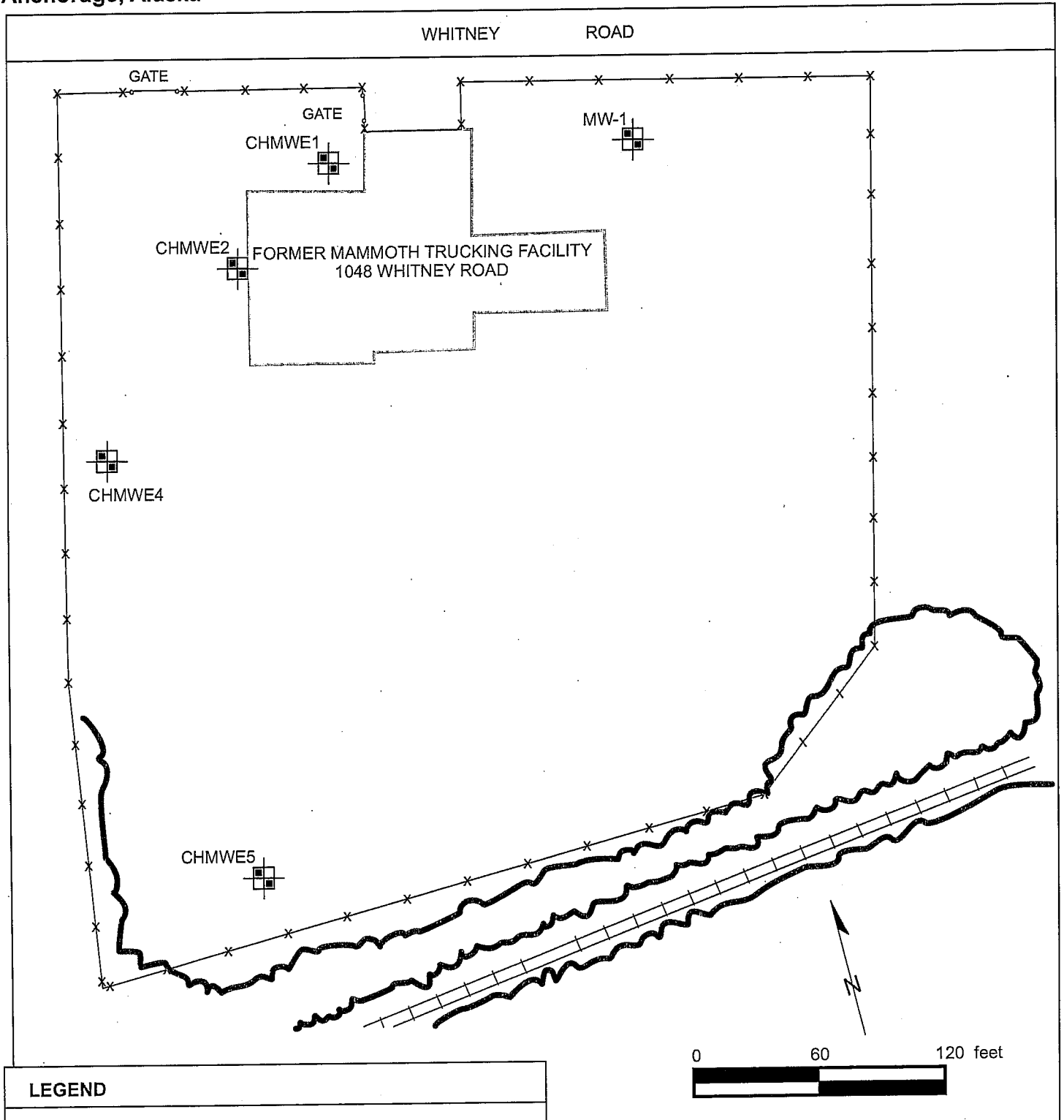


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Figure 1
D-0012-01

12/2010

**Groundwater Sampling Locations
Former Mammoth Trucking Facility
Anchorage, Alaska**



LEGEND

CHMWE1  MONITORING WELL LOCATION

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Figure 2 **12/2010**
D-0012-01

Attachment A

Groundwater Sample Forms

Groundwater Sample Form

Project: ARCC Former Mammal
 Project #: _____

Site Location: 1648 W W Hwy Rd
 Well Number: CHMWE1

Water Column

Total Depth of Well (feet): 14.5
 Depth to Water from TOC (feet): 10.05
 Column of Water in Well (feet): 4.45

Water Level Measurement Date: 10/27/10
 Water Level Measurement Time: 1445

Purge Information

Gallons per foot of 2" Screen: 0.17
 Column of Water in Well (feet): x 4.45
 Volume of Water in Well Casing (gal): = 0.75

Total Volume Removed (gal): 2.25
 Purge Method: Peristaltic Pump

Field Parameters

Gallons Removed	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved O ₂ (mg/L)	Redox (mV)	Odor (Y/N)	Sheen (Y/N)
0.75	10.5	8.04	0.9	287	2.75	105	N	N
1.50	10.7	5.95	0.9	123	2.98	111	N	N
2.25	10.6	6.04	0.9	113	2.97	106	N	N

Sample Information

Sample Date: 10/27/10
 Sample Time: 1510
 Sample Method: Peristaltic Pump

Sample Number: CHMWE1
 Field Duplicate Number: _____
 Sampler: BL

Laboratory Analyses Requested: _____

Comments: 6 VOA's 2- 4oz Glass Amber

Groundwater Sample Form

Project: APPC Former Mound #1

Site Location: 1048 W Whitney Rd

Project #: _____

Well Number: CHMWE2

Water Column

Total Depth of Well (feet): 10.1

Water Level Measurement Date: 10/27/10

Depth to Water from TOC (feet): 7.7

Water Level Measurement Time: 1530

Column of Water in Well (feet): 2.4

Purge Information

Gallons per foot of 2" Screen: 0.17

Total Volume Removed (gal): 1.5

Column of Water in Well (feet): x 2.4

Purge Method: Peristaltic Pump

Volume of Water in Well Casing (gal): = 0.4

Field Parameters

Gallons Removed	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved O ₂ (mg/L)	Redox (mV)	Odor (Y/N)	Sheen (Y/N)
0.5	10.4	6.25	0.9	285	3.92	-95	N	N
1.0	10.1	6.22	1.1	279	4.84	-96	N	N
1.5	10.2	6.24	1.1	282	5.06	-96	N	N

Sample Information

Sample Date: 10/27/10

Sample Number: CHMWE2

Sample Time: 1600

Field Duplicate Number: _____

Sample Method: Peristaltic Pump

Sampler: DL

Laboratory Analyses Requested: _____

Comments: 6 VOA's 2 - 4oz Glass Amber

Groundwater Sample Form

Project: APPC Form Mammoth
 Project #: _____

Site Location: 1048 W Whitney
 Well Number: CHMWE4

Water Column

Total Depth of Well (feet): 23.5
 Depth to Water from TOC (feet): 14.5
 Column of Water in Well (feet): 9.0

Water Level Measurement Date: 10/27/10
 Water Level Measurement Time: 1300

Purge Information

Gallons per foot of 2" Screen: 0.17
 Column of Water in Well (feet): x 9.0
 Volume of Water in Well Casing (gal): = 1.5

Total Volume Removed (gal): 4.5
 Purge Method: Peristaltic Pump

Field Parameters

Gallons Removed	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved O ₂ (mg/L)	Redox (mV)	Odor (Y/N)	Sheen (Y/N)
1.5	9.88	5.24	2.14	58.4	5.21	-102	N	N
3.0	7.67	5.96	2.38	56.3	2.44	-112	N	N
4.5	7.48	5.97	2.40	64.4	2.34	-114	N	N

Sample Information

Sample Date: 10/27/10
 Sample Time: 1330
 Sample Method: Peristaltic Pump

Sample Number: CHMWE4
 Field Duplicate Number: _____
 Sampler: BC

Laboratory Analyses Requested:

Comments: 6 VAS 2. - 4oz ^{BC} 2. - 250 ml HCL Preserved

Groundwater Sample Form

Project: ARCC Ferner Munnouth
 Project #: _____

Site Location: 1048 W Whiskey Rd
 Well Number: CHMWES

Water Column

Total Depth of Well (feet): 12.20
 Depth to Water from TOC (feet): 9.20
 Column of Water in Well (feet): 3.00

Water Level Measurement Date: 10/27/10
 Water Level Measurement Time: 11:30

Purge Information

Gallons per foot of 2" Screen: 0.17
 Column of Water in Well (feet): x 3.00
 Volume of Water in Well Casing (gal): = 0.5

Total Volume Removed (gal): 1.5
 Purge Method: Peristaltic Pump

Field Parameters

Gallons Removed	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved O ₂ (mg/L)	Redox (mV)	Odor (Y/N)	Sheen (Y/N)
0.5	10.05	5.36	1.09	33.4	7.47	-62	N	N
1.0	2.33 7.44	5.44	1.13	28.4	7.04	-69	N	N
1.5	9.12	5.50	1.12	26.7	6.81	-74	N	N

Sample Information

Sample Date: 10/27/10
 Sample Time: 12:10
 Sample Method: Peristaltic Pump

Sample Number: CHMWES
 Field Duplicate Number: _____
 Sampler: BL

Laboratory Analyses Requested:

Comments: 6 VOA's 2 250ml ⁴⁰² ₃₀ Glass HCL preserved

Groundwater Sample Form

Project: APPC former Ammonia
 Project #: _____

Site Location: 1048 w Whitney Rd
 Well Number: MW-1

Water Column

Total Depth of Well (feet): 14.9
 Depth to Water from TOC (feet): 9.8
 Column of Water in Well (feet): 5.1

Water Level Measurement Date: 10/27/10
 Water Level Measurement Time: 1345

Purge Information

Gallons per foot of 2" Screen: 0.17
 Column of Water in Well (feet): x 5.1
 Volume of Water in Well Casing (gal): = 0.9

Total Volume Removed (gal): 3.0
 Purge Method: Peristaltic Pump

Field Parameters

Gallons Removed	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved O ₂ (mg/L)	Redox (mV)	Odor (Y/N)	Sheen (Y/N)
1.0	12.75	6.05	0.9	9.5	3.76	65	N	N
2.0	12.08	6.07	0.9	11.8	3.68	70	N	N
3.0	11.98	6.01	0.9	12.8	3.56	75	N	N

Sample Information

Sample Date: 10/27/10
 Sample Time: 1415 Duplicated @ 1425
 Sample Method: Peristaltic Pump

Sample Number: MW-01-01
 Field Duplicate Number: MW-01-02
 Sampler: B1

Laboratory Analyses Requested: _____

Comments: 4 - 402 Glass Number 6 - 12 - VOAs

Attachment B

Laboratory Analytical Results

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANCHORAGE, AK 2000 W INTERNATIONAL AIRPORT ROAD, SUITE A-10
ANCHORAGE, AK 99502-1119
ph: (907) 563.9200 fax: (907) 563.9210
CS Approval Number: UST-067

December 06, 2010

Braden Galloway
Clarus
840 K Street
Anchorage, ALASKA 99501

RE: ARRC Former Mammoth Facility

Enclosed are the results of analyses for samples received by the laboratory on 10/27/10 17:10.
The following list is a summary of the Work Orders contained in this report, generated on 12/06/10 14:42.

If you have any questions concerning this report, please feel free to contact me.

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
ATJ0093	ARRC Former Mammoth Faci	[none]

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CHMWE1	ATJ0093-01	Water	10/27/10 15:10	10/27/10 17:10
CHMWE2	ATJ0093-02	Water	10/27/10 16:00	10/27/10 17:10
CHMWE4	ATJ0093-03	Water	10/27/10 13:30	10/27/10 17:10
CHMWE5	ATJ0093-04	Water	10/27/10 12:10	10/27/10 17:10
MW-01-01	ATJ0093-05	Water	10/27/10 14:15	10/27/10 17:10
MW-01-02	ATJ0093-06	Water	10/27/10 14:25	10/27/10 17:10
Trip Blank	ATJ0093-07	Water	10/27/10 14:25	10/27/10 17:10

TestAmerica Anchorage

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus
840 K Street
Anchorage, ALASKA 99501

Project Name: **ARRC Former Mammoth Facility**
Project Number: [none]
Project Manager: Braden Galloway

Report Created:
12/06/10 14:42

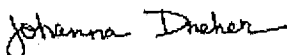
Analytical Case Narrative
TestAmerica - Anchorage, AK

ATJ0093

Revised report issued 06 December 2010

This report was revised to include the RRO by AK 103 results.

TestAmerica Anchorage



Johanna L. Dreher, Client Services Manager

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Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO
 TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-01 (CHMWE1)											
Water Sampled: 10/27/10 15:10											
Diesel Range Organics	AK102/103	ND	----	0.394	mg/l	1x	10K0006	11/01/10 14:02	11/01/10 16:25	deb	
Residual Range Organics	"	ND	----	0.394	"	"	"	"	"	deb	
Surrogate(s): 1-Chlorooctadecane				97.3%	50 - 150 %		"				
Triacontane				85.3%	50 - 150 %		"				
ATJ0093-02 (CHMWE2)											
Water Sampled: 10/27/10 16:00											
Diesel Range Organics	AK102/103	5.72	----	0.403	mg/l	1x	10K0006	11/01/10 14:02	11/02/10 13:41	deb	Q4
Residual Range Organics	"	2.39	----	0.403	"	"	"	"	"	deb	Q4
Surrogate(s): 1-Chlorooctadecane				80.9%	50 - 150 %		"				
Triacontane				79.3%	50 - 150 %		"				
ATJ0093-03 (CHMWE4)											
Water Sampled: 10/27/10 13:30											
Diesel Range Organics	AK102/103	ND	----	0.481	mg/l	1x	10K0006	11/01/10 14:02	11/02/10 13:41	ms	
Residual Range Organics	"	0.484	----	0.481	"	"	"	"	"	ms	
Surrogate(s): 1-Chlorooctadecane				102%	50 - 150 %		"				
Triacontane				94.8%	50 - 150 %		"				
ATJ0093-04 (CHMWE5)											
Water Sampled: 10/27/10 12:10											
Diesel Range Organics	AK102/103	0.588	----	0.431	mg/l	1x	10K0006	11/01/10 14:02	11/02/10 14:13	deb	Q11
Residual Range Organics	"	ND	----	0.431	"	"	"	"	"	deb	
Surrogate(s): 1-Chlorooctadecane				89.5%	50 - 150 %		"				
Triacontane				82.6%	50 - 150 %		"				
ATJ0093-05 (MW-01-01)											
Water Sampled: 10/27/10 14:15											
Diesel Range Organics	AK102/103	ND	----	0.407	mg/l	1x	10K0006	11/01/10 14:02	11/02/10 14:59	deb	
Residual Range Organics	"	ND	----	0.407	"	"	"	"	"	deb	
Surrogate(s): 1-Chlorooctadecane				86.1%	50 - 150 %		"				
Triacontane				79.8%	50 - 150 %		"				
ATJ0093-06 (MW-01-02)											
Water Sampled: 10/27/10 14:25											
Diesel Range Organics	AK102/103	ND	----	0.427	mg/l	1x	10K0006	11/01/10 14:02	11/02/10 14:59	ms	
Residual Range Organics	"	ND	----	0.427	"	"	"	"	"	ms	
Surrogate(s): 1-Chlorooctadecane				105%	50 - 150 %		"				
Triacontane				96.5%	50 - 150 %		"				

TestAmerica Anchorage

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Gasoline Range Organics (C6-C10) and BTEX per AK101/8021B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-01 (CHMWE1)											
Water											
Sampled: 10/27/10 15:10											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/05/10 01:18	SYB	
Benzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
<i>Surrogate(s): 4-BFB (FID)</i>				104%		60 - 120 %	"				"
<i>4-BFB (PID)</i>				102%		60 - 120 %	"				"

ATJ0093-02 (CHMWE2)											
Water											
Sampled: 10/27/10 16:00											
Gasoline Range Organics	AK101/8021B	107	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/04/10 22:21	SYB	
Benzene	"	0.813	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	1.08	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	2.70	----	1.00	"	"	"	"	"	SYB	
<i>Surrogate(s): 4-BFB (FID)</i>				105%		60 - 120 %	"				"
<i>4-BFB (PID)</i>				106%		60 - 120 %	"				"

ATJ0093-03 (CHMWE4)											
Water											
Sampled: 10/27/10 13:30											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/05/10 00:43	SYB	
Benzene	"	0.966	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
<i>Surrogate(s): 4-BFB (FID)</i>				102%		60 - 120 %	"				"
<i>4-BFB (PID)</i>				100%		60 - 120 %	"				"

ATJ0093-04 (CHMWE5)											
Water											
Sampled: 10/27/10 12:10											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/04/10 21:10	SYB	
Benzene	"	3.55	----	0.500	"	"	"	"	"	SYB	
Toluene	"	2.35	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
<i>Surrogate(s): 4-BFB (FID)</i>				106%		60 - 120 %	"				"
<i>4-BFB (PID)</i>				103%		60 - 120 %	"				"

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Gasoline Range Organics (C6-C10) and BTEX per AK101/8021B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 14:15											
ATJ0093-05 (MW-01-01)											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/04/10 20:34	SYB	
Benzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
Surrogate(s):	4-BFB (FID)			104%		60 - 120 %	"				"
	4-BFB (PID)			101%		60 - 120 %	"				"

Water											
Sampled: 10/27/10 14:25											
ATJ0093-06 (MW-01-02)											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/04/10 19:59	SYB	
Benzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
Surrogate(s):	4-BFB (FID)			104%		60 - 120 %	"				"
	4-BFB (PID)			100%		60 - 120 %	"				"

Water											
Sampled: 10/27/10 14:25											
ATJ0093-07 (Trip Blank)											
Gasoline Range Organics	AK101/8021B	ND	----	80.0	ug/l	1x	10K0173	11/04/10 14:45	11/04/10 19:24	SYB	
Benzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Toluene	"	ND	----	0.500	"	"	"	"	"	SYB	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	SYB	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	SYB	
Surrogate(s):	4-BFB (FID)			104%		60 - 120 %	"				"
	4-BFB (PID)			100%		60 - 120 %	"				"

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Volatile Organic Compounds per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
		Water									
		Sampled: 10/27/10 15:10									
ATJ0093-01 (CHMWE1)											
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 12:36	BJ	
Benzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	10.0	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	5.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L. Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 15:10											
ATJ0093-01 (CHMWE1)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 12:36	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	30.7	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	1.41	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	ND	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
Surrogate(s):	Dibromofluoromethane	91.6%				80 - 120 %	"				"
	1,2-DCA-d4	98.4%				80 - 120 %	"				"
	Toluene-d8	96.4%				80 - 120 %	"				"
	4-BFB	95.0%				80 - 120 %	"				"

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-02 (CHMWE2)		Water Sampled: 10/27/10 16:00									
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:03	BJ	
Benzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	10.0	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	1.48	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	5.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	11.8	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 16:00											
ATJ0093-02 (CHMWE2)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:03	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	2.80	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	9.49	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	3.95	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
Surrogate(s):	Dibromofluoromethane			91.9%			80 - 120 %	"			
	1,2-DCA-d4			98.4%			80 - 120 %	"			
	Toluene-d8			95.6%			80 - 120 %	"			
	4-BFB			96.8%			80 - 120 %	"			

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 13:30											
ATJ0093-03 (CHMWE4)											
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:30	BJ	
Benzene	"	1.05	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	5.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	10.0	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	5.00	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	5.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	5.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	19.0	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Volatile Organic Compounds per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 13:30											
ATJ0093-03 (CHMWE4)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:30	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	11.9	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	

Surrogate(s):	Dibromofluoromethane	95.5%	80 - 120 %	"	"
	1,2-DCA-d4	102%	80 - 120 %	"	"
	Toluene-d8	99.9%	80 - 120 %	"	"
	4-BFB	99.4%	80 - 120 %	"	"

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-04 (CHMW5)		Water		Sampled: 10/27/10 12:10							
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:57	BJ	
Benzene	"	3.73	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	10.0	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	5.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	1.37	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Volatile Organic Compounds per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 12:10											
ATJ0093-04 (CHMWE5)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 13:57	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Toluene	"	2.80	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	17.9	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
<i>Surrogate(s):</i>	<i>Dibromofluoromethane</i>			94.9%			80 - 120 %	"			
	<i>1,2-DCA-d4</i>			101%			80 - 120 %	"			
	<i>Toluene-d8</i>			99.4%			80 - 120 %	"			
	<i>4-BFB</i>			97.4%			80 - 120 %	"			

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 14:15											
ATJ0093-05 (MW-01-01)											
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 14:23	BJ	
Benzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	5.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	10.0	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	5.00	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	5.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	5.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L. Dreher, Client Services Manager

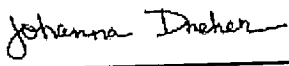


Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Volatile Organic Compounds per EPA Method 8260B
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 14:15											
ATJ0093-05 (MW-01-01)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 14:23	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	1.56	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	ND	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
Surrogate(s):	Dibromofluoromethane			97.3%			80 - 120 %	"			
	1,2-DCA-d4			102%			80 - 120 %	"			
	Toluene-d8			101%			80 - 120 %	"			
	4-BFB			100%			80 - 120 %	"			

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TestAmerica Anchorage

 Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-06 (MW-01-02)		Water									
		Sampled: 10/27/10 14:25									
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 14:50	BJ	
Benzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	10.0	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	5.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	5.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 14:25											
ATJ0093-06 (MW-01-02)											
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 14:50	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	ND	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	1.62	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	ND	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
Surrogate(s):	Dibromofluoromethane			95.2%			80 - 120 %	"			"
	1,2-DCA-d4			102%			80 - 120 %	"			"
	Toluene-d8			101%			80 - 120 %	"			"
	4-BFB			99.0%			80 - 120 %	"			"

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Johanna Dreher

Johanna L. Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
Water											
Sampled: 10/27/10 14:25											
ATJ0093-07 (Trip Blank)											
Acetone	EPA 8260B	ND	----	25.0	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 12:09	BJ	
Benzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromodichloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Bromoform	"	ND	----	5.00	"	"	"	"	"	BJ	
Bromomethane	"	ND	----	10.0	"	"	"	"	"	BJ	
2-Butanone (MEK)	"	ND	----	5.00	"	"	"	"	"	BJ	
n-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
sec-Butylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
tert-Butylbenzene	"	ND	----	10.0	"	"	"	"	"	BJ	
Carbon disulfide	"	ND	----	1.00	"	"	"	"	"	BJ	
Carbon tetrachloride	"	ND	----	1.00	"	"	"	"	"	BJ	
Chlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Chloroform	"	ND	----	5.00	"	"	"	"	"	BJ	
Chloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
2-Chlorotoluene	"	ND	----	1.00	"	"	"	"	"	BJ	
4-Chlorotoluene	"	ND	----	5.00	"	"	"	"	"	BJ	
1,2-Dibromo-3-chloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromochloromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dibromoethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Dibromomethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,4-Dichlorobenzene	"	ND	----	5.00	"	"	"	"	"	BJ	
Dichlorodifluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
trans-1,2-Dichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
2,2-Dichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	
cis-1,3-Dichloropropene	"	ND	----	1.00	"	"	"	"	"	BJ	

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B
 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ATJ0093-07 (Trip Blank)		Water									
		Sampled: 10/27/10 14:25									
trans-1,3-Dichloropropene	EPA 8260B	ND	----	1.00	ug/l	1x	10K0251	11/08/10 09:00	11/08/10 12:09	BJ	
Ethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Hexachlorobutadiene	"	ND	----	4.00	"	"	"	"	"	BJ	
2-Hexanone	"	ND	----	10.0	"	"	"	"	"	BJ	
Isopropylbenzene	"	ND	----	2.00	"	"	"	"	"	BJ	
p-Isopropyltoluene	"	ND	----	2.00	"	"	"	"	"	BJ	
4-Methyl-2-pentanone	"	ND	----	5.00	"	"	"	"	"	BJ	
Methyl tert-butyl ether	"	ND	----	1.00	"	"	"	"	"	BJ	
Methylene chloride	"	9.03	----	5.00	"	"	"	"	"	BJ	
Naphthalene	"	ND	----	2.00	"	"	"	"	"	BJ	
n-Propylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Styrene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2,2-Tetrachloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Tetrachloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Toluene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trichlorobenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,1-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,1,2-Trichloroethane	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichloroethene	"	ND	----	1.00	"	"	"	"	"	BJ	
Trichlorofluoromethane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,3-Trichloropropane	"	ND	----	1.00	"	"	"	"	"	BJ	
1,2,4-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
1,3,5-Trimethylbenzene	"	ND	----	1.00	"	"	"	"	"	BJ	
Vinyl chloride	"	ND	----	1.00	"	"	"	"	"	BJ	
o-Xylene	"	ND	----	1.00	"	"	"	"	"	BJ	
m,p-Xylene	"	ND	----	2.00	"	"	"	"	"	BJ	
Surrogate(s): Dibromofluoromethane		94.2%				80 - 120 %	"				"
1,2-DCA-d4		102%				80 - 120 %	"				"
Toluene-d8		100%				80 - 120 %	"				"
4-BFB		97.7%				80 - 120 %	"				"

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Diesel Range Organics (C10-C25) per AK102 - Laboratory Quality Control Results
 TestAmerica Anchorage

QC Batch: 10K0006	Water Preparation Method: EPA 3510
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Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Extracted: 11/01/10 14:02														
Blank (10K0006-BLK1)														
Diesel Range Organics	AK 102	ND	---	0.500	mg/l	1x	--	--	--	--	--	--	11/01/10 15:53	
Surrogate(s): 1-Chlorooctadecane		Recovery: 85.8%		Limits: 50-150%		"								
Extracted: 11/01/10 14:02														
LCS (10K0006-BS1)														
Diesel Range Organics	AK 102	8.07	---	0.500	mg/l	1x	---	10.1	79.9%	(75-125)	--	--	11/01/10 16:25	
Surrogate(s): 1-Chlorooctadecane		Recovery: 83.9%		Limits: 60-120%		"								
Extracted: 11/01/10 14:02														
LCS Dup (10K0006-BSD1)														
Diesel Range Organics	AK 102	8.29	---	0.500	mg/l	1x	--	10.1	82.1%	(75-125)	2.78% (20)		11/01/10 16:58	
Surrogate(s): 1-Chlorooctadecane		Recovery: 85.6%		Limits: 60-120%		"								
Extracted: 11/01/10 14:02														
Duplicate (10K0006-DUP1)														
Diesel Range Organics	AK 102	ND	---	0.403	mg/l	1x	ND	--	--	--	1.91% (20)		11/01/10 15:53	
Surrogate(s): 1-Chlorooctadecane		Recovery: 96.3%		Limits: 50-150%		"								

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Gasoline Range Organics (C6-C10) and BTEX per AK101/8021B - Laboratory Quality Control Results
 TestAmerica Portland

QC Batch: 10K0173 **Water Preparation Method:** EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Extracted: 11/04/10 14:45														
Blank (10K0173-BLK1)														
Gasoline Range Organics	AK101/8021	ND	---	80.0	ug/l	1x	--	--	--	--	--	--	11/04/10 18:27	
	B	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
11/04/10 18:27														
<i>Surrogate(s): 4-BFB (FID)</i>		<i>Recovery: 105%</i>		<i>Limits: 60-120%</i>										
<i>4-BFB (PID)</i>		<i>99.6%</i>		<i>60-120%</i>										
Extracted: 11/04/10 14:45														
LCS (10K0173-BS1)														
Benzene	AK101/8021	17.0	---	0.500	ug/l	1x	--	20.0	84.9%	(75-125)	--	--	11/04/10 16:41	
	B	17.6	---	0.500	"	"	--	"	88.1%	(75-120)	--	--	"	
Toluene	"	18.5	---	0.500	"	"	--	"	92.6%	(75-130)	--	--	"	
Ethylbenzene	"	55.6	---	1.00	"	"	--	60.0	92.7%	(80-130)	--	--	"	
Xylenes (total)	"	55.6	---	1.00	"	"	--	60.0	92.7%	(80-130)	--	--	"	
11/04/10 16:41														
<i>Surrogate(s): 4-BFB (PID)</i>		<i>Recovery: 103%</i>		<i>Limits: 60-120%</i>										
Extracted: 11/04/10 14:45														
LCS (10K0173-BS2)														
Gasoline Range Organics	AK101/8021	510	---	80.0	ug/l	1x	--	500	102%	(60-120)	--	--	11/04/10 17:16	
	B	510	---	80.0	"	"	--	500	102%	(60-120)	--	--	"	
<i>Surrogate(s): 4-BFB (FID)</i>		<i>Recovery: 107%</i>		<i>Limits: 60-120%</i>										
11/04/10 17:16														
Extracted: 11/04/10 14:45														
LCS Dup (10K0173-BSD2)														
Gasoline Range Organics	AK101/8021	540	---	80.0	ug/l	1x	--	500	108%	(60-120)	5.64%	(20)	11/04/10 17:52	
	B	540	---	80.0	"	"	--	500	108%	(60-120)	5.64%	(20)	"	
<i>Surrogate(s): 4-BFB (FID)</i>		<i>Recovery: 108%</i>		<i>Limits: 60-120%</i>										
11/04/10 17:52														
Extracted: 11/04/10 14:45														
Duplicate (10K0173-DUP1)														
Gasoline Range Organics	AK101/8021	112	---	80.0	ug/l	1x	107	--	--	--	4.52%	(50)	11/04/10 21:45	
	B	112	---	80.0	"	"	107	--	--	--	4.52%	(50)	"	
<i>Surrogate(s): 4-BFB (FID)</i>		<i>Recovery: 105%</i>		<i>Limits: 60-120%</i>										
11/04/10 21:45														
Extracted: 11/04/10 14:45														
Matrix Spike (10K0173-MS1)														
Benzene	AK101/8021	18.0	---	0.500	ug/l	1x	ND	20.0	90.1%	(65-144)	--	--	11/05/10 01:54	
	B	18.6	---	0.500	"	"	0.153	"	92.5%	(70-135)	--	--	"	
Toluene	"	19.1	---	0.500	"	"	ND	"	95.4%	(65-145)	--	--	"	
Ethylbenzene	"	56.7	---	1.00	"	"	0.290	60.0	94.0%	(60-145)	--	--	"	
Xylenes (total)	"	56.7	---	1.00	"	"	0.290	60.0	94.0%	(60-145)	--	--	"	
11/05/10 01:54														
<i>Surrogate(s): 4-BFB (PID)</i>		<i>Recovery: 102%</i>		<i>Limits: 60-120%</i>										

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created: 12/06/10 14:42
	Project Number:	[none]	
	Project Manager:	Braden Galloway	

Gasoline Range Organics (C6-C10) and BTEX per AK101/8021B - Laboratory Quality Control Results
 TestAmerica Portland

QC Batch: 10K0173 Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (10K0173-MSD1)														
							QC Source: ATJ0093-01						Extracted: 11/04/10 14:45	
Benzene	AK101/8021	17.3	---	0.500	ug/l	1x	ND	20.0	86.4%	(65-144)	4.14%	(20)	11/05/10 02:29	
	B													
Toluene	"	17.9	---	0.500	"	"	0.153	"	88.7%	(70-135)	4.18%	"	"	
Ethylbenzene	"	18.4	---	0.500	"	"	ND	"	91.9%	(65-145)	3.73%	"	"	
Xylenes (total)	"	54.4	---	1.00	"	"	0.290	60.0	90.2%	(60-145)	4.04%	"	"	
Surrogate(s): 4-BFB (PID) Recovery: 102% Limits: 60-120% "													11/05/10 02:29	

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Johanna L Dreher, Client Services Manager



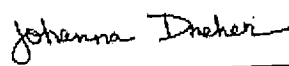
Clarus 840 K Street Anchorage, ALASKA 99501	Project Name: ARRC Former Mammoth Facility Project Number: [none] Project Manager: Braden Galloway	Report Created: 12/06/10 14:42
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Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results
 TestAmerica Portland

QC Batch: 10K0251 Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Extracted: 11/08/10 08:00														
Blank (10K0251-BLK1)														
Acetone	EPA 8260B	ND	---	25.0	ug/l	1x	--	--	--	--	--	--	11/08/10 11:40	
Benzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Bromobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Bromochloromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Bromodichloromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Bromoform	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
Bromomethane	"	ND	---	10.0	"	"	--	--	--	--	--	--	"	
2-Butanone (MEK)	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
n-Butylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
sec-Butylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
tert-Butylbenzene	"	ND	---	10.0	"	"	--	--	--	--	--	--	"	
Carbon disulfide	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Carbon tetrachloride	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Chlorobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Chloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Chloroform	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
Chloromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
2-Chlorotoluene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
4-Chlorotoluene	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
1,2-Dibromo-3-chloropropane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Dibromochloromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2-Dibromoethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Dibromomethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2-Dichlorobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3-Dichlorobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,4-Dichlorobenzene	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
Dichlorodifluoromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1-Dichloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2-Dichloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1-Dichloroethene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
cis-1,2-Dichloroethene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
trans-1,2-Dichloroethene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2-Dichloropropane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3-Dichloropropane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
2,2-Dichloropropane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1-Dichloropropene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
cis-1,3-Dichloropropene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
trans-1,3-Dichloropropene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	

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TestAmerica Anchorage

 Johanna L Dreher, Client Services Manager

Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results
 TestAmerica Portland

QC Batch: 10K0251	Water Preparation Method: EPA 5030B
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Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Extracted: 11/08/10 08:00														
Blank (10K0251-BLK1)														
Hexachlorobutadiene	EPA 8260B	ND	---	4.00	ug/l	1x	--	--	--	--	--	--	11/08/10 11:40	
2-Hexanone	"	ND	---	10.0	"	"	--	--	--	--	--	--	"	
Isopropylbenzene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
p-Isopropyltoluene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
4-Methyl-2-pentanone	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
Methyl tert-butyl ether	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Methylene chloride	"	ND	---	5.00	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
n-Propylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Styrene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1,1,2-Tetrachloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1,2,2-Tetrachloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Tetrachloroethene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Toluene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2,3-Trichlorobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2,4-Trichlorobenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1,1-Trichloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,1,2-Trichloroethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Trichloroethene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Trichlorofluoromethane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2,3-Trichloropropane	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,2,4-Trimethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3,5-Trimethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Vinyl chloride	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
o-Xylene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
m,p-Xylene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
11/08/10 11:40														
Surrogate(s):	Dibromofluoromethane	Recovery:	95.4%	Limits:	80-120%	"								
	1,2-DCA-d4		101%		80-120%	"								
	Toluene-d8		101%		80-120%	"								
	4-BFB		99.2%		80-120%	"								

TestAmerica Anchorage

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus 840 K Street Anchorage, ALASKA 99501	Project Name:	ARRC Former Mammoth Facility	Report Created:
	Project Number:	[none]	12/06/10 14:42
	Project Manager:	Braden Galloway	

Volatile Organic Compounds per EPA Method 8260B - Laboratory Quality Control Results
 TestAmerica Portland

QC Batch: 10K0251 Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Extracted: 11/08/10 08:00														
LCS (10K0251-BS1)														
Benzene	EPA 8260B	18.3	---	1.00	ug/l	1x	--	20.0	91.4%	(80-120)	--	--	11/08/10 10:20	
Chlorobenzene	"	18.0	---	1.00	"	"	--	"	90.2%	(80-124)	--	--	"	
1,1-Dichloroethene	"	18.6	---	1.00	"	"	--	"	92.9%	(78-120)	--	--	"	
Toluene	"	18.5	---	1.00	"	"	--	"	92.7%	(80-124)	--	--	"	
Trichloroethene	"	18.6	---	1.00	"	"	--	"	93.1%	(80-132)	--	--	"	
11/08/10 10:20														
<i>Sinrogate(s):</i>		<i>Dibromofluoromethane</i>	<i>Recovery:</i>	<i>97.7%</i>	<i>Limits:</i>		<i>80-120%</i>	"					"	
		<i>1,2-DCA-d4</i>		<i>99.6%</i>			<i>80-120%</i>	"					"	
		<i>Toluene-d8</i>		<i>104%</i>			<i>80-120%</i>	"					"	
		<i>4-BFB</i>		<i>101%</i>			<i>80-120%</i>	"					"	

Extracted: 11/08/10 08:00														
LCS Dup (10K0251-BSD1)														
Benzene	EPA 8260B	17.9	---	1.00	ug/l	1x	--	20.0	89.3%	(80-120)	2.38%	(25)	11/08/10 10:47	
Chlorobenzene	"	18.4	---	1.00	"	"	--	"	92.2%	(80-124)	2.30%	"	"	
1,1-Dichloroethene	"	17.8	---	1.00	"	"	--	"	88.9%	(78-120)	4.40%	"	"	
Toluene	"	18.3	---	1.00	"	"	--	"	91.4%	(80-124)	1.41%	"	"	
Trichloroethene	"	18.2	---	1.00	"	"	--	"	90.8%	(80-132)	2.50%	"	"	
11/08/10 10:47														
<i>Sinrogate(s):</i>		<i>Dibromofluoromethane</i>	<i>Recovery:</i>	<i>97.2%</i>	<i>Limits:</i>		<i>80-120%</i>	"					"	
		<i>1,2-DCA-d4</i>		<i>102%</i>			<i>80-120%</i>	"					"	
		<i>Toluene-d8</i>		<i>101%</i>			<i>80-120%</i>	"					"	
		<i>4-BFB</i>		<i>103%</i>			<i>80-120%</i>	"					"	

TestAmerica Anchorage

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Johanna Dreher

Johanna L Dreher, Client Services Manager



Clarus
840 K Street
Anchorage, ALASKA 99501

Project Name: **ARRC Former Mammoth Facility**
Project Number: [none]
Project Manager: Braden Galloway

Report Created:
12/06/10 14:42

Notes and Definitions

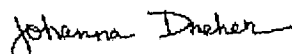
Report Specific Notes:

- Q11 - Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel.
- Q4 - The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics.

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Anchorage



Johanna L Dreher, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Test America Anchorage Cooler Receipt Form

(Army Corps. Compliant)

WORK ORDER # ATJ0092 CLIENT: Clams PROJECT: LARC
Date/Time Cooler Arrived 10: 27 10 4:00 Cooler signed for by: Johanna Dreher
(Print name)

Preliminary Examination Phase:

Date cooler opened: same as date received or / /
Cooler opened by (print) Johanna Dreher (sign) Johanna Dreher

1. Delivered by ALASKA AIRLINES Fed-Ex UPS NAC LYNDEN CLIENT Other hand
Shipment Tracking # if applicable N/A (include copy of shipping papers in file)

2. Number of Custody Seals 0 Signed by N/A Date / /
Were custody seals unbroken and intact on arrival? Yes No

3. Were custody papers sealed in a plastic bag? Yes No

4. Were custody papers filled out properly (ink, signed, etc.)? Yes No

5. Did you sign the custody papers in the appropriate place? Yes No

6. Was ice used? Yes No Type of ice: blue ice gel ice real ice dry ice Condition of Ice: Solid

Temperature by Digi-Thermo Probe 1.7 °C Thermometer # REL#5
Acceptance Criteria: 0 - 6°C

7. Packing in Cooler: bubble wrap styrofoam cardboard Other:

8. Did samples arrive in plastic bags? Yes No

9. Did all bottles arrive unbroken, and with labels in good condition? Yes No

10. Are all bottle labels complete (ID, date, time, etc.) Yes No

11. Do bottle labels and Chain of Custody agree? Yes No

12. Are the containers and preservatives correct for the tests indicated? Yes No

13. Conoco Phillips, Alyeska, BP H2O samples only: pH < 2? Yes No N/A

14. Is there adequate volume for the tests requested? Yes No

15. Were VOA vials free of bubbles? N/A Yes No

If "NO" which containers contained "head space" or bubbles?

Log-in Phase:

Date of sample log-in 10/28/10
Samples logged in by (print) Stephen Lam (sign) Stephen Lam

1. Was project identifiable from custody papers? Yes No

2. Do Turn Around Times and Due Dates agree? Yes No

3. Was the Project Manager notified of status? Yes No

4. Was the Lab notified of status? Yes No

5. Was the COC scanned and copied? Yes No

Attachment C

Data Quality Assessment

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)? Yes No NA (Please explain.) Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.? Yes No NA (Please explain.) Comments:

The sample cooler temperature was reported to be 1.7°C

e. Data quality or usability affected? (Please explain.) Comments:

No. Although the sample cooler temperature was reported to be 1.7°C, the reported analytical results were accepted without qualification.

4. Case Narrative

a. Present and understandable? Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab? Yes No NA (Please explain.) Comments:

There were no discrepancies, errors, or QC failures.

c. Were all corrective actions documented? Yes No NA (Please explain.) Comments:

No corrective actions were performed.

d. What is the effect on data quality/usability according to the case narrative? Comments:

None

5. Samples Results

a. Correct analyses performed/reported as requested on COC? Yes No NA (Please explain.) Comments:

b. All applicable holding times met? Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis? Yes No NA (Please explain.) ✓ Comments:

Water samples only

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? Yes No NA (Please explain.) ✓ Comments:

e. Data quality or usability affected? ✓ Comments:

No effect on data quality or usability.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples? Yes No NA (Please explain.) ✓ Comments:

ii. All method blank results less than PQL? Yes No NA (Please explain.) ✓ Comments:

iii. If above PQL, what samples are affected? Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined? Yes No NA (Please explain.) ✓ Comments:

There were no samples affected by the absence of analytes in the method blanks.

v. Data quality or usability affected? (Please explain.) Comments:

The data quality and usability were not affected by the absence of analytes in the method blanks. ✓

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) Yes No NA (Please explain.) ✓ Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.) ✓ Comments:

Neither metals nor inorganics analyses were performed.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) ✓ Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) ✓ Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A ✓

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) ✓ Comments:

No samples were affected. ✓

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The data quality or usability was not affected by the LCS/LCSD data being within acceptance criteria. ✓

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples? ✓

Yes No NA (Please explain.) ✓ Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No NA (Please explain.) ✓ Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

No samples were had failed surrogate recoveries. ✓

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

The data quality and usability were not affected by the surrogate recoveries being within acceptance criteria. ✓

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.)

Comments:

✓

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No NA (Please explain.)

Comments:

Only one cooler was used to transport the trip blank and samples. ✓

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

Methylene chloride was detected in the trip blank at 0.00903 mg/L. ✓

iv. If above PQL, what samples are affected?

Comments:

No samples were affected because methylene chloride was not detected in any of the groundwater samples. ✓

v. Data quality or usability affected? (Please explain.)

Comments:

No samples were affected because methylene chloride was not detected in any of the groundwater samples. ✓

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.)

Comments:

ii. Submitted blind to lab?
 Yes No NA (Please explain.)

Comments:

[Redacted]

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

Handwritten: PCE (ug/L) 1.56-1.62
 $\frac{(1.56 + 1.62)/2}{1.59} \times 100 = 3.77\%$

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The data quality and usability were not affected by the field duplicate RPDs being within acceptance criteria.

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.)

Comments:

Handwritten: DEC is unaware of use of non-disposable equipment

An equipment blank was not required in the ADEC-approved work plan.

i. All results less than PQL?

Yes No NA (Please explain.)

Comments:

An equipment blank was not required.

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

No data were affected by the absence of an equipment blank.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No NA (Please explain.)

Comments:

Handwritten: reviewed by DEC 3/23/11
Grand Gidley 1/10