

January 13, 2015

R&M No. 2186.01



Grant Lidren
Alaska Department of Environmental Conservation
Contaminated Sites Program
555 Cordova Street
Anchorage, Alaska 99501

RE: Groundwater Monitoring Report
Tract H, Port of Anchorage Addition 1
ADEC File #2100.38.535
Anchorage, Alaska

Dear Mr. Lidren:

The following report provides the results of the 2014 groundwater monitoring effort performed by R&M Consultants, Inc. (R&M) at the Port of Anchorage (Port) in Anchorage, Alaska. The work was conducted to address site characterization activities requested by the Alaska Department of Environmental Conservation (ADEC) to support the recent listing of the Port within the ADEC Contaminated Sites Database.

BACKGROUND

The Port is located in an industrial area of Anchorage, bordered by Cook Inlet to the west, Joint Base Elmendorf-Richardson to the north and east, and bulk fuel facilities to the south. The Port provides facilities for the movement of containerized freight, iron and steel products, wood products, bulk petroleum, and cement. Current Port facilities include two petroleum, oil, and lubricant (POL) transfer terminals, a POL pipeline valve yard, three cargo ship terminals, container cranes, equipment and material staging yards, vehicle transit areas, an administrative building with associated vehicle parking areas, a Security Center, and a maintenance facility.

The Port was listed in November, 2012 in the ADEC Contaminated Sites Database (File No. 2100.38.535). Existing soil and groundwater contamination in various areas of Port property can be attributed to historical releases from pipelines and tank farms dating back to the 1964 Great Alaska Earthquake. As a result, several areas of hydrocarbon contamination have been identified on Port property during excavation activities for utility projects. ADEC requested that the Port conduct an investigation to roughly delineate the extent of contamination and evaluate the potential migration of contaminants into Cook Inlet (ADEC, 2012). Groundwater monitoring activities were outlined in the *Groundwater Monitoring Work Plan, Tract H, Port of Anchorage Addition 1* (R&M, 2013) which was approved by ADEC on 20 June 2013. Groundwater samples were collected and analyzed initially in 2013; this report represents the second round of sampling conducted in 2014.

GROUNDWATER FLOW DIRECTION

With the exception of a few grassed landscaped areas and vegetated drainage ditches (as well as partially constructed elements of the pending expansion project), the Port is entirely paved. Groundwater is generally shallow, tidally influenced, and flows west/northwest towards Cook Inlet.

R&M CONSULTANTS, INC.

9101 Vanguard Drive
Anchorage, Alaska 99507

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Monitoring well elevations were surveyed in April 2014 to determine current groundwater elevations. The water levels in the wells were measured prior to sampling to allow determination of the approximate groundwater elevation and flow direction (Attachment A, Table 1). The interpreted direction of groundwater flow is generally to the west and northwest (Attachment B, Figure 1).

MONITORING WELL SAMPLING

All groundwater sampling was performed in accordance with the procedures in ADEC's *Draft Field Sampling Guidance* (May, 2010). Prior to purging and sampling, the groundwater levels and well depths for each monitoring well were measured with a water level indicator precise to 0.01 feet. The water level indicator was decontaminated between wells by soaking in a diluted phosphate solution (Alconox) and rinsing first with potable then deionized water. Water levels were compared with 2014 survey elevations and are presented in Table 1 (Attachment A). No free product was encountered in the wells, however a slight hydrocarbon sheen and odor was observed in groundwater from monitoring well MW-6D-1.

Each monitoring well was purged up to three well volumes utilizing polyethylene bailers. Purge water was collected in 5-gallon buckets and transported to a 55-gallon drum staged near the Port maintenance facility until laboratory analysis was complete. Based on the laboratory results and approval received from ADEC, the purge water was disposed of by Emerald Services, Inc. on 4 December 2014.

Groundwater samples were submitted to TestAmerica for laboratory analyses of the following:

- Gasoline Range Organics (GRO) by Alaska Method 101.
- Diesel Range Organics (DRO) by Alaska Method 102.
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA 8021B.

LABORATORY ANALYTICAL RESULTS

All water samples were submitted to TestAmerica on 31 October 2014. TestAmerica is an Environmental Protection Agency (EPA) and ADEC approved laboratory. Standard Chain-of-Custody procedures for laboratory samples were followed. The temperature blank included in the sample cooler registered at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ upon submittal to TestAmerica. Laboratory analytical results were received on 12 November 2014 (Attachment C). Groundwater laboratory analytical results are presented in Table 2 (Attachment A, Table 2).

Benzene was detected above ADEC cleanup levels in the original and duplicate groundwater samples collected from monitoring well MW-6D-1 at 0.0226 mg/L and 0.0181 mg/L, respectively. Ethylbenzene, xylene, GRO and DRO were also detected in groundwater from monitoring well MW-6D-1 but below applicable cleanup levels (Attachment A, Table 2).

DRO was detected below cleanup levels in monitoring wells MW-A-1 and MW-12B-2. Benzene was detected below cleanup levels in groundwater from monitoring well MW-12B-2. Toluene was not detected in any groundwater samples (Attachment A, Table 2).

QUALITY ASSURANCE/ QUALITY CONTROL

Duplicate samples were obtained at a rate of one per ten samples. One duplicate groundwater sample was collected from MW-6D-1 on 31 October 2014 and submitted in the same manner as the regular samples; the duplicate sample was labeled MW-6D-2. Analytical results for contaminants were in good agreement between the normal and the duplicate groundwater samples (Attachment C).

A trip blank for AK101/EPA8021B was prepared by the laboratory, taken to the site and handled like all other samples. No GRO or BTEX constituents were detected in the trip blank, indicating that handling and ambient conditions did not contribute to levels of contamination detected in some samples. Method blanks were prepared and analyzed by SGS for all parameters. No analytes were detected at the practical quantitation limit (PQL) for any method blank parameter. An ADEC laboratory data review checklist was completed and is included with this report (Attachment C).

SUMMARY AND CONCLUSIONS

The purpose of this sampling effort was to supplement the initial 2013 sampling effort in order to delineate the extent of contamination and to evaluate the potential for contaminants to migrate into Cook Inlet (ADEC, 2012). Most detectable analytical results fall well below ADEC cleanup levels with the exception of monitoring well MW-6D-1 where only benzene exceeds ADEC cleanup levels. Contamination appears to be localized near monitoring well MW-6D-1 which is farthest from the shoreline. Analytical results from the three wells located along the shoreline are all non-detect or contaminant levels fall below ADEC cleanup standards indicating that contamination is not migrating into and affecting Cook Inlet. Based on the information presented herein, additional groundwater sampling is not recommended at this time.

CLOSURE

This brief letter report has been prepared for the exclusive use of the Port of Anchorage and their representatives in the study of this site. The findings presented within this report are based on limited sampling and laboratory analyses conducted by R&M. Since opinions of conditions prevailing on a particular site must be based on the work authorized by the client, all findings/data must be construed as representative of the site at a particular moment in time and the result of services performed within the scope, limitations, and cost of the work requested. Changes in the conditions of this site may occur with the passage of time and may be due to natural processes or the works of man. In addition, changes in government codes, either State or Federal regulations or laws, may occur. Due to such changes, which are beyond our control, observations and recommendations applicable to this site may need to be revised wholly or in part from time to time.

R&M Consultants, Inc. performed this work in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No warranty, express or implied, beyond exercise of reasonable care and professional diligence, is made.

Should you require additional information regarding the investigation or this report, please contact us.

Sincerely,

R&M CONSULTANTS, INC.



Kristi M. McLean, LEED AP BD+C
Group Manager – Environmental Services

Attachment A: Tables

Attachment B: Figure 1

Attachment C: Analytical Results and Laboratory Data Review Checklist

cc: Sharen Walsh, P.E., Port of Anchorage

REFERENCES

Alaska Department of Environmental Conservation (ADEC, 2012). Letter dated 20 November 2012 from ADEC addressed to Todd Cowles, Port of Anchorage, Re: Port of Anchorage Groundwater Monitoring.

R&M Consultants, Inc. (R&M, 2013).” Groundwater Monitoring Work Plan, Tract H, Port of Anchorage Addition 1, Anchorage, Alaska.” June, 2013.

ATTACHMENT A

TABLES

Groundwater Elevations TABLE 1

Laboratory Analytical Results, Groundwater Samples TABLE 2

TABLE 1
GROUNDWATER ELEVATIONS

Monitoring Well ID	Date	Top of Casing Elevation (feet) ⁽¹⁾	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-12B-2	10/31/14	35.84	10.84	25.00
MW-C-1	10/31/14	36.31	13.30	23.01
MW-6D-1	10/31/14	36.87	3.77	33.10
MW-A-1	10/31/14	37.12	7.44	29.68

(1) Monitoring wells were surveyed on April 23, 2014. Elevations are referenced to Mean Lower Low Water (MLLW) based on USACE monument S. End.

TABLE 2
LABORATORY ANALYTICAL RESULTS
GROUNDWATER SAMPLES

Monitoring Well ID	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)
CURRENT RESULTS, 31 OCTOBER 2014						
MW-12B-2	ND	ND	ND	ND	ND	0.169
MW-C-1	ND	ND	ND	ND	ND	ND
MW-6D-1	0.0226	ND	0.0063	0.0485	1.48	0.613
MW-6D-2 ⁽²⁾	0.0181	ND	0.0044	0.0391	1.33	0.569
MW-A-1	ND	ND	ND	ND	ND	0.157
HISTORICAL RESULTS, 18 SEPTEMBER 2013						
MW-12B-2	0.000510	ND	ND	ND	ND	ND
MW-12B-2D ⁽²⁾	ND	ND	ND	ND	ND	ND
MW-C-1	ND	ND	ND	ND	ND	ND
MW-6D-1	0.0358	ND	0.0129	0.0980	0.829	0.883
MW-A-1	ND	ND	ND	ND	ND	0.793
Cleanup Levels ⁽¹⁾	0.005	1.0	0.7	10.0	2.2	1.5

⁽¹⁾ Cleanup levels for BTEX, GRO, and DRO have been specified in Table C, Groundwater Cleanup Levels (18 AAC 75.345, April 8, 2012).

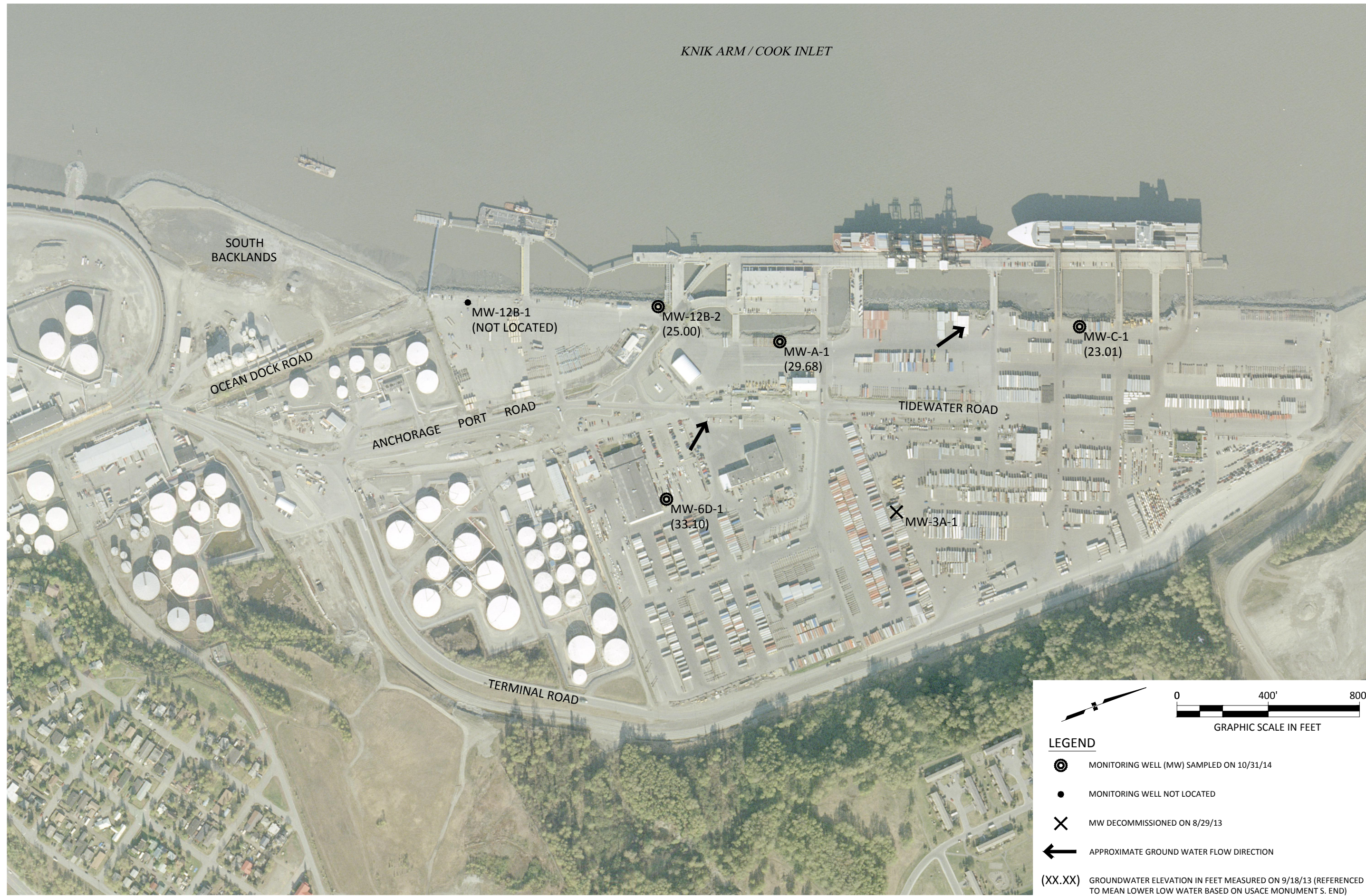
⁽²⁾ Duplicate sample collected from MW-6D-1 for 2014 sampling and MW-12B-2 for 2013 sampling.

NOTE: Shaded cells indicate that analyte was detected above cleanup levels.

ATTACHMENT B

Monitoring Well Site Map

FIGURE 1



KNIK ARM / COOK INLET

SOUTH BACKLANDS

OCEAN DOCK ROAD

ANCHORAGE PORT ROAD

TERMINAL ROAD

TIDEWATER ROAD

MW-12B-1
(NOT LOCATED)

MW-12B-2
(25.00)






MW-A-1
(29.68)

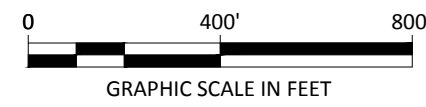
MW-C-1
(23.01)

MW-6D-1
(33.10)

MW-3A-1

LEGEND

-  MONITORING WELL (MW) SAMPLED ON 10/31/14
-  MONITORING WELL NOT LOCATED
-  MW DECOMMISSIONED ON 8/29/13
-  APPROXIMATE GROUND WATER FLOW DIRECTION
-  GROUNDWATER ELEVATION IN FEET MEASURED ON 9/18/13 (REFERENCED TO MEAN LOWER LOW WATER BASED ON USACE MONUMENT S. END)



FB:	N/A
GRID:	1030
PROJ.NO:	2186.01.10
FIGURE:	1

PORT OF ANCHORAGE TRACT H, POA ADDITION 1
MONITORING WELL SITE MAP

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DWN:	P.M.H.
CKD:	K.M.M.
DATE:	DEC 2014
SCALE:	AS SHOWN

ATTACHMENT C
ANALYTICAL RESULTS

TestAmerica., Laboratory Data Report

Laboratory Data Review Checklist

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Anchorage

2000 West International Airport Road

Suite A10

Anchorage, AK 99502-1119

Tel: (907)563-9200

TestAmerica Job ID: 230-373-1

Client Project/Site: Port of Anchorage Water Sampling

For:

R&M Consultants

9101 Vanguard Drive

Anchorage, Alaska 99507

Attn: Kristi McLean



Authorized for release by:

11/12/2014 6:19:06 PM

Steve Crupi, Project Manager II

(253)248-4961

steve.crupi@testamericainc.com

LINKS

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results through

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Have a Question?



Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Y	The chromatographic response resembles a typical fuel pattern.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Job ID: 230-373-1

Laboratory: TestAmerica Anchorage

Narrative

Job Narrative 230-373-1

Receipt

The samples were received on 10/31/2014 5:00 PM, arriving in good condition, properly preserved and, where required, on ice.

Except:

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method AK102: In analysis batch 175543, for preparation batch 175363, sample MW-12B-2 (230-373-1) contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes. In the same batch, samples MW-6D-1 (230-373-4), MW-6D-2 (230-373-5), and MW-A-1 (230-373-2) contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: .

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Detection Summary

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-12B-2

Lab Sample ID: 230-373-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
DRO (nC10-<nC25)	0.169	Y	0.106	mg/L	1		AK102 & 103	Total/NA

Client Sample ID: MW-A-1

Lab Sample ID: 230-373-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
DRO (nC10-<nC25)	0.157	Y	0.104	mg/L	1		AK102 & 103	Total/NA

Client Sample ID: MW-C-1

Lab Sample ID: 230-373-3

No Detections.

Client Sample ID: MW-6D-1

Lab Sample ID: 230-373-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	22.6		0.500	ug/L	1		8021B	Total/NA
Ethylbenzene	6.30		0.500	ug/L	1		8021B	Total/NA
Xylenes, Total	48.5		1.50	ug/L	1		8021B	Total/NA
Gasoline Range Organics (GRO) -C6-C10	1480		50.0	ug/L	1		AK101	Total/NA
DRO (nC10-<nC25)	0.613	Y	0.102	mg/L	1		AK102 & 103	Total/NA

Client Sample ID: MW-6D-2

Lab Sample ID: 230-373-5

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Benzene	18.1		0.500	ug/L	1		8021B	Total/NA
Ethylbenzene	4.42		0.500	ug/L	1		8021B	Total/NA
Xylenes, Total	39.1		1.50	ug/L	1		8021B	Total/NA
Gasoline Range Organics (GRO) -C6-C10	1330		50.0	ug/L	1		AK101	Total/NA
DRO (nC10-<nC25)	0.569	Y	0.102	mg/L	1		AK102 & 103	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 230-373-6

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Anchorage

Client Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-12B-2

Lab Sample ID: 230-373-1

Date Collected: 10/31/14 14:00

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500	ug/L			11/03/14 19:32	1
Toluene	ND		0.500	ug/L			11/03/14 19:32	1
Ethylbenzene	ND		0.500	ug/L			11/03/14 19:32	1
Xylenes, Total	ND		1.50	ug/L			11/03/14 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	89		58.2 - 129		11/03/14 19:32	1
a,a,a-Trifluorotoluene (pid)	84		60 - 135		11/03/14 19:32	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		50.0	ug/L			11/03/14 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	85		50 - 150		11/03/14 19:32	1
BFB - FID	90		50 - 150		11/03/14 19:32	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.169	Y	0.106	mg/L		11/10/14 11:06	11/12/14 09:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	63		50 - 150	11/10/14 11:06	11/12/14 09:14	1

Client Sample ID: MW-A-1

Lab Sample ID: 230-373-2

Date Collected: 10/31/14 15:00

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500	ug/L			11/03/14 19:59	1
Toluene	ND		0.500	ug/L			11/03/14 19:59	1
Ethylbenzene	ND		0.500	ug/L			11/03/14 19:59	1
Xylenes, Total	ND		1.50	ug/L			11/03/14 19:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	93		58.2 - 129		11/03/14 19:59	1
a,a,a-Trifluorotoluene (pid)	92		60 - 135		11/03/14 19:59	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		50.0	ug/L			11/03/14 19:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	93		50 - 150		11/03/14 19:59	1
BFB - FID	94		50 - 150		11/03/14 19:59	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.157	Y	0.104	mg/L		11/10/14 11:06	11/12/14 13:26	1

TestAmerica Anchorage

Client Sample Results

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-A-1

Lab Sample ID: 230-373-2

Date Collected: 10/31/14 15:00

Matrix: Water

Date Received: 10/31/14 17:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	51		50 - 150	11/10/14 11:06	11/12/14 13:26	1

Client Sample ID: MW-C-1

Lab Sample ID: 230-373-3

Date Collected: 10/31/14 15:20

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500	ug/L			11/03/14 21:30	1
Toluene	ND		0.500	ug/L			11/03/14 21:30	1
Ethylbenzene	ND		0.500	ug/L			11/03/14 21:30	1
Xylenes, Total	ND		1.50	ug/L			11/03/14 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	100		58.2 - 129		11/03/14 21:30	1
<i>a,a,a</i> -Trifluorotoluene (<i>pid</i>)	94		60 - 135		11/03/14 21:30	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	ND		50.0	ug/L			11/03/14 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>a,a,a</i> -Trifluorotoluene (<i>fid</i>)	95		50 - 150		11/03/14 21:30	1
BFB - FID	101		50 - 150		11/03/14 21:30	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	ND		0.102	mg/L		11/10/14 11:06	11/12/14 13:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	51		50 - 150	11/10/14 11:06	11/12/14 13:43	1

Client Sample ID: MW-6D-1

Lab Sample ID: 230-373-4

Date Collected: 10/31/14 16:15

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	22.6		0.500	ug/L			11/03/14 21:57	1
Toluene	ND		0.500	ug/L			11/03/14 21:57	1
Ethylbenzene	6.30		0.500	ug/L			11/03/14 21:57	1
Xylenes, Total	48.5		1.50	ug/L			11/03/14 21:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	99		58.2 - 129		11/03/14 21:57	1
<i>a,a,a</i> -Trifluorotoluene (<i>pid</i>)	97		60 - 135		11/03/14 21:57	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	1480		50.0	ug/L			11/03/14 21:57	1

TestAmerica Anchorage

Client Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-6D-1

Lab Sample ID: 230-373-4

Date Collected: 10/31/14 16:15

Matrix: Water

Date Received: 10/31/14 17:00

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	107		50 - 150		11/03/14 21:57	1
BFB - FID	103		50 - 150		11/03/14 21:57	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.613	Y	0.102	mg/L		11/10/14 11:06	11/12/14 10:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150	11/10/14 11:06	11/12/14 10:08	1

Client Sample ID: MW-6D-2

Lab Sample ID: 230-373-5

Date Collected: 10/31/14 16:15

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	18.1		0.500	ug/L			11/03/14 22:23	1
Toluene	ND		0.500	ug/L			11/03/14 22:23	1
Ethylbenzene	4.42		0.500	ug/L			11/03/14 22:23	1
Xylenes, Total	39.1		1.50	ug/L			11/03/14 22:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	78		58.2 - 129		11/03/14 22:23	1
a,a,a-Trifluorotoluene (pid)	79		60 - 135		11/03/14 22:23	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C6-C10	1330		50.0	ug/L			11/03/14 22:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	88		50 - 150		11/03/14 22:23	1
BFB - FID	81		50 - 150		11/03/14 22:23	1

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (nC10-<nC25)	0.569	Y	0.102	mg/L		11/10/14 11:06	11/12/14 10:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	69		50 - 150	11/10/14 11:06	11/12/14 10:26	1

Client Sample ID: Trip Blank

Lab Sample ID: 230-373-6

Date Collected: 10/31/14 00:00

Matrix: Water

Date Received: 10/31/14 17:00

Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500	ug/L			11/03/14 22:50	1
Toluene	ND		0.500	ug/L			11/03/14 22:50	1
Ethylbenzene	ND		0.500	ug/L			11/03/14 22:50	1
Xylenes, Total	ND		1.50	ug/L			11/03/14 22:50	1

TestAmerica Anchorage

Client Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: Trip Blank

Lab Sample ID: 230-373-6

Date Collected: 10/31/14 00:00

Matrix: Water

Date Received: 10/31/14 17:00

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
BFB - PID	80		58.2 - 129		11/03/14 22:50	1
a,a,a-Trifluorotoluene (pid)	72		60 - 135		11/03/14 22:50	1

Method: AK101 - Alaska - Gasoline Range Organics (GC)

<i>Analyte</i>	<i>Result</i>	<i>Qualifier</i>	<i>RL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Gasoline Range Organics (GRO) -C6-C10	ND		50.0	ug/L			11/03/14 22:50	1

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
a,a,a-Trifluorotoluene (fid)	73		50 - 150		11/03/14 22:50	1
BFB - FID	80		50 - 150		11/03/14 22:50	1



Surrogate Summary

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	BFB1 (58.2-129)	TFT1 (60-135)
230-369-A-6 DU	Duplicate	102	97
230-373-1	MW-12B-2	89	84
230-373-2	MW-A-1	93	92
230-373-3	MW-C-1	100	94
230-373-4	MW-6D-1	99	97
230-373-5	MW-6D-2	78	79
230-373-6	Trip Blank	80	72
LCS 230-1481/1002	Lab Control Sample	100	105
LCSD 230-1481/1014	Lab Control Sample Dup	99	104
MB 230-1481/4	Method Blank	99	101

Surrogate Legend
 BFB = BFB - PID
 TFT = a,a,a-Trifluorotoluene (pid)

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TFT2 (50-150)	BFB - FID2 (50-150)
230-369-A-6 DU	Duplicate	98	103
230-373-1	MW-12B-2	85	90
230-373-2	MW-A-1	93	94
230-373-3	MW-C-1	95	101
230-373-4	MW-6D-1	107	103
230-373-5	MW-6D-2	88	81
230-373-6	Trip Blank	73	80
LCS 230-1480/1003	Lab Control Sample	109	100
LCSD 230-1480/1015	Lab Control Sample Dup	108	97
MB 230-1480/4	Method Blank	102	99

Surrogate Legend
 TFT = a,a,a-Trifluorotoluene (fid)
 BFB - FID = BFB - FID

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OTPH (50-150)
230-373-1	MW-12B-2	63
230-373-2	MW-A-1	51
230-373-3	MW-C-1	51
230-373-4	MW-6D-1	76
230-373-5	MW-6D-2	69
LCS 580-175363/2-A	Lab Control Sample	86
LCSD 580-175363/3-A	Lab Control Sample Dup	87
MB 580-175363/1-A	Method Blank	83

TestAmerica Anchorage

Surrogate Summary

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Surrogate Legend

OTPH = o-Terphenyl

1

2

3

4

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QC Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 230-1481/4

Matrix: Water

Analysis Batch: 1481

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.500	ug/L			11/03/14 14:39	1
Toluene	ND		0.500	ug/L			11/03/14 14:39	1
Ethylbenzene	ND		0.500	ug/L			11/03/14 14:39	1
Xylenes, Total	ND		1.50	ug/L			11/03/14 14:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
BFB - PID	99		58.2 - 129		11/03/14 14:39	1
a,a,a-Trifluorotoluene (pid)	101		60 - 135		11/03/14 14:39	1

Lab Sample ID: LCS 230-1481/1002

Matrix: Water

Analysis Batch: 1481

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	20.0	20.14		ug/L		101	57.9 - 151
Toluene	20.0	18.92		ug/L		95	54.8 - 154
Ethylbenzene	20.0	19.60		ug/L		98	67.2 - 132
Xylenes, Total	60.0	58.42		ug/L		97	66.4 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
BFB - PID	100		58.2 - 129
a,a,a-Trifluorotoluene (pid)	105		60 - 135

Lab Sample ID: LCSD 230-1481/1014

Matrix: Water

Analysis Batch: 1481

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Benzene	20.0	21.19		ug/L		106	57.9 - 151	5	20
Toluene	20.0	19.99		ug/L		100	54.8 - 154	6	20
Ethylbenzene	20.0	20.42		ug/L		102	67.2 - 132	4	20
Xylenes, Total	60.0	60.34		ug/L		101	66.4 - 130	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
BFB - PID	99		58.2 - 129
a,a,a-Trifluorotoluene (pid)	104		60 - 135

Lab Sample ID: 230-369-A-6 DU

Matrix: Water

Analysis Batch: 1481

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Benzene	ND		ND		ug/L		NC	25
Toluene	ND		ND		ug/L		NC	25
Ethylbenzene	ND		ND		ug/L		NC	25
Xylenes, Total	ND		ND		ug/L		NC	25

TestAmerica Anchorage

QC Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 230-369-A-6 DU
Matrix: Water
Analysis Batch: 1481

Client Sample ID: Duplicate
Prep Type: Total/NA

Surrogate	DU DU		Limits
	%Recovery	Qualifier	
BFB - PID	102		58.2 - 129
a,a,a-Trifluorotoluene (pid)	97		60 - 135

Method: AK101 - Alaska - Gasoline Range Organics (GC)

Lab Sample ID: MB 230-1480/4
Matrix: Water
Analysis Batch: 1480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Gasoline Range Organics (GRO) -C6-C10	ND		50.0	ug/L			11/03/14 14:39	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
a,a,a-Trifluorotoluene (fid)	102		50 - 150		11/03/14 14:39	1
BFB - FID	99		50 - 150		11/03/14 14:39	1

Lab Sample ID: LCS 230-1480/1003
Matrix: Water
Analysis Batch: 1480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Gasoline Range Organics (GRO) -C6-C10	500	522.9		ug/L		105	60 - 120

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
a,a,a-Trifluorotoluene (fid)	109		50 - 150
BFB - FID	100		50 - 150

Lab Sample ID: LCSD 230-1480/1015
Matrix: Water
Analysis Batch: 1480

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Gasoline Range Organics (GRO) -C6-C10	500	508.4		ug/L		102	60 - 120	3	20

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
a,a,a-Trifluorotoluene (fid)	108		50 - 150
BFB - FID	97		50 - 150

Lab Sample ID: 230-369-A-6 DU
Matrix: Water
Analysis Batch: 1480

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Sample		DU DU		Unit	D	RPD	RPD Limit
	Result	Qualifier	Result	Qualifier				
Gasoline Range Organics (GRO) -C6-C10	ND		ND		ug/L		NC	

TestAmerica Anchorage

QC Sample Results

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Method: AK101 - Alaska - Gasoline Range Organics (GC) (Continued)

Lab Sample ID: 230-369-A-6 DU
 Matrix: Water
 Analysis Batch: 1480

Client Sample ID: Duplicate
 Prep Type: Total/NA

Surrogate	DU DU		Limits
	%Recovery	Qualifier	
a,a,a-Trifluorotoluene (fid)	98		50 - 150
BFB - FID	103		50 - 150

Method: AK102 & 103 - Alaska - Diesel Range Organics & Residual Range Organics (GC)

Lab Sample ID: MB 580-175363/1-A
 Matrix: Water
 Analysis Batch: 175460

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 175363

Analyte	MB MB		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
DRO (nC10-<nC25)	ND		0.100	mg/L		11/10/14 11:06	11/11/14 16:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
o-Terphenyl	83		50 - 150	11/10/14 11:06	11/11/14 16:11	1

Lab Sample ID: LCS 580-175363/2-A
 Matrix: Water
 Analysis Batch: 175460

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 175363

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
DRO (nC10-<nC25)	4.00	3.288		mg/L		82	75 - 125

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
o-Terphenyl	86		50 - 150

Lab Sample ID: LCSD 580-175363/3-A
 Matrix: Water
 Analysis Batch: 175460

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 175363

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec. Limits	RPD	
		Result	Qualifier					RPD	Limit
DRO (nC10-<nC25)	4.00	3.333		mg/L		83	75 - 125	1	20

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
o-Terphenyl	87		50 - 150

QC Association Summary

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

GC VOA

Analysis Batch: 1480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-369-A-6 DU	Duplicate	Total/NA	Water	AK101	
230-373-1	MW-12B-2	Total/NA	Water	AK101	
230-373-2	MW-A-1	Total/NA	Water	AK101	
230-373-3	MW-C-1	Total/NA	Water	AK101	
230-373-4	MW-6D-1	Total/NA	Water	AK101	
230-373-5	MW-6D-2	Total/NA	Water	AK101	
230-373-6	Trip Blank	Total/NA	Water	AK101	
LCS 230-1480/1003	Lab Control Sample	Total/NA	Water	AK101	
LCSD 230-1480/1015	Lab Control Sample Dup	Total/NA	Water	AK101	
MB 230-1480/4	Method Blank	Total/NA	Water	AK101	

Analysis Batch: 1481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-369-A-6 DU	Duplicate	Total/NA	Water	8021B	
230-373-1	MW-12B-2	Total/NA	Water	8021B	
230-373-2	MW-A-1	Total/NA	Water	8021B	
230-373-3	MW-C-1	Total/NA	Water	8021B	
230-373-4	MW-6D-1	Total/NA	Water	8021B	
230-373-5	MW-6D-2	Total/NA	Water	8021B	
230-373-6	Trip Blank	Total/NA	Water	8021B	
LCS 230-1481/1002	Lab Control Sample	Total/NA	Water	8021B	
LCSD 230-1481/1014	Lab Control Sample Dup	Total/NA	Water	8021B	
MB 230-1481/4	Method Blank	Total/NA	Water	8021B	

GC Semi VOA

Prep Batch: 175363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-373-1	MW-12B-2	Total/NA	Water	3510C	
230-373-2	MW-A-1	Total/NA	Water	3510C	
230-373-3	MW-C-1	Total/NA	Water	3510C	
230-373-4	MW-6D-1	Total/NA	Water	3510C	
230-373-5	MW-6D-2	Total/NA	Water	3510C	
LCS 580-175363/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 580-175363/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
MB 580-175363/1-A	Method Blank	Total/NA	Water	3510C	

Analysis Batch: 175460

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 580-175363/2-A	Lab Control Sample	Total/NA	Water	AK102 & 103	175363
LCSD 580-175363/3-A	Lab Control Sample Dup	Total/NA	Water	AK102 & 103	175363
MB 580-175363/1-A	Method Blank	Total/NA	Water	AK102 & 103	175363

Analysis Batch: 175543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
230-373-1	MW-12B-2	Total/NA	Water	AK102 & 103	175363
230-373-2	MW-A-1	Total/NA	Water	AK102 & 103	175363
230-373-3	MW-C-1	Total/NA	Water	AK102 & 103	175363
230-373-4	MW-6D-1	Total/NA	Water	AK102 & 103	175363
230-373-5	MW-6D-2	Total/NA	Water	AK102 & 103	175363

TestAmerica Anchorage

Lab Chronicle

Client: R&M Consultants
 Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-12B-2

Date Collected: 10/31/14 14:00

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 19:32	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 19:32	ASD	TAL ANC
Total/NA	Prep	3510C			175363	11/10/14 11:06	WJR	TAL SEA
Total/NA	Analysis	AK102 & 103		1	175543	11/12/14 09:14	EKK	TAL SEA

Client Sample ID: MW-A-1

Date Collected: 10/31/14 15:00

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 19:59	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 19:59	ASD	TAL ANC
Total/NA	Prep	3510C			175363	11/10/14 11:06	WJR	TAL SEA
Total/NA	Analysis	AK102 & 103		1	175543	11/12/14 13:26	EKK	TAL SEA

Client Sample ID: MW-C-1

Date Collected: 10/31/14 15:20

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 21:30	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 21:30	ASD	TAL ANC
Total/NA	Prep	3510C			175363	11/10/14 11:06	WJR	TAL SEA
Total/NA	Analysis	AK102 & 103		1	175543	11/12/14 13:43	EKK	TAL SEA

Client Sample ID: MW-6D-1

Date Collected: 10/31/14 16:15

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 21:57	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 21:57	ASD	TAL ANC
Total/NA	Prep	3510C			175363	11/10/14 11:06	WJR	TAL SEA
Total/NA	Analysis	AK102 & 103		1	175543	11/12/14 10:08	EKK	TAL SEA

Client Sample ID: MW-6D-2

Date Collected: 10/31/14 16:15

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 22:23	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 22:23	ASD	TAL ANC

TestAmerica Anchorage

Lab Chronicle

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Client Sample ID: MW-6D-2

Date Collected: 10/31/14 16:15

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			175363	11/10/14 11:06	WJR	TAL SEA
Total/NA	Analysis	AK102 & 103		1	175543	11/12/14 10:26	EKK	TAL SEA

Client Sample ID: Trip Blank

Date Collected: 10/31/14 00:00

Date Received: 10/31/14 17:00

Lab Sample ID: 230-373-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8021B		1	1481	11/03/14 22:50	ASD	TAL ANC
Total/NA	Analysis	AK101		1	1480	11/03/14 22:50	ASD	TAL ANC

Laboratory References:

TAL ANC = TestAmerica Anchorage, 2000 West International Airport Road, Suite A10, Anchorage, AK 99502-1119, TEL (907)563-9200

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Laboratory: TestAmerica Anchorage

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	AK00975	06-30-15

Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-022	03-04-15
California	State Program	9	2901	01-31-15
L-A-B	DoD ELAP		L2236	01-19-16
L-A-B	ISO/IEC 17025		L2236	01-19-16
Montana (UST)	State Program	8	N/A	04-30-20
Oregon	NELAP	10	WA100007	11-06-15
USDA	Federal		P330-11-00222	04-08-17
Washington	State Program	10	C553	02-17-15

Method Summary

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	TAL ANC
AK101	Alaska - Gasoline Range Organics (GC)	ADEC	TAL ANC
AK102 & 103	Alaska - Diesel Range Organics & Residual Range Organics (GC)	ADEC	TAL SEA

Protocol References:

ADEC = Alaska Department of Environmental Conservation

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL ANC = TestAmerica Anchorage, 2000 West International Airport Road, Suite A10, Anchorage, AK 99502-1119, TEL (907)563-9200

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310



Sample Summary

Client: R&M Consultants
Project/Site: Port of Anchorage Water Sampling

TestAmerica Job ID: 230-373-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
230-373-1	MW-12B-2	Water	10/31/14 14:00	10/31/14 17:00
230-373-2	MW-A-1	Water	10/31/14 15:00	10/31/14 17:00
230-373-3	MW-C-1	Water	10/31/14 15:20	10/31/14 17:00
230-373-4	MW-6D-1	Water	10/31/14 16:15	10/31/14 17:00
230-373-5	MW-6D-2	Water	10/31/14 16:15	10/31/14 17:00
230-373-6	Trip Blank	Water	10/31/14 00:00	10/31/14 17:00

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THE LEADER IN ENV
230-373 Chain of Custody

Sampler ID _____
Temperature on Receipt _____
Drinking Water? Yes No

Chain of Custody Record

TAL-4124-280 (05/08)

Client: **REM consultants, inc.** Project Manager: **Kristy McLean** Chain of Custody Number: **155712**

Address: **9101 Vanguard Drive** Telephone Number (Area Code)/Fax Number: **646-9658** Lab Number: **1013114**

City: **Ann Arbor** State: **MI** Zip Code: **49107** Site Contact: _____ Lab Contact: _____

Project Name and Location (State): **Part of Anchorage** Carrier/Waybill Number: _____

Contract/Purchase Order/Quote No. _____

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt	
			Air	Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
MW-12B-2	10/31/14	1400	X							X					01
MW-A-1	10/31/14	1500	X							X					02
MW-C-1	10/31/14	1520	X							X					03
MW-6D-1	10/31/14	1615	X							X					04
MW-6D-2	10/31/14	1615	X							X					05

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
 24 Hours 48 Hours 7 Days 14 Days 21 Days Other _____

1. Relinquished By: *[Signature]* Date: **10/31/14** Time: **500**

2. Relinquished By: _____ Date: _____ Time: _____

3. Relinquished By: _____ Date: _____ Time: _____

1. Received By: *[Signature]* Date: **10/31/14** Time: **1700**

2. Received By: _____ Date: _____ Time: _____

3. Received By: _____ Date: _____ Time: _____

Comments: _____

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy



Login Sample Receipt Checklist

Client: R&M Consultants

Job Number: 230-373-1

Login Number: 373

List Source: TestAmerica Anchorage

List Number: 1

Creator: Pilch, Andrew C

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	False	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: R&M Consultants

Job Number: 230-373-1

Login Number: 373

List Number: 2

Creator: Tyson, Benjamin C

List Source: TestAmerica Seattle

List Creation: 11/08/14 01:42 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	A2TB= 1.0/1.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Laboratory Data Review Checklist

Completed by:	Kristi McLean		
Title:	Environmental Services Manager	Date:	Sep 9, 2014
CS Report Name:	POA Tract H Addition 1	Report Date:	Nov 12, 2014
Consultant Firm:	R&M Consultants, Inc.		
Laboratory Name:	TestAmerica	Laboratory Report Number:	230-373-1
ADEC File Number:	2100.38.535	ADEC RecKey Number:	HazID 25938

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No NA (Please explain) Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No NA (Please explain) Comments:

b. Correct analyses requested?

Yes No NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes No NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No NA (Please explain) Comments:

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 acceptance range, insufficient or missing samples, etc.?

Yes No NA (Please explain) Comments:

No discrepancies were documented.

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

Comments:

There were no documented discrepancies that would affect data quality or usability.

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:

None were identified by the lab

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

There were no corrective actions documented

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

Comments:

The case narrative did not identify an effect on data quality/usability.

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:

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? (Please explain)

Comments:

NA

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:

NA

iv. 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

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

No samples were affected

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:

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/DMSD, 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:

NA

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

Yes No NA (Please explain) Comments:

No data flags were identified.

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

NA

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 sample results had failed surrogate recoveries

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

Comments:

No sample results had failed surrogate recoveries

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 required to transport the samples and was therefore not indicated on the COC.

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

NA

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

Comments:

NA

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:

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

All RPD < 30% except for Ethylbenzene = 35%

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

Yes No NA (Please explain.)

Comments:

f. Decontamination or Equipment Blank (if applicable)

Yes No NA (Please explain)

Comments:

No decontamination/equipment blank was submitted.

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

ii. If above PQL, what samples are affected?

Comments:

NA

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

Comments:

NA

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

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Reset Form