R&M CONSULTANTS, INC.
9101 Vanguard Drive
Anchorage, Alaska 99507
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July 23, 2014 R&M No. 2061.01

Steve Cochran
Anchorage School District
1301 Labar Street
Anchorage, Alaska 99515

RE: Student Transportation Facility (ADEC File No. 2100.26.251)
2014 Groundwater Monitoring Report

Dear Mr. Cochran:

This letter report details the results of groundwater monitoring and well decommissioning activities conducted at the Anchorage School District (ASD) Student Transportation Facility located at 3580 East Tudor Road in Anchorage, Alaska (Figures 1 and 2, Attachment B). This work has been completed in accordance with the Anchorage School District's Purchase Order No. P032759 dated October 17, 2013.

BACKGROUND

Five registered underground storage tanks (USTs) were removed from the Student Transportation Facility in 1997 (Figure 2, Attachment B). Contamination remained in close proximity to the building foundation, despite extensive removal of contaminated soil, and may have extended beneath the building.

Initial analysis indicated that groundwater had been contaminated. Groundwater monitoring wells were installed at the Student Transportation Facility after removal of contaminated soil and have been periodically monitored over the years (R&M, 2013).

Upon review of the Groundwater Monitoring Report dated December 4, 2003, the Alaska Department of Environmental Conservation (ADEC) determined that although the shallow groundwater contamination remained above the established cleanup levels, it did not pose a risk to human health or the environment and was not migrating. Based on this determination, ADEC determined that no further remedial action (NFRA) was required at this site.

Following NFRA, an Annual Groundwater Monitoring Work Plan, dated April 19, 2005 was submitted to ADEC for approval. Within the work plan, it was requested that groundwater monitoring occur on an annual basis among the three monitoring wells of concern (MW-01, MW-04, and G-4) until a stable or decreasing trend in contaminant concentrations was established and/or 18 AAC 75.345 Table C levels were achieved. Approval of the Annual Groundwater Monitoring Work Plan was received from ADEC in a letter dated May 12, 2005. Periodic groundwater monitoring events were conducted over the next eight years.

As recommended by ADEC in a letter dated 1 May 2013 (ADEC, 2013), R&M proposed the following activities for the ASD Student Transportation Facility:

- Obtain groundwater samples from monitoring wells MW-01, MW-04 and G-4.
- Decommission monitoring wells MW-02, G-1, G-3, and G-6 in accordance with ADEC regulations and guidance (18 AAC 75, 18 AAC 78, and Monitoring Well Guidance dated September 2013).
- Attempt to locate monitoring wells MW-3, G-2, and G-5 with the use of a metal detector and historical site maps.
- Submit findings and report to ASD and ADEC.

This effort was described in the Groundwater Monitoring Work Plan, Anchorage School District Student Transportation Facility, Anchorage, Alaska (R&M, 2013) which was submitted to ADEC on 6 January 2014; approval was granted on 7 January 2014, and field work ensued. This report documents the result of those efforts.

MONITORING WELL SAMPLING AND OBSERVATIONS

Monitoring wells MW-01, MW-04 and G-4 were found intact and in good order during the 10 May 2014 sampling event. Runoff had infiltrated the flush mount of monitoring well G-4 and bentonite sludge had accumulated in the void between the well cap and cover. Once the bentonite was removed, the well cap was accessible and was removed. There was no indication that runoff had impacted the interior of the well. Monitoring wells MW-01 and MW-04 were found to be water tight and dry beneath the well cover.

Groundwater elevations were measured prior to purging and sampling with a water level indicator precise to 0.01 feet. (Table 1, Attachment A). Existing survey elevations were used to determine current groundwater elevations. The interpreted direction of groundwater flow is generally to the west (Figure 2, Attachment B). Comparison of historic groundwater flow data indicate that groundwater flow directions may change with the seasonal fluctuations and varying subsurface conditions. No free product was encountered in the wells, however, monitoring wells MW-04 and MW-01 exhibited a slight sheen and hydrocarbon odor.

Wells were purged and sampled in accordance with ADEC's Draft Field Sampling Guidance, May 2010. Prior to sampling, the monitoring wells were purged of three casing volumes of water. Well purge water and decontamination water totaling approximately 20 gallons were retained in a 55-gallon drum until laboratory analytical results were received. Impacted water will be removed by Emerald Services, Inc. Groundwater samples were submitted to the Alaska Division of SGS North America Inc. (SGS) for laboratory analyses on 12 May 2014. SGS is an Environmental Protection Agency (EPA) and ADEC-approved laboratory. Groundwater samples were collected by PVC bailer and analyzed for the following parameters:

- Gasoline Range Organics (GRO) by Method AK 101 and benzene, toluene, ethylbenzene, and total xylene (BTEX) by EPA test method 8021B (MW-01, MW-04 and G-4)
- Diesel Range Organics (DRO) by Method AK102 (MW-01 and MW-04)
- Residual Range Organics (RRO) by Method AK 103 (MW-04)

Laboratory analytical results were received on May 20, 2014. Current and historical laboratory analytical results are presented in Table 2 (Attachment A), with the complete laboratory report included in Attachment C.

Laboratory analysis detected DRO and RRO at levels exceeding ADEC groundwater cleanup standards in groundwater from monitoring well MW-04. Benzene was detected in groundwater collected from monitoring well MW-01 at levels exceeding ADEC groundwater cleanup standards.

A duplicate groundwater sample was collected from monitoring well MW-01 and submitted in the same manner as the regular samples. Analytical results were in relatively good agreement between the normal and the duplicate groundwater samples. An ADEC laboratory data review checklist was completed and is included with this report (Attachment C). A trip blank for AK 101/8021B 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 levels for any method blank parameter.

MONITORING WELL RECONNAISSANCE AND DECOMMISSIONING

In addition to monitoring wells MW-02, G-1, G-3, and G-6, wells MW-03, G-2, and G-5 were requested to be located (ADEC, 2013), The latter two wells were found using a metal detector and historical site maps. Monitoring well MW-03 could not be located and its status remains unknown. Monitoring wells G-2 and G-5 were located and approved by ADEC for decommissioning on 29 May 2014 (via e-mail).

A total of six monitoring wells (MW-02, G-1, G-2, G-3, G-5, and G-6) were decommissioned on 23 June 2014. Monitoring wells were decommissioned by complete well removal in accordance with the ADEC document titled Monitoring Well Guidance (September 2013) adopted by reference in 18 AAC 75 and 18 AAC 78. Discovery Drilling Inc. was contracted to provide decommissioning support. A tracked GeoProbe was utilized to remove the well casings. After the end cap was punctured, the casing was withdrawn and filled with hydrated bentonite. Once the casing was removed, the top two feet of the vacated well were filled with pea gravel and covered with cold patch asphalt to blend with the surrounding pavement. Monitoring well G-2 was not situated in a paved area and therefore gravel was extended to the surface instead of cold patch. Prior to decommissioning, the depths of the wells were measured as well as the length of the casings upon withdrawal to verify that all well casings were completely removed.

CONCLUSIONS AND RECOMMENDATIONS

Comparisons of current and historical groundwater sampling results from monitoring wells MW-01, MW-04, and G-4 indicate that GRO, DRO, RRO, and BTEX contamination from the former source area are naturally attenuating with time. Current laboratory sample results for GRO and DRO from monitoring well MW-01 now fall below ADEC cleanup levels. Concentrations of benzene from monitoring well MW-01 and DRO/RRO concentrations from monitoring well MW-04 remain above ADEC groundwater cleanup standards, but current results indicate a notable decrease from the historical sampling results. Results of the current groundwater sampling indicate that DRO and RRO from monitoring well MW-04 and benzene from monitoring well MW-01 continue to exceed ADEC cleanup levels; therefore, it is recommended that groundwater sampling continue for one additional sampling event to occur in the spring of 2015.

CLOSURE

This brief letter report has been prepared for the exclusive use of the Anchorage School District 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. We also need to advise you that various State and Federal agencies may require reporting of the information provided by this investigation. R&M does not assume the responsibility for reporting these findings and has not disclosed the results of this study.

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.

This report should be submitted to the Alaska Department of Environmental Conservation for their review and determination of any additional site investigations, monitoring, or corrective actions that may be required in the future. We appreciate the opportunity to perform this groundwater monitoring. Should you require further information concerning the current sampling results or this report, please contact us at your convenience.

Sincerely,
R&M CONSULTANTS, INC.

Kristi M. McLean, LEED AP BD+C
Environmental Specialist

Reviewed by:

Kevin J. Pendergast, CPG, PE
Group Manager – Environmental and Planning

Attachment A: Tables
Attachment B: Figures
Attachment C: Analytical Results and Laboratory Data Review Checklist

REFERENCES

Alaska Department of Environmental Conservation (ADEC, 2013). Letter dated 1 May 2013 from ADEC addressed to Edie Knapp, ASD Re: Verification of Institutional control Compliance at ASD Student Transportation Facility.

R&M Consultants, Inc. (R&M, 2013). "Groundwater Monitoring Work Plan, Anchorage School District Student Transportation Facility, Anchorage, Alaska" 10 December 2013.

ATTACHMENT A

TABLES

TABLE 1
STUDENT TRANSPORTATION FACILITY
GROUNDWATER TABLE ELEVATIONS

WELL ID	MW-01	MW-02	MW-04	G-1	G-3	G-4	G-5	G-6
Measured May 10, 2014 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	NA	169.25	NA	NA	168.26	NA	NA
Depth to Groundwater (feet)	7.52	NA	7.40	NA	NA	7.09	NA	NA
Groundwater Elevation (feet)	161.38	NA	161.85	NA	NA	161.17	NA	NA
Historical Results from July 29, 2010 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	NA	169.25	NA	NA	168.26	NA	NA
Depth to Groundwater (feet)	8.68	NA	8.72	NA	NA	7.98	NA	NA
Groundwater Elevation (feet)	160.22	NA	160.53	NA	NA	160.28	NA	NA
Historical Results from September 19, 2006 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	NA	169.25	NA	NA	168.26	NA	NA
Depth to Groundwater (feet)	8.63	NA	8.73	NA	NA	8.24	NA	NA
Groundwater Elevation (feet)	160.27	NA	160.52	NA	NA	160.02	NA	NA
Historical Results from October 27, 2005 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	NA	169.25	NA	NA	168.26	NA	NA
Depth to Groundwater (feet)	8.72	NA	9.14	NA	NA	NA	NA	NA
Groundwater Elevation (feet)	160.18	NA	160.11	NA	NA	NA	NA	NA
Historical Results from May 04, 2004 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	169.98	169.25	168.38	169.11	168.26	167.12	166.70
Depth to Groundwater (feet)	7.48	8.21	6.86	5.74	7.85	6.98	5.79	NA[a]
Groundwater Elevation (feet)	161.42	161.77	162.39	162.64	161.26	161.28	161.33	NA[a]
Historical Results from October 10, 2003 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	169.98	169.25	168.38	169.11	168.26	167.12	166.70
Depth to Groundwater (feet)	8.72	8.59	8.81	7.89	9.12	8.19	7.02	6.72
Groundwater Elevation (feet)	160.18	161.39	160.44	160.49	159.99	160.07	160.1	159.98
Historical Results from July 15, 2003 – Prior to purging and sampling								
Measuring Point Elevation (feet)	168.90	169.98	169.25	168.38	169.11	168.26	167.12	166.70
Depth to Groundwater (feet)	8.98	8.41	9.81	8.64	9.61	8.99	7.91	7.71
Groundwater Elevation (feet)	159.92	161.57	159.44	159.74	159.50	159.27	159.21	158.99

Note: [a] = No groundwater elevation determined due to well being seasonally frozen

TABLE 2 - STUDENT TRANSPORTATION FACILITY
LABORATORY ANALYTICAL RESULTS – GROUNDWATER

SAMPLE ID	GRO (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	DRO (mg/L)	RRO (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)
Current Results (5/10/14)											
ST-MW01-01	1.48	**0.0108**	ND	0.123	0.372	1.27	NA	NA	NA	NA	NA
ST-MW01-02 (duplicate)	1.81	**0.0152**	ND	0.148	0.482	0.968	NA	NA	NA	NA	NA
ST-MW04-01	ND	0.000570	ND	ND	ND	**4.20**	**8.34**	NA	NA	NA	NA
ST-G4-01	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Historical Results (7/29/10)											
ST-MW01-01	**8.05**	**0.0534**	0.00147	0.513	3.50	**3.12**	NA	NA	NA	NA	NA
ST-MW01-02 (duplicate)	**4.32**	**0.0629**	0.00169	0.515	3.41	**2.44**	NA	NA	NA	NA	NA
ST-MW4-01	ND	0.00056	ND	ND	ND	**6.62**	**12.6**	NA	NA	NA	NA
ST-G4-01	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Historical Results (9/19/06)											
ST-MW01-01	**150**	**1.2**	0.057	**4.3**	**30**	**2.6**	NA	NA	NA	NA	NA
ST-MW04-01	ND	ND	ND	ND	ND	**4.7**	**3.5**	NA	NA	NA	NA
ST-G4-01	0.23	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Historical Results (10/27/05)											
ST-MW01-01	**27.4**	**1.23**	0.187	**1.4**	**11.85**	**3.91**	NA	NA	NA	NA	NA
ST-MW04-01	ND	0.000903	ND	ND	ND	**4.26**	**5.60**	NA	NA	NA	NA
ST-MW04-02	ND	0.000911	ND	ND	ND	**4.36**	**5.75**	NA	NA	NA	NA
Historical Results (05/05/04)											
ST-MW01-01	**7.18**	**0.445**	0.746	0.326	2.15	**2.39**	NA	NA	NA	NA	NA
ST-MW02-01	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-MW04-01	ND	ND	ND	ND	ND	**4.22**	**5.68**	ND	ND	ND	**3.01**
ST-MW04-02	ND	ND	ND	ND	ND	**4.27**	**6.56**	ND	ND	ND	**2.89**
ST-G01-01	ND	ND	ND	ND	ND	0.577	NA	NA	NA	NA	NA
ST-G03-01	ND	ND	ND	ND	ND	0.660	NA	NA	NA	NA	NA
ST-G04-01	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-G05-01	ND	ND	ND	ND	ND	ND	0.559	ND	ND	**6.92**	**4.32**
ST-G06-01	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
ADEC Groundwater Cleanup Levels (18 AAC 75.345 Table C)	**2.2 (mg/L)**	**0.005 (mg/L)**	**1.0 (mg/L)**	**0.7 (mg/L)**	**10.0 (mg/L)**	**1.5 (mg/L)**	**1.1 (mg/L)**	**0.010 (mg/L)**	**0.005 (mg/L)**	**0.10 (mg/L)**	**0.015 (mg/L)**

(CONTINUED)

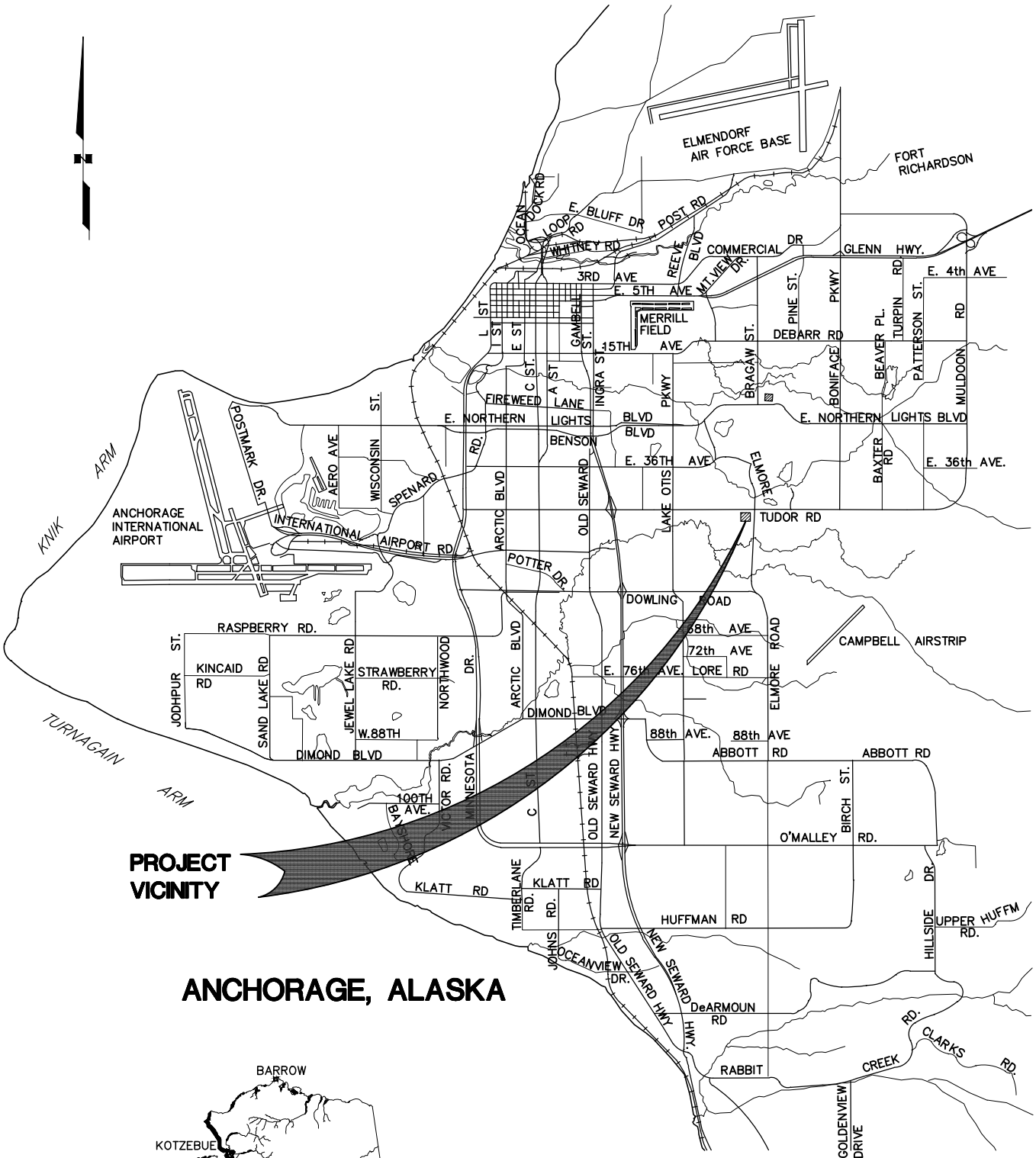
TABLE 2 - STUDENT TRANSPORTATION FACILITY
LABORATORY ANALYTICAL RESULTS – GROUNDWATER
(continued)

SAMPLE ID	GRO (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	DRO (mg/L)	RRO (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)
Historical Results (10/10/03)											
ST-MW01-01	**11.8**	**1.14**	**3.68**	0.644	2.86	**2.60**	NA	NA	NA	NA	NA
ST-MW02-01	ND	ND	ND	ND	ND	0.401	NA	NA	NA	NA	NA
ST-MW04-01	ND	ND	ND	ND	ND	**9.34**	**7.99**	**0.0116**	ND	0.00989	**0.0627**
Historical Results (10/10/03, continued)											
ST-G01-01	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-G03-01	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-G04-01	ND	**0.0515**	ND	ND	ND	0.335	NA	NA	NA	NA	NA
ST-G05-01	ND	0.00159	ND	ND	ND	1.02	0.600	**0.0847**	0.00102	**0.314**	**0.160**
ST-G05-02	ND	0.00199	ND	ND	ND	1.38	0.879	0.0185	0.00100	0.0356	**0.0828**
ST-G06-01	ND	ND	ND	ND	ND	0.337	ND	**0.0725**	ND	0.0197	0.00818
Historical Results (7/15/03)											
ST-MW01-01	**36.0**	**3.86**	**12.9**	**1.32**	5.97	**2.19**	NA	NA	NA	NA	NA
ST-MW02-01	ND	ND	0.00811	ND	ND	0.433	NA	NA	NA	NA	NA
ST-MW04-01	ND	0.00124	0.00338	ND	ND	**7.77**	**7.47**	ND	ND	0.0102	**0.0239**
ST-G01-01	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-G03-01	ND	0.00111	0.00698	ND	0.00551	ND	NA	NA	NA	NA	NA
ST-G04-01	ND	0.000920	ND	ND	ND	ND	NA	NA	NA	NA	NA
ST-G05-01	0.438	**0.336**	ND	0.00678	ND	ND	0.614	ND	ND	0.041	**0.0166**
ST-G05-02	0.471	**0.360**	ND	0.00664	ND	0.668	ND	ND	ND	0.0541	**0.0193**
ST-G06-01	ND	ND	ND	ND	ND	ND	ND	**0.0597**	**0.00946**	**0.133**	**0.0313**
ADEC Groundwater Cleanup Levels (18 AAC 75.345 Table C)	**2.2 (mg/L)**	**0.005 (mg/L)**	**1.0 (mg/L)**	**0.7 (mg/L)**	**10.0 (mg/L)**	**1.5 (mg/L)**	**1.1 (mg/L)**	**0.010 (mg/L)**	**0.005 (mg/L)**	**0.10 (mg/L)**	**0.015 (mg/L)**

Key: ND = Not detected, or reported at the Practical Quantitation Limit (PQL)
NA = Not Analyzed
[a] = No sample collected due to well being seasonally frozen

ATTACHMENT B

FIGURES



ANCHORAGE SCHOOL DISTRICT

STUDENT TRANSPORTATION FACILITY
ANCHORAGE, ALASKA

LOCATION & VICINITY MAP

JULY 2014 **FIGURE 1**

Plotted 7/23/2014 3:00 PM by Patrick Hewlett Z:\project\2061.01 ASD Groundwater Monitoring Services\Earth\ACAD\2061.01 – Bus Barn Vicinity Map.dwg

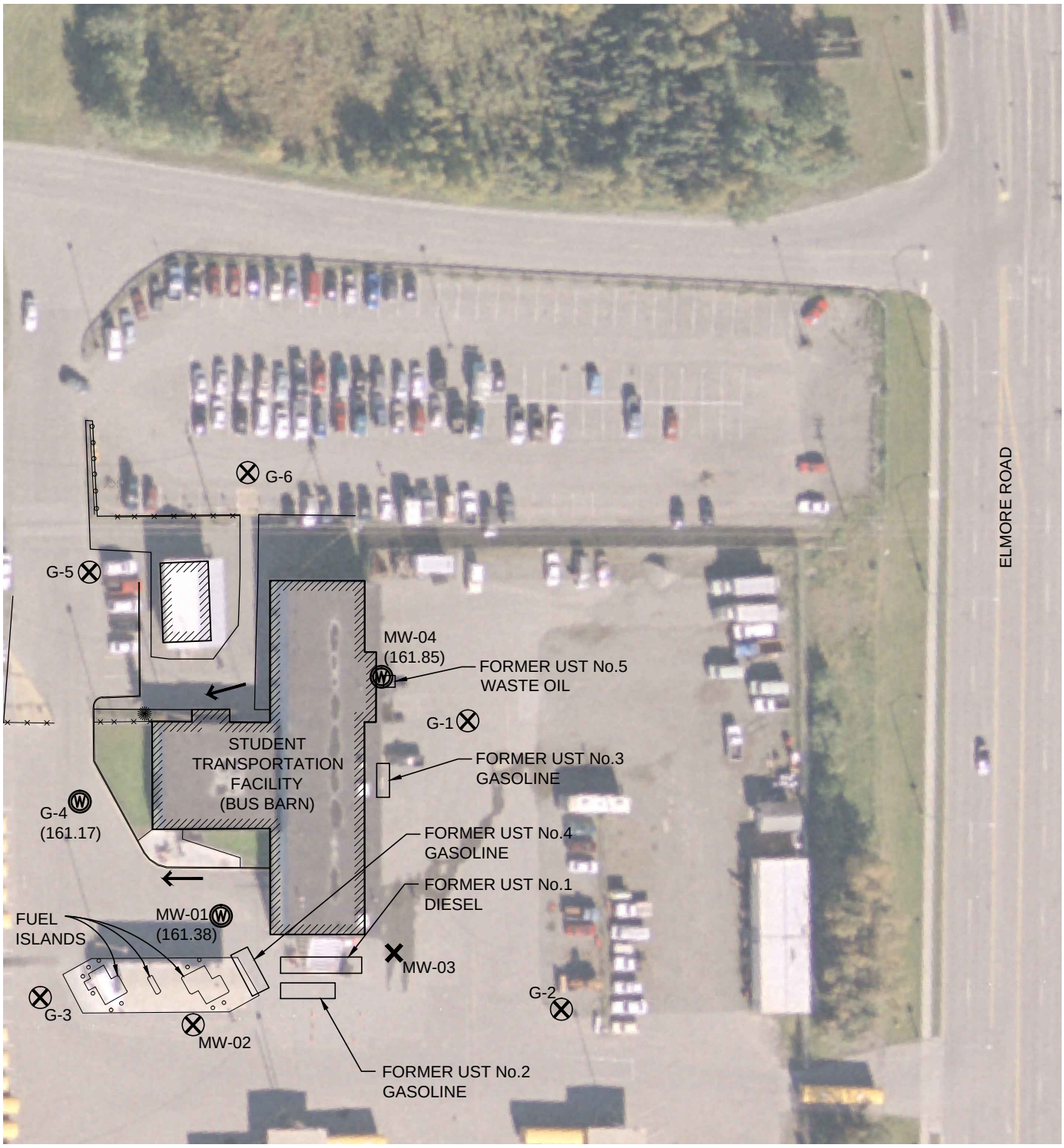


PHOTO CREDIT: STATEWIDE DIGITAL MAPPING INITIATIVE

LEGEND

- (W) MONITORING WELL SAMPLED 5/10/14
- ⊗ MONITORING WELL DECOMMISSIONED 6/23/14
- ✕ MONITORING WELL NOT LOCATED
- (XX.XX) GROUNDWATER ELEVATION IN FEET
- —×—×— FENCE
- ← APPROXIMATE DIRECTION OF GROUNDWATER FLOW

N

ANCHORAGE SCHOOL DISTRICT

STUDENT TRANSPORTATION FACILITY
ANCHORAGE, ALASKA

MONITORING WELL LOCATIONS

JULY 2014 **FIGURE 2**

Z:\project\2061.01 ASD Groundwater Monitoring Services\Earth\ACAD\2061.01 - GW Report MWI Locations.dwg

Plotted 7/23/2014 3:06 PM by Patrick Hewlett

ATTACHMENT C

ANALYTICAL RESULTS AND LABORATORY DATA REVIEW CHECKLIST

SGS

Laboratory Report of Analysis

To: R & M Consultants Inc
9101 Vanguard Dr
Anchorage, AK 99507
(907)646-9689

Report Number: **1141846**

Client Project: **2061.01 ASD**

Dear Kristi McLean,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Stephen at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Stephen C. Ede
Alaska Division Technical Director

Stephen C. Ede
2014.05.20
09:10:04 -08'00'

Stephen Ede Date
Project Manager
Stephen.Ede@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **R & M Consultants Inc**
SGS Project: **1141846**
Project Name/Site: **2061.01 ASD**
Project Contact: **Kristi McLean**

Refer to sample receipt form for information on sample condition.

ST-MW01-01 (1141846001) PS

AK102 - The pattern is consistent with a weathered gasoline.

ST-MW01-02 (1141846002) PS

AK102 - The pattern is consistent with a weathered gasoline.
AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to matrix interference.

ST-MW04 (1141846003) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
ST-MW01-01	1141846001	05/10/2014	05/12/2014	Water (Surface, Eff., Ground)
ST-MW01-02	1141846002	05/10/2014	05/12/2014	Water (Surface, Eff., Ground)
ST-MW04	1141846003	05/10/2014	05/12/2014	Water (Surface, Eff., Ground)
ST-G4	1141846004	05/10/2014	05/12/2014	Water (Surface, Eff., Ground)
Trip Blank	1141846005	05/10/2014	05/12/2014	Water (Surface, Eff., Ground)

Method	Method Description
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	Diesel Range Organics (W)
AK102	Diesel/Residual Range Organics Water
AK103	Diesel/Residual Range Organics Water

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Detectable Results Summary

Client Sample ID: **ST-MW01-01**
Lab Sample ID: 1141846001

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1.27	mg/L
Volatile Fuels	Benzene	10.8	ug/L
	Ethylbenzene	123	ug/L
	Gasoline Range Organics	1.48	mg/L
	o-Xylene	82.0	ug/L
	P & M -Xylene	290	ug/L

Client Sample ID: **ST-MW01-02**
Lab Sample ID: 1141846002

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	0.968	mg/L
Volatile Fuels	Benzene	15.2	ug/L
	Ethylbenzene	148	ug/L
	Gasoline Range Organics	1.81	mg/L
	o-Xylene	95.2	ug/L
	P & M -Xylene	387	ug/L

Client Sample ID: **ST-MW04**
Lab Sample ID: 1141846003

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	4.20	mg/L
	Residual Range Organics	8.34	mg/L
Volatile Fuels	Benzene	0.570	ug/L

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Results of **ST-MW01-01**

Client Sample ID: **ST-MW01-01**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846001
Lab Project ID: 1141846

Collection Date: 05/10/14 10:55
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1.27		0.622	0.187	mg/L	1		05/14/14 13:36
Surrogates								
5a Androstane	74.3		50-150		%	1		05/14/14 13:36

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK102
Analyst: HM
Analytical Date/Time: 05/14/14 13:36
Container ID: 1141846001-D

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 05/13/14 10:36
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL

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Results of **ST-MW01-01**

Client Sample ID: **ST-MW01-01**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846001
Lab Project ID: 1141846

Collection Date: 05/10/14 10:55
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.48		0.100	0.0310	mg/L	1		05/18/14 22:49
Surrogates								
4-Bromofluorobenzene	75.4		50-150		%	1		05/18/14 22:49

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 05/18/14 22:49
Container ID: 1141846001-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	10.8		0.500	0.150	ug/L	1		05/18/14 22:49
Ethylbenzene	123		1.00	0.310	ug/L	1		05/18/14 22:49
o-Xylene	82.0		1.00	0.310	ug/L	1		05/18/14 22:49
P & M -Xylene	290		2.00	0.620	ug/L	1		05/18/14 22:49
Toluene	1.00	U	1.00	0.310	ug/L	1		05/18/14 22:49
Surrogates								
1,4-Difluorobenzene	101		77-115		%	1		05/18/14 22:49

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 05/18/14 22:49
Container ID: 1141846001-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **ST-MW01-02**

Client Sample ID: **ST-MW01-02**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846002
Lab Project ID: 1141846

Collection Date: 05/10/14 11:00
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.968		0.600	0.180	mg/L	1		05/14/14 13:46
Surrogates								
5a Androstane	77.3		50-150		%	1		05/14/14 13:46

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK102
Analyst: HM
Analytical Date/Time: 05/14/14 13:46
Container ID: 1141846002-D

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 05/13/14 10:36
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 05/20/2014 8:38:07AM

Results of **ST-MW01-02**

Client Sample ID: **ST-MW01-02**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846002
Lab Project ID: 1141846

Collection Date: 05/10/14 11:00
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.81		0.100	0.0310	mg/L	1		05/18/14 23:07
Surrogates								
4-Bromofluorobenzene	155	*	50-150		%	1		05/18/14 23:07

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 05/18/14 23:07
Container ID: 1141846002-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	15.2		0.500	0.150	ug/L	1		05/18/14 23:07
Ethylbenzene	148		1.00	0.310	ug/L	1		05/18/14 23:07
o-Xylene	95.2		1.00	0.310	ug/L	1		05/18/14 23:07
P & M -Xylene	387		2.00	0.620	ug/L	1		05/18/14 23:07
Toluene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:07
Surrogates								
1,4-Difluorobenzene	100		77-115		%	1		05/18/14 23:07

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 05/18/14 23:07
Container ID: 1141846002-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **ST-MW04**

Client Sample ID: **ST-MW04**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846003
Lab Project ID: 1141846

Collection Date: 05/10/14 11:30
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	4.20		0.600	0.180	mg/L	1		05/14/14 13:55
Surrogates								
5a Androstane	85.3		50-150		%	1		05/14/14 13:55

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK102
Analyst: HM
Analytical Date/Time: 05/14/14 13:55
Container ID: 1141846003-D

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 05/13/14 10:36
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	8.34		0.500	0.150	mg/L	1		05/14/14 13:55
Surrogates								
n-Triacontane-d62	84.3		50-150		%	1		05/14/14 13:55

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK103
Analyst: HM
Analytical Date/Time: 05/14/14 13:55
Container ID: 1141846003-D

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 05/13/14 10:36
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Results of **ST-MW04**

Client Sample ID: **ST-MW04**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846003
Lab Project ID: 1141846

Collection Date: 05/10/14 11:30
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		05/18/14 23:26
Surrogates								
4-Bromofluorobenzene	79.6		50-150		%	1		05/18/14 23:26

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 05/18/14 23:26
Container ID: 1141846003-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.570		0.500	0.150	ug/L	1		05/18/14 23:26
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:26
o-Xylene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:26
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		05/18/14 23:26
Toluene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:26
Surrogates								
1,4-Difluorobenzene	98.2		77-115		%	1		05/18/14 23:26

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 05/18/14 23:26
Container ID: 1141846003-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **ST-G4**

Client Sample ID: **ST-G4**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846004
Lab Project ID: 1141846

Collection Date: 05/10/14 12:35
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		05/18/14 23:45
Surrogates								
4-Bromofluorobenzene	82.5		50-150		%	1		05/18/14 23:45

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 05/18/14 23:45
Container ID: 1141846004-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		05/18/14 23:45
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:45
o-Xylene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:45
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		05/18/14 23:45
Toluene	1.00	U	1.00	0.310	ug/L	1		05/18/14 23:45
Surrogates								
1,4-Difluorobenzene	101		77-115		%	1		05/18/14 23:45

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 05/18/14 23:45
Container ID: 1141846004-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 05/20/2014 8:38:07AM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **2061.01 ASD**
Lab Sample ID: 1141846005
Lab Project ID: 1141846

Collection Date: 05/10/14 10:55
Received Date: 05/12/14 08:42
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		05/18/14 22:11
Surrogates								
4-Bromofluorobenzene	83.1		50-150		%	1		05/18/14 22:11

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 05/18/14 22:11
Container ID: 1141846005-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		05/18/14 22:11
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		05/18/14 22:11
o-Xylene	1.00	U	1.00	0.310	ug/L	1		05/18/14 22:11
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		05/18/14 22:11
Toluene	1.00	U	1.00	0.310	ug/L	1		05/18/14 22:11
Surrogates								
1,4-Difluorobenzene	100		77-115		%	1		05/18/14 22:11

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 05/18/14 22:11
Container ID: 1141846005-A

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 05/18/14 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 05/20/2014 8:38:07AM

Method Blank

Blank ID: MB for HBN 1538664 [VXX/25859]
Blank Lab ID: 1210330

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1141846001, 1141846002, 1141846003, 1141846004, 1141846005

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	83.6	50-150		%

Batch Information

Analytical Batch: VFC11884
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 5/18/2014 8:38:00PM

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 5/18/2014 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1141846 [VXX25859]
Blank Spike Lab ID: 1210333
Date Analyzed: 05/19/2014 01:18

Spike Duplicate ID: LCSD for HBN 1141846 [VXX25859]
Spike Duplicate Lab ID: 1210334
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1141846001, 1141846002, 1141846003, 1141846004, 1141846005

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	0.971	97	1.00	0.954	95	(60-120)	1.80	(< 20)
Surrogates									
4-Bromofluorobenzene	0.0500		89	0.0500		77	(50-150)	14.50	

Batch Information

Analytical Batch: **VFC11884**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25859**
Prep Method: **SW5030B**
Prep Date/Time: **05/18/2014 08:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1538664 [VXX/25859]
Blank Lab ID: 1210330

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1141846001, 1141846002, 1141846003, 1141846004, 1141846005

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.250U	0.500	0.150	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	0.890J	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene	96	77-115		%

Batch Information

Analytical Batch: VFC11884
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 5/18/2014 8:38:00PM

Prep Batch: VXX25859
Prep Method: SW5030B
Prep Date/Time: 5/18/2014 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 05/20/2014 8:38:09AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1141846 [VXX25859]
Blank Spike Lab ID: 1210331
Date Analyzed: 05/19/2014 01:00

Spike Duplicate ID: LCSD for HBN 1141846 [VXX25859]
Spike Duplicate Lab ID: 1210332
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1141846001, 1141846002, 1141846003, 1141846004, 1141846005

Results by **SW8021B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	100	107	107	100	105	105	(80-120)	2.40	(< 20)
Ethylbenzene	100	103	103	100	104	104	(75-125)	0.98	(< 20)
o-Xylene	100	102	102	100	101	101	(80-120)	0.77	(< 20)
P & M -Xylene	200	206	103	200	206	103	(75-130)	0.09	(< 20)
Toluene	100	104	104	100	105	105	(75-120)	1.20	(< 20)
Surrogates									
1,4-Difluorobenzene	50		110	50		103	(77-115)	7.10	

Batch Information

Analytical Batch: **VFC11884**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25859**
Prep Method: **SW5030B**
Prep Date/Time: **05/18/2014 08:00**
Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1527161 [XXX/31011]
Blank Lab ID: 1209335

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1141846001, 1141846002, 1141846003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.244J	0.600	0.180	mg/L
Surrogates				
5a Androstane	93.4	60-120		%

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK102
Instrument: HP 6890 Series II FID SV D R
Analyst: HM
Analytical Date/Time: 5/14/2014 11:58:00AM

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 5/13/2014 10:36:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1141846 [XXX31011]
Blank Spike Lab ID: 1209336
Date Analyzed: 05/14/2014 12:08

Spike Duplicate ID: LCSD for HBN 1141846 [XXX31011]
Spike Duplicate Lab ID: 1209337
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1141846001, 1141846002, 1141846003

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	5	4.82	96	5	4.98	100	(75-125)	3.30	(< 20)
Surrogates									
5a Androstane	0.1		101	0.1		105	(60-120)	4.00	

Batch Information

Analytical Batch: **XFC11304**
Analytical Method: **AK102**
Instrument: **HP 6890 Series II FID SV D R**
Analyst: **HM**

Prep Batch: **XXX31011**
Prep Method: **SW3520C**
Prep Date/Time: **05/13/2014 10:36**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1527161 [XXX/31011]
Blank Lab ID: 1209335

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1141846001, 1141846002, 1141846003

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62	93.7	60-120		%

Batch Information

Analytical Batch: XFC11304
Analytical Method: AK103
Instrument: HP 6890 Series II FID SV D R
Analyst: HM
Analytical Date/Time: 5/14/2014 11:58:00AM

Prep Batch: XXX31011
Prep Method: SW3520C
Prep Date/Time: 5/13/2014 10:36:44AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
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Blank Spike Summary

Blank Spike ID: LCS for HBN 1141846 [XXX31011]
Blank Spike Lab ID: 1209336
Date Analyzed: 05/14/2014 12:08

Spike Duplicate ID: LCSD for HBN 1141846 [XXX31011]
Spike Duplicate Lab ID: 1209337
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1141846001, 1141846002, 1141846003

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	5	5.04	101	5	5.27	105	(60-120)	4.30	(< 20)
Surrogates									
n-Triacontane-d62	0.1		93	0.1		97	(60-120)	4.20	

Batch Information

Analytical Batch: **XFC11304**
Analytical Method: **AK103**
Instrument: **HP 6890 Series II FID SV D R**
Analyst: **HM**

Prep Batch: **XXX31011**
Prep Method: **SW3520C**
Prep Date/Time: **05/13/2014 10:36**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

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SGS North America Inc.
CHAIN OF CUSTODY RECORD

1141846

Locations Nationwide
Alaska, Maryland, New Jersey, New York, North Carolina, Indiana, West Virgina, Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: R & M Consultants

CONTACT: Kristi McLean PHONE NO: 646-9689

PROJECT NAME: ASD PROJECT/ PWSID/ PERMIT#: 2061.01

REPORTS TO: Kristi McLean E-MAIL: kmclean@rmconsult.com

INVOICE TO: R & M Consultants QUOTE #: 10827 P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: HCl	Preservative: HCl	Preservative: HCl	REMARKS/ LOC ID
							BTEX8021/GRO	~~DRO/RRO~~ DRO	RRO	
1 A-E	ST-MW01-01	5/10/14	10:55	water	5		X	X		
2 A-E	ST-MW01-02	5/10/14	11:00	water	5		X	X		
3 A-E	ST-MW04	5/10/14	11:30	water	5		X	X	X	
4 A-C	ST-64	5/10/14	12:35	water	3		X			
5 A-C	Trip Blank				3					added VLP 5/12/14

Section 5

Relinquished By:	Date	Time	Received By:
(1)	5/12/14	842	
(2)			
(3)			
~~(4)~~	5/12/14	0842	Received For Laboratory By:

Section 4

DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 2.8° #238
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

SGS

1141846

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	Hand delivered
Temperature blank compliant* (i.e., 0-6°C after CF)? ** Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 2.8 w/ Therm.ID: 236 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all sample containers ice free?**	(Yes) No N/A (Yes) No N/A	
Delivery method (specify all that apply): (Client) USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Note ABN/ tracking # See Attached or (N/A) Yes No (N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC **(circle one)** or note: (N/A) → For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF Initiated by: (N/A)		
Were samples received within hold time? *Note: Refer to form F-083 "Sample Guide" for hold time information.* Do samples **match COC*** (i.e., sample IDs, dates/times collected)? ** Note: Exemption permitted if times differ <1hr; in that case, use times on COC.* Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): (Bubble Wrap) Separate plastic bags Vermiculite Other:	(Yes) No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A (Yes) No N/A	TB had bubbles < 6mm
Were **proper containers** (type/mass/volume/preservative*) used? ** Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A (Yes) No N/A	CRD 5/15/14 ~~Trip Blank had~~
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	(Yes) No N/A Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No N/A	SRF Completed by: PM = N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	(Yes) No N/A	Peer Reviewed by: UCP N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1141846001-A	HCL to pH < 2	OK			
1141846001-B	HCL to pH < 2	OK			
1141846001-C	HCL to pH < 2	OK			
1141846001-D	HCL to pH < 2	OK			
1141846001-E	HCL to pH < 2	OK			
1141846002-A	HCL to pH < 2	OK			
1141846002-B	HCL to pH < 2	OK			
1141846002-C	HCL to pH < 2	OK			
1141846002-D	HCL to pH < 2	OK			
1141846002-E	HCL to pH < 2	OK			
1141846003-A	HCL to pH < 2	OK			
1141846003-B	HCL to pH < 2	OK			
1141846003-C	HCL to pH < 2	OK			
1141846003-D	HCL to pH < 2	OK			
1141846003-E	HCL to pH < 2	OK			
1141846004-A	HCL to pH < 2	OK			
1141846004-B	HCL to pH < 2	OK			
1141846004-C	HCL to pH < 2	OK			
1141846005-A	HCL to pH < 2	OK			
1141846005-B	HCL to pH < 2	OK			
1141846005-C	HCL to pH < 2	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Laboratory Data Review Checklist

Completed by:	Kristi McLean		
Title:	Environmental Specialist	Date:	Jul 23, 2014
CS Report Name:	ASD Student Transportation, 2014 GW Monitoring	Report Date:	May 20, 2014
Consultant Firm:	R&M Consultants, Inc.		
Laboratory Name:	SGS North America, Inc.	Laboratory Report Number:	1141846
ADEC File Number:	2100.26.251	ADEC RecKey Number:	NA

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:

All laboratory analyses were conducted by SGS Anchorage

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° ± 2° 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:

Samples were received in good condition; no leaks, cracks, breakage was documented.

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:

There were no discrepancies.

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

Comments:

NA: Data quality/usability was not affected.

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:

One QC failure was identified but did not affect data quality or usability

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

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

Comments:

QC failure (biased high) occurred in samples with results that were below cleanup levels.

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:

Soil analysis was not performed.

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: Data quality/usability was not affected.

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 or flagged

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

NA

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:

No metals/inorganics analysis was 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/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:

Samples were not affected.

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

NA: Data quality/usability was not affected.

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:

BFB surrogate recoveries biased high (AK101) for MW01-02.

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:

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

Biased high due to hydrocarbon interference. Data/usability not affected; results are below cleanup levels.

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:

Not noted on COC but referenced on Sample Receipt Form (page 23 of SGS report).

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: Data quality/usability was not affected.

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)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

( ) Yes (•) No ( ) NA (Please explain) Comments:

All RPD values were well below 30% except for Benzene (33%).

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

( ) Yes (•) No ( ) NA (Please explain) Comments:

Data quality/usability is not affected; samples were in good agreement.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

Most sampling equipment was disposable. A decontamination blank was not taken for the alconox wash water used for the water level indicator.

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:

No data flags/qualifiers were identified.

Reset Form