SITE CHARACTERIZATION REPORT

Alaska Railroad Corporation (ARRC)

ARRC Hurricane Siding
Alaska Railroad Milepost 281.5
Hurricane, Alaska

ADEC Hazard ID 23545
ADEC File ID: 2258.26.008

Prepared For:
Alaska Railroad Corporation
P.O. Box 107500
Anchorage, Alaska 99510-7500

Prepared By:
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ADEC Qualified Person:

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January 2012

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APPENDICES

ABBREVIATIONS AND ACRONYMS

AAC	Alaska Administrative Code
ARRC	Alaska Railroad Corporation
ADEC	Alaska Department of Environmental Conservation
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes (total)
DRO	Diesel Range Organics
GeoTek	GeoTek Alaska, Inc.
GRO	Gasoline Range Organics
PID	Photo-ionization Detector
LOQ	Limit of Quantitation
µg/Kg	Micrograms per Kilogram
mg/Kg	Milligrams per Kilogram
MP	Milepost
NAPL	Non-Aqueous Phase Liquids
PAH	Polynuclear Aromatic Hydrocarbon
PPMV	Parts Per Million by Volume
PVC	Polyvinyl Chloride
RRO	Residual Range Organics
RSE	Restoration Science & Engineering, LLC
SVOC	Semi-Volatile Organic Compound
TPH	Total Petroleum Hydrcarbons
UST	Underground Storage Tank
VPH	Volatile Petroleum Hydrocarbons

EXECUTIVE SUMMARY

On September 8th and 9th, 2011 GeoTek Alaska, Inc. advanced four (4) soil borings later completed as groundwater monitoring wells to define the horizontal and vertical extent petroleum hydrocarbon impacts from a former 7,500-gallon diesel UST located at the ARRC Hurricane Siding near Railroad MP 281.5.

RSE qualified person(s) provided drilling oversight and environmental sampling services during soil boring activities and monitoring well installation. RSE qualified person, Moana Leirer, performed field-screening and laboratory sampling to assess subsurface soil and groundwater petroleum hydrocarbon impacts.

Generally, there were no visual, olfactory, or field-screening indications of petroleum hydrocarbons in the subsurface soil and groundwater in the area down gradient of the former diesel UST location. Laboratory soil samples analyzed for DRO/RRO, GRO/BTEX, and SVOCs confirm subsurface soil conditions are below ADEC Method 2 Migration to Groundwater soil cleanup levels meeting the requirements in 18 AAC 75.

A groundwater sample from monitoring well RSE-4 measured 1.52 mg/L DRO, slightly above the ADEC Table C DRO cleanup level of 1.5 mg/L. Monitoring well RSE-4 is down gradient of the former UST location.

RSE recommends the ADEC close this site with appropriate institutional controls.

1.0 INTRODUCTION

1.1 PROPERTY DESCRIPTION

The Alaska Railroad Corporation (ARRC) Hurricane Siding is located at Railroad Milepost (MP) 281.5 near Hurricane, Alaska (Figure 1). A tool shed, abandoned concrete foundation, and the Hurricane Section House are located onsite (Figure 2). The project area is located approximately 40 feet west of the ARRC mainline. According to the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Database, the site is located at 62.977225 N and 149.643059 W.

1.2 SITE HISTORY

In 1990 two (2) underground storage tanks (USTs) were removed from the ARRC Hurricane Siding site, one (1) 500-gallon gasoline UST and one (1) 7,500-gallon diesel UST. At that time, laboratory analytical data indicated elevated concentrations of volatile petroleum hydrocarbons (VPH) at the gasoline UST excavation area and elevated concentration of total petroleum hydrocarbons (TPH) at the diesel UST excavation area. All contaminated soil was subsequently excavated during UST removal and remediated (Clarus, 2009). According to the Clarus (2010)

both gasoline range organics (GRO) and diesel range organics (DRO) impacts to the soil exist west and southwest of the former diesel UST excavation area. Soil borings B1 and B5 indicated GRO concentrations in soil above ADEC Method 2 migration to groundwater cleanup levels; ranging from 622 mg/Kg to 936 mg/Kg from 2 to 3 feet bgs, and 213 mg/Kg to 736 mg/Kg from 5 to 6 feet bgs. Soil borings B1, B2 and B5 each indicated DRO concentrations in soil above ADEC Method 2 migration to groundwater soil cleanup levels; ranging from 10,000 mg/Kg to 84,400 mg/Kg from 2 to 3 feet bgs, and 912 mg/Kg to 6,920 mg/Kg at 6 feet bgs. Boring locations from Clarus (2010) are shown on Figure 2, Appendix A.

1.3 SITE ASSESSMENT OBJECTIVES

The purpose of this site characterization was to document the vertical and horizontal extent of potential subsurface petroleum hydrocarbon impacts to soil and groundwater originating from the former diesel UST. Groundwater samples were collected to document any impacts to the shallow unconfined aquifer. Restoration Science & Engineering, LLC (RSE) provided a qualified sampler to collect both field-screening and laboratory soil and groundwater samples. GeoTek Alaska, Inc. (GeoTek) advanced the soil borings and installed the groundwater monitoring wells under RSE and ARRC direction.

2.0 FIELD-SCREENING AND SOIL SAMPLING METHODOLOGY

2.1 FIELD-SCREENING METHODOLOGY

On September 8th, 2011, RSE field scientist and qualified sampler, Moana Leirer provided drilling oversight and environmental sampling support during the site characterization. Ms. Leirer directed GeoTek to advance soil borings at four (4) locations in accordance with the previously approved groundwater monitoring work plan (RSE, 2011). Soil samples were collected for field-screening every five feet. Soil samples used for field-screening were collected directly from the sampling sleeve using a clean stainless steel spoon. The soil was placed into quart-sized plastic bags and warmed to approximately 60° F prior to analyzing. Each soil sample was screened using a photo-ionization detector (PID) calibrated to 100 ppmv isobutylene. The location and depth of each soil sample along with the results from the PID-screening were recorded in a field notebook. Field-screening sample locations are shown on Figure 2, Appendix A. Once the field-screening results were recorded, Ms. Leirer collected one (1) soil sample from each soil boring for laboratory.

2.2 SOIL SAMPLING METHODOLOGY

One (1) soil sample was collected from each soil boring location at the soil/groundwater interface or at the highest PID screening result. RSE field scientists obtained soil samples from a 5-foot long sampling sleeve continuously advanced at each soil boring location. Each soil boring was advanced into the saturated zone. Soil sample locations are shown on Figure 2, Appendix A.

Soil samples were collected with a clean stainless steel spoon and placed into method specific containers. Each container was placed into a cooler and maintained between 2 and 6° C. The soil samples were delivered to SGS Environmental Services (located in Anchorage, Alaska) for analyses. Soil samples were analyzed for diesel range organics (DRO) by AK Method 102, residual range organics (RRO) by AK Method 103, gasoline range organics (GRO) by AK Method 101, and benzene, toluene, ethylbenzene and total xylenes (collectively referred to as BTEX) by EPA Method 8021B.

2.3 GROUNDWATER SAMPLING METHODOLOGY

GeoTek installed one (1) monitoring well at each soil boring location. Each monitoring well consists of 5-feet of slotted 2-inch PVC pipe or well screen installed below the water table and a solid 2-inch PVC pipe riser. Each well was sealed with an environmental-grade locking well cap set inside a flush-mount protective steel monument. The annulus around the well was filled with silica sand to 1 foot above the top of the well screen, followed by at least 1 foot of saturated bentonite chips.

One groundwater sample was collected from monitoring wells RSE-1 through RSE-4 after groundwater elevations were measured at each well. Free product was not observed in any well. Prior to sample collection, each monitoring well was purged of at least three times the groundwater volume in the well, as measured prior to sampling. Water quality parameters were recorded at one-gallon intervals during purging at each monitoring well. Groundwater monitoring well locations are shown on Figure 2, Appendix A.

Groundwater samples were collected in method-specific containers using clean, dedicated tubing and a peristaltic pump. Each container was placed into a cooler and maintained between 2 and 6° C. The groundwater samples were delivered to SGS Environmental Services for analyses. Soil samples were analyzed for DRO by AK Method 102, RRO by AK Method 103, GRO by AK Method 101, and BTEX by EPA Method 8021B.

3.0 RESULTS AND FINDINGS

3.1 SOIL SAMPLING RESULTS

RSE field scientists did not observe any visual or olfactory indication of hydrocarbon impacts to the soil from soil borings RSE-1, RSE-2, or RSE-3. A slight hydrocarbon odor was noted from 5 to 10 feet bgs at soil boring RSE-4. Results from the PID field-screening did not indicate any volatile compounds above ambient (background) conditions within the soil samples collected from soil borings RSE-1, RSE-2, or RSE-4. All field-screening samples measured 0.0 ppmv from the PID. However, both soil samples from 0 to 5 feet and 5 to 10 feet bgs at soil boring RSE-3 measured 20.0 ppmv from the PID. Field-screening results are provided in Table E1, Appendix E. Free product was not observed.

Laboratory soil samples RSE-1A, RSE-2A, RSE-3A, and RSE-4A measured "not detectable" above the Limit of Quantitation (LOQ) or below ADEC Method 2 Migration to Groundwater soil cleanup levels for all compounds analyzed. Laboratory results for all soil samples are compared to the ADEC Method 2 Migration to Groundwater soil cleanup levels in Table B1, Appendix B.

The results from both the field-screening and laboratory soil analyses did not identify any subsurface petroleum hydrocarbon impacts above ADEC Method 2 soil cleanup levels resulting from the former diesel UST system.

3.2 GROUNDWATER SAMPLING RESULTS

Groundwater samples RSE-1, RSE-2, RSE-3, and RSE-4 measured "not detectable" or below Table C cleanup levels for all compounds analyzed except for a slightly elevated DRO result from RSE-4 (1.52 mg/L). Laboratory results for all groundwater samples are compared to the Table C cleanup levels in Tables B2, Appendix B. Groundwater quality measurements from each monitoring well are provided in Table B3, Appendix B.

The results from the laboratory groundwater analyses indicate there de minimis petroleum hydrocarbon impacts to the shallow unconfined aquifer down gradient of the former diesel UST system.

4.0 DISCUSSION OF LOCAL GROUNDWATER

Depth to groundwater varied greatly among the four wells. Groundwater was observed to be between 93.09 feet and 91.94 feet based upon a local arbitrary benchmark. Generally, the groundwater gradient flows in a NW direction. Figure 2 in Appendix B, shows the calculated groundwater gradient based upon measurements collected from RSE-1 through RSE-4 on September 9, 2011.

Clarus (2010) reports a drinking water well located 16 feet south of the Hurricane Section House. The well log indicates two (2) distinct clay layers: one from 4 to 10 feet bgs, and one from 24 to 29 feet bgs. The drinking water well is reported to be 60 feet deep. RSE field scientists did not observe the shallow clays described in the well log suggesting that the project area consisted of fill material in the upper strata.

5.0 INVESTIGATIVE-DERIVED WASTE

Soil derived during installation of the soil borings/monitoring wells was containerized in one (1) labeled 5-gallion bucket and stored onsite. Purge water from monitoring wells RSE-1, RSE-2, and RSE-3 was filtered through a sealed 5-gallon bucket containing granular active carbon (GAC) and discharged to the gravel pad within the project area. Approximately 5-gallons of purge water from RSE-4 remains onsite in a labeled 5-gallon bucket. During sampling, purge water from monitoring well RSE-4 had a strong fuel odor, although no sheen was present.

Other items, such as gloves, empty plastic bags and unused laboratory containers were placed into a dumpster for offsite disposal. Stainless steel spoons, field equipment, and other non-consumables were decontaminated at RSE's office using a detergent and hot water.

6.0 DATA QUALITY AND SITE ASSESSMENT LIMITATIONS

Soil and groundwater samples were collected and analyzed in accordance with the provisions of 18 AAC 75. Field documentation was reviewed for completeness, accuracy, and the presence of unexpected results. All samples were analyzed by SGS Environmental Services. Data deliverable packages show acceptable method and laboratory instrument performance. The laboratory data was reviewed internally by RSE staff and is suitable for its intended use for comparison of sample results with ADEC cleanup standards. Appendix D provides a copy of the laboratory analytical report, chain-of-custody, and ADEC Laboratory Review Checklist. Both RSE and the contract-laboratory maintain a complete set of data deliverables, which are assembled to meet the criteria established in 18 AAC 75.

7.0 CONCLUSION AND RECOMMENDATIONS

There are no visual, olfactory, or field-screening indications of petroleum hydrocarbons in the subsurface soil within the region investigated by RSE in the course of this field work. Laboratory soil samples analyzed for DRO/RRO and GRO/BTEX confirm subsurface soil conditions are below ADEC Method 2 Migration to Groundwater soil cleanup levels and identify horizontal and vertical extent of petroleum hydrocarbon impacts at the project area.

Groundwater data suggested limited petroleum hydrocarbon impacts down gradient of the assumed source area. Given the shallow groundwater at monitoring well location RSE-4, a separate localized surface stain or other de minimis source area may explain the slightly elevated DRO results (1.52 mg/L).

RSE recommends the ADEC close this site with appropriate institutional controls.

8.0 REFERENCES

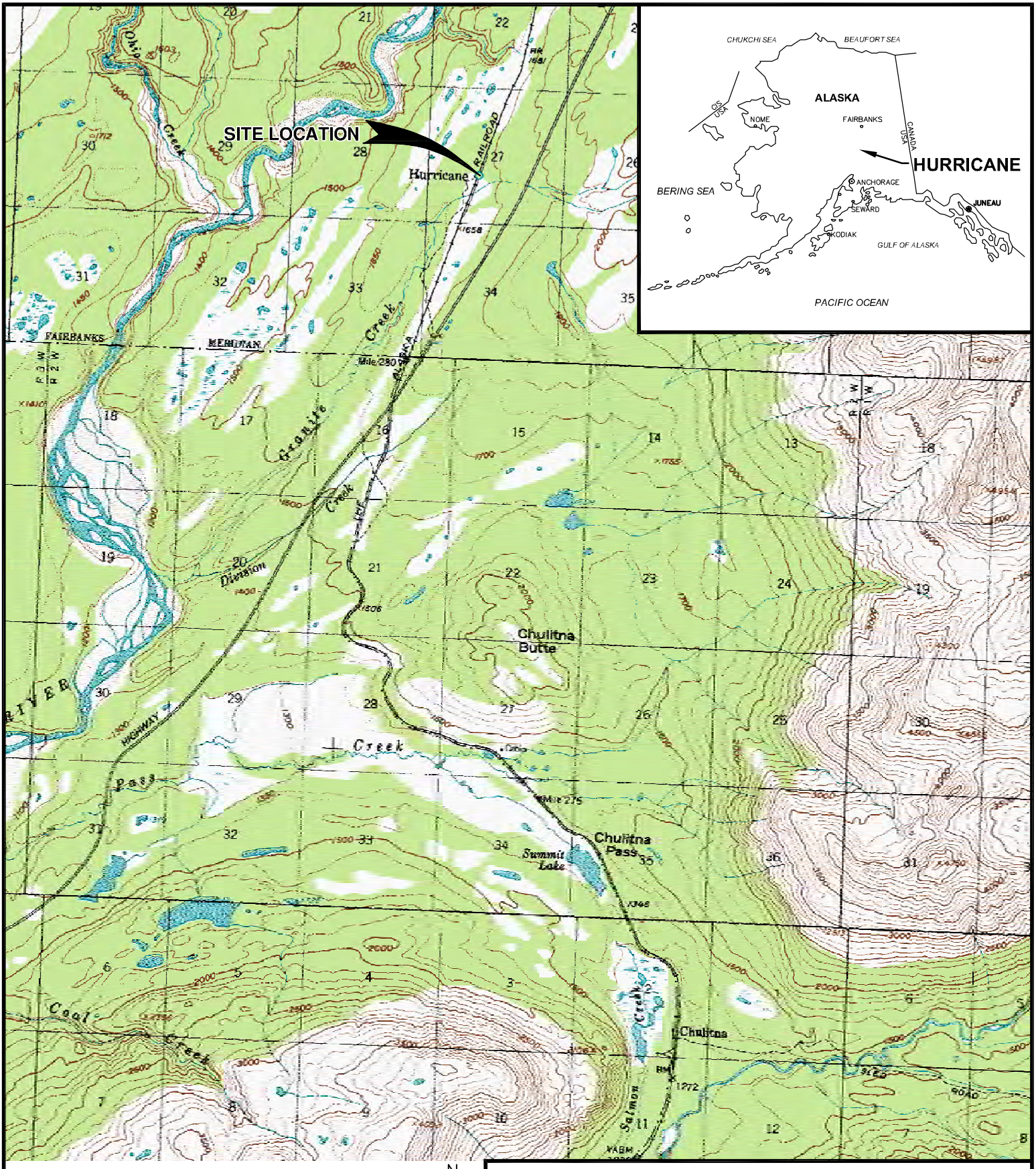
Clarus Technologies, LLC, Work Plan for Soil Borings and Sampling, Hurricane Siding, Hurricane, Alaska. May 2009.

Clarus Technologies, LLC, Phase II Investigation Report, Hurricane Siding, Hurricane, Alaska. April 2010.

Restoration Science & Engineering, LLC, Work Plan for Soil Boring and Groundwater Sampling, Hurricane Siding, Railbelt, Alaska, ADEC File No. 2258.26.008. August 2011.

APPENDIX A:

FIGURES



HURRICANE SECTION HOUSE

VICINITY MAP

HURRICANE, ALASKA

JOB NO: 11-827.3	DRAWN: JRH
DATE: 10-12-2011	FILE: Hurricane Section House.dwg

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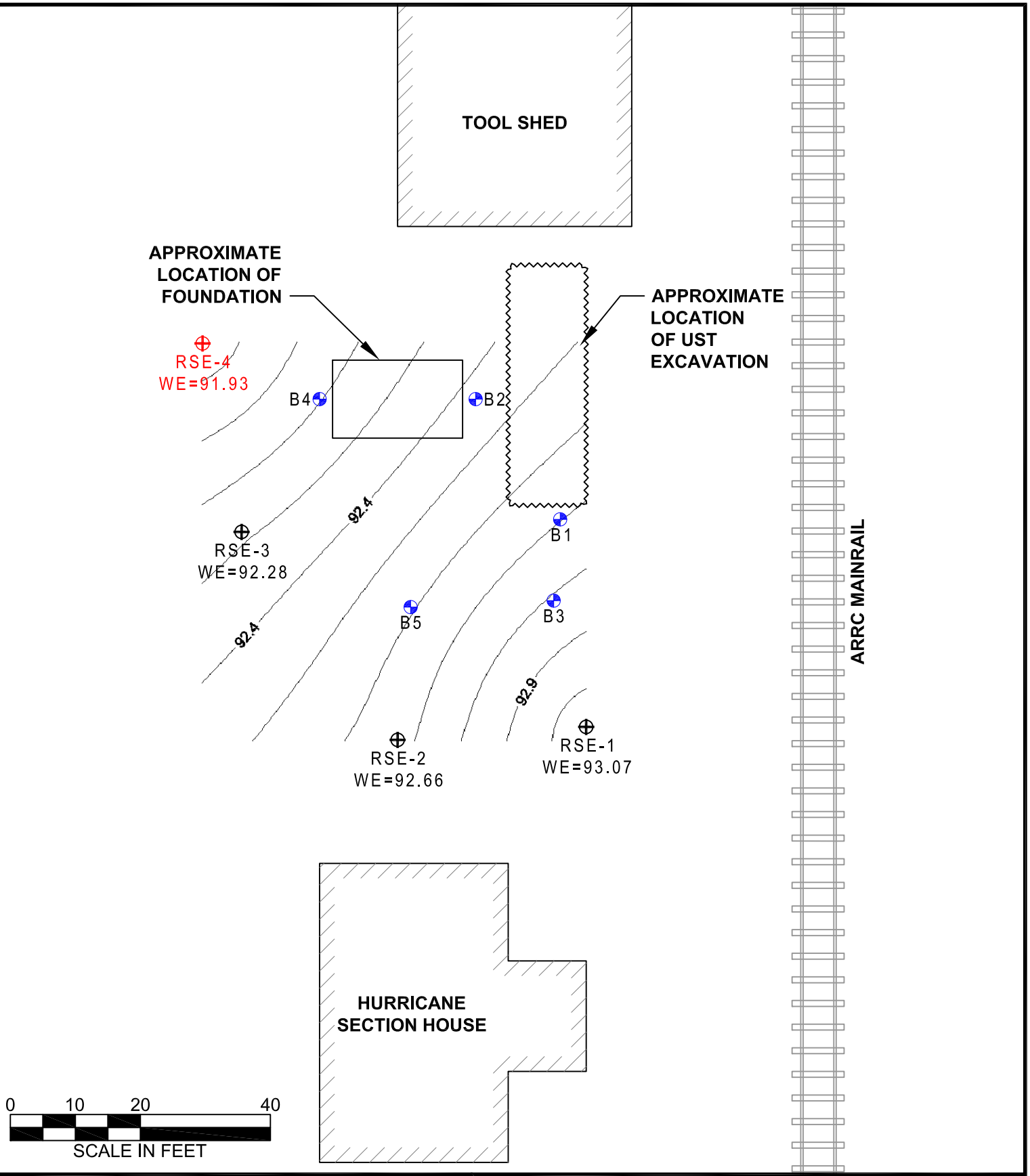
FIGURE 1



LEGEND

RSE-1	APPROXIMATE LOCATION OF MONITORING WELL
RSE-4	GROUNDWATER SAMPLE EXCEEDS ADEC CLEANUP CRITERIA
B1	CLARUS SOIL BORING LOCATION
WE	WELL ELEVATION

N

HURRICANE SECTION HOUSE

SITE PLAN

HURRICANE, ALASKA

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JOB NO: 11-827.3	DRAWN: JRH
DATE: 10-12-2011	FILE: Hurricane Section House.dwg

FIGURE 2

APPENDIX B:

TABLES

TABLE B1
HURRICANE SIDING SITE CHARACTERIZATION
HYDROCARBON CONCENTRATIONS IN SOIL
JANUARY 2012 REPORT DATE

HYDROCARBON CONCENTRATIONS IN SOIL											
SAMPLE ID	**DATE**	**PID RESULTS**	**DEPTH BELOW GROUND SURFACE**	**TOTAL SOLIDS**	**DIESEL RANGE ORGANICS**	**RESIDUAL RANGE ORGANICS**	**GASOLINE RANGE ORGANICS**	**BENZENE**	**TOLUENE**	**ETHYL-BENZENE**	**TOTAL XYLENES**
		ppmv	**feet**	**(%)**	**(mg/Kg)**	**(mg/Kg)**	**(mg/Kg)**	**(µg/Kg)**	**(µg/Kg)**	**(µg/Kg)**	**(µg/Kg)**
RSE-1A	**9/8/2011**	0.0	4.0	94.1	*13.1 U*	*13.1 U*	*1.23 U*	*6.56 U*	*12.8 U*	*12.8 U*	*24.6 U*
RSE-2A	**9/8/2011**	0.0	3.5	86.4	*14.2 U*	**35.5**	*2.18 U*	*11.6 U*	*22.6 U*	*22.6 U*	*43.4 U*
RSE-3A	**9/8/2011**	20.0	3.0	79.2	**61.6**	**80.5**	*2.08 U*	*11.1 U*	*21.8 U*	*21.8 U*	*41.8 U*
RSE-4A	**9/8/2011**	2.3	3.0	84.2	**28.4**	**20.3 J**	*1.63 U*	*8.72 U*	*17.0 U*	*17.0 U*	*32.6 U*
RSE-X1	**9/8/2011**	0.0	3.5	81.9	*15.1 U*	**61.7**	*1.92 U*	*10.3 U*	*20.0 U*	*20.0 U*	*38.4 U*
Soil Trip Blank	**--**	**--**		--	**--**	**--**	*1.53 U*	*8.14 U*	*15.9 U*	*15.9 U*	*30.6 U*
ADEC Method 2 soil cleanup levels for migration to groundwater					**250**	**11,000**	**300**	**25**	**6,500**	**6,900**	**63,000**

NOTES:
1) Diesel range organics analyses by Method AK 102
2) Residual range organics analyses by Method AK 103
3) Gasoline range organics analyses by Method AK 101
4) BTEX (benzene, toluene, ethylbenzene and total xylenes) analyses by Method EPA 8021B
5) Bold font indicates that concentrations were detected above the LOQ
6) Bold font and a J flag indicate that the result is an estimated value
7) U flag indicates that the analyte measured below the limit of detection, the LOQ is indicated (italicized)
8) When values of Total Xylenes (P&M Xylenes and o-Xylenes) are both reported at non-detectable concentrations, the highest measured LOQ between those values is noted.
9) Soil sample RSE-X1 is a blind duplicate of RSE-2A
10) LOQ = limit of quanitation, ppmv= parts per million by volume, mg/Kg = milligrams per kilogram, µg/Kg = micrograms per kilogram,

TABLE B2
HURRICANE SIDING SITE CHARACTERIZATION
HYDROCARBON CONCENTRATIONS IN GROUNDWATER
JANUARY 2012 REPORT DATE

HYDROCARBON CONCENTRATIONS IN GROUNDWATER								
SAMPLE ID	**DATE**	**DIESEL RANGE ORGANICS**	**RESIDUAL RANGE ORGANICS**	**GASOLINE RANGE ORGANICS**	**BENZENE**	**TOLUENE**	**ETHYL-BENZENE**	**TOTAL XYLENES**
		(mg/L)	**(mg/L)**	**(mg/L)**	**(µg/L)**	**(µg/L)**	**(µg/L)**	**(µg/L)**
RSE-1	**9/9/11**	**0.203 J**	*0.300 U*	*0.0600 U*	*0.300 U*	*0.620 U*	*0.620 U*	*1.24 U*
RSE-2	**9/9/11**	**0.311 J**	*0.300 U*	*0.0600 U*	**0.250 J**	*0.620 U*	*0.620 U*	*1.24 U*
RSE-3	**9/9/11**	**0.498 J**	*0.300 U*	*0.0600 U*	*0.300 U*	*0.620 U*	*0.620 U*	*1.24 U*
RSE-X	**9/9/11**	**0.431 J**	*0.300 U*	*0.0600 U*	*0.300 U*	*0.620 U*	*0.620 U*	*1.24 U*
RSE-4	**9/9/11**	**1.52**	*0.300 U*	**0.0833 J**	*0.300 U*	**0.700 J**	**1.65**	**12.12**
H2O Trip Blank	**--**	**--**	--	*0.0600 U*	*0.300 U*	*0.620 U*	*0.620 U*	*1.24 U*
ADEC Table C Cleanup Levels		**1.5**	**1.1**	**2.2**	**5**	**1,000**	**700**	**10,000**

NOTES:
1) Diesel range organics analyses by Method AK 102
2) Residual range organics analyses by Method AK 103
3) Gasoline range organics analyses by Method AK 101
4) BTEX (benzene, toluene, ethylbenzene and total xylenes) analyses by Method EPA 8021B
5) Bold font indicates that concentrations were detetced above the LOQ
6) Bold font and a J flag indicates that the result is an estimated value
7) U flag indicates that the analyte measured non-detectable at the LOQ (italicized)
8) When values of Total Xylenes (P&M Xylenes and o-Xylenes) are both reported at non-detectable concentrations, the highest measured LOQ between those values is noted.
9) Groundwater sample RSE-X is a blind duplicate of sample RSE-3
10) LOQ = limit of quanitation, mg/L = milligrams per liter, µg/L = micrograms per liter

TABLE B3
HURRICANE SIDING SITE CHARACTERIZATION
GROUNDWATER WATER QUALITY
JANUARY 2012

Location	Date	Elevation (ft)	Volume Purged (gallons)	Temperature (^{o}C)	pH (pH Units)	Conductivity (uS/cm)	Specific Conductance (uS/cm)	Salinity (ppt)
RSE-1	9/9/11	93.07	1	6.9	6.49	67.5	103.1	0.0
	9/9/11		2	--	--	--	--	--
	9/9/11		3	6.8	6.52	54.2	83.4	0.0
	9/9/11		4	6.7	6.41	53.7	82.4	0.0
RSE-2	9/9/11	92.66	1	7.2	6.32	129.4	196.20	0.1
			* Well went dry after purging one gallon					
RSE-3	9/9/11	92.28	1	6.9	6.35	49.8	76.0	0.0
	9/9/11		2	6.8	6.38	82.7	126.8	0.1
	9/9/11		3	6.8	6.44	75.7	115.9	0.1
	9/9/11		4	6.9	6.41	74.3	113.5	0.1
	9/9/11		5	6.9	6.36	74.0	113.4	0.1
RSE-4	9/9/11	91.93	1	6.3	6.39	89.5	138.5	0.1
	9/9/11		2	6.2	6.39	65.4	101.8	0.0
	9/9/11		3	6.1	6.36	66.4	103.0	0.0
	9/9/11		4	6.1	6.43	60.1	94.2	0.0
	9/9/11		5	6.1	6.43	59.5	93.3	0.0

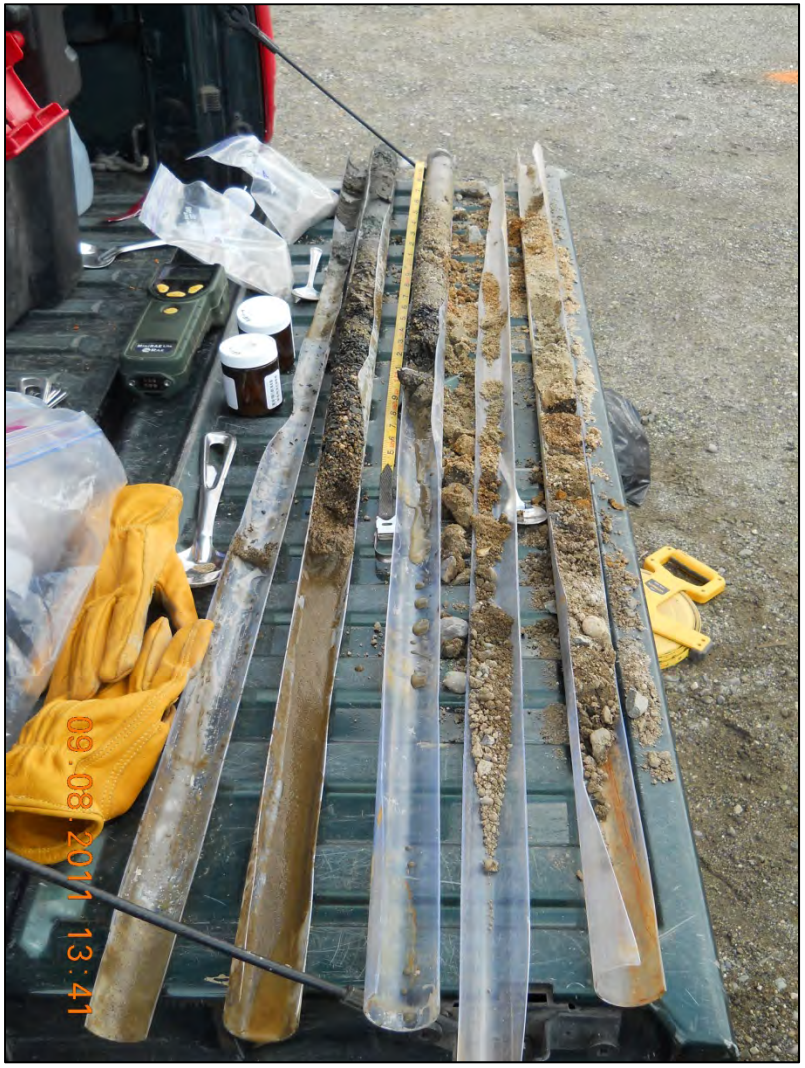
Notes:

1) Water quality measurements performed using a YSI Model 63 Water Quality Meter.

2) ppt = parts per thousand, uS/cm = microsemiens per centimeter

APPENDIX C:

SELECT SITE PHOTOGRAPHS



Typical Recovery from Soil Borings

Typical Direct-Push Drilling Methods

Looking West Towards Monitoring Well Locations

Hurricane Siding Looking Towards Tool Shed

Hurricane Section House

Typical Monitoring Well Installation – Missing Protective Casing

APPENDIX D:

SGS LABORATORY REPORT, CHAIN-OF-CUSTODY, AND ADEC LABORATORY REVIEW CHECKLIST

SGS North America Inc.
Alaska Division
Level II Laboratory Data Report

Project:	Hurricane Siding 11-827
Client:	AK Railroad Corp
SGS Work Order:	1114384

Released by:

Contents:

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.

CASE NARRATIVE

Print Date: 9/27/2011

Client Name: AK Railroad Corp
Project Name: Hurricane Siding 11-827
Workorder No.: 1114384

Sample Comments

Refer to the sample receipt form for information on sample condition.

Lab Sample ID	Sample Type	Client Sample ID
1114384002	PS	RSE-2A
	AK103 - Unknown hydrocarbon with several peaks is present.	
1114384003	PS	RSE-X1
	AK103 - Unknown hydrocarbon with several peaks is present. AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to possible misspike of surrogate. DRO/RRO values are considered estimated.	
1114384004	PS	RSE-3A
	AK102 - The pattern is consistent with a weathered middle distillate. AK103 - Unknown hydrocarbon with several peaks is present.	
1114384005	PS	RSE-4A
	AK102 - The pattern is consistent with a weathered middle distillate.	
1114384010	PS	RSE-X
	AK102 - 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.

Laboratory Analytical Report

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Attn: **Lucas Gamble**
T: (907) 278-1023 F:(907) 277-5718
lgamble@gci.net

Project: **Hurricane Siding 11-827**

Workorder No.: **1114384**

Certification:

This data package is in compliance with the terms and conditions of the contract, both technically and for completeness, unless otherwise noted on the sample data sheet(s) and/or case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory. If you have any questions regarding this report, or if we can be of further assistance, please contact your SGS Project Manager.

Chuck Homestead

Charles.Homestead@sgs.com
General Manager Alaska

Contents (Bookmarked in PDF):

Print Date: 9/27/2011

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 AK100001 for NELAP (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6010B, 6020, 7470A, 7471B, 8021B, 8081B, 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, the National Environmental Laboratory Accreditation Program and 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
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., 2xDL)
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
RL	Reporting Limit
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.

SAMPLE SUMMARY

Print Date: 9/27/2011 5:28 pm

Client Name: AK Railroad Corp
Project Name: Hurricane Siding 11-827
Workorder No.: 1114384

Analytical Methods

Method Description	Analytical Method
AK101/8021 Combo.	AK101
AK101/8021 Combo.	SW8021B
AK101/8021 Combo. (S)	AK101
AK101/8021 Combo. (S)	SW8021B
Diesel/Residual Range Organics	AK102
Diesel/Residual Range Organics	AK103
DRO/RRO Low Volume Water	AK102
DRO/RRO Low Volume Water	AK103
Percent Solids SM2540G	SM20 2540G

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1114384001	RSE-1A
1114384002	RSE-2A
1114384003	RSE-X1
1114384004	RSE-3A
1114384005	RSE-4A
1114384006	RSE-1
1114384007	RSE-2
1114384008	RSE-3
1114384009	RSE-4
1114384010	RSE-X
1114384011	Soil Trip Blank
1114384012	H20 Trip Blank

Detectable Results Summary

Print Date: 9/27/2011 5:28 pm

Client Sample ID: **RSE-2A**
SGS Ref. #: 1114384002

Semivolatile Organic Fuels Department

Parameter	Result	Units
Residual Range Organics	35.5	mg/Kg

Client Sample ID: **RSE-X1**
SGS Ref. #: 1114384003

Semivolatile Organic Fuels Department

Parameter	Result	Units
Residual Range Organics	61.7	mg/Kg

Client Sample ID: **RSE-3A**
SGS Ref. #: 1114384004

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	61.6	mg/Kg
Residual Range Organics	80.5	mg/Kg

Client Sample ID: **RSE-4A**
SGS Ref. #: 1114384005

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	28.4	mg/Kg
Residual Range Organics	20.3J	mg/Kg

Client Sample ID: **RSE-1**
SGS Ref. #: 1114384006

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	0.203J	mg/L

Client Sample ID: **RSE-2**
SGS Ref. #: 1114384007

Volatile Fuels Department

Parameter	Result	Units
Benzene	0.250J	ug/L

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	0.311J	mg/L

Client Sample ID: **RSE-3**
SGS Ref. #: 1114384008

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	0.498J	mg/L

Detectable Results Summary

Print Date: 9/27/2011 5:28 pm

Client Sample ID: **RSE-4**
SGS Ref. #: 1114384009

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	0.0833J	mg/L
Toluene	0.700J	ug/L
Ethylbenzene	1.65	ug/L
o-Xylene	7.36	ug/L
P & M -Xylene	4.76	ug/L
Semivolatile Organic Fuels Department		
Diesel Range Organics	1.52	mg/L

Client Sample ID: **RSE-X**
SGS Ref. #: 1114384010

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	0.431J	mg/L

Client Sample ID: **RSE-1A**
SGS Ref. #: 1114384001
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 09/08/11 14:15
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	6.56 U	10.3	3.28	ug/Kg	1	VFC10689		
Ethylbenzene	12.8 U	20.5	6.40	ug/Kg	1	VFC10689		
Gasoline Range Organics	1.23 U	2.05	0.615	mg/Kg	1	VFC10689		
o-Xylene	12.8 U	20.5	6.40	ug/Kg	1	VFC10689		
P & M -Xylene	24.6 U	41.0	12.3	ug/Kg	1	VFC10689		
Toluene	12.8 U	20.5	6.40	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	94.1	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	102	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 19:36
Dilution Factor: 1
Initial Prep Wt./Vol.: 76.586 g
Container ID:1114384001-B
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 19:36
Dilution Factor: 1
Initial Prep Wt./Vol.: 76.586 g
Container ID:1114384001-B
Analyst: HM

Client Sample ID: **RSE-1A**
SGS Ref. #: 1114384001
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 09/08/11 14:15
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.1 U	21.1	6.54	mg/Kg	1	XFC10054	XXX25648	
Residual Range Organics	13.1 U	21.1	6.54	mg/Kg	1	XFC10054	XXX25648	
5a Androstane <surr>	98.9	50-150		%	1	XFC10054	XXX25648	
n-Triacontane-d62 <surr>	95.8	50-150		%	1	XFC10054	XXX25648	

Batch Information

Analytical Batch: XFC10054
Analytical Method: AK102
Analysis Date/Time: 09/16/11 02:41
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.244 g
Prep Extract Vol.: 1 mL
Container ID:1114384001-A
Analyst: MCS

Analytical Batch: XFC10054
Analytical Method: AK103
Analysis Date/Time: 09/16/11 02:41
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.244 g
Prep Extract Vol.: 1 mL
Container ID:1114384001-A
Analyst: MCS

Client Sample ID: **RSE-1A**
SGS Ref. #: 1114384001
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 09/08/11 14:15
Receipt Date/Time: 09/12/11 11:41

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.1			%	1	SPT8476		

Batch Information

Analytical Batch: SPT8476
Analytical Method: SM20 2540G
Analysis Date/Time: 09/12/11 18:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1114384001-A
Analyst: DDR

Client Sample ID: **RSE-2A**
SGS Ref. #: 1114384002
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 86.4

Collection Date/Time: 09/08/11 15:00
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	11.6 U	18.1	5.80	ug/Kg	1	VFC10689		
Ethylbenzene	22.6 U	36.2	11.3	ug/Kg	1	VFC10689		
Gasoline Range Organics	2.18 U	3.62	1.09	mg/Kg	1	VFC10689		
o-Xylene	22.6 U	36.2	11.3	ug/Kg	1	VFC10689		
P & M -Xylene	43.4 U	72.5	21.7	ug/Kg	1	VFC10689		
Toluene	22.6 U	36.2	11.3	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	94	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	99.3	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 19:54
Dilution Factor: 1
Initial Prep Wt./Vol.: 50.931 g
Container ID:1114384002-B
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 19:54
Dilution Factor: 1
Initial Prep Wt./Vol.: 50.931 g
Container ID:1114384002-B
Analyst: HM

Client Sample ID: **RSE-2A**
SGS Ref. #: 1114384002
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 86.4

Collection Date/Time: 09/08/11 15:00
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	14.2 U	23.0	7.12	mg/Kg	1	XFC10054	XXX25648	
Residual Range Organics	35.5	23.0	7.12	mg/Kg	1	XFC10054	XXX25648	
5a Androstane <surr>	96.6	50-150		%	1	XFC10054	XXX25648	
n-Triacontane-d62 <surr>	88	50-150		%	1	XFC10054	XXX25648	

Batch Information

Analytical Batch: XFC10054
Analytical Method: AK102
Analysis Date/Time: 09/16/11 03:02
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.22 g
Prep Extract Vol.: 1 mL
Container ID:1114384002-A
Analyst: MCS

Analytical Batch: XFC10054
Analytical Method: AK103
Analysis Date/Time: 09/16/11 03:02
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.22 g
Prep Extract Vol.: 1 mL
Container ID:1114384002-A
Analyst: MCS

Client Sample ID: **RSE-2A**
SGS Ref. #: 1114384002
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 86.4

Collection Date/Time: 09/08/11 15:00
Receipt Date/Time: 09/12/11 11:41

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	86.4			%	1	SPT8476		

Batch Information

Analytical Batch: SPT8476
Analytical Method: SM20 2540G
Analysis Date/Time: 09/12/11 18:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1114384002-A
Analyst: DDR

Client Sample ID: **RSE-X1**
SGS Ref. #: 1114384003
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.9

Collection Date/Time: 09/08/11 14:00
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	10.3 U	16.0	5.13	ug/Kg	1	VFC10689		
Ethylbenzene	20.0 U	32.0	10.0	ug/Kg	1	VFC10689		
Gasoline Range Organics	1.92 U	3.20	0.961	mg/Kg	1	VFC10689		
o-Xylene	20.0 U	32.0	10.0	ug/Kg	1	VFC10689		
P & M -Xylene	38.4 U	64.1	19.2	ug/Kg	1	VFC10689		
Toluene	20.0 U	32.0	10.0	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	94.5	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	117	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 20:13
Dilution Factor: 1
Initial Prep Wt./Vol.: 72.561 g
Container ID:1114384003-B
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 20:13
Dilution Factor: 1
Initial Prep Wt./Vol.: 72.561 g
Container ID:1114384003-B
Analyst: HM

Client Sample ID: **RSE-X1**
SGS Ref. #: 1114384003
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.9

Collection Date/Time: 09/08/11 14:00
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	15.1 U		24.4	7.56	mg/Kg	1	XFC10054	XXX25648	
Residual Range Organics	61.7		24.4	7.56	mg/Kg	1	XFC10054	XXX25648	
5a Androstane <surr>	2.2	*	50-150		%	1	XFC10054	XXX25648	
n-Triacontane-d62 <surr>	2.5	*	50-150		%	1	XFC10054	XXX25648	

Batch Information

Analytical Batch: XFC10054
Analytical Method: AK102
Analysis Date/Time: 09/16/11 03:23
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.021 g
Prep Extract Vol.: 1 mL
Container ID:1114384003-A
Analyst: MCS

Analytical Batch: XFC10054
Analytical Method: AK103
Analysis Date/Time: 09/16/11 03:23
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.021 g
Prep Extract Vol.: 1 mL
Container ID:1114384003-A
Analyst: MCS

Client Sample ID: **RSE-X1**
SGS Ref. #: 1114384003
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.9

Collection Date/Time: 09/08/11 14:00
Receipt Date/Time: 09/12/11 11:41

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	81.9			%	1	SPT8476		

Batch Information

Analytical Batch: SPT8476
Analytical Method: SM20 2540G
Analysis Date/Time: 09/12/11 18:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1114384003-A
Analyst: DDR

Client Sample ID: **RSE-3A**
SGS Ref. #: 1114384004
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 79.2

Collection Date/Time: 09/08/11 16:00
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	11.1 U	17.4	5.57	ug/Kg	1	VFC10689		
Ethylbenzene	21.8 U	34.8	10.9	ug/Kg	1	VFC10689		
Gasoline Range Organics	2.08 U	3.48	1.04	mg/Kg	1	VFC10689		
o-Xylene	21.8 U	34.8	10.9	ug/Kg	1	VFC10689		
P & M -Xylene	41.8 U	69.6	20.9	ug/Kg	1	VFC10689		
Toluene	21.8 U	34.8	10.9	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	94.1	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	125	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 20:32
Dilution Factor: 1
Initial Prep Wt./Vol.: 72.974 g
Container ID:1114384004-B
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 20:32
Dilution Factor: 1
Initial Prep Wt./Vol.: 72.974 g
Container ID:1114384004-B
Analyst: HM

Client Sample ID: **RSE-3A**
SGS Ref. #: 1114384004
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 79.2

Collection Date/Time: 09/08/11 16:00
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	61.6	25.1	7.79	mg/Kg	1	XFC10054	XXX25648	
Residual Range Organics	80.5	25.1	7.79	mg/Kg	1	XFC10054	XXX25648	
5a Androstane <surr>	101	50-150		%	1	XFC10054	XXX25648	
n-Triacontane-d62 <surr>	98.1	50-150		%	1	XFC10054	XXX25648	

Batch Information

Analytical Batch: XFC10054
Analytical Method: AK102
Analysis Date/Time: 09/16/11 03:44
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.154 g
Prep Extract Vol.: 1 mL
Container ID:1114384004-A
Analyst: MCS

Analytical Batch: XFC10054
Analytical Method: AK103
Analysis Date/Time: 09/16/11 03:44
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.154 g
Prep Extract Vol.: 1 mL
Container ID:1114384004-A
Analyst: MCS

Client Sample ID: **RSE-3A**
SGS Ref. #: 1114384004
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 79.2

Collection Date/Time: 09/08/11 16:00
Receipt Date/Time: 09/12/11 11:41

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	79.2			%	1	SPT8476		

Batch Information

Analytical Batch: SPT8476
Analytical Method: SM20 2540G
Analysis Date/Time: 09/12/11 18:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1114384004-A
Analyst: DDR

Client Sample ID: **RSE-4A**
SGS Ref. #: 1114384005
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.2

Collection Date/Time: 09/08/11 16:40
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	8.72 U	13.6	4.36	ug/Kg	1	VFC10689		
Ethylbenzene	17.0 U	27.2	8.50	ug/Kg	1	VFC10689		
Gasoline Range Organics	1.63 U	2.72	0.817	mg/Kg	1	VFC10689		
o-Xylene	17.0 U	27.2	8.50	ug/Kg	1	VFC10689		
P & M -Xylene	32.6 U	54.5	16.3	ug/Kg	1	VFC10689		
Toluene	17.0 U	27.2	8.50	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	94.2	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	118	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 20:50
Dilution Factor: 1
Initial Prep Wt./Vol.: 83.28 g
Container ID:1114384005-B
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 20:50
Dilution Factor: 1
Initial Prep Wt./Vol.: 83.28 g
Container ID:1114384005-B
Analyst: HM

Client Sample ID: **RSE-4A**
SGS Ref. #: 1114384005
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.2

Collection Date/Time: 09/08/11 16:40
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	28.4	23.7	7.36	mg/Kg	1	XFC10054	XXX25648	
Residual Range Organics	20.3J	23.7	7.36	mg/Kg	1	XFC10054	XXX25648	
5a Androstane <surr>	96.6	50-150		%	1	XFC10054	XXX25648	
n-Triacontane-d62 <surr>	91.4	50-150		%	1	XFC10054	XXX25648	

Batch Information

Analytical Batch: XFC10054
Analytical Method: AK102
Analysis Date/Time: 09/16/11 04:05
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.03 g
Prep Extract Vol.: 1 mL
Container ID:1114384005-A
Analyst: MCS

Analytical Batch: XFC10054
Analytical Method: AK103
Analysis Date/Time: 09/16/11 04:05
Dilution Factor: 1
Prep Batch: XXX25648
Prep Method: SW3550C
Prep Date/Time: 09/13/11 19:20
Initial Prep Wt./Vol.: 30.03 g
Prep Extract Vol.: 1 mL
Container ID:1114384005-A
Analyst: MCS

Client Sample ID: **RSE-4A**
SGS Ref. #: 1114384005
Project ID: Hurricane Siding 11-827
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.2

Collection Date/Time: 09/08/11 16:40
Receipt Date/Time: 09/12/11 11:41

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	84.2			%	1	SPT8476		

Batch Information

Analytical Batch: SPT8476
Analytical Method: SM20 2540G
Analysis Date/Time: 09/12/11 18:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1114384005-A
Analyst: DDR

Client Sample ID: **RSE-1**
SGS Ref. #: 1114384006
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:20
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.300 U	0.500	0.150	ug/L	1	VFC10691	VXX22728	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	1	VFC10691	VXX22728	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VFC10691	VXX22728	
Toluene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
1,4-Difluorobenzene <surr>	98	77-115		%	1	VFC10691	VXX22728	
4-Bromofluorobenzene <surr>	94.2	50-150		%	1	VFC10691	VXX22728	

Batch Information

Analytical Batch: VFC10691
Analytical Method: AK101
Analysis Date/Time: 09/14/11 14:18
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384006-A
Analyst: HM

Analytical Batch: VFC10691
Analytical Method: SW8021B
Analysis Date/Time: 09/14/11 14:18
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384006-A
Analyst: HM

Client Sample ID: **RSE-1**
SGS Ref. #: 1114384006
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:20
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	0.203J	0.600	0.180	mg/L	1	XFC10053	XXX25638	
Residual Range Organics	0.300 U	0.500	0.150	mg/L	1	XFC10053	XXX25638	
5a Androstane <surr>	105	50-150		%	1	XFC10053	XXX25638	
n-Triacontane-d62 <surr>	99.9	50-150		%	1	XFC10053	XXX25638	

Batch Information

Analytical Batch: XFC10053
Analytical Method: AK102
Analysis Date/Time: 09/15/11 16:32
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384006-D
Analyst: MCS

Analytical Batch: XFC10053
Analytical Method: AK103
Analysis Date/Time: 09/15/11 16:32
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384006-D
Analyst: MCS

Client Sample ID: **RSE-2**
SGS Ref. #: 1114384007
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 17:25
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.250J	0.500	0.150	ug/L	1	VFC10691	VXX22728	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	1	VFC10691	VXX22728	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VFC10691	VXX22728	
Toluene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
1,4-Difluorobenzene <surr>	98.2	77-115		%	1	VFC10691	VXX22728	
4-Bromofluorobenzene <surr>	92.5	50-150		%	1	VFC10691	VXX22728	

Batch Information

Analytical Batch: VFC10691
Analytical Method: AK101
Analysis Date/Time: 09/14/11 12:08
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384007-A
Analyst: HM

Analytical Batch: VFC10691
Analytical Method: SW8021B
Analysis Date/Time: 09/14/11 12:08
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384007-A
Analyst: HM

Client Sample ID: **RSE-2**
SGS Ref. #: 1114384007
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 17:25
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	0.311J	0.600	0.180	mg/L	1	XFC10053	XXX25638	
Residual Range Organics	0.300 U	0.500	0.150	mg/L	1	XFC10053	XXX25638	
5a Androstane <surr>	107	50-150		%	1	XFC10053	XXX25638	
n-Triacontane-d62 <surr>	102	50-150		%	1	XFC10053	XXX25638	

Batch Information

Analytical Batch: XFC10053
Analytical Method: AK102
Analysis Date/Time: 09/15/11 16:54
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384007-D
Analyst: MCS

Analytical Batch: XFC10053
Analytical Method: AK103
Analysis Date/Time: 09/15/11 16:54
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384007-D
Analyst: MCS

Client Sample ID: **RSE-3**
SGS Ref. #: 1114384008
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:45
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.300 U	0.500	0.150	ug/L	1	VFC10691	VXX22728	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	1	VFC10691	VXX22728	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VFC10691	VXX22728	
Toluene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
1,4-Difluorobenzene <surr>	98.7	77-115		%	1	VFC10691	VXX22728	
4-Bromofluorobenzene <surr>	88.7	50-150		%	1	VFC10691	VXX22728	

Batch Information

Analytical Batch: VFC10691
Analytical Method: AK101
Analysis Date/Time: 09/14/11 12:26
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384008-A
Analyst: HM

Analytical Batch: VFC10691
Analytical Method: SW8021B
Analysis Date/Time: 09/14/11 12:26
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384008-A
Analyst: HM

Client Sample ID: **RSE-3**
SGS Ref. #: 1114384008
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:45
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	0.498J	0.600	0.180	mg/L	1	XFC10053	XXX25638	
Residual Range Organics	0.300 U	0.500	0.150	mg/L	1	XFC10053	XXX25638	
5a Androstane <surr>	107	50-150		%	1	XFC10053	XXX25638	
n-Triacontane-d62 <surr>	102	50-150		%	1	XFC10053	XXX25638	

Batch Information

Analytical Batch: XFC10053
Analytical Method: AK102
Analysis Date/Time: 09/15/11 17:15
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384008-D
Analyst: MCS

Analytical Batch: XFC10053
Analytical Method: AK103
Analysis Date/Time: 09/15/11 17:15
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384008-D
Analyst: MCS

Client Sample ID: **RSE-4**
SGS Ref. #: 1114384009
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:55
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.300 U	0.500	0.150	ug/L	1	VFC10691	VXX22728	
Ethylbenzene	1.65	1.00	0.310	ug/L	1	VFC10691	VXX22728	
Gasoline Range Organics	0.0833J	0.100	0.0300	mg/L	1	VFC10691	VXX22728	
o-Xylene	7.36	1.00	0.310	ug/L	1	VFC10691	VXX22728	
P & M -Xylene	4.76	2.00	0.620	ug/L	1	VFC10691	VXX22728	
Toluene	0.700J	1.00	0.310	ug/L	1	VFC10691	VXX22728	
1,4-Difluorobenzene <surr>	98.8	77-115		%	1	VFC10691	VXX22728	
4-Bromofluorobenzene <surr>	101	50-150		%	1	VFC10691	VXX22728	

Batch Information

Analytical Batch: VFC10691
Analytical Method: AK101
Analysis Date/Time: 09/14/11 12:45
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384009-A
Analyst: HM

Analytical Batch: VFC10691
Analytical Method: SW8021B
Analysis Date/Time: 09/14/11 12:45
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384009-A
Analyst: HM

Client Sample ID: **RSE-4**
SGS Ref. #: 1114384009
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:55
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1.52	0.600	0.180	mg/L	1	XFC10053	XXX25638	
Residual Range Organics	0.300 U	0.500	0.150	mg/L	1	XFC10053	XXX25638	
5a Androstane <surr>	106	50-150		%	1	XFC10053	XXX25638	
n-Triacontane-d62 <surr>	101	50-150		%	1	XFC10053	XXX25638	

Batch Information

Analytical Batch: XFC10053
Analytical Method: AK102
Analysis Date/Time: 09/15/11 17:36
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384009-D
Analyst: MCS

Analytical Batch: XFC10053
Analytical Method: AK103
Analysis Date/Time: 09/15/11 17:36
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384009-D
Analyst: MCS

Client Sample ID: **RSE-X**
SGS Ref. #: 1114384010
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:00
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.300 U	0.500	0.150	ug/L	1	VFC10691	VXX22728	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	1	VFC10691	VXX22728	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VFC10691	VXX22728	
Toluene	0.620 U	1.00	0.310	ug/L	1	VFC10691	VXX22728	
1,4-Difluorobenzene <surr>	98.5	77-115		%	1	VFC10691	VXX22728	
4-Bromofluorobenzene <surr>	90.4	50-150		%	1	VFC10691	VXX22728	

Batch Information

Analytical Batch: VFC10691
Analytical Method: AK101
Analysis Date/Time: 09/14/11 13:04
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384010-A
Analyst: HM

Analytical Batch: VFC10691
Analytical Method: SW8021B
Analysis Date/Time: 09/14/11 13:04
Dilution Factor: 1
Prep Batch: VXX22728
Prep Method: SW5030B
Prep Date/Time: 09/14/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384010-A
Analyst: HM

Client Sample ID: **RSE-X**
SGS Ref. #: 1114384010
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/09/11 16:00
Receipt Date/Time: 09/12/11 11:41

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	0.431J	0.600	0.180	mg/L	1	XFC10053	XXX25638	
Residual Range Organics	0.300 U	0.500	0.150	mg/L	1	XFC10053	XXX25638	
5a Androstane <surr>	111	50-150		%	1	XFC10053	XXX25638	
n-Triacontane-d62 <surr>	106	50-150		%	1	XFC10053	XXX25638	

Batch Information

Analytical Batch: XFC10053
Analytical Method: AK102
Analysis Date/Time: 09/15/11 17:57
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384010-B
Analyst: MCS

Analytical Batch: XFC10053
Analytical Method: AK103
Analysis Date/Time: 09/15/11 17:57
Dilution Factor: 1
Prep Batch: XXX25638
Prep Method: SW3520C
Prep Date/Time: 09/13/11 09:45
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1114384010-B
Analyst: MCS

Client Sample ID: **Soil Trip Blank**
SGS Ref. #: 1114384011
Project ID: Hurricane Siding 11-827
Matrix: Solid/Soil (Wet Weight)

Collection Date/Time: 09/08/11 14:15
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	8.14 U	12.7	4.07	ug/Kg	1	VFC10689		
Ethylbenzene	15.9 U	25.5	7.94	ug/Kg	1	VFC10689		
Gasoline Range Organics	1.53 U	2.55	0.764	mg/Kg	1	VFC10689		
o-Xylene	15.9 U	25.5	7.94	ug/Kg	1	VFC10689		
P & M -Xylene	30.6 U	50.9	15.3	ug/Kg	1	VFC10689		
Toluene	15.9 U	25.5	7.94	ug/Kg	1	VFC10689		
1,4-Difluorobenzene <surr>	93.6	72-119		%	1	VFC10689		
4-Bromofluorobenzene <surr>	93.2	50-150		%	1	VFC10689		

Batch Information

Analytical Batch: VFC10689
Analytical Method: AK101
Analysis Date/Time: 09/13/11 21:27
Dilution Factor: 1
Initial Prep Wt./Vol.: 49.11 g
Container ID:1114384011-A
Analyst: HM

Analytical Batch: VFC10689
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 21:27
Dilution Factor: 1
Initial Prep Wt./Vol.: 49.11 g
Container ID:1114384011-A
Analyst: HM

Client Sample ID: **H20 Trip Blank**
SGS Ref. #: 1114384012
Project ID: Hurricane Siding 11-827
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 09/08/11 14:15
Receipt Date/Time: 09/12/11 11:41

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	0.300 U	0.500	0.150	ug/L	1	VFC10688	VXX22722	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VFC10688	VXX22722	
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	1	VFC10688	VXX22722	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VFC10688	VXX22722	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VFC10688	VXX22722	
Toluene	0.620 U	1.00	0.310	ug/L	1	VFC10688	VXX22722	
1,4-Difluorobenzene <surr>	98.6	77-115		%	1	VFC10688	VXX22722	
4-Bromofluorobenzene <surr>	94	50-150		%	1	VFC10688	VXX22722	

Batch Information

Analytical Batch: VFC10688
Analytical Method: AK101
Analysis Date/Time: 09/13/11 16:31
Dilution Factor: 1
Prep Batch: VXX22722
Prep Method: SW5030B
Prep Date/Time: 09/13/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384012-A
Analyst: HM

Analytical Batch: VFC10688
Analytical Method: SW8021B
Analysis Date/Time: 09/13/11 16:31
Dilution Factor: 1
Prep Batch: VXX22722
Prep Method: SW5030B
Prep Date/Time: 09/13/11 08:00
Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1114384012-A
Analyst: HM

SGS Ref.#	1051441	Method Blank	**Printed Date/Time**	09/27/2011	17:28
Client Name	AK Railroad Corp		**Prep Batch**		
Project Name/#	Hurricane Siding 11-827		**Method**		
Matrix	Soil/Solid (dry weight)		**Date**		

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Solids					
Total Solids	99.9			%	09/12/11
Batch SPT8476					
Method SM20 2540G					
Instrument					

SGS Ref.#	1051539	Method Blank	**Printed Date/Time**	09/27/2011	17:28
Client Name	AK Railroad Corp		**Prep Batch**	XXX25638	
Project Name/#	Hurricane Siding 11-827		**Method**	SW3520C	
Matrix	Water (Surface, Eff., Ground)		**Date**	09/13/2011	

QC results affect the following production samples:

1114384006, 1114384007, 1114384008, 1114384009, 1114384010

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	0.210J	0.600	0.180	mg/L	09/15/11
Surrogates					
5a Androstane <surr>	102	60-120		%	09/15/11
Batch XFC10053					
Method AK102					
Instrument HP 7890A FID SV E F					
Residual Range Organics	0.300 U	0.500	0.150	mg/L	09/15/11
Surrogates					
n-Triacontane-d62 <surr>	99	60-120		%	09/15/11
Batch XFC10053					
Method AK103					
Instrument HP 7890A FID SV E F					

SGS Ref.#	1051701	Method Blank	**Printed Date/Time**		09/27/2011 17:28
Client Name	AK Railroad Corp		**Prep**	**Batch**	VXX22722
Project Name/#	Hurricane Siding 11-827			**Method**	SW5030B
Matrix	Water (Surface, Eff., Ground)			**Date**	09/13/2011

QC results affect the following production samples:

1114384012

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	09/13/11
Surrogates					
4-Bromofluorobenzene <surr>	97.1	50-150		%	09/13/11
Batch VFC10688					
Method AK101					
Instrument Agilent 7890 PID/FID					
Benzene	0.300 U	0.500	0.150	ug/L	09/13/11
Ethylbenzene	0.620 U	1.00	0.310	ug/L	09/13/11
o-Xylene	0.620 U	1.00	0.310	ug/L	09/13/11
P & M -Xylene	1.24 U	2.00	0.620	ug/L	09/13/11
Toluene	0.620 U	1.00	0.310	ug/L	09/13/11
Surrogates					
1,4-Difluorobenzene <surr>	97.1	77-115		%	09/13/11
Batch VFC10688					
Method SW8021B					
Instrument Agilent 7890 PID/FID					

SGS Ref.#	1051706	Method Blank	**Printed Date/Time**	09/27/2011 17:28
Client Name	AK Railroad Corp		**Prep Batch**	XXX25648
Project Name/#	Hurricane Siding 11-827		**Method**	SW3550C
Matrix	Soil/Solid (dry weight)		**Date**	09/13/2011

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	12.4 U	20.0	6.20	mg/Kg	09/14/11
Surrogates					
5a Androstane <surr>	94.9	60-120		%	09/14/11
Batch XFC10048					
Method AK102					
Instrument HP 7890A FID SV E R					
Residual Range Organics	12.4 U	20.0	6.20	mg/Kg	09/14/11
Surrogates					
n-Triacontane-d62 <surr>	97.6	60-120		%	09/14/11
Batch XFC10048					
Method AK103					
Instrument HP 7890A FID SV E R					

SGS Ref.#	1051734	Method Blank	**Printed Date/Time**		09/27/2011 17:28
Client Name	AK Railroad Corp		**Prep**	**Batch**	
Project Name/#	Hurricane Siding 11-827			**Method**	
Matrix	Soil/Solid (dry weight)			**Date**	

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005, 1114384011

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	1.50 U	2.50	0.750	mg/Kg	09/13/11
Surrogates					
4-Bromofluorobenzene <surr>	121	50-150		%	09/13/11
Batch VFC10689					
Method AK101					
Instrument HP 5890 Series II PID+FID VCA					
Benzene	8.00 U	12.5	4.00	ug/Kg	09/13/11
Ethylbenzene	15.6 U	25.0	7.80	ug/Kg	09/13/11
o-Xylene	15.6 U	25.0	7.80	ug/Kg	09/13/11
P & M -Xylene	30.0 U	50.0	15.0	ug/Kg	09/13/11
Toluene	15.6 U	25.0	7.80	ug/Kg	09/13/11
Surrogates					
1,4-Difluorobenzene <surr>	92.3	72-119		%	09/13/11
Batch VFC10689					
Method SW8021B					
Instrument HP 5890 Series II PID+FID VCA					

SGS Ref.#	1052219	Method Blank	**Printed Date/Time**	09/27/2011	17:28
Client Name	AK Railroad Corp		**Prep Batch**	VXX22728	
Project Name/#	Hurricane Siding 11-827		**Method**	SW5030B	
Matrix	Water (Surface, Eff., Ground)		**Date**	09/14/2011	

QC results affect the following production samples:

1114384006, 1114384007, 1114384008, 1114384009, 1114384010

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	0.0600 U	0.100	0.0300	mg/L	09/14/11
Surrogates					
4-Bromofluorobenzene <surr>	94.4	50-150		%	09/14/11
Batch VFC10691					
Method AK101					
Instrument Agilent 7890 PID/FID					
Benzene	0.300 U	0.500	0.150	ug/L	09/14/11
Ethylbenzene	0.620 U	1.00	0.310	ug/L	09/14/11
o-Xylene	0.620 U	1.00	0.310	ug/L	09/14/11
P & M -Xylene	1.24 U	2.00	0.620	ug/L	09/14/11
Toluene	0.620 U	1.00	0.310	ug/L	09/14/11
Surrogates					
1,4-Difluorobenzene <surr>	98.7	77-115		%	09/14/11
Batch VFC10691					
Method SW8021B					
Instrument Agilent 7890 PID/FID					

SGS Ref.#	1051442	Duplicate	**Printed Date/Time**		09/27/2011 17:28
Client Name	AK Railroad Corp		**Prep**	**Batch**	
Project Name/#	Hurricane Siding 11-827			**Method**	
Original	1118821002			**Date**	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	93.4	93.4	%	0	(< 15)	09/12/2011
Batch SPT8476						
Method SM20 2540G						
Instrument						

SGS Ref.#	1051540 Lab Control Sample	**Printed Date/Time**	09/27/2011	17:28
	1051541 Lab Control Sample Duplicate	**Prep Batch**	XXX25638	
Client Name	AK Railroad Corp	**Method**	SW3520C	
Project Name/#	Hurricane Siding 11-827	**Date**	09/13/2011	
Matrix	Water (Surface, Eff., Ground)			

QC results affect the following production samples:

1114384006, 1114384007, 1114384008, 1114384009, 1114384010

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	21.7	108	(75-125)			20 mg/L	09/15/2011
	LCSD	22.4	112		3	(< 20)	20 mg/L	09/15/2011
Surrogates								
5a Androstane <surr>	LCS		102	(60-120)				09/15/2011
	LCSD		104		1			09/15/2011
Batch XFC10053 **Method** AK102 **Instrument** HP 7890A FID SV E F								
Residual Range Organics	LCS	20.6	103	(60-120)			20 mg/L	09/15/2011
	LCSD	21.5	107		4	(< 20)	20 mg/L	09/15/2011
Surrogates								
n-Triacontane-d62 <surr>	LCS		94	(60-120)				09/15/2011
	LCSD		98		4			09/15/2011
Batch XFC10053 **Method** AK103 **Instrument** HP 7890A FID SV E F								

SGS Ref.#	1051702 Lab Control Sample		**Printed Date/Time**	09/27/2011	17:28
	1051704 Lab Control Sample Duplicate		**Prep Batch**	VXX22722	
Client Name	AK Railroad Corp		**Method**	SW5030B	
Project Name/#	Hurricane Siding 11-827		**Date**	09/13/2011	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1114384012

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	110	110	(80-120)			100 ug/L	09/13/2011
	LCSD	110	110		0	(< 20)	100 ug/L	09/13/2011
Ethylbenzene	LCS	111	111	(75-125)			100 ug/L	09/13/2011
	LCSD	112	112		1	(< 20)	100 ug/L	09/13/2011
o-Xylene	LCS	110	110	(80-120)			100 ug/L	09/13/2011
	LCSD	111	111		1	(< 20)	100 ug/L	09/13/2011
P & M -Xylene	LCS	221	110	(75-130)			200 ug/L	09/13/2011
	LCSD	223	111		1	(< 20)	200 ug/L	09/13/2011
Toluene	LCS	111	111	(75-120)			100 ug/L	09/13/2011
	LCSD	112	112		1	(< 20)	100 ug/L	09/13/2011
Surrogates								
1,4-Difluorobenzene <surr>	LCS		99	(77-115)				09/13/2011
	LCSD		101		2			09/13/2011

Batch	VFC10688
Method	SW8021B
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1051703	Lab Control Sample	**Printed Date/Time**	09/27/2011	17:28
	1051705	Lab Control Sample Duplicate	**Prep Batch**	VXX22722	
Client Name	AK Railroad Corp		**Method**	SW5030B	
Project Name/#	Hurricane Siding 11-827		**Date**	09/13/2011	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1114384012

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	0.939	94	(60-120)			1.00 mg/L	09/13/2011
	LCSD	0.957	96		2	(< 20)	1.00 mg/L	09/13/2011
Surrogates								
4-Bromofluorobenzene <surr>	LCS		99	(50-150)				09/13/2011
	LCSD		96		3			09/13/2011

Batch VFC10688
Method AK101
Instrument Agilent 7890 PID/FID

SGS Ref.#	1051707 Lab Control Sample	**Printed Date/Time**	09/27/2011	17:28
	1051708 Lab Control Sample Duplicate	**Prep Batch**	XXX25648	
Client Name	AK Railroad Corp	**Method**	SW3550C	
Project Name/#	Hurricane Siding 11-827	**Date**	09/13/2011	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	175	105	(75-125)			167 mg/Kg	09/14/2011
	LCSD	176	105		0	(< 20)	167 mg/Kg	09/14/2011
Surrogates								
5a Androstane <surr>	LCS		94	(60-120)				09/14/2011
	LCSD		94		0			09/14/2011
Batch XFC10048								
Method AK102								
Instrument HP 7890A FID SV E R								
Residual Range Organics	LCS	174	105	(60-120)			167 mg/Kg	09/14/2011
	LCSD	173	104		1	(< 20)	167 mg/Kg	09/14/2011
Surrogates								
n-Triacontane-d62 <surr>	LCS		97	(60-120)				09/14/2011
	LCSD		96		1			09/14/2011
Batch XFC10048								
Method AK103								
Instrument HP 7890A FID SV E R								

SGS Ref.#	1051735 Lab Control Sample	**Printed Date/Time**	09/27/2011 17:28
	1051736 Lab Control Sample Duplicate	**Prep Batch**	
Client Name	AK Railroad Corp	**Method**	
Project Name/#	Hurricane Siding 11-827	**Date**	
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005, 1114384011

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1100	88	(75-125)			1250 ug/Kg	09/13/2011
	LCSD	1120	90		2	(< 20)	1250 ug/Kg	09/13/2011
Ethylbenzene	LCS	1170	93	(75-125)			1250 ug/Kg	09/13/2011
	LCSD	1200	96		3	(< 20)	1250 ug/Kg	09/13/2011
o-Xylene	LCS	1120	89	(75-125)			1250 ug/Kg	09/13/2011
	LCSD	1140	91		2	(< 20)	1250 ug/Kg	09/13/2011
P & M -Xylene	LCS	2280	91	(80-125)			2500 ug/Kg	09/13/2011
	LCSD	2340	94		2	(< 20)	2500 ug/Kg	09/13/2011
Toluene	LCS	1130	91	(70-125)			1250 ug/Kg	09/13/2011
	LCSD	1160	93		2	(< 20)	1250 ug/Kg	09/13/2011
Surrogates								
1,4-Difluorobenzene <surr>	LCS		95	(72-119)				09/13/2011
	LCSD		95		0			09/13/2011

Batch	VFC10689
Method	SW8021B
Instrument	HP 5890 Series II PID+FID VCA

SGS Ref.#	1051737 Lab Control Sample	**Printed Date/Time**	09/27/2011 17:28
	1051738 Lab Control Sample Duplicate	**Prep Batch**	
Client Name	AK Railroad Corp	**Method**	
Project Name/#	Hurricane Siding 11-827	**Date**	
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005, 1114384011

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	10.3	103	(60-120)			10.0 mg/Kg	09/13/2011
	LCSD	10.3	103		1	(< 20)	10.0 mg/Kg	09/13/2011
Surrogates								
4-Bromofluorobenzene <surr>	LCS		119	(50-150)				09/13/2011
	LCSD		120		1			09/13/2011

Batch VFC10689
Method AK101
Instrument HP 5890 Series II PID+FID VCA

SGS Ref.#	1052220 Lab Control Sample		**Printed Date/Time**	09/27/2011	17:28
	1052222 Lab Control Sample Duplicate		**Prep Batch**	VXX22728	
Client Name	AK Railroad Corp		**Method**	SW5030B	
Project Name/#	Hurricane Siding 11-827		**Date**	09/14/2011	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1114384006, 1114384007, 1114384008, 1114384009, 1114384010

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	108	108	(80-120)			100 ug/L	09/14/2011
	LCSD	107	107		1	(< 20)	100 ug/L	09/14/2011
Ethylbenzene	LCS	109	109	(75-125)			100 ug/L	09/14/2011
	LCSD	109	109		1	(< 20)	100 ug/L	09/14/2011
o-Xylene	LCS	108	108	(80-120)			100 ug/L	09/14/2011
	LCSD	108	108		0	(< 20)	100 ug/L	09/14/2011
P & M -Xylene	LCS	217	109	(75-130)			200 ug/L	09/14/2011
	LCSD	216	108		1	(< 20)	200 ug/L	09/14/2011
Toluene	LCS	110	110	(75-120)			100 ug/L	09/14/2011
	LCSD	109	109		1	(< 20)	100 ug/L	09/14/2011
Surrogates								
1,4-Difluorobenzene <surr>	LCS		101	(77-115)				09/14/2011
	LCSD		101		0			09/14/2011

Batch	VFC10691
Method	SW8021B
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1052221 Lab Control Sample		**Printed Date/Time**	09/27/2011	17:28
	1052223 Lab Control Sample Duplicate		**Prep Batch**	VXX22728	
Client Name	AK Railroad Corp		**Method**	SW5030B	
Project Name/#	Hurricane Siding 11-827		**Date**	09/14/2011	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1114384006, 1114384007, 1114384008, 1114384009, 1114384010

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	0.938	94	(60-120)			1.00 mg/L	09/14/2011
	LCSD	0.942	94		0	(< 20)	1.00 mg/L	09/14/2011
Surrogates								
4-Bromofluorobenzene <surr>	LCS		97	(50-150)				09/14/2011
	LCSD		96		1			09/14/2011

Batch VFC10691
Method AK101
Instrument Agilent 7890 PID/FID

SGS Ref.#	1051740	Matrix Spike	**Printed Date/Time**	09/27/2011 17:28
	1051741	Matrix Spike Duplicate	**Prep Batch**	
			Method	
			Date	
Original	1051739			
Matrix	Solid/Soil (Wet Weight)			

QC results affect the following production samples:

1114384001, 1114384002, 1114384003, 1114384004, 1114384005, 1114384011

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Fuels Department											
Benzene		MS	(12.6) U	1580	80	(75-125)			1970	ug/Kg	09/13/2011
		MSD		1550	79		2	(< 20)	1970	ug/Kg	09/13/2011
Ethylbenzene		MS	(24.6) U	1650	84	(75-125)			1970	ug/Kg	09/13/2011
		MSD		1620	82		2	(< 20)	1970	ug/Kg	09/13/2011
o-Xylene		MS	(24.6) U	1660	84	(75-125)			1970	ug/Kg	09/13/2011
		MSD		1620	82		2	(< 20)	1970	ug/Kg	09/13/2011
P & M -Xylene		MS	(47.2) U	3260	83	(80-125)			3940	ug/Kg	09/13/2011
		MSD		3180	81		2	(< 20)	3940	ug/Kg	09/13/2011
Toluene		MS	(24.6) U	1630	83	(70-125)			1970	ug/Kg	09/13/2011
		MSD		1590	81		2	(< 20)	1970	ug/Kg	09/13/2011
Surrogates											
1,4-Difluorobenzene <surr>		MS		1890	96	(72-119)					09/13/2011
		MSD		1890	96		0				09/13/2011

Batch VFC10689
Method SW8021B
Instrument HP 5890 Series II PID+FID VCA

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1114384

(1)

CLIENT: RESTORATION SCIENCE & ENGINEERING

CONTACT: Lucas Gamble PHONE NO: (907) 278-1023

PROJECT NAME: Hurricane Siding PROJECT/ PWSID/ PERMIT#: 11-827

REPORTS TO: RSE EMAIL:

INVOICE TO: ALASKA RAILROAD CORPORATION QUOTE #: 9839

P.O. #: CONTRACT 51213 TASK 4 P.O. #7

SGS Reference #:

page 1 of 2

(2)

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required (3) GRO/BTEX AK101/8021B	DRO/RRO AK102/103	REMARKS/ LOC ID
(1) A-B	RSE-1A	9/8/11	1415	SOIL	2	G		X	X	
(2)	RSE-2A		1500					X	X	
(3)	RSE-X1		1400					X	X	
(4)	RSE-3A		1600					X	X	
(5)	RSE-4A		1640					X	X	*HOLD FOR ANALYSES
(6) A-D	RSE-1	9/9/11	1620	Water	4	G		X	X	ONE DRO JAR BROKE
(7)	RSE-2		1725		4			X	X	
(8)	RSE-3		1645		4			X	X	
(9)	RSE-4		1655		5			X	X	
(10) A-C	RSE-X2		1600		3			X	X	2 BTEX vials broke

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
	9/12/11	11:46am	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:
	9/12/11	11:41	

(4)

DOD Project? YES NO

Cooler ID _____

Data Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

~~HOLD~~ ~~RSE-4A for analysis~~ until further notice

Temperature Blank °C: 1.0 35

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

White - Retained by Lab
Pink - Retained by Client

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1114384

(1)

CLIENT: RESTORATION SCIENCE & ENGINEERING

CONTACT: LUCAS GAMBLE PHONE NO: (907) 278-6023

PROJECT NAME: Hurricane Siding PROJECT/ PWSID/ PERMIT#: 11-822

REPORTS TO: RSE EMAIL: LGAMBLE@RESTORSCI.COM

INVOICE TO: ALASKA RAILROAD CORPORATION QUOTE #: 9839

P.O. #: CONTRACT 51213 TASK 4 P.O. #7

SGS Reference #:

page 2 of 2

(2)

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used: HCl	Analysis Required (3): GRO / BTEX 8021	REMARKS/ LOC ID
(11) A	Soil Trip Blank	—							
(12) AC	H_2O Trip Blank	—							

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
	9/12/11	11:41 AM	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:
	9/12/11	11:41	

(4)

DOD Project? YES NO

Cooler ID _____

Data Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

Temperature Blank °C: 1.035

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

White - Retained by Lab
Pink - Retained by Client

SGS

1114384

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	
Temperature blank compliant* (i.e., 0-6°C after correction factor)? ** Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 1.0 w/ Therm.ID: 35 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 Road Runner 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 airbill/tracking # See Attached or N/A Yes No (N/A)	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one). → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: N/A
Do samples **match COC*** (i.e., sample IDs, dates/times collected)? ** Note: Exemption permitted if times differ <1hr; in which case, use times on COC.* Were analyses requested unambiguous?	(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? Were the bottles provided by SGS? (Note apparent exceptions.)	(Yes) No N/A (Yes) No N/A Yes No (N/A)	Limited Volume on sample Per Client Proceed w/analysis
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	
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** or **site-specific QC** (e.g., BMS/BMSD/BDUP) samples, were the COC & bottles flagged (e.g., stickers) accordingly? For RUSH/SHORT HT, was email sent?	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: aen PM = Heather Hall N/A
Was **PEER REVIEW** of ***sample numbering/labeling*** completed (i.e., compare WO# on containers to COC, unique lab ID on each container, LIMS container labels used?) Was selection of ***"Bill to"*** client **PEER REVIEW**ed?	(Yes) No N/A Yes No N/A	Peer Reviewed by: 1318 Metrics: 09-12-11
Additional notes (if applicable): Per Heather Hall share tripblank w/wo # 4385.		

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

Laboratory Data Review Checklist

Completed by: Lucus Gamble

Title: Environmental Sciences Manager Date: November 29, 2011

CS Report Name: ARRC Hurricane Site Characterization Report Date: January 2012

Consultant Firm: Restoration Science & Engineering, LLC

Laboratory Name: SGS Environmental Services Laboratory Report Number: 1114384

ADEC File Number: 2258.26.008 ADEC RecKey Number: Hazard ID 23545

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      Yes No NA (Please explain.) Comments:

      SGS Environmental Services in Anchorage, Alaska

   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:

      Samples were not transferred to a "network" laboratory

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      Yes No NA (Please explain.) Comments:

      The COC is provided at the end of the lab report

   b. Correct analyses requested?
      Yes No NA (Please explain.) Comments:

      AK Methods 101, 102, 103, and EPA Methods 8021B

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes **No** NA (Please explain.) Comments:

      The temperature blank measured 1.0° C

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      Yes No NA (Please explain.) Comments:

      MeOH was used to preserve GRO/BTEX for soil and HCl for water

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

Sample condition is documented at the end of the lab report

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

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

Data quality or usability not affected

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

Provided on page 2 of the lab report

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

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

See page 2 of the lab report

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

Data quality or usability not affected

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

DRO/RRO and GRO/BTEX

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?
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 and if so, are the data flags clearly defined?
Yes No **NA** (Please explain.) Comments:

No affected samples

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

Data quality or usability not 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/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

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

Comments:

NA

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

Yes No **NA** (Please explain.) Comments:

No affected samples

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

Comments:

Data quality or usability 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:

Surrogate recovery was outside QC limits because of possible misspike for RSE-X1

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:

See narrative on page 2

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

Comments:

Data quality or usability not affected

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:

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:

Data quality or usability not affected

e. Field Duplicate

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

Yes No NA (Please explain.) Comments:

Soil sample RSE-X is a blind duplicate of RSE-3; and RSE-X1 is a blind duplicate of RSE-2A

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)

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes **No** NA (Please explain.) Comments:

No for soil sample, because of low sample recovery it was difficult to obtain homogenous material

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

Comments:

Data quality or usability not affected

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

Yes No **NA** (Please explain.) Comments:

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:

APPENDIX E:

TABLE SHOWING SUBSURFACE GEOLOGY AND SOIL BORING NARRATIVE

TABLE E1
SOIL BORING DETAILS
HURRICANE SIDING SITE CHARACTERIZATION
JANUARY 2012 REPORT DATE

Well	Sample Number	Drive Interval	Feet Driven	Recovery	Sample Depth	PID	Soil Descriptions	Analytical Samples	MW Construction Details
		(ft)	(ft)	(ft)	(ft)	(ppmv)			
RSE-1	A	0-5	5	4	2	0.0	0 to 1.5 Subangular gravel with sand and silt	No HC Odor	Bottom of 5' well screen @ 8'bg. Filled annular space with sand from 8' bg to 1' above well screen. Topped with 1' of bentonite.
					4	0.0	1.5 to 2.5 Fine silt and sand	Sample RSE-1A from 4' bg	
							2.5 to 5 Subangular gravel with sand and silt	GW @ 5' bg	
	B	5-10	5	2	--	--	5 to 10 Subangular gravel with sand and silt	Saturated Zone-no sample collected	
								No HC odor	
	C	10-15	5	3	--	--	10 to 15 Subangular gravel with sand and silt	Saturated Zone-no sample collected	

Well	Sample Number	Drive Interval	Feet Driven	Recovery	Sample Depth	PID	Soil Descriptions	Analytical Samples	MW Construction Details
		(ft)	(ft)	(ft)	(ft)	(ppmv)			
RSE-2	A	0-5	5	3.5	2	0.0	0 to 2.5 Mixed gravel, sand and fines		Bottom of 5' well screen @ 8'bg. Filled annular space with sand from 8' bg to 1' above well screen. Topped with 1' of bentonite.
					3.5	0.0	2.5 to 3.0 Fine sand and silt	Sample RSE-2A AND Dup RSE-X1 from 3-3.5' bg	
							3 to 5 Coarse sand and some gravel	GW @ 4' bg	
								No HC odor	
	B	10-15	5	3.5	--	--	5 to 6.5 coarse gravel	Saturated Zone-no sample collected	
							6.5 to 8 Fine sand and silt		
							8 to 10 coarse gravel	No HC odor	

Well	Sample Number	Drive Interval	Feet Driven	Recovery	Sample Depth	PID	Soil Descriptions	Analytical Samples	MW Construction Details
		(ft)	(ft)	(ft)	(ft)	(ppmv)			
RSE-3	A	0-5	5	3		20.0	0 to 1 coarse gravel		Bottom of 5' well screen @ 8'bg. Filled annular space with sand from 8' bg to 1' above well screen. Topped with 1' of bentonite.
							1 to 2 Fine sand and silt		
							2 to 2.5 coarse sand	GW @ 4-5 bg	
					3	20.0	2.5 to 5 Fine sand, moist soil	Sample RSE-3A from 3' bg	
								Slight HC odor	
	B	5-10	5	2.5	--	--	5 to 5.5 fine sand		
							5.5 to 10 coarse sand and silt	Saturated Zone-no sample collected	

Well	Sample Number	Drive Interval	Feet Driven	Recovery	Sample Depth	PID	Soil Descriptions	Analytical Samples	MW Construction Details
		(ft)	(ft)	(ft)	(ft)	(ppmv)			
RSE-4	A	0-5	5	3	2	0.0	0 to 1 Fine sandy silt		Bottom of 5' well screen @ 7'bg. Filled annular space with sand from 8' bg to 1' above well screen. Topped with 1' of bentonite.
					3	2.3	1 to 2.5 coarse sand	Sample RSE-4A from just above GW at 3'bg	
							2.5 to 2.9 very fine sand and silt	GW @ ~ 3.5' bg	
							2.9 to 5 coarse sand	HC odor present	
	B	5-10	5	3	--	--	5 to 10 very coarse sand and fine gravel		
								Saturated zone-no sample collected	
								HC odor present	