

FES

3538 International Street
Fairbanks, Alaska 99701

Phone: (907) 452-1006
FAX: (907) 452-2692
Email: FES@Alaska.com

FAIRBANKS ENVIRONMENTAL SERVICES

DATE: December 16, 2013

TO: Mr. Russell Grandel, Alaska Railroad Corporation

FROM: Michael Boese, Fairbanks Environmental Services

RE: Passive Soil Gas Survey Report
Former Mammoth Trucking Site
Anchorage, Alaska
ADEC Hazard ID – 23887 / File ID – 2100.26.202

EXECUTIVE SUMMARY

A soil gas survey was conducted at the former Mammoth Trucking site located in Anchorage, Alaska (Figure 1). The site is owned by the Alaska Railroad Corporation (ARRC) and currently leased to Alaska West Express. The survey was conducted to evaluate soil gas conditions and identify areas with potential soil contamination. Soil and groundwater contamination above Alaska Department of Environmental Conservation cleanup levels has been previously identified at the site. Contaminants include both fuel and chlorinated solvent constituents.

Passive gas samplers were installed at 12 locations across the northwest corner of the site. The samplers were retrieved after 10 days and analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) using a semi-quantitative screening method (modified 8260C). All work was performed by qualified persons, Michael Boese and Kristin Drenzek, as required by Title 18 of the Alaska Administrative Code, Chapter 75.

While nine of the 12 soil gas samplers had detectable contaminants, the detections were generally very low and detected compounds varied between sample locations. The sampler with the most contaminant detections and highest magnitude was from location M-07. Contaminant detections from the M-07 sampler included benzene, ethylbenzene, m+p-xylenes, o-xylene, 1,3,5-trimethylbenzene, octane, TPH, cis- and trans-1,2-dichloroethene, and vinyl chloride. The sampler was located 50 feet west of the existing building and near the location of former underground storage tanks.

While some of the contaminants detected by the soil gas survey have been detected in soil and groundwater at the site, there was not a strong correlation in the detection locations. Based on the survey results, there does not appear to be any soil gas concerns except possibly near location M-07. It is recommended that quantitative soil gas samples be collected to evaluate soil gas concentrations at locations M-07, M-08, and M-09.

1.0 INTRODUCTION

1.1 Site Description

The former Mammoth Trucking site is located at 1048 East Whitney Road in Anchorage, Alaska (Figure 2). The subject property is currently leased to Alaska West Express from the ARRC. Site improvements include a building surrounded by a large, paved yard. The site is underlain by a shallow, unconfined aquifer.

1.2 Previous Investigations

In 1990, one 500-gallon gasoline underground storage tank (UST), one 2,000-gallon diesel UST, one 12,000-gallon diesel UST, and two used oil USTs were removed from the northwest corner of the former Mammoth Trucking property. Upon removal of the tanks and approximately 140 cubic yards of contaminated soil, obvious soil contamination remained (Northern Test Lab, 1991).

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

Site characterization activities conducted between 1994 and 2012 indicate that soil and groundwater exceed ADEC cleanup levels for petroleum and chlorinated solvents. In addition, vapor intrusion screening levels were exceeded based on groundwater concentrations. Historical soil and groundwater results are shown in Figure 2. The source of chlorinated solvent contamination has not been identified, and based on PCE detections in wells located upgradient of the tanks the chlorinated solvent contamination does not appear to be from the former USTs. Groundwater flow direction at the former Mammoth Trucking site is generally to the south-southwest toward Ship Creek (CH2MHill, 1999).

2.0 WORK PERFORMED

Following utility locates, 1.5-inch-diameter holes were drilled through the asphalt at each of the 12 sample locations shown on Figure 2. Upon failed attempts to advance the holes through the soil using percussion drivers, ¾-inch-diameter holes were drilled into the soil using an electric hammer drill equipped with a 32"-long drill bit. All 12 holes were drilled to the maximum depth but, due to sloughing, hole depths only ranged from 20 inches to 30 inches below the asphalt surface. Soil encountered beneath the asphalt was comprised primarily of dry, gravelly sands. The locations of the soil gas samples were surveyed using a Global Positioning System (GPS) with sub-meter accuracy; coordinates are displayed in the installation and retrieval log in the AGI Laboratory Report (Appendix B).

On October 4, 2013, Amplified Geochemical Imaging, LLC (AGI; formerly Gore® Surveys) Universal Samplers (passive samplers containing an absorbent trap in a Gortex® shell) were installed in the bottom of each of the 12 holes. An insertion rod was used to facilitate the installation of the samplers which were connected to rubber stoppers via strings. The stoppers were used to seal the holes and were recessed below the surface of the asphalt to help protect them from vehicular traffic. Each universal sampler had a unique serial number which was verified during installation and retrieval. Pertinent information was documented in the Installation and Retrieval Log included in the attached analytical report.

Upon retrieval on October 14, the samplers were replaced into glass vials and sent to AGI's laboratory in Elkton, Maryland under chain of custody for analysis of VOCs using a semi-quantitative screening method (modified 8260C). Following sample collection activities, the holes were backfilled with clean sand and the asphalt was repaired using cold patch and elastic crack filler.

3.0 DEVIATION TO WORK PLAN

One deviation to the Work Plan was noted. Due to the size of the holes drilled into the asphalt (1.5-inches in diameter), the corks provided by the laboratory would not seal the holes. Locally-purchased rubber stoppers were used instead, as shown in Photograph 3 in Appendix A. To evaluate potential contamination derived from the black rubber stoppers, the trip blanks were placed in a sealed bag together with one of the stoppers; the evaluation is documented in the Data Quality Section.

4.0 DATA QUALITY

Chemical data quality is summarized in the ADEC Laboratory Review Checklist in Appendix C. Batch quality control data including reference standards and method blanks indicated that the gas chromatograph/mass selective detection instrument was operating properly.

As noted in Section 3.0, two trip blank samples were stored with a black rubber stopper to simulate the environment of the project samples. Several non-halogenated compounds were detected in trip blank samples including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-methylnaphthalene, m+p-xylenes, naphthalene, octane, pentadecane, toluene, TPH, tridecane, and undecane. As a result, detections of these analytes in project samples are generally attributed to blank contamination. Detected analytes within two times the concentration detected in the blanks are considered artifacts due to potential contamination from the rubber stoppers and are qualified with a B. Note that chlorinated compounds were not detected in blank samples, and the detections are valid.

5.0 SOIL GAS RESULTS

Soil gas results presented in Table 1 and Figure 3 are reported in micrograms (μg) and represent the mass of contaminants passively adsorbed during a 10-day period. Several low level, non-halogenated hydrocarbons were detected in project samples; however, many of these results were attributed to blank contamination and are not considered valid detections (see Section 4.0). Detected results greater than twice the blank concentrations are considered valid and are discussed further.

Soil gas concentrations were low and detected compounds varied between sample locations. With the exception of M-07, only one to three analytes were detected at each location. In general, the largest number of contaminants with the highest concentrations was detected in M-07. The following analytes were detected in that sample: benzene, ethylbenzene, m+p-xylenes, o-xylene, 1,3,5-trimethylbenzene, octane, TPH, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride. All analytes were detected at their highest concentrations in this location except m+p-xylenes, which were detected in greater concentrations in M-09 and M-11. Several of these analytes including octane, TPH, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride were not detected (above reporting limits and blank contamination) elsewhere.

Benzene was also detected in location M-08 (35 feet east of M-07), but at a concentration of 0.03 μg , which was just above the reporting limit of 0.02 μg . Benzene was the only analyte detected in this location.

Elevated total BTEX results were detected in samples from M-07, M-09, and M-11; M-09 was the location of the former used oil tank and M-11 is immediately south in the direction of groundwater flow. Since benzene was not detected in M-09 or M-11, the elevated BTEX results were primarily due to ethylbenzene and xylenes concentrations.

Chlorinated compounds were detected in three soil gas sample locations; PCE was detected in the sample from location M-02; cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride (breakdown products of PCE) were detected in the sample from M-07; and a low level chloroform concentration was detected in M-01. The PCE detection is consistent with historical groundwater detections on the north side of the building. Chloroform is not a breakdown product but has historically been detected in groundwater samples (RSE, 2012) collected from this site.

Low levels of undecane were detected in three locations, M-05, M-10, and M-12. Undecane, a common component of diesel fuels, was not analyzed for in soil or groundwater samples as it is not a typical contaminant of concern.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this work was to evaluate soil gas conditions in the northwest corner of the former Mammoth Trucking site. The survey identified an area with potential soil contamination and confirmed the presence of contaminants of concern including TPH, BTEX compounds, PCE, and PCE breakdown products. The analytes identified are generally consistent with analytes historically detected in groundwater and soil samples at the site, although the locations of the soil gas detections are generally not consistent with soil and groundwater detections.

Detected concentrations were low and the type of compounds varied highly between sample locations. With the exception of location M-07, no more than three compounds were detected at any one location. Elevated hydrocarbons and chlorinated VOCs were only identified in sample location M-07, located 50 feet west of the building.

Based on the survey results, there does not appear to be any soil gas concerns except possibly near location M-07. While soil gas screening results from M-07 were generally representative of historical soil concentrations detected in samples from boring CHSB2, soil screening results did not correlate well with soil/groundwater data from samples collected adjacent to the west end of the existing building near the former UST excavation. It is recommended that quantitative soil gas samples be collected to evaluate gas concentrations at locations M-07, M-08, and M-09.

7.0 REFERENCES

ADEC, 2012. *Vapor Intrusion Guidance for Contaminated Sites*. October.

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

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

CH2MHill, 1999. *Former Mammoth Trucking Release Investigation*. February.

Clarus Technologies, LLC, 2010. *Groundwater Monitoring Report, Former Mammoth Trucking Facility, Anchorage, Alaska, D-0012-01*. December.

Restoration Science & Engineering, LLC, 2012. *Groundwater Monitoring Report, Former Mammoth Trucking Facility, 1048 Whitney Road, Anchorage, Alaska, ADEC File No. 2100.26.202*. October.

Attachments:

Table 1 – Soil Gas Results

Figure 1 – Vicinity Map

Figure 2 – Groundwater and Soil Cleanup Level Exceedences

Figure 3 – Detected Analytes in Soil Gas Samples

Appendix A – Photolog

Appendix B – AGI Laboratory Report

Appendix C – ADEC Laboratory Review Checklist

Table 1 - Soil Gas Sample Results
Former Mammoth Trucking Site (AGI Project: ENV 30000066)

FIELD_ID	MODULE_ID	MATRIX	UNITS	1-1-1-2-Tetrachloroethane	1-1-1-Trichloroethane	1-1-2-2-Tetrachloroethane	1-1-2-Trichloroethane	1-1-Dichloroethane	1-1-Dichloroethene	1-2-4-Trimethylbenzene	1-2-Dichlorobenzene	1-2-Dichloroethane
TB1	716772	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06 B	<0.02	<0.02
M-01	716773	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
M-02	716774	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05 B	<0.02	<0.02
M-03	716775	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
M-04	716776	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
M-05	716777	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04 B	<0.02	<0.02
M-06	716778	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04 B	<0.02	<0.02
M-07	716779	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.13 B	<0.02	<0.02
M-08	716780	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04 B	<0.02	<0.02
M-09	716781	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03 B	<0.02	<0.02
M-10	716782	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02 B	<0.02	<0.02
M-11	716783	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03 B	<0.02	<0.02
M-12	716784	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
TB2	716785	SOILGAS	µg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.08 B	<0.02	<0.02

FIELD_ID	MODULE_ID	MATRIX	UNITS	1-3-5-Trimethylbenzene	1-3-Dichlorobenzene	1-4-Dichlorobenzene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Benzene	Carbon Tetrachloride	Chlorobenzene
TB1	716772	SOILGAS	µg	0.06 B	<0.02	<0.02	0.07 B	<0.05	<0.05	<0.02	<0.02	<0.02
M-01	716773	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-02	716774	SOILGAS	µg	0.02 B	<0.02	<0.02	0.1 B	<0.05	<0.05	<0.02	<0.02	<0.02
M-03	716775	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-04	716776	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-05	716777	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-06	716778	SOILGAS	µg	0.02 B	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-07	716779	SOILGAS	µg	0.52	<0.02	<0.02	<0.05	<0.05	<0.05	0.73	<0.02	<0.02
M-08	716780	SOILGAS	µg	0.04 B	<0.02	<0.02	0.07 B	<0.05	<0.05	0.03	<0.02	<0.02
M-09	716781	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-10	716782	SOILGAS	µg	0.03 B	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-11	716783	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
M-12	716784	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
TB2	716785	SOILGAS	µg	0.07 B	<0.02	<0.02	0.08 B	<0.05	<0.05	<0.02	<0.02	<0.02

Passive soil gas samples were collected with universal samplers provided by Amplified Geochemical Imaging, LLC (AGI) utilizing a 10-day deployment between October 4 and 14, 2013.

Bolded results were detected above the reporting limit. Highlighted results are valid results in excess of two times that detected in blank samples.

TB1 = Trip Blank #1; TB2 = Trip Blank #2

µg = micrograms

B = Analyte detection is attributed to blank contamination.

Table 1 - Soil Gas Sample Results
Former Mammoth Trucking Site (AGI Project: ENV 3000066)

FIELD_ID	MODULE_ID	MATRIX	UNITS	Chloroform	cis-1-2-Dichloroethene	Ethylbenzene	Fluorene	m-p-Xylene	Methyl tert-butyl ether	Naphthalene	o-Xylene	Octane
TB1	716772	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.04 B	<0.02	0.14 B	<0.02	0.02 B
M-01	716773	SOILGAS	µg	0.04	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02
M-02	716774	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.04 B	<0.02	<0.05	0.03 B	0.05 B
M-03	716775	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02
M-04	716776	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02
M-05	716777	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.04 B	<0.02	<0.05	0.02 B	0.04 B
M-06	716778	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.04 B	<0.02	<0.05	<0.02	<0.02
M-07	716779	SOILGAS	µg	<0.02	0.65	0.37	<0.05	0.15	<0.02	<0.05	0.27	1.88
M-08	716780	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.03 B	<0.02	0.05 B	<0.02	0.02 B
M-09	716781	SOILGAS	µg	<0.02	<0.02	0.04	<0.05	0.25	<0.02	<0.05	0.13	<0.02
M-10	716782	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	0.07 B	<0.02	0.02 B
M-11	716783	SOILGAS	µg	<0.02	<0.02	0.04	<0.05	0.21	<0.02	<0.05	0.12	0.02 B
M-12	716784	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.03 B	<0.02	<0.05	<0.02	0.04 B
TB2	716785	SOILGAS	µg	<0.02	<0.02	<0.02	<0.05	0.06 B	<0.02	0.18 B	0.02 B	0.03 B

FIELD_ID	MODULE_ID	MATRIX	UNITS	Pentadecane	Tetrachloroethene	Toluene	TPH	trans-1-2-Dichloroethene	Trichloroethene	Tridecane	Undecane	Vinyl Chloride
TB1	716772	SOILGAS	µg	0.1 B	<0.02	0.09 B	13.83 B	<0.02	<0.02	0.19 B	0.11 B	<0.20
M-01	716773	SOILGAS	µg	<0.05	<0.02	0.02 B	5.15 B	<0.02	<0.02	0.06 B	0.07 B	<0.20
M-02	716774	SOILGAS	µg	0.17 B	0.08	0.03 B	11.76 B	<0.02	<0.02	0.31 B	0.17 B	<0.20
M-03	716775	SOILGAS	µg	<0.05	<0.02	0.03 B	4.2 B	<0.02	<0.02	0.06 B	<0.05	<0.20
M-04	716776	SOILGAS	µg	0.07 B	<0.02	0.03 B	4.07 B	<0.02	<0.02	0.12 B	<0.05	<0.20
M-05	716777	SOILGAS	µg	0.17 B	<0.02	0.02 B	13.58 B	<0.02	<0.02	0.17 B	0.48	<0.20
M-06	716778	SOILGAS	µg	0.1 B	<0.02	0.03 B	4.39 B	<0.02	<0.02	0.06 B	<0.05	<0.20
M-07	716779	SOILGAS	µg	0.08 B	<0.02	0.05 B	610.44	0.04	<0.02	0.09 B	0.11 B	2.93
M-08	716780	SOILGAS	µg	0.07 B	<0.02	0.03 B	6.96 B	<0.02	<0.02	0.07 B	0.06 B	<0.20
M-09	716781	SOILGAS	µg	<0.05	<0.02	0.03 B	3.82 B	<0.02	<0.02	<0.05	0.07 B	<0.20
M-10	716782	SOILGAS	µg	0.12 B	<0.02	0.03 B	30.21 B	<0.02	<0.02	0.2 B	0.57	<0.20
M-11	716783	SOILGAS	µg	<0.05	<0.02	0.02 B	5.4 B	<0.02	<0.02	0.07 B	0.14 B	<0.20
M-12	716784	SOILGAS	µg	0.05 B	<0.02	<0.02	23.06 B	<0.02	<0.02	0.35 B	0.48	<0.20
TB2	716785	SOILGAS	µg	0.14 B	<0.02	0.08 B	15.46 B	<0.02	<0.02	0.23 B	0.14 B	<0.20

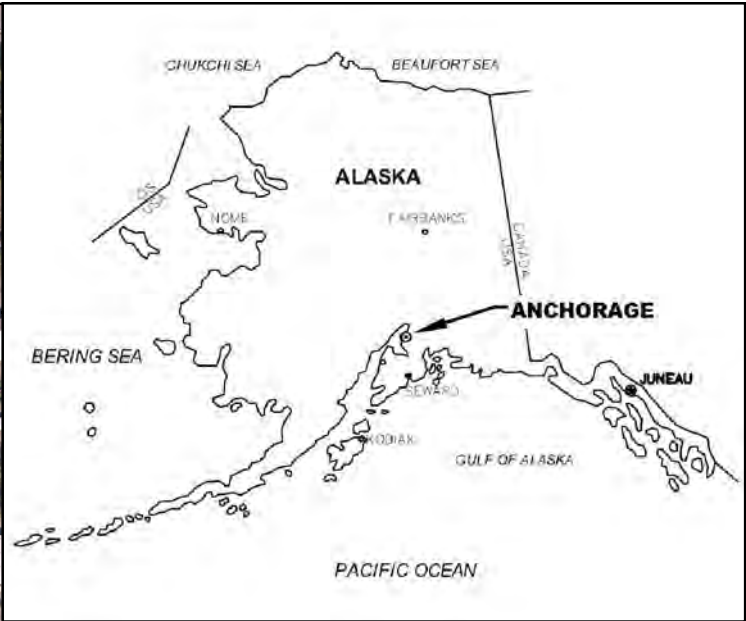
Passive soil gas samples were collected with universal samplers provided by Amplified Geochemical Imaging, LLC (AGI) utilizing a 10-day deployment between October 4 and 14, 2013.

Bolded results were detected above the reporting limit. Highlighted results are valid results in excess of two times that detected in blank samples.

TB1 = Trip Blank #1; TB2 = Trip Blank #2

µg = micrograms

B = Analyte detection is attributed to blank contamination.



NOTES:

Source: Aerial Imagery was provided by Alaska Mapped (UAF-GINA/SDMI <http://alaskamapped.org/bdl>)

The Former Mammoth Trucking Site is located at 1048 E. Whitney Road in Anchorage, Alaska.

Fairbanks Environmental Services
3538 International Street
Fairbanks, Alaska 99701



ALASKA RAILROAD CORPORATION

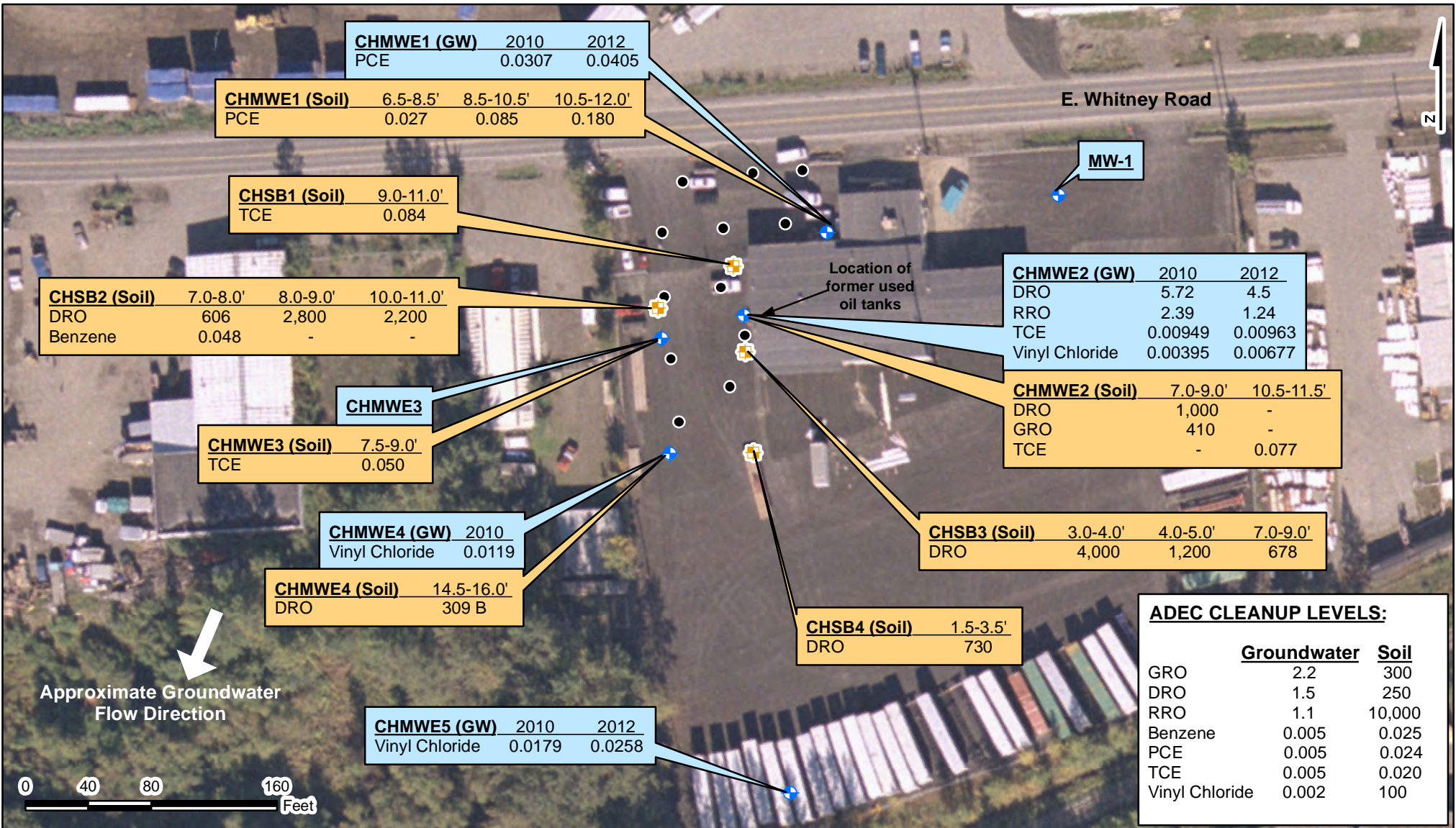
Vicinity Map

Former Mammoth Trucking Site
Anchorage, Alaska

CONTRACT:
85304

FIGURE:
1

DATE:
11/13



CHMWE1 (GW)			
	2010	2012	
PCE	0.0307	0.0405	

CHMWE1 (Soil)			
	6.5-8.5'	8.5-10.5'	10.5-12.0'
PCE	0.027	0.085	0.180

CHSB1 (Soil)	
TCE	0.084

CHSB2 (Soil)			
	7.0-8.0'	8.0-9.0'	10.0-11.0'
DRO	606	2,800	2,200
Benzene	0.048	-	-

CHMWE3

CHMWE3 (Soil)	
TCE	0.050

CHMWE4 (GW)	
Vinyl Chloride	0.0119

CHMWE4 (Soil)	
DRO	309 B

CHMWE2 (GW)		
	2010	2012
DRO	5.72	4.5
RRO	2.39	1.24
TCE	0.00949	0.00963
Vinyl Chloride	0.00395	0.00677

CHMWE2 (Soil)		
	7.0-9.0'	10.5-11.5'
DRO	1,000	-
GRO	410	-
TCE	-	0.077

CHSB3 (Soil)			
	3.0-4.0'	4.0-5.0'	7.0-9.0'
DRO	4,000	1,200	678

CHSB4 (Soil)	
DRO	730

CHMWE5 (GW)		
	2010	2012
Vinyl Chloride	0.0179	0.0258

ADEC CLEANUP LEVELS:		
	Groundwater	Soil
GRO	2.2	300
DRO	1.5	250
RRO	1.1	10,000
Benzene	0.005	0.025
PCE	0.005	0.024
TCE	0.005	0.020
Vinyl Chloride	0.002	100


NOTES:
 Only results in excess of ADEC groundwater and Method Two soil cleanup levels are displayed. Groundwater results are displayed in milligrams per liter (mg/L). Soil results are displayed in milligrams per kilogram (mg/Kg).
 Soil boring and monitoring well locations were approximated. Groundwater results from Clarus, 2010 and Restoration Science & Engineering, 2012. Soil results from CH2M Hill, 1999.
 GRO - gasoline range organics PCE - tetrachloroethene
 DRO - diesel range organics TCE - trichloroethene
 RRO - residual range organics bgs - below ground surface

KEY:

CHMWE4 (GW) 2010 Vinyl Chloride 11.9	← Year Groundwater Sample Collected
CHMWE4 (Soil) 14.5-16.0' DRO 309,000 B	← Sample Depth (feet bgs)

- ☒ 1998 Soil Boring Location
- ⊕ 1998 Soil Boring Completed as a Monitoring Well
- 2013 Passive Soil Gas Sample Location

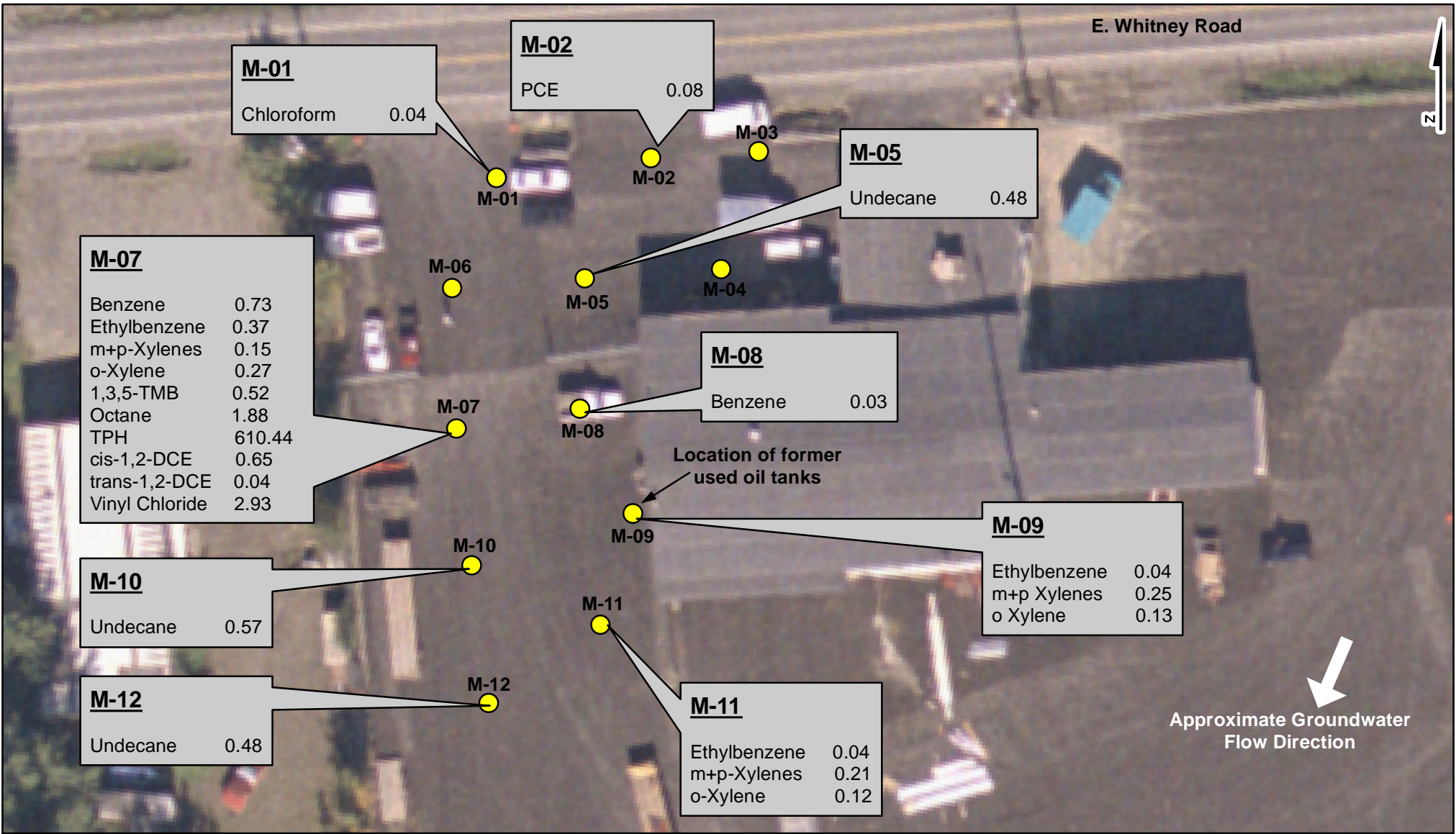
Fairbanks Environmental Services
 3538 International Street
 Fairbanks, Alaska 99701



ALASKA RAILROAD CORPORATION

Groundwater and Soil Cleanup Level Exceedances
 Former Mammoth Trucking Site
 Anchorage, Alaska

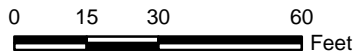
CONTRACT: 85304	FIGURE: 2	DATE: 11/13
--------------------	--------------	----------------



NOTES:

Results shown are detections in excess of 2 times the concentrations found in blank samples.

1,3,5-TMB = 1,3,5-Trimethylbenzene
 TPH = Total Petroleum Hydrocarbons
 cis-1,2-DCE = cis-1,2-Dichloroethene
 trans-1,2-DCE = trans-1,2-Dichloroethene
 PCE = tetrachloroethene



Passive Soil Gas Sample Location

M-09

M-09

Ethylbenzene 0.04
 m+p Xylenes 0.25
 o Xylene 0.13

All results are reported in micrograms (µg)

Fairbanks Environmental Services
 3538 International Street
 Fairbanks, Alaska 99701



ALASKA RAILROAD CORPORATION

Detected Analytes in Soil Gas Samples

Former Mammoth Trucking Site
 Anchorage, Alaska

CONTRACT: 85304

FIGURE: 3

DATE: 11/13

APPENDIX A
PHOTOLOG



Photograph 1 – Drilling a hole in soil at location M-07 (3/4-inch-diameter by 32-inch drill bit). View to the east.



Photograph 2 – Soil gas locations were measured using a GPS. View to the north.



Photograph 3 – Close-up of module# 716776 tied to the black rubber stopper with string.



Photograph 4 – AGI Universal Samplers were 11 inches long when uncoiled.



Photograph 5 – Preparing to deploy Universal Sampler at M-04.



Photograph 6 – An insertion rod was used ensure the Universal Samplers were at the bottom of each hole.



Photograph 7 – Black stoppers were installed below grade in the active parking lot.



Photograph 8 – Upon retrieval after 10 days of deployment, Universal Samplers were returned to the lab in glass vials.



Photograph 9 – After sampling was completed, each hole was backfilled with sand.



Photograph 10 – Cold patch was installed in the top 4 inches, then holes were sealed with elastic crack filler.

APPENDIX B
AGI LABORATORY REPORT 30000066



AMPLIFIED
GEOCHEMICAL
IMAGING, LLC

Laboratory Report

Site: Mammoth Trucking

Prepared for:

FAIRBANKS ENVIRONMENTAL
2400 Spenard Road
Anchorage, AK

Prepared on:
October 28, 2013

Project Summary and Objective

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:

Mammoth Trucking

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described below for the requested organic compounds, reporting of the data, and contour mapping (as needed).

This report includes results for only the samples noted under the Laboratory Sample Report section. If contour maps are part of the project deliverable, the maps will be prepared and issued under a separate report cover, upon receipt of a usable sitemap (electronic) and compound choices for contouring.

Written/submitted by:

Dayna M Cobb

Project Manager

Reviewed/approved by:

Jay W Hodny

Project Manager

Analytical data approved by:

Jasmine R. Smith

Chemist

Quality Assurance Statement

The AGI Laboratory, at Amplified Geochemical Imaging's facility in Elkton, MD USA, operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, and its Quality Assurance Manual, Operating Procedures, and Methods (SPG-SOP-0462).

For this project, the analytical method, results, and observations reported do [] do not [✓] fall within the scope of AGI's ISO 17025 accreditation.

Screening/Concentration Method

The AGI Universal Samplers are analyzed at AGI's fixed laboratory using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following U.S. EPA Method 8260 (SPG-WI-0292) which includes the following:

- **BFB Tuning Frequency:** A BFB tune is analyzed at the start of each analytical run and after every 30 samples.
- **Initial Calibration:** A minimum of a five point calibration curve is analyzed prior to the analysis of samples.
- **Linearity of Target Compounds:** If the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for a target compound a regression equation can be used for quantitation.
- **Continuing Calibration Verification:** After every 10 samples, and at the end of each analytical batch, and a second-source Reference Standard is analyzed near the mid point of the calibration curve. The acceptance criteria for all target analytes in the reference standards are +/- 50% of the true value.
- **Method Blank:** Analyzed prior to the analysis of field samples and every 30 samples.

Note: Analyte levels reported for the field-deployed AGI Universal Samplers that exceed trip and method blank levels, and/or the reporting limit, are more likely to have originated from on-site sources.

Media Sampled:	SOIL GAS
Chemist - sample analysis:	Fatima Niazi
Chemist - data processor:	Fatima Niazi
Chemist - data review:	Jasmine R. Smith

Method deviations: The high level standard for MtBE was removed in order to maintain linearity.

Please note that data file names ending with R are rerun samples using the second pair of sorbers, in which the original results were not reported. Data file names ending in D are duplicate analysis results for the second set of sorbers from the same sampler, and are reported.

Additional Report Information

- Comments
- Laboratory Sample Report
- Chain of Custody
- Installation and Retrieval Log
- Data Table(s) and Key (if needed)
- Concentration Calculation Method Summary (as applicable)
- Total Ion Chromatograms

Project Specific Comments

Trip blanks 716772 and 716785 contained hits above the reporting limits for several compounds. There were no other trip blanks associated with this project.

Survey period ¹	Samplers were installed on October 4, 2013 and retrieved on October 14, 2013 for an exposure period of 10 days.	
Tamper seal intact:	Yes	
Date received:	10/15/2013	By: Scott Kirlin
COC returned:	Yes	
Comments:	None.	

1 - Installation start to end of retrieval, as reported. See installation and retrieval log for individual deployment and retrieval dates and times (i.e., sampler exposure time).

General Comments

Analytical QA/QC

Laboratory instrumentation consists of gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation involves cutting the tip off the bottom of the AGI Universal Sampler, and transferring one or more "sorbents" to a thermal desorption tube for analysis. The insertion/retrieval cord prevents soil, water and other interferences from coming in contact with the adsorbent. No further sample preparation is required. Any replicate sorbents not consumed in the initial analysis will be discarded fifteen (15) days from the date of the laboratory report.

Data are archived and stored in a secure manner as per AGI's Quality Assurance program (SPG-SOP-0462).

Total petroleum hydrocarbons (TPH), gasoline-range petroleum hydrocarbons (GRPH), and/or diesel range petroleum hydrocarbons (DRPH), when reported, are calculated using the area under the peaks observed in m/z 55 and 57 selected ion chromatograms. Quantitation of the mass values was performed using the response factor for a specific alkane (present in the calibration standards). TPH values include the entire chromatogram and provide estimates for aliphatic hydrocarbon ranges of C4 to C20. GRPH and DRPH include only the relevant regions of the chromatograms and provide estimates for C4 to C10 and C10 to C20 aliphatic hydrocarbons, respectively.

Trip blanks were provided to document potential exposures that were not part of the signal of interest (e.g., impact during sampler shipment, installation and/or retrieval, and storage). The trip blanks are identically manufactured and packaged AGI Universal Samplers to those samplers deployed in the field. The trip blanks remain unopened during all phases of the project. Levels reported on the trip blanks may indicate potential impact to the samplers other than the contaminant source of interest.

Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. UPEs may be indicative of complex fluid mixtures. UPEs observed early in the chromatograms are considered to indicate presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.

Total ion chromatograms (TICs) are included in the Attachments. The eight-digit serial number of each sampler is incorporated in the TIC identification (e.g., 12345678.D represents AGI Universal Sampler 12345678).

General Comments

Soil Gas Sampling

For soil gas sampling, the AGI Environmental Survey reports mass levels migrating through the open pore spaces of the soil and diffusing through the sampler membrane for sorption by the engineered, hydrophobic adsorbents, housed within the membrane tube. During the migration of the soil gas away from the source to the AGI Universal Sampler, the vapors are subject to a variety of attenuation factors. The soil gas masses reported on the samplers compare favorably with the concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels to other sampled locations on the site, the matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.

Soil gas concentrations ($\mu\text{g}/\text{m}^3$) are calculated following the method described in the Additional Report Information section.

Soil gas signals reported by this method cannot be correlated specifically to soil adsorbed, groundwater, and/or free-phase contamination. The soil gas signal reported from each AGI Universal Sampler can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).

Air Sampling

For indoor, outdoor, and crawlspace air sampling, the AGI Environmental Survey reports mass levels present in the air and diffusing through the sampler membrane for sorption by the engineered adsorbents housed within the membrane tube.

Air concentrations ($\mu\text{g}/\text{m}^3$) are calculated following the method described in the Additional Report Information section.

Groundwater and Sediment Porewater Sampling

For groundwater and sediment porewater sampling, the AGI Environmental Survey reports the mass levels of compounds present in the water which, when coming in contact with the sampler membrane, partitions out of solution, and diffuses through the sampler membrane for sorption by the engineered adsorbents.

Water concentrations ($\mu\text{g}/\text{L}$) are calculated using the quantified mass, exposure period and the compound specific uptake rate. The rates were measured under controlled experimental conditions. The uptake rates are corrected for water pressure (depth of the AGI Universal Sampler below the water table), water temperature and the aquifer flow rate. For sediment porewater, the uptake rate is corrected for the reduced volume of water in the sediment, by multiplying the uptake rate by the pore water fraction.

LABORATORY SAMPLE REPORT

Project: ENV 3000066

Site Name: Mammoth Trucking

Module Type: SPG0001

Module ID	Sample Type	Field ID
00716772	TRIP_BLANK	TB1
00716773	FIELD_SAMPLE	M-01
00716774	FIELD_SAMPLE	M-02
00716775	FIELD_SAMPLE	M-03
00716776	FIELD_SAMPLE	M-04
00716777	FIELD_SAMPLE	M-05
00716778	FIELD_SAMPLE	M-06
00716779	FIELD_SAMPLE	M-07
00716780	FIELD_SAMPLE	M-08
00716781	FIELD_SAMPLE	M-09
00716782	FIELD_SAMPLE	M-10
00716783	FIELD_SAMPLE	M-11
00716784	FIELD_SAMPLE	M-12
00716785	TRIP_BLANK	TB2

Total # "FIELD SAMPLES"	Total # "TRIP BLANKS"	Total # "UNUSED"	Total # "LOST"
12	2	0	0

Duplicate samples: 0



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 CHESAPEAKE BOULEVARD
ELKTON, MD 21921 USA

SURVEY PRODUCTS GROUP
SPEAKE BOULEVARD ELKTON MARYLAND USA
27600 ENVIRONMENTAL@WLGORE.COM

Production Order #: **30000066**

Soil gas and/or Air Sampling

Customer Name: FAIRBANKS ENVIRONMENTAL
Address: 2400 Spenard Road
SUITE 300
Anchorage, AK 99503

Site Name: Mammoth Trucking
Site Address: **1048 E. Whitney Road
Anchorage, AK 99503**
Project Manager: **MIKE BOESE**

Serial # of GORE Modules Shipped
00716772 - 00716785

# of Modules for Installation	12.00	# of Trip Blanks	2
Total Modules Shipped	14.00	Pieces	
Total Modules Received		Pieces	
Total Modules Installed		Pieces	

Serial # of Trip Blanks (Client Decides)

00716772	00716785	
----------	----------	--

Prepared By: <u>Charlene Galloway</u>	Installation Method: (Circle those that apply) Slide Hammer <input type="checkbox"/> Hammer Drill <input checked="" type="checkbox"/> Auger <input checked="" type="checkbox"/>
Verified By: <u>Charlene Whigham</u>	Other: <u>3/4 bit</u>
Installation Performed By: Name: <u>Mike Boese / Kristin Drenzel</u> Company: <u>FES</u>	Retrieval Performed By: Name: <u>Mike Boese / Drenzel</u> Company: <u>FES</u>
Installation Start Date / Time: <u>1420 10/4/13</u>	Retrieval Start Date / Time: <u>1041 10/14/13</u>
Installation Complete Date / Time: <u>1444 10/4/13</u>	Retrieval Complete Date / Time: <u>1118 10/14/13</u>
Total Modules Retrieved: <u>12</u>	
Total Modules Lost In Field: <u>0</u>	
Total Unused Modules Returned: <u>24</u>	<u>+ TRIP Blanks</u>
Relinquished By: <u>Charlene Galloway</u> Date/Time: <u>8/1/13</u> Company: <u>AGI</u>	Received By: <u>Mike Boese</u> Date/Time: <u>8/5/13</u> Company: <u>FES</u>
Relinquished By: <u>Mike Boese</u> Date/Time: <u>8/14/13</u> Company: <u>FES</u> 1200	Received By: _____ Date/Time: _____ Company: _____
Relinquished By: _____ Date/Time: _____ Company: _____	Received By: <u>[Signature]</u> Date/Time: <u>10-15-13</u> Company: <u>AGI</u> 2:50 PM

Amplified Geochemical Imaging

100 Chesapeake Boulevard
 Elkton, MD USA 21921
 ph: 410-392-7600

AGI Project No: ENV 30000066
Site Name: Mammoth Trucking
Site Location: 1048 E. Whitney Road

**Amplified Geochemical Imaging
 Installation & Retrieval Log**

Company Name: FAIRBANKS ENVIRONMENTAL SERVICES
Location: 2400 Spenard Road, Suite 300, Anchorage, AK 99503
Samples collected by: Mike Boese / Kristin Drenzek

* Optional or as needed

MODULE SERIAL NO.	FIELD ID* (e.g., arbitrary, US EPA)	SAMPLE TYPE (Field Sample, Trip Blank, Field Blank, etc.)	INSTALLATION DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/27/2000 13:00	RETRIEVAL DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 13:00	OBSERVATIONS/COMMENT S* (e.g., sample depth, location description, missing, pulled from hole, etc. - as needed)	SAMPLE ENVIRONMENT* (e.g., grass, bare soil, through slab)	YES / NO		
							EVIDENCE OF LIQUID PETROLEUM HYDROCARBONS?	ODOR ?	WATER IN INSTALLATION HOLE?
00716772	TB1	TRIP_BLANK	10/4/2013 12:00	10/14/2013 11:18	NA	NA	No	No	No
00716773	M-01	FIELD_SAMPLE	10/4/2013 14:37	10/14/2013 10:50	Depth = 21"; Dry	Under Asphalt	No	No	No
00716774	M-02	FIELD_SAMPLE	10/4/2013 14:32	10/14/2013 10:53	Depth = 25"; Moist	Under Asphalt	No	No	No
00716775	M-03	FIELD_SAMPLE	10/4/2013 14:34	10/14/2013 10:57	Depth = 30"; Moist	Under Asphalt	No	No	No
00716776	M-04	FIELD_SAMPLE	10/4/2013 14:20	10/14/2013 10:48	Depth = 21"; Dry	Under Asphalt	No	No	No
00716777	M-05	FIELD_SAMPLE	10/4/2013 14:27	10/14/2013 10:41	Depth = 20.5"; Dry	Under Asphalt	No	No	No
00716778	M-06	FIELD_SAMPLE	10/4/2013 14:41	10/14/2013 10:46	Depth = 20.5"; Dry	Under Asphalt	No	No	No
00716779	M-07	FIELD_SAMPLE	10/4/2013 14:42	10/14/2013 11:10	Depth = 28"; Dry	Under Asphalt	No	No	No
00716780	M-08	FIELD_SAMPLE	10/4/2013 14:29	10/14/2013 11:07	Depth = 24"; Dry	Under Asphalt	No	No	No
00716781	M-09	FIELD_SAMPLE	10/4/2013 14:25	10/14/2013 11:02	Depth = 24"; Dry	Under Asphalt	No	No	No
00716782	M-10	FIELD_SAMPLE	10/4/2013 14:39	10/14/2013 11:16	Depth = 23"; Dry	Under Asphalt	No	No	No
00716783	M-11	FIELD_SAMPLE	10/4/2013 14:23	10/14/2013 11:04	Depth = 20"; Dry	Under Asphalt	No	No	No
00716784	M-12	FIELD_SAMPLE	10/4/2013 14:44	10/14/2013 11:14	Depth = 25"; Dry	Under Asphalt	No	No	No
00716785	TB2	TRIP_BLANK	10/4/2013 12:01	10/14/2013 11:17	NA	NA	No	No	No

**Amplified Geochemical
Installation & Retrieval**

* Optional or as needed

MODULE SERIAL NO.	SOIL TYPE		PROJECTED COORDINATES X (EASTING)	PROJECTED COORDINATES Y (NORTHING)	COORDINATE SYSTEM* (e.g., UTM Zone, Stateplane, etc.)	COORDINATE DATUM* (e.g., WGS 84)
	SOIL TYPE AT MODULE DEPTH (clay, loamy sand etc.)	TOTAL SOIL POROSITY AT MODULE DEPTH* (total volume of pores/total volume)				
00716772	SAND		NA	NA	UTM zone 6N, meters	WGS84
00716773	SAND		346210.7509	6791220.1495	UTM zone 6N, meters	WGS84
00716774	SAND		346224.1345	6791221.9621	UTM zone 6N, meters	WGS84
00716775	SAND		346233.0057	6791222.7207	UTM zone 6N, meters	WGS84
00716776	SAND		346229.7541	6791212.2407	UTM zone 6N, meters	WGS84
00716777	SAND		346218.2599	6791211.6468	UTM zone 6N, meters	WGS84
00716778	SAND		346207.4606	6791209.3506	UTM zone 6N, meters	WGS84
00716779	SAND		346206.5405	6791197.8846	UTM zone 6N, meters	WGS84
00716780	SAND		346217.8889	6791201.1140	UTM zone 6N, meters	WGS84
00716781	SAND		346222.4741	6791191.8738	UTM zone 6N, meters	WGS84
00716782	SAND		346208.0541	6791185.9399	UTM zone 6N, meters	WGS84
00716783	SAND		346219.2457	6791180.4500	UTM zone 6N, meters	WGS84
00716784	SAND		346209.1153	6791173.1587	UTM zone 6N, meters	WGS84
00716785	SAND		NA	NA	UTM zone 6N, meters	WGS84



PROJECT NUMBER: ENV 3000066
SITE NAME: Mammoth Trucking
SITE ADDRESS:

FOR: FAIRBANKS ENVIRONMENTAL
Anchorage, AK 99503

SAMPLER ID: 00716772 TRIP_BLANK

Dilution Factor: 1 Field ID: TB1

Installation Date: 10/4/2013 12:00:00PM

Retrieval Date: 10/14/2013 11:18:00AM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Reviewer: Jasmine R. Smith

Matrix: SOIL GAS

Porosity: 0.38

Product: SPG0001

Water Filled Voids: 0.14

Date Analyzed: 10/24/2013 9:59:00PM

Batch: ENV-131021-1

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.09	0.02
Octane	111-65-9	0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.04	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.06	0.02
1,2,4-Trimethylbenzene	95-63-6	0.06	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.11	0.05
Naphthalene	91-20-3	0.14	0.05
Tridecane	629-50-5	0.19	0.05
2-Methylnaphthalene	91-57-6	0.07	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716772 TRIP_BLANK

Dilution Factor: 1

Field ID: TB1

Matrix: SOIL GAS

Product: SPG0001

Installation Date: 10/4/2013 12:00:00PM

Retrieval Date: 10/14/2013 11:18:00AM

Porosity: 0.38

Water Filled Voids: 0.14

Date Analyzed: 10/24/2013 9:59:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.10	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		13.83	0.50
BTEX		0.13	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716773 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-01

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:37:00PM

Retrieval Date: 10/14/2013 10:50:00AM

Date Analyzed: 10/24/2013 7:13:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	0.04	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.02	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.07	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.06	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716773 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-01

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:37:00PM

Retrieval Date: 10/14/2013 10:50:00AM

Date Analyzed: 10/24/2013 7:13:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		5.15	0.50
BTEX		0.02	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716774 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-02

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:32:00PM

Retrieval Date: 10/14/2013 10:53:00AM

Date Analyzed: 10/24/2013 7:40:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	0.05	0.02
Tetrachloroethene	127-18-4	0.08	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.04	0.02
o-Xylene	95-47-6	0.03	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	0.05	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.17	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.31	0.05
2-Methylnaphthalene	91-57-6	0.10	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716774 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-02

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:32:00PM

Retrieval Date: 10/14/2013 10:53:00AM

Date Analyzed: 10/24/2013 7:40:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.17	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		11.76	0.50
BTEX		0.10	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716775 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-03

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:34:00PM

Retrieval Date: 10/14/2013 10:57:00AM

Date Analyzed: 10/24/2013 10:27:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.06	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716775 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-03

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:34:00PM

Retrieval Date: 10/14/2013 10:57:00AM

Date Analyzed: 10/24/2013 10:27:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		4.20	0.50
BTEX		0.03	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716776 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-04

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:20:00PM

Retrieval Date: 10/14/2013 10:48:00AM

Date Analyzed: 10/24/2013 10:55:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.12	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716776 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-04

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:20:00PM

Retrieval Date: 10/14/2013 10:48:00AM

Date Analyzed: 10/24/2013 10:55:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.07	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		4.07	0.50
BTEX		0.03	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716777 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-05

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:27:00PM

Retrieval Date: 10/14/2013 10:41:00AM

Date Analyzed: 10/24/2013 8:36:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.02	0.02
Octane	111-65-9	0.04	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.04	0.02
o-Xylene	95-47-6	0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	0.04	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.48	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.17	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716777 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-05

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:27:00PM

Retrieval Date: 10/14/2013 10:41:00AM

Date Analyzed: 10/24/2013 8:36:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.17	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		13.58	0.50
BTEX		0.08	0.02



PROJECT NUMBER: ENV 30000066
SITE NAME: Mammoth Trucking
SITE ADDRESS:

FOR: FAIRBANKS ENVIRONMENTAL
Anchorage, AK 99503

SAMPLER ID: 00716778 FIELD_SAMPLE

Dilution Factor: 1 Field ID: M-06

Installation Date: 10/4/2013 2:41:00PM

Retrieval Date: 10/14/2013 10:46:00AM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Date Analyzed: 10/24/2013 11:50:00PM

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Matrix: SOIL GAS

Product: SPG0001

Porosity: 0.38

Water Filled Voids: 0.14

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.04	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	0.04	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	<0.05	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.06	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716778 FIELD_SAMPLE

Dilution Factor: 1

Field ID: M-06

Matrix: SOIL GAS

Porosity: 0.38

Product: SPG0001

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:41:00PM

Retrieval Date: 10/14/2013 10:46:00AM

Date Analyzed: 10/24/2013 11:50:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.10	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		4.39	0.50
BTEX		0.06	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716779 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-07

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:42:00PM

Retrieval Date: 10/14/2013 11:10:00AM

Date Analyzed: 10/24/2013 11:22:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	2.93	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	0.04	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	0.65	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	0.73	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.05	0.02
Octane	111-65-9	1.88	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	0.37	0.02
m,p-Xylene	108-38-3/106-42-3	0.15	0.02
o-Xylene	95-47-6	0.27	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.52	0.02
1,2,4-Trimethylbenzene	95-63-6	0.13	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.11	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.09	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716779 FIELD_SAMPLE

Dilution Factor: 1

Field ID: M-07

Matrix: SOIL GAS

Porosity: 0.38

Product: SPG0001

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:42:00PM

Retrieval Date: 10/14/2013 11:10:00AM

Date Analyzed: 10/24/2013 11:22:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.08	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		610.44	0.50
BTEX		1.57	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716780 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-08

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:29:00PM

Retrieval Date: 10/14/2013 11:07:00AM

Date Analyzed: 10/24/2013 5:22:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	0.03	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.03	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.04	0.02
1,2,4-Trimethylbenzene	95-63-6	0.04	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.06	0.05
Naphthalene	91-20-3	0.05	0.05
Tridecane	629-50-5	0.07	0.05
2-Methylnaphthalene	91-57-6	0.07	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716780 FIELD_SAMPLE

Dilution Factor: 1

Field ID: M-08

Matrix: SOIL GAS

Porosity: 0.38

Product: SPG0001

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:29:00PM

Retrieval Date: 10/14/2013 11:07:00AM

Date Analyzed: 10/24/2013 5:22:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.07	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		6.96	0.50
BTEX		0.08	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716781 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-09

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:25:00PM

Retrieval Date: 10/14/2013 11:02:00AM

Date Analyzed: 10/24/2013 6:45:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	<0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	0.04	0.02
m,p-Xylene	108-38-3/106-42-3	0.25	0.02
o-Xylene	95-47-6	0.13	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	0.03	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.07	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	<0.05	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716781 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-09

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:25:00PM

Retrieval Date: 10/14/2013 11:02:00AM

Date Analyzed: 10/24/2013 6:45:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		3.82	0.50
BTEX		0.46	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716782 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-10

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:39:00PM

Retrieval Date: 10/14/2013 11:16:00AM

Date Analyzed: 10/24/2013 6:17:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.03	0.02
Octane	111-65-9	0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.03	0.02
1,2,4-Trimethylbenzene	95-63-6	0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.57	0.05
Naphthalene	91-20-3	0.07	0.05
Tridecane	629-50-5	0.20	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716782 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-10

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:39:00PM

Retrieval Date: 10/14/2013 11:16:00AM

Date Analyzed: 10/24/2013 6:17:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.12	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		30.21	0.50
BTEX		0.03	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716783 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-11

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:23:00PM

Retrieval Date: 10/14/2013 11:04:00AM

Date Analyzed: 10/24/2013 8:08:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.02	0.02
Octane	111-65-9	0.02	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	0.04	0.02
m,p-Xylene	108-38-3/106-42-3	0.21	0.02
o-Xylene	95-47-6	0.12	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	0.03	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.14	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.07	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716783 FIELD_SAMPLE

Dilution Factor: 1

Field ID: M-11

Matrix: SOIL GAS

Product: SPG0001

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:23:00PM

Retrieval Date: 10/14/2013 11:04:00AM

Date Analyzed: 10/24/2013 8:08:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	<0.05	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		5.40	0.50
BTEX		0.39	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716784 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-12

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:44:00PM

Retrieval Date: 10/14/2013 11:14:00AM

Date Analyzed: 10/24/2013 5:49:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Octane	111-65-9	0.04	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.03	0.02
o-Xylene	95-47-6	<0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	<0.02	0.02
1,2,4-Trimethylbenzene	95-63-6	<0.02	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.48	0.05
Naphthalene	91-20-3	<0.05	0.05
Tridecane	629-50-5	0.35	0.05
2-Methylnaphthalene	91-57-6	<0.05	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 3000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716784 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: M-12

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 2:44:00PM

Retrieval Date: 10/14/2013 11:14:00AM

Date Analyzed: 10/24/2013 5:49:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.05	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		23.06	0.50
BTEX		0.03	0.02



PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

Anchorage, AK 99503

SITE ADDRESS:

SAMPLER ID: 00716785 TRIP_BLANK

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: TB2

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 10/4/2013 12:01:00PM

Retrieval Date: 10/14/2013 11:17:00AM

Date Analyzed: 10/24/2013 4:54:00PM

Analyst: Fatima Niazi

Method: SPG-WI-0292

Batch: ENV-131021-1

Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Vinyl Chloride	75-01-4	<0.20	0.20
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,1-Dichloroethene	75-35-4	<0.02	0.02
trans-1,2-Dichloroethene	156-60-5	<0.02	0.02
1,1-Dichloroethane	75-34-3	<0.02	0.02
cis-1,2-Dichloroethene	156-59-2	<0.02	0.02
Chloroform	67-66-3	<0.02	0.02
1,1,1-Trichloroethane	71-55-6	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Carbon Tetrachloride	56-23-5	<0.02	0.02
Trichloroethene	79-01-6	<0.02	0.02
1,1,2-Trichloroethane	79-00-5	<0.02	0.02
Toluene	108-88-3	0.08	0.02
Octane	111-65-9	0.03	0.02
Tetrachloroethene	127-18-4	<0.02	0.02
Chlorobenzene	108-90-7	<0.02	0.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.06	0.02
o-Xylene	95-47-6	0.02	0.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.02	0.02
1,3,5-Trimethylbenzene	108-67-8	0.07	0.02
1,2,4-Trimethylbenzene	95-63-6	0.08	0.02
1,3-Dichlorobenzene	541-73-1	<0.02	0.02
1,4-Dichlorobenzene	106-46-7	<0.02	0.02
1,2-Dichlorobenzene	95-50-1	<0.02	0.02
Undecane	1120-21-4	0.14	0.05
Naphthalene	91-20-3	0.18	0.05
Tridecane	629-50-5	0.23	0.05
2-Methylnaphthalene	91-57-6	0.08	0.05



**AMPLIFIED
GEOCHEMICAL
IMAGING, LLC**

100 Chesapeake Boulevard
Elkton, Maryland 21921 USA
ph: +1-410-392-7600
www.agisurveys.net

PROJECT NUMBER: ENV 30000066

FOR: FAIRBANKS ENVIRONMENTAL

SITE NAME: Mammoth Trucking

SITE ADDRESS:

Anchorage, AK 99503

SAMPLER ID: 00716785 TRIP_BLANK

Dilution Factor: 1

Field ID: TB2

Matrix: SOIL GAS

Product: SPG0001

Installation Date: 10/4/2013 12:01:00PM

Retrieval Date: 10/14/2013 11:17:00AM

Porosity: 0.38

Water Filled Voids: 0.14

Date Analyzed: 10/24/2013 4:54:00PM

Analyst: Fatima Niazi

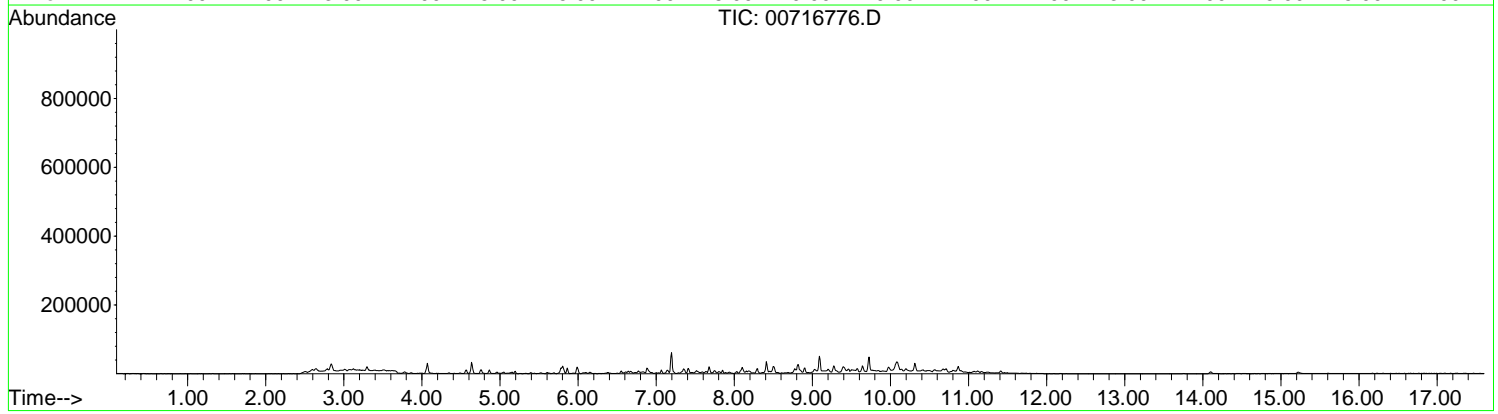
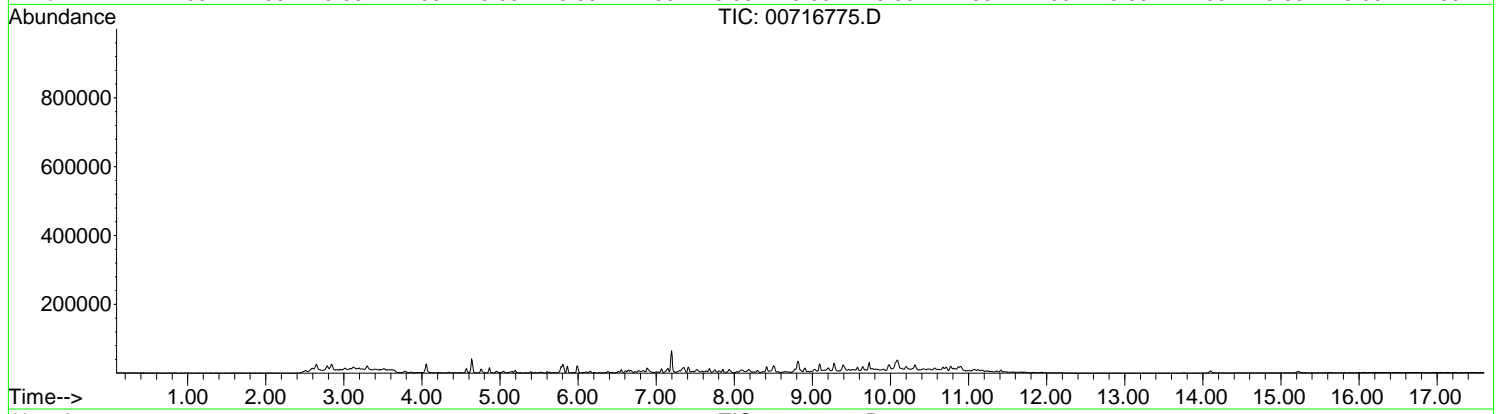
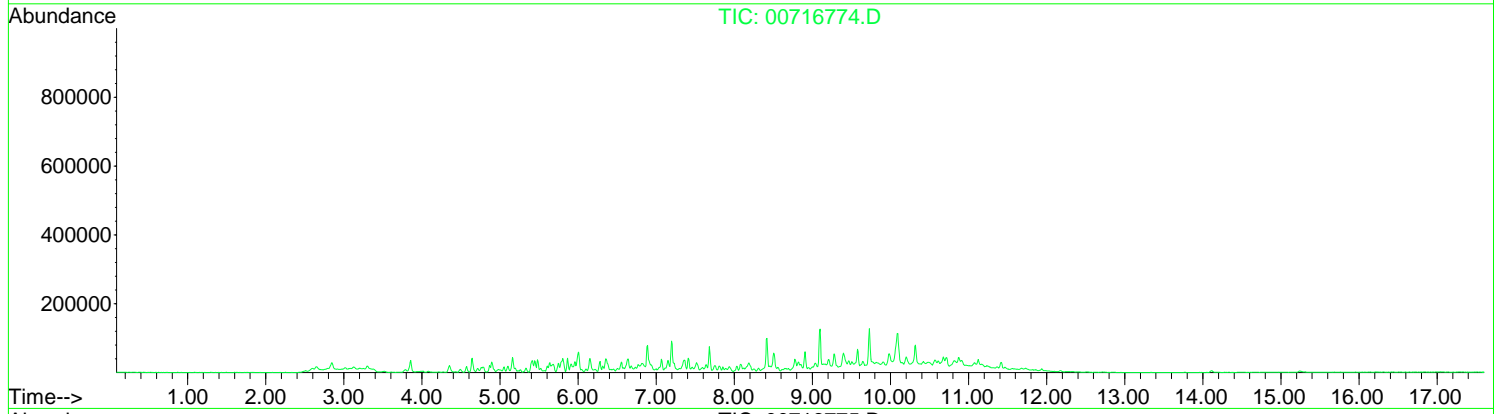
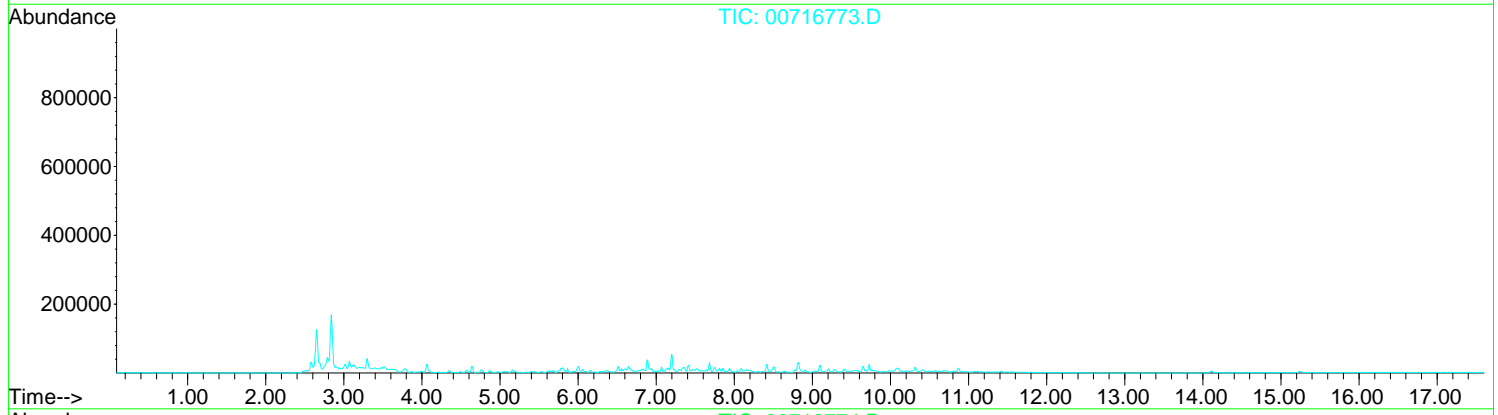
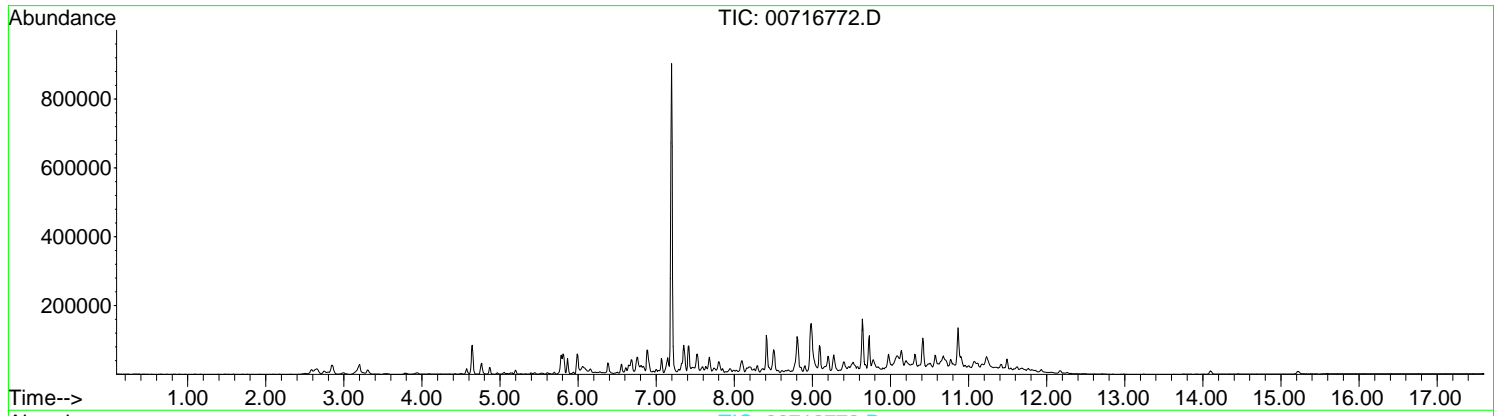
Method: SPG-WI-0292

Batch: ENV-131021-1

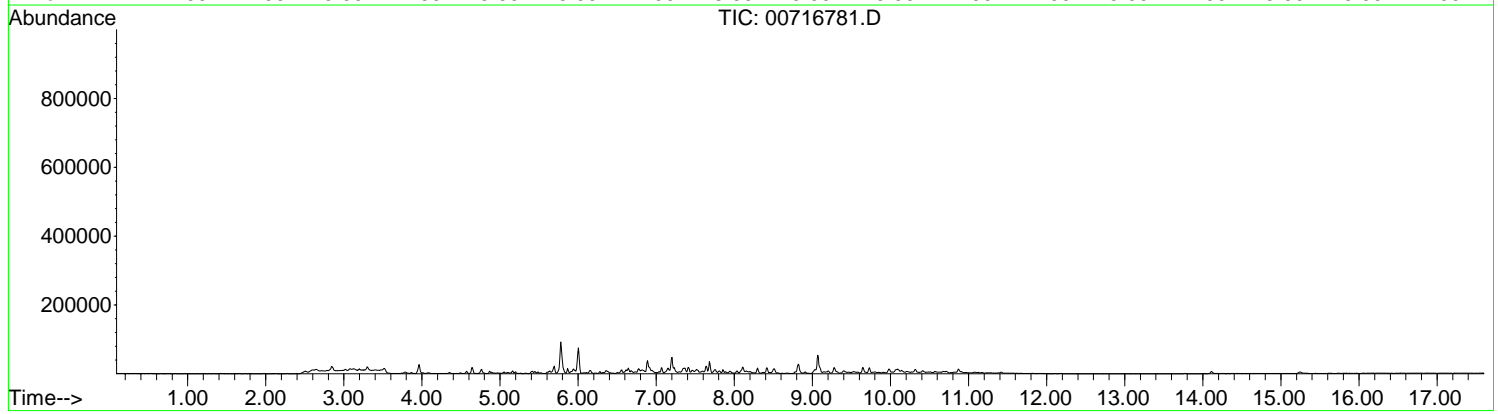
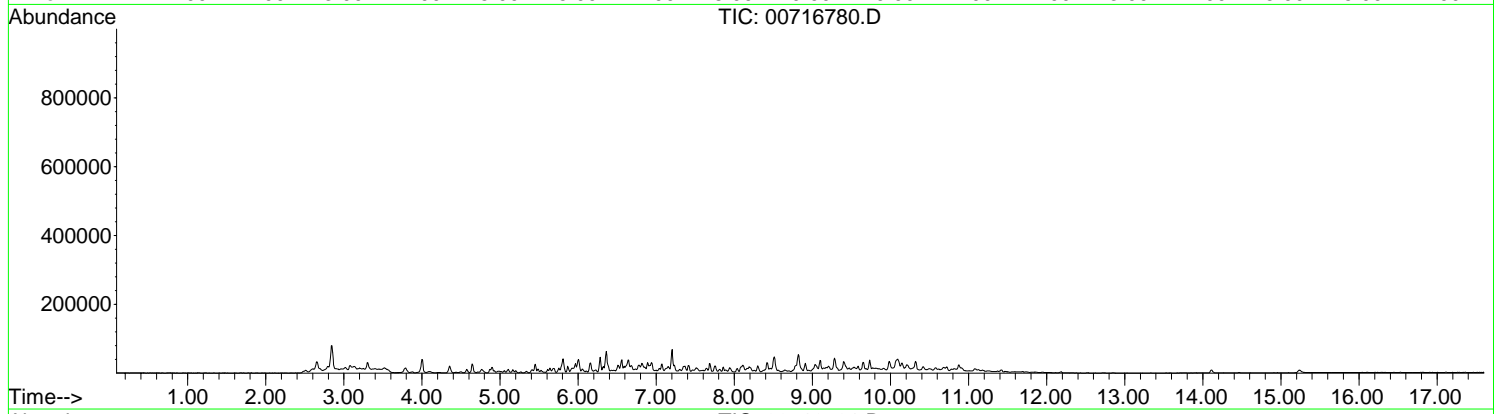
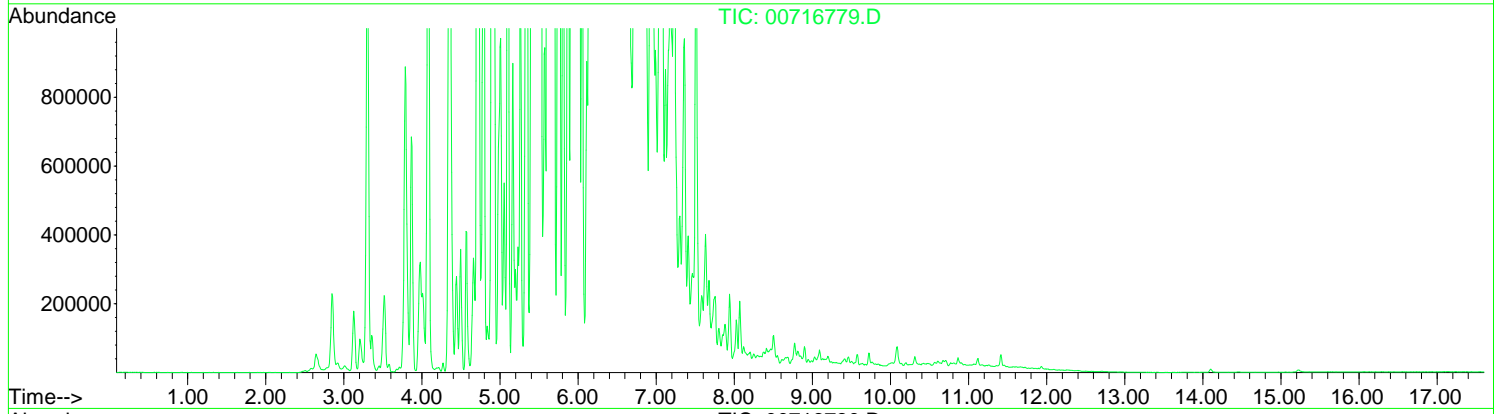
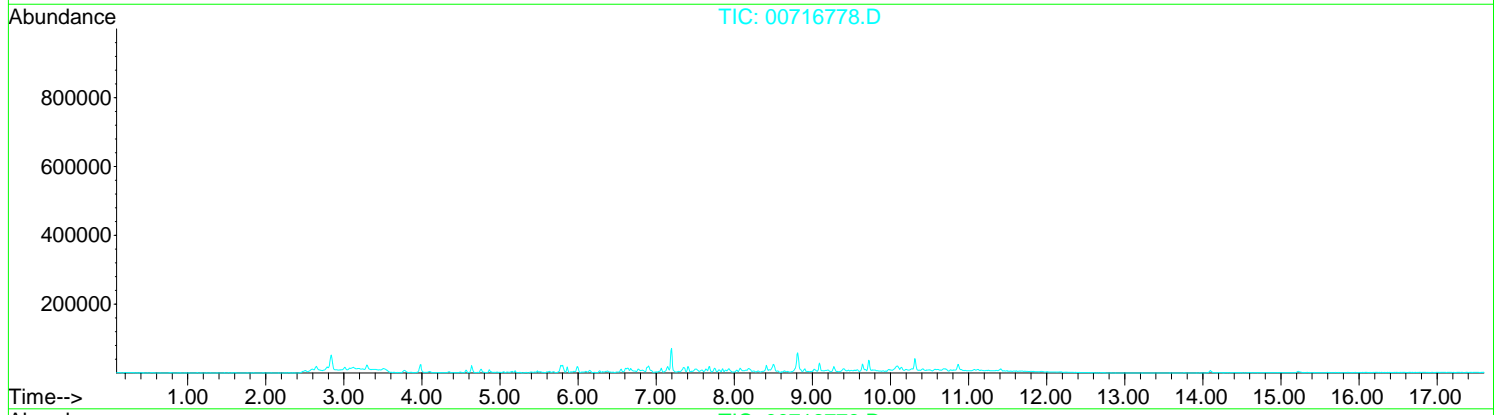
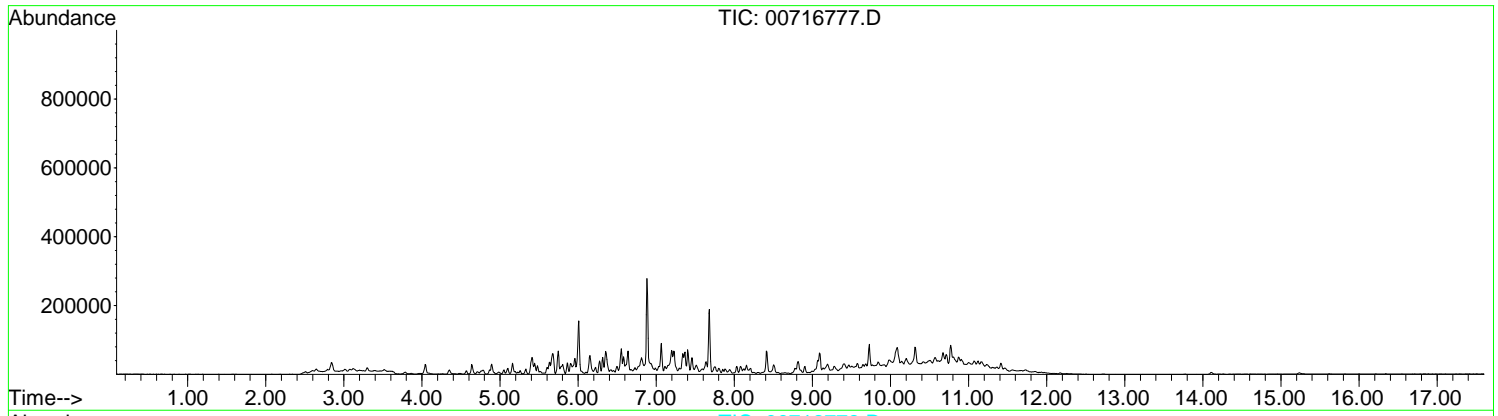
Reviewer: Jasmine R. Smith

Compound	CAS #	Result (ug)	RL (ug)
Acenaphthylene	208-96-8	<0.05	0.05
Pentadecane	629-62-9	0.14	0.05
Acenaphthene	83-32-9	<0.05	0.05
Fluorene	86-73-7	<0.05	0.05
TPH		15.46	0.50
BTEX		0.15	0.02

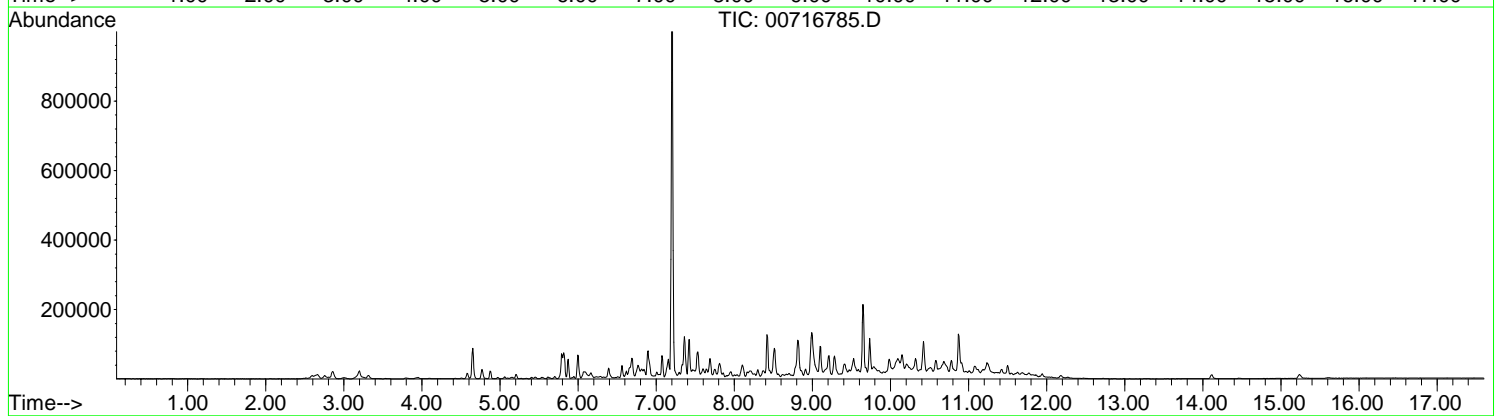
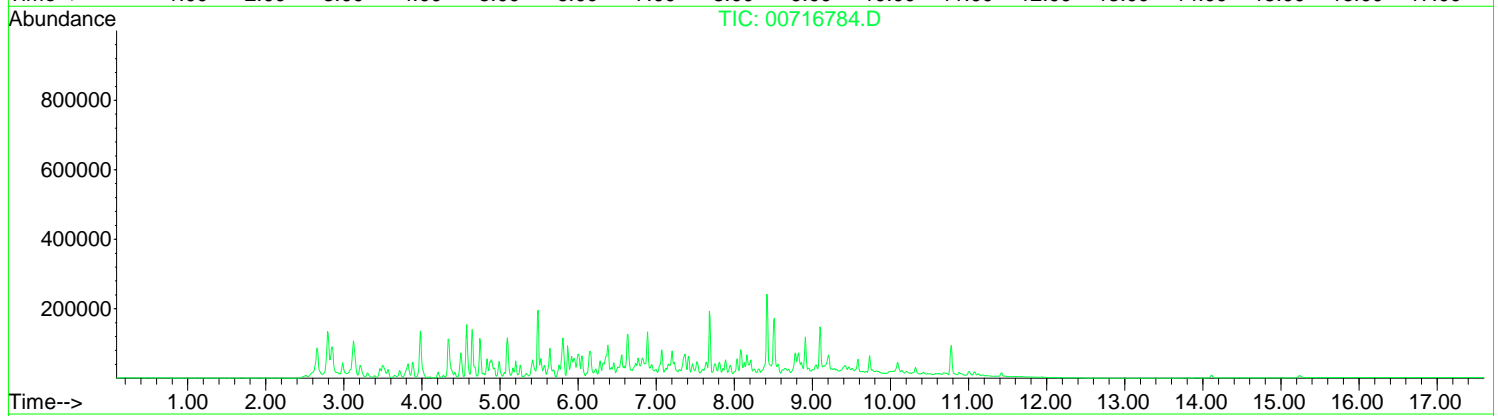
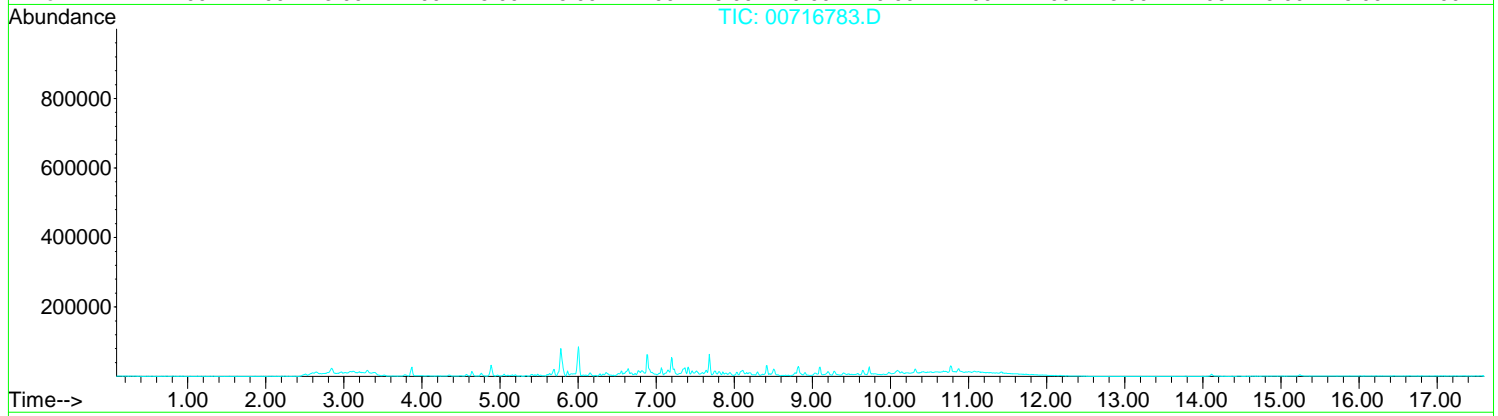
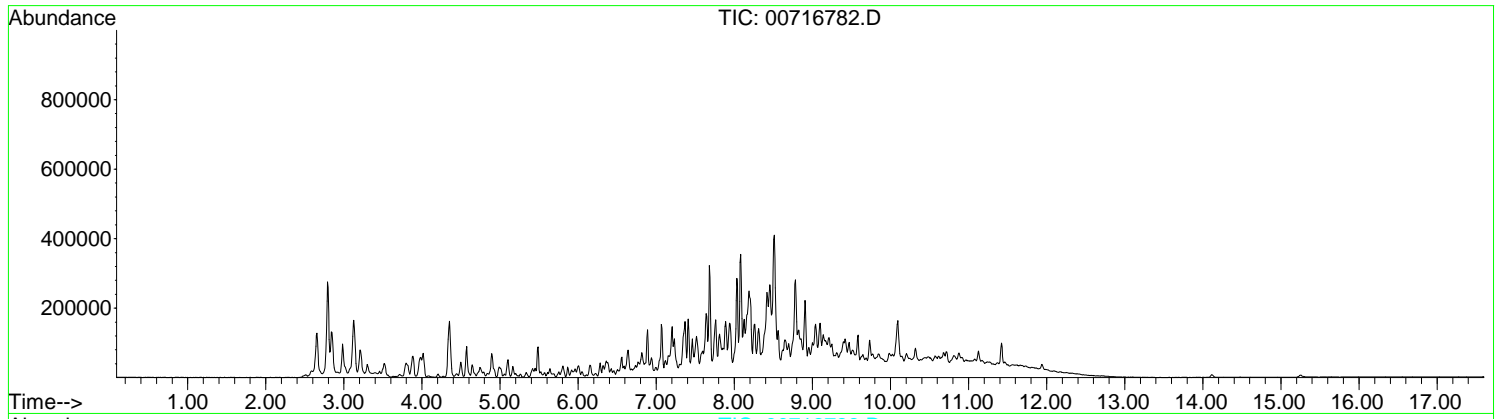
TICS - 3000066
IN NUMERICAL ORDER



TICS - 3000066
IN NUMERICAL ORDER



TICS - 30000066
IN NUMERICAL ORDER



Amplified Geochemical Imaging, LLC.

100 Chesapeake Blvd.
Elkton, MD 21922-0010
Phone: 410.392.7600
Fax: 410.506.4780

www.agisurveys.net

SALES OFFICES:

Europe: +49.89.4612.2198



AGI SURVEYS ANALYTICAL RESULTS
 FAIRBANKS ENVIRONMENTAL, AK
 AGI STANDARD TARGET VOCs/SVOCs (SCREENING)
 MAMMOTH TRUCKING
 PRODUCTION ORDER # 30000066

DATE ANALYZED	SAMPLE NAME	TPH, ug	VC, ug	BTEX, ug	BENZ, ug	TOL, ug	ETBENZ, ug	mpXYL, ug	oXYL, ug	C11, C13, &C15, ug	UNDEC, ug
	RL=	0.50	0.20		0.02	0.02	0.02	0.02	0.02		0.05
10/24/13	716773	5.15	nd	0.02	bdl	0.02	bdl	bdl	bdl	0.12	0.07
10/24/13	716774	11.76	nd	0.10	bdl	0.03	bdl	0.04	0.03	0.64	0.17
10/24/13	716775	4.20	nd	0.03	bdl	0.03	bdl	bdl	bdl	0.06	bdl
10/24/13	716776	4.07	nd	0.03	bdl	0.03	bdl	bdl	bdl	0.19	bdl
10/24/13	716777	13.58	nd	0.08	bdl	0.02	bdl	0.04	0.02	0.82	0.48
10/24/13	716778	4.39	nd	0.06	bdl	0.03	bdl	0.04	bdl	0.16	bdl
10/24/13	716779	610.44	2.93	1.57	0.73	0.05	0.37	0.15	0.27	0.28	0.11
10/24/13	716780	6.95	nd	0.08	0.03	0.03	bdl	0.03	bdl	0.20	0.06
10/24/13	716781	3.82	nd	0.46	bdl	0.03	0.04	0.25	0.13	0.07	0.07
10/24/13	716782	30.21	nd	0.03	bdl	0.03	bdl	bdl	bdl	0.88	0.57
10/24/13	716783	5.40	nd	0.39	bdl	0.02	0.04	0.21	0.12	0.21	0.14
10/24/13	716784	23.06	nd	0.03	bdl	bdl	bdl	0.03	bdl	0.88	0.48
10/24/13	716772	13.83	nd	0.13	bdl	0.09	bdl	0.04	bdl	0.40	0.11
10/24/13	716785	15.46	nd	0.15	bdl	0.08	bdl	0.06	0.02	0.51	0.14
10/24/13	method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	Maximum	610.44	2.93	1.57	0.73	0.05	0.37	0.25	0.27	0.88	0.57
	Standard Dev.	173.47	0.85	0.44	0.21	0.01	0.10	0.08	0.08	0.33	0.20
	Mean	60.25	0.24	0.24	0.07	0.03	0.04	0.07	0.05	0.38	0.19

No RL(Reporting Limit) is available for summed analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

AGI SURVEYS ANALYTICAL RESULTS
 FAIRBANKS ENVIRONMENTAL, AK
 AGI STANDARD TARGET VOCs/SVOCs (SCREENING)
 MAMMOTH TRUCKING
 PRODUCTION ORDER # 30000066

SAMPLE NAME	TRIDEC, ug	PENTADEC, ug	TMBs, ug	124TMB, ug	135TMB, ug	ct12DCE, ug	t12DCE, ug	c12DCE, ug	NAPH&2-MN, ug	NAPH, ug
RL=	0.05	0.05		0.02	0.02		0.02	0.02		0.05
716773	0.06	bdl	bdl	bdl	bdl	nd	nd	nd	bdl	bdl
716774	0.31	0.17	0.07	0.05	0.02	nd	nd	nd	0.10	bdl
716775	0.06	bdl	bdl	bdl	bdl	nd	nd	nd	bdl	bdl
716776	0.12	0.07	bdl	bdl	bdl	nd	nd	nd	bdl	bdl
716777	0.17	0.17	0.04	0.04	bdl	nd	nd	nd	bdl	bdl
716778	0.06	0.10	0.06	0.04	0.02	bdl	nd	bdl	bdl	bdl
716779	0.09	0.08	0.64	0.13	0.52	0.69	0.04	0.65	bdl	bdl
716780	0.07	0.07	0.08	0.04	0.04	bdl	nd	bdl	0.12	0.05
716781	bdl	bdl	0.03	0.03	bdl	nd	nd	nd	bdl	bdl
716782	0.20	0.12	0.05	0.02	0.03	nd	nd	nd	0.07	0.07
716783	0.07	bdl	0.03	0.03	bdl	nd	nd	nd	bdl	bdl
716784	0.35	0.05	bdl	bdl	bdl	nd	nd	nd	bdl	bdl
716772	0.19	0.10	0.12	0.06	0.06	nd	nd	nd	0.21	0.14
716785	0.23	0.14	0.15	0.08	0.07	nd	nd	nd	0.26	0.18
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Maximum	0.35	0.17	0.64	0.13	0.52	0.69	0.04	0.65	0.12	0.07
Standard Dev.	0.10	0.05	0.18	0.03	0.14	0.20	0.01	0.19	0.04	0.02
Mean	0.13	0.08	0.08	0.04	0.06	0.06	0.00	0.06	0.02	0.03

No RL(Reporting Limit) is available for summed analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

AGI SURVEYS ANALYTICAL RESULTS
 FAIRBANKS ENVIRONMENTAL, AK
 AGI STANDARD TARGET VOCs/SVOCs (SCREENING)
 MAMMOTH TRUCKING
 PRODUCTION ORDER # 30000066

SAMPLE NAME	2MeNAPH, ug	MTBE, ug	11DCA, ug	111TCA, ug	12DCA, ug	TCE, ug	OCT, ug	PCE, ug	14DCB, ug	Acenaphthene, ug
RL=	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05
716773	bdl	nd	nd	bdl	nd	bdl	bdl	bdl	nd	nd
716774	0.10	nd	nd	nd	nd	nd	0.05	0.08	nd	bdl
716775	bdl	nd	nd	nd	nd	nd	bdl	bdl	nd	nd
716776	bdl	nd	nd	nd	nd	nd	bdl	bdl	nd	bdl
716777	bdl	nd	nd	nd	nd	bdl	0.04	bdl	nd	bdl
716778	bdl	nd	nd	bdl	nd	bdl	bdl	bdl	nd	nd
716779	bdl	nd	nd	nd	nd	nd	1.88	bdl	nd	bdl
716780	0.07	nd	nd	nd	nd	bdl	0.02	bdl	nd	bdl
716781	bdl	nd	nd	nd	nd	nd	bdl	bdl	nd	nd
716782	bdl	nd	nd	nd	nd	nd	0.02	nd	bdl	nd
716783	bdl	nd	nd	nd	nd	nd	0.02	nd	nd	nd
716784	bdl	nd	nd	nd	nd	bdl	0.04	nd	nd	nd
716772	0.07	nd	nd	nd	nd	bdl	0.02	bdl	bdl	bdl
716785	0.08	nd	nd	nd	nd	bdl	0.03	nd	bdl	bdl
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Maximum	0.10	0.00	0.00	0.01	0.00	0.01	1.88	0.08	0.00	0.03
Standard Dev.	0.02	0.00	0.00	0.00	0.00	0.00	0.54	0.02	0.00	0.01
Mean	0.04	0.00	0.00	0.00	0.00	0.00	0.18	0.01	0.00	0.00

No RL(Reporting Limit) is available for summed analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

AGI SURVEYS ANALYTICAL RESULTS
 FAIRBANKS ENVIRONMENTAL, AK
 AGI STANDARD TARGET VOCs/SVOCs (SCREENING)
 MAMMOTH TRUCKING
 PRODUCTION ORDER # 30000066

SAMPLE NAME	Acenaphthylene, ug	Fluorene, ug	11DCE, ug	CHCl3, ug	CCl4, ug	112TCA, ug	CIBENZ, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug
RL=	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
716773	nd	bdl	nd	0.04	nd	nd	nd	nd	nd	nd
716774	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716775	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716776	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716777	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716778	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716779	bdl	bdl	bdl	nd	nd	nd	nd	nd	nd	nd
716780	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716781	nd	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716782	bdl	bdl	nd	nd	bdl	nd	nd	nd	nd	nd
716783	nd	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716784	bdl	bdl	nd	nd	nd	nd	nd	nd	bdl	nd
716772	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
716785	bdl	bdl	nd	nd	nd	nd	nd	nd	nd	nd
method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Maximum	0.01	0.01	0.01	0.04	0.00	0.00	0.00	0.00	0.01	0.00
Standard Dev.	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

No RL(Reporting Limit) is available for summed analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

AGI SURVEYS ANALYTICAL RESULTS
 FAIRBANKS ENVIRONMENTAL, AK
 AGI STANDARD TARGET VOCs/SVOCs (SCREENING)
 MAMMOTH TRUCKING
 PRODUCTION ORDER # 30000066

SAMPLE NAME	12DCB, ug
RL=	0.02
716773	nd
716774	nd
716775	nd
716776	nd
716777	nd
716778	nd
716779	nd
716780	nd
716781	nd
716782	bdl
716783	nd
716784	nd
716772	nd
716785	nd
method blank	nd
Maximum	0.00
Standard Dev.	0.00
Mean	0.00

GORE® Surveys
KEY TO DATA TABLE

UNITS

µg	micrograms, relative mass value
RL	reporting limit
bdl	below reporting limit; compound was observed at level below the RL
nd	non-detect, compound was not detected at any level

ANALYTES

TPH	total petroleum hydrocarbons
BTEX	combined masses of benzene, toluene, ethylbenzene and total xylenes (Gasoline Range Aromatics)
BENZ	benzene
TOL	toluene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
oXYL	o-xylene
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
UNDEC	undecane
TRIDEC	tridecane
PENTADEC	pentadecane
TMBs	combined masses of 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene
135TMB	1,3,5-trimethylbenzene
124TMB	1,2,4-trimethylbenzene
MTBE	methyl t-butyl ether
NAPH	naphthalene
2MeNAPH	2-methyl naphthalene
MTBE	methyl t-butyl ether
OCT	octane
ct12DCE	cis- & trans-1,2-dichloroethene
t12DCE	trans-1,2-dichloroethene
c12DCE	cis-1,2-dichloroethene
11DCA	1,1-dichloroethane
CHC13	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
CC14	carbon tetrachloride
TCE	trichloroethene
PCE	tetrachloroethene
CIBENZ	chlorobenzene
14DCB	1,4-dichlorobenzene
112TCA	1,1,2-trichloroethane
1112TetCA	1,1,1,2-tetrachloroethane
1122TetCA	1,1,2,2-tetrachloroethane
13DCB	1,3-dichlorobenzene
12DCB	1,2-dichlorobenzene
11DCE	1,1-dichloroethene
VC	vinyl chloride

BLANKS

method blank	QA/QC module, documents analytical conditions during analysis
--------------	---

APPENDIX C
ADEC LABORATORY REVIEW CHECKLIST

Contaminated Sites Program
Spill Prevention and Response Division
Alaska Department of Environmental Conservation

Laboratory Data Review Checklist for Air Samples

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

DEC File Number: DEC Haz ID:

1. Laboratory

- a. Did a NELAP-certified laboratory receive and perform all of the submitted sample analyses?
Yes No N/A (Please explain.)

Comments:

The soil gas data are semi-quantitative screening level data only. As such, many of the questions, such as this one, may not apply. AGI operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, its QA Manual, operating procedures, and methods.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP-approved?
Yes No N/A (Please explain.)

Comments:

No samples were transferred.

2. Chain of Custody (COC)

- a. Was the COC information completed, signed and dated (including released/received by)?
 Yes No N/A (Please explain.)

Comments:

- b. Was the correct analyses requested?
 Yes No N/A (Please explain.)

Comments:

VOCs were analyzed using a modified 8260 method.

3. Laboratory Sample Receipt Documentation

- a. Was the sample condition documented? Were samples collected in gas-tight, opaque/dark Summa canisters or other DEC-approved containers? Was the canister vacuum/pressure checked, recorded upon receipt and were there no open valves?
Yes No N/A (Please explain.)

Comments:

Sample condition was not documented. Note that analysis was performed on soil gas modules (not canisters) which were exposed to soil gas for a 10-day period. Each module was immediately placed in a glass jar upon retrieval from subsurface, and was shipped sealed in glass jars to AGI. All samples were accounted for, and the tamper seal was noted to be intact.

- b. If there were any discrepancies, were they documented? Examples include incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.
Yes No N/A (Please explain.)

Comments:

All samples were accounted for and were presumed to be in good condition.

- c. Was the data quality or usability affected? (Please explain.)

Comments:

Although the condition of samples was not documented, they were presumed to be in good condition.

4. Case Narrative

- a. Is there a case narrative and is it understandable?
Yes No N/A (Please explain.)

Comments:

No case narrative per say, but there were general and project specific comments.

- b. Were there any discrepancies, errors or QC failures identified by the lab?
Yes No N/A (Please explain.)

Comments:

Several compounds were detected in the trip blanks.

- c. Were all corrective actions documented?
Yes No N/A (Please explain.)

Comments:

No corrective actions were identified.

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

Comments:

Case narratives do not generally discuss data usability, only the QC issues.

5. Samples Results

a. Was the correct analyses performed/reported as requested on COC?

Yes No N/A (Please explain.)

Comments:

VOCs were analyzed by a modified 8260 method.

b. Were the samples analyzed within 30 days of collection or within the time required by the method?

Yes No N/A (Please explain.)

Comments:

c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No N/A (Please explain.)

Comments:

Results were semi-quantitative and reported in micrograms since flux (volume of soil gas) was not known.

d. Was the data quality or usability affected?

Comments:

Results were reported sufficiently for the purposes intended.

6. QC Samples

a. Method Blank

i. Was one method blank reported per analysis and 20 samples?

Yes No N/A (Please explain.)

Comments:

ii. Were all method blank results less than PQL?

Yes No N/A (Please explain.)

Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags and, if so, are the data flags clearly defined?

Yes No ■N/A (Please explain.)

Comments:

No analytes were detected in the method blank.

v. Was the data quality or usability affected? (Please explain.)

Comments:

No impact to data since no analytes were detected in the method blank.

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

i. Was there one LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No ■N/A (Please explain.)

Comments:

According to the QA Statement, CCVs were performed after every 10 samples, however, that data were not provided. Upon a discussion with the lab, they indicated that their recovery limits are 50%-150%, and if there was a deviation to the QC requirements, they would have been reported.

ii. Accuracy – Were all percent recoveries (%R) reported and within method or laboratory limits? What were the project specified DQOs, if applicable?

Yes No ■N/A (Please explain.)

Comments:

Data not provided

iii. Precision – Were all relative percent differences (RPD) reported and were they less than method or laboratory limits? What were the project-specified DQOs, if applicable.

Yes No ■N/A (Please explain.)

Comments:

Data not provided

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

Comments:

- v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No N/A (Please explain.)

Comments:

- vi. Is the data quality or usability affected? (Please explain.)

Comments:

Batch control data were not provided, but the lack of deviations reported infers that QC requirements were met for this screening level data.

c. Surrogates

- i. Are surrogate recoveries reported for field, QC and laboratory samples?
Yes No N/A (Please explain.)

Comments:

Surrogates were not used for module sample analysis.

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits?
What were the project-specified DQOs, if applicable?
Yes No N/A (Please explain.)

Comments:

Surrogates were not analyzed.

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No N/A (Please explain.)

Comments:

- iv. Was the data quality or usability affected? (Please explain.)

Comments:

Surrogates were not analyzed with absorbent module samples, as it was a screening level analysis.

d. Field Duplicate

- i. Was one field duplicate submitted per analysis and 10 type (soil gas, indoor air, etc.) samples?
Yes No N/A (Please explain.)

Comments:

Field duplicate analysis was not specified in ADEC-approved Work Plan and was not performed; data were semi-quantitative screening data. Soil gas results, however, mirror historical groundwater data.

ii. Were they or was it submitted blind to the lab?

Yes No N/A (Please explain.)

Comments:

No field dups were analyzed for this project.

iii. Precision – Were all relative percent differences (RPD) less than the specified DQOs?
(Recommended: 25 %)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No N/A (Please explain.)

Comments:

No field dups were analyzed for this project.

iv. Was the data quality or usability affected? (Please explain.)

Comments:

e. Field Blank (If not used, explain why.)

Yes No N/A (Please explain.)

Comments:

Two trip blank samples were treated like field blank samples, as they were exposed to rubber stoppers used for sealing the holes drilled into the soil. See

i. Were all results less than the PQL?

Yes No N/A (Please explain.)

Comments:

Several non-halogenated hydrocarbons were identified in the blanks, and they are presumed to be from the rubber stoppers.

ii. If above PQL, what samples are affected?

Comments:

1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 2-Methylnaphthalene, m+p-Xylenes, Naphthalene, o-Xylene, Octane, Pentadecane, Toluene, Tridecane, Undecane, and TPH were detected in the blanks. Consequently, detected concentrations of these analytes in project samples are suspect.

iii. Was the data quality or usability affected? (Please explain.)

Comments:

There was pervasive blank contamination that was presumed to be due to exposure to the rubber stoppers. However, most of the impacted analytes were not analytes of interest and if they are, detected concentrations are extremely low and preclude any inhalation risks.

7. Other Data Flags/Qualifiers

a. Were other data flags/qualifiers defined and appropriate?

Yes No N/A (Please explain.)

Comments:

No other data flags or qualifiers were used.