

SITE REMEDIATION ASSESSMENT REPORT

HEATING OIL SPILL AT THE TRAVELODGE 9200 GLACIER HIGHWAY JUNEAU, ALASKA ADEC FILE NUMBER: 1513.38.076

NOVEMBER 26, 2012

Prepared For:

Travelodge Hotel
9200 Glacier Highway
Juneau, Alaska 99801

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LIST OF ACRONYMS

- | | |
|--|--|
| ADEC – Alaska Department of Environmental Conservation | mi -- miles |
| BTEX – Benzene, Toluene, Ethylbenzene, and total Xylenes | NORTECH – NORTECH Environment, Energy, Health & Safety Consultants |
| Cy – cubic yards | PID – photo ionization detector |
| DRO – diesel range organics | RRO – residual range organics |
| EPA – Environmental Protection Agency | SAP – sampling and analysis plan |
| FSG – Alaska Department of Environmental Conservation <u>Draft</u> <u>Field Sampling Guidance</u> Document dated May, 2010 | SAR – Site Assessment Report |
| Ft – feet or foot | SBL – Smith Bayless and LeResche |
| Ft ² – square feet | SGS – SGS Environmental Services |
| Ft bgs – feet below ground surface | Sq ft – square foot or square feet |
| | TPHd – total petroleum hydrocarbons diesel |
| | UST – underground storage tank |
| | VOC – volatile organic compounds |





1.0 EXECUTIVE SUMMARY

NORTECH Environment, Energy, Health and Safety Consultants (**NORTECH**) has performed Site Characterization and Assessment activities at the Travelodge located at 9200 Glacier Highway in Juneau, Alaska (the Site). The Travelodge is undertaking these activities to address petroleum contamination at this Site stemming from a historic leaky underground storage tank (UST) found prior to the tanks removal in 2001. This Site Assessment Report (SAR) recaps previous characterization activities, discusses assessment methodologies, and presents the results from the 2012 Site assessment.

2.0 PROJECT BACKGROUND

2.1 General Site Setting and Description

The Travelodge is located in the Mendenhall Valley area about 8 miles (mi) northwest of downtown Juneau, Alaska. The Site consists of a 90,042 square foot (ft²) lot with a 59,790 ft² hotel. The property is zoned for light commercial use. The portion of the property that is not covered by the hotel is a paved parking lot. Surrounding properties are commercial and residential in nature.

The Site is located 0.3 mi west of the base of Thunder Mountain. The nearest surface water body is Duck Creek, about 500 ft southwest of the Site. Groundwater at the Site was shallow, 0.5 to 1 foot below ground surface (ft bgs) during the 2012 Site visit. The soil type of the Mendenhall Valley is generally poorly sorted sand and gravel with silt. Appendix A includes figures that show the Site Location, Site Vicinity, and Site Map. Appendix B includes photographs of the Site taken during the 2012 Site visit.

2.2 Previous Investigations

September 2000

A Site Assessment was performed by **NORTECH** prior to removal of a 600 gallon leaking underground storage tank (UST) by Channel Construction on September 15th, 2000. Eleven soil samples total were collected from the property, from the contaminated soil stockpile and from the crawlspace of the Travelodge. Excavation and stockpiling of 160 cubic yards (cy) of contaminated soil from the site occurred on September 15th and 16th, 2000. On September 23rd, 2000, Channel Construction installed an oil/water separator to clean water from the Travelodge to the storm sewer culvert. Within the crawlspace, beneath the Travelodge, approximately 60 gallons of heating oil was floating on water. Sorbent pads were used to collect this heating oil in the crawlspace. The contaminated soil was hauled to Juneau's United Soil Recycling (USR) facility on December 1st, 2000.

An HNU Systems Model PI-101 photoionization detector (PID) and the hot water sheen test were used for the field screening process during both the delineation of the crawlspace area and during the tank excavation and removal activities.

Field samples were sent to Analytical Resources, Inc in Seattle, WA for diesel range organics (DRO) analysis by method AK102. Laboratory results are listed in the following table, Table 1:

Table 1: September 2000 Soil Sampling Results

<i>Sample ID</i>	<i>Sample Depth (ft bgs)</i>	<i>DRO (mg/kg)</i>
TL-CL01	7	72
TL-CL02	7	18,000
TL-CL03	5	8,400
TL-CL04	4	37
TL-CL05	5	14
TL-CL06	4.5	92
TL-CL07	4.5	50
TL-CL08	4.5	37
TL-CZ01*	from removed soils	20,000
TL-CS01**	1.5 (from crawlspace)	5,800
TL-CS02**	1.5 (from crawlspace)	6,900

Table Notes: Results in **boldface** exceed ADEC Method 2 cleanup level of 230 ppm.
 * This sample characterizes removed soils.
 ** These samples were taken from the crawlspace beneath the Travelodge.

All quality control indicators were within range and all sample results were deemed valid.

June 2001

A Site Assessment was performed by Smith Bayliss LeResche (SBL) prior to removal of a 1,000-gallon UST by Channel Construction on June 7th, 2001. The single-walled tank was found to be whole and in good condition. However, contaminated soil was found near the vent pipe connection. Free product or product in groundwater was not found during the tank excavation process. Also on June 7th, 50 cy of contaminated soil were removed, stockpiled on site, and then hauled to Juneau's USR facility on June 21st, 2001 by Channel Construction.

An HNU Systems Model PI-101 PID and the hot water sheen test were used for the field screening process during delineation of the crawlspace area and during the tank excavation and removal activities.

Field samples were sent to Analytical Resources, Inc. in Seattle, Washington for DRO analysis by method AK102. Laboratory results are listed in the following Table 2:

Table 2: June 2001 Soil Sampling Results

Sample ID	Sample Depth (ft bgs)	DRO (mg/kg)
TL2-01*	10.5	< 5.0
TL2-02*	10.5	< 5.0
TL2-03	10.5	680
TL2-04	12	56
TL2-05	11	< 5.0
TL2-06	8	10
TL2-CZ	Removed soils	1700

Table Notes: Results in **boldface** exceed ADEC Method 2 cleanup level of 230 ppm.
* Indicates duplicate sample pair
<5.0 indicates result was less than 5 mg/kg

All quality control indicators were within range and all sample results were deemed valid.

A small quantity (<five cubic yards) of contaminated soil remained from the secondary tank excavation at the Travelodge Hotel. The contamination lies within the uppermost section of the silty, dense, blue till (glacial-derived sediments) layer, which is impermeable upon saturation. This contaminated area is localized and is not connected to the contamination located at the north side of the Travelodge. A new 2,000-gallon STiP3 UST was installed in the same location by Channel Construction.

August 2009

The characterization work at this site was conducted on August 12th, 2009. J. Ginter and A. Bruce of **NORTECH** were present during these activities. Temperatures were ranged between 50°F to 60°F. They collected samples from the contaminated soil area within the crawlspace identified during the September 2000 activities. Travelodge personnel have been treating the material *in-situ* using high nitrogen fertilizer and ammonia.

They collected six samples for field screening and collected two samples and one field duplicate from area that showed the highest field screening readings for laboratory analysis, per ADEC requirements. The results of the 2009 assessment are presented in Table 3, below.

Table 3: August 2009 Soil Sampling Results

Sample ID	Sample Depth (ft bgs)	DRO (mg/kg)
CL01	1.5	200
CL02*	1.5	420
CL03*	1.5	505

Table Notes: Results in **boldface** exceed ADEC Method 2 cleanup level of 230 ppm.
 * Indicates duplicate sample pair

July 2010

The 2010 annual characterization work at this Site was conducted on July 22nd, 2010. A. Dieffenbacher and A. Bruce of **NORTECH**, were present during these activities. Temperatures were ranged between 41°F to 81°F. Samples were collected from the previously identified contaminated soil area within the crawlspace. Travelodge personnel have been continuing treatment of the material *in-situ* using high nitrogen fertilizer and ammonia.

NORTECH collected three soil samples for field screening and collected three samples and one field duplicate from an area that showed the highest field screening readings for laboratory analysis, per ADEC requirements. The results of the 2010 assessment are presented in Table 4, below. ADEC requested for the analysis of benzene, ethylbenzene, xylenes, and toluene (BTEX) in soils for the 2010 and subsequent events.

Table 4: July 2010 Laboratory Results

Sample ID	Sample Depth (ft bgs)	DRO (mg/kg)	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Toluene (mg/kg)
CM101*	2	6560	ND	ND	0.1747	ND
CM102*	2	7190	ND	ND	0.725	ND
CM103	2	2490	ND	ND	ND	ND
CM104	2	2480	ND	ND	ND	ND

Table Notes: Results in **boldface** exceed ADEC Method 2 cleanup level of 230 ppm.
 * Indicates duplicate sample pair

All quality control indicators were found to be within range and all results were deemed valid.

2.3 Project Objectives and Scope of Work

The Travelodge is responsible for addressing the environmental concerns observed at this Site. The Travelodge has contracted **NORTECH** to conduct a Site Assessment at the 9200 Glacier Highway in accordance with 18 AAC 75 and the Vapor Intrusion Guidance for Contaminated Sites Document (October 2012) per ADEC request. This

activity is being performed to document the effectiveness of *in-situ* treatment efforts conducted over the past twelve years to address the diesel contaminated soil left in place in the crawlspace area of the Site.

NORTECH submitted a Site Characterization Plan to ADEC in September 2012 outlining plans and methods to assess the indoor vapor intrusion exposure pathway. ADEC approved the plan on September 14, 2012. This SAR presents the most recent soil and air sampling efforts completed during September 2012. Additionally, this report summarizes the characterization activities that were previously performed at the Site, recaps the 2012 field screening methods and results, describes specific laboratory sampling methods and the analytical results, and recommends additional actions necessary to complete the scope of work.

3.0 METHODOLOGY

3.1 Field screening Protocol

Handheld Photo Ionization Detector (PID)

NORTECH uses the headspace method of field screening in general accordance with Section 4 of the ADEC UST Manual (18 AAC 78) and the draft Field Sampling Guidance (FSG). In general, we conduct field screening on a five-foot grid (25 square feet per grid unit) to identify the impacted area. Field screening samples are collected using clean or disposable sampling tools in a sufficient quantity to partially fill (30-50%) a clean zip lock bag (a minimum of 8 ounces of soil). If necessary, the samples are heated to a minimum temperature of 40° F. The sample bags are then sealed, agitated, labeled, and set aside to develop headspace vapors for a minimum of ten minutes prior to screening with a MiniRAE 3000 PID. A PID analyses vapors for total volatile organic compounds (VOCs). After headspace development, the bags are again agitated, and the PID probe is inserted into a small opening in the bag to draw headspace vapors from the center of the space above the soil. **NORTECH** records the highest PID reading from each sample in the project field logbook.

Hot Water Sheen Test

NORTECH also used the hot water sheen test (also known as Hydrothermally Induced Iridescent Optrosopy) to corroborate and supplement the PID results and visual and olfactory observations of specific soils. The general methodology is to partially fill a small stainless steel bowl with suspect soil and slowly add hot water to the bowl and note any sheen that appears on the water surface. Then the water and soil are agitated and the surface is evaluated again. The bowl is then decontaminated for reuse. This procedure is subjective, but is a reasonable indicator of the presence or absence of petroleum contamination. Typical results are rainbow sheen, a white wispy sheen, a

blocky sheen or no sheen. These specific indications provide a subjective analysis about the suspected contamination. For example, fresh releases have a vibrant rainbow of colors, while older weathered releases are generally dull (white) and wispy. In addition, natural organics (biogenic origin) display a blocky pattern and tend to fracture while petroleum contamination does not.

3.2 Laboratory Sampling and Analysis Procedures

Soil Sampling

The number and type of laboratory samples were determined by previous site work. The following list indicates the soil analysis methods that have been used for the purposes of this site investigation:

- DRO by AK102, characterization,
- Residual Range Organics (RRO) by AK 103, characterization and closure,
- BTEX by 8021, characterization and closure.

Surface and subsurface soil samples were collected using a combination of hand equipment, such as post-hole diggers, shovels, trowels, and spoons and disposable sampling equipment such as gloves and re-sealable bags. Non-disposable sampling equipment that contacted environmental media was decontaminated both before initial use and between sampling locations to avoid cross contamination. Samples were placed in the appropriate sampling container, sealed, and placed promptly on ice in a cooler in the custody of **NORTECH** personnel.

NORTECH describes the sample collection location and soil types in the field notes. The Site field notebook is included in Appendix C of this SAR. The soil samples were analyzed by SGS Environmental Services (SGS) in Anchorage, Alaska.

Air Sampling

The number and type of laboratory air samples were determined by known Site conditions and by specific method requirements. **NORTECH** collected air samples using the Environmental Protection Agency (EPA) Method TO-17. The samples were submitted to Air Toxics Ltd. in Folsom, California for analysis of Total Petroleum Hydrocarbons-diesel (TPHd) and VOCs. One trip blank was submitted

The air samples were collected using laboratory provided sample containers in conjunction with in-house pumps and calibrators. Sampling equipment that contacted environmental media was decontaminated both before initial use and between sampling locations to avoid cross contamination. After collection, the samples were promptly sealed and placed promptly on ice in a cooler in the custody of **NORTECH** personnel.

3.3 Site Soil Cleanup Levels

The Site cleanup goals for soil have been determined using the State of Alaska Department of Environmental Conservation's (ADEC) Method 2 for soil (over 40-inch zone, migration to groundwater) as outlined in ADEC regulations (18 AAC 75.341, Table B2). Method 2 cleanup levels for soil at the Site are shown in Table 5, below.

Table 5: Site Cleanup Levels for Soil

Analyte	Site Cleanup Level for Soil (mg/kg)
DRO	230
RRO	8,300
Benzene	0.025
Ethylbenzene	6.9
Toluene	6.5
Xylenes	63.0

4.0 FIELD ACTIVITIES

The 2012 characterization work at this Site was conducted on September 25th, 2012. T. Martin and A. Bruce of **NORTECH**, were present during these activities. Temperatures ranged between 62°F to 64°F and humidity was about 80% in the crawlspace area. External conditions averaged 49°F. Both soil and air samples were collected from the previously identified contaminated soil area within the crawlspace. Interviews with Travelodge personnel indicated that they have been treating the material *in-situ* using high nitrogen fertilizer and ammonia.

Air sample collection was performed with two separate Sensidyne BDXii Air Sampler Pumps. Sample containers were laboratory supplied. The flow rates for air sample collection were set and confirmed using a DryCal DC-Lite calibrator through laboratory supplied calibrator tubes. Once the appropriate flow rates were achieved, the air sampling containers were attached to the pumps and staged for collection. Pump #5, set at 200 ml/min, was ran for 45 min and pump #2, set at 50 ml/min, was ran for 3 hours. Sample collection was performed to acquire just less than 10 liters (L) of air, which is the laboratory recommended safe sample volume for indoor air. Air temperature and humidity were monitored during the air sample collection period. We performed flow rate drift checks through the calibration tubes once air sample collection was complete. One trip blank was present during air sample collection for quality assurance purposes.

After air sampling was complete, **NORTECH** advanced five soil borings and collected soil samples for field screening at one foot intervals from each boring for field screening

analysis. Of these, we submitted three soil samples and one field duplicate from the areas that showed the highest field screening readings for laboratory analysis, per ADEC requirements. Borings were advanced until groundwater was encountered, between 0.8 and 1.5 ft bgs.

5.0 RESULTS WITH DISCUSSION

Both the air sample collection locations and the soil field screening and laboratory sample locations are shown in Figure 3 of Appendix A. Three soil samples were collected for laboratory analysis. These samples were sent to SGS for analysis of DRO by AK102, RRO by AK103, and BTEX by 8021. The SGS Laboratory report is included in Appendix D of this SAR. Laboratory results of the soil samples are listed in the Table 6, following.

Table 6: 2012 Soil Sample Laboratory Results

Sample ID	Sample Depth (ft bgs)	DRO (mg/kg)	RRO (mg/kg)	Benzene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Toluene (mg/kg)
TS-1	1	2930	122	ND	ND	ND	ND
TS-2	0.8	396	39.8	ND	ND	ND	0.073
TS-3*	1.5	35.8	201	ND	ND	ND	ND
TS-dup*	1.5	42.3	386	ND	ND	ND	ND

Table Notes: Sample results in **boldface** exceed ADEC cleanup levels for this project.
 *denotes field duplicate samples

Two air samples were collected for laboratory analysis of TPHd and VOCs by method TO-17. These samples were sent to Air Toxics Ltd. in Folsom, California for analysis. Most of the chemical compounds analyzed in TPHd and VOC analysis were not detectable. Results for compounds detected are presented in Table 7, following. The Air Toxics laboratory report with all other results is also located in Appendix D.

Table 7: 2012 Air Sample Laboratory Results

Sample ID	TPHd ($\mu\text{g}/\text{m}^3$)	Freon 11 ($\mu\text{g}/\text{m}^3$)	2,2,4-Trimethylpentane ($\mu\text{g}/\text{m}^3$)	Isopentane ($\mu\text{g}/\text{m}^3$)	Benzene ($\mu\text{g}/\text{m}^3$)	Toluene ($\mu\text{g}/\text{m}^3$)
TA-1*	ND	1.3 J	1.4	ND	ND	ND
TA-2*	ND	3.4 J	1.5	1.8	0.54	1.2
TA-3	ND	4.0 J	ND	ND	ND	ND

Table Notes: Sample results in **boldface** exceed ADEC cleanup levels for this project.
 *denotes field duplicate samples

Freon 11 and Methylene Chloride were detected in the trip blank, sample TA-3 and can therefore be associated to an outside source. Samples TA-1 and TA-2 were collected as a distributed volume pair and are therefore considered duplicate samples because

they have the same air volume collected, just taken at different flow rates, as recommended in the TO-17 method.

The Site cleanup goal for indoor air has been determined using the residential values listed in the ADEC Vapor Intrusion Guidance for Contaminated Sites Appendix D: Target Levels for Indoor Air, (October 2012). Benzene and toluene are the only two detected analytes listed in either the ADEC vapor intrusion (VI) guidance and in Table B1 of 18 AAC 75. **NORTECH** referred to the National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards (CDC, 2005) to determine if exposure limits exist for Freon 11 and 2,2,4-Trimethylpentane. TPHd was not detected, however, the cleanup level is included for completeness. Table 8, below, lists target indoor air levels for Site specific compounds in air. Compounds not listed in the table below were not detected during laboratory analysis of the air samples.

Table 8: Target Levels of Detected Compounds for Indoor Air

Analyte	Site Cleanup Level for Air ($\mu\text{g}/\text{m}^3$)
TPHd*	100,000
2,2,4 Trimethylpentane	NEL
Isopentane	NEL
Freon 11*	5,600,000
Benzene	3.1
Toluene	5210

Table Notes: * - indicates listed levels were determined from NIOSH manual.
NEL – indicates there is not a listed exposure limit

A laboratory data review checklist exercise has been prepared for both the soil and air laboratory results and are included in Appendix E. The soils data exercise revealed that all soil samples analyzed were affected by a laboratory control sample recovery problem; however, the lab reran these samples to confirm the initial reported results. The air data exercise revealed that the samples were received at the lab just outside of temperature specifications, however, the lab report states that laboratory studies demonstrate a high level of stability for VOCs on the TO-17 'VI' tube at room temperature for periods of up to 14 days. Although not all quality control indicators are within acceptable limits, both the soil and the air data results have been deemed valid through corrective action as documented in the data review checklists and laboratory reports.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the activities completed at the site, **NORTECH** has developed the following conclusions:

- Soil sample results indicate that remediation is progressing through the application of high nitrogen fertilizer and ammonia to the affected area. **NORTECH** estimates that about 6 cy of petroleum contaminated soil remain in the crawlspace area at this Site.
- Air sample results indicated that only trace amounts of contamination have volatilized into the air. **NORTECH** has updated the Conceptual Site Model, included as Appendix F, to reflect that the inhalation of indoor air exposure pathway as incomplete, based on the below action level results.
- **NORTECH** recommends for the Travelodge to continue *in-situ* treatment using high nitrogen fertilizer (ensure a N to P ratio of 6:1) and ammonia. Also, continue to flush the treated area with water after each addition if the area is dry.
- We recommend continuing biannual site characterization activities in the fall of 2014 to assess remediation progress.

7.0 LIMITATIONS AND NOTIFICATIONS

NORTECH provides a level of service that is performed within the standards of care and competence of the environmental engineering profession. However, it must be recognized that limitations exist within any site investigation. This report provides results based on a restricted work scope and from the analysis and observation of a limited number of samples. Therefore, while it is our opinion that these limitations are reasonable and adequate for the purposes of this report, actual site conditions may differ. Specifically, the unknown nature of exact subsurface physical conditions, sampling locations, the analytical procedures' inherent limitations, as well as financial and time constraints are limiting factors.

The report is a record of observations and measurements made on the subject site as described. The data should be considered representative only of the time the site investigation was completed. No other warranty or presentation, either expressed or implied, is included or intended. This report is prepared for the exclusive use of the Travelodge. If it is made available to others, it should be for information on factual data only, and not as a warranty of conditions, such as those interpreted from the results presented or discussed in the report. We certify that except as specifically noted in this report, all statements and data appearing in this report are in conformance with ADEC's Standard Sampling Procedures. **NORTECH** has performed the work, made the findings, and proposed the recommendations described in this report in accordance with generally accepted environmental engineering practices.



8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

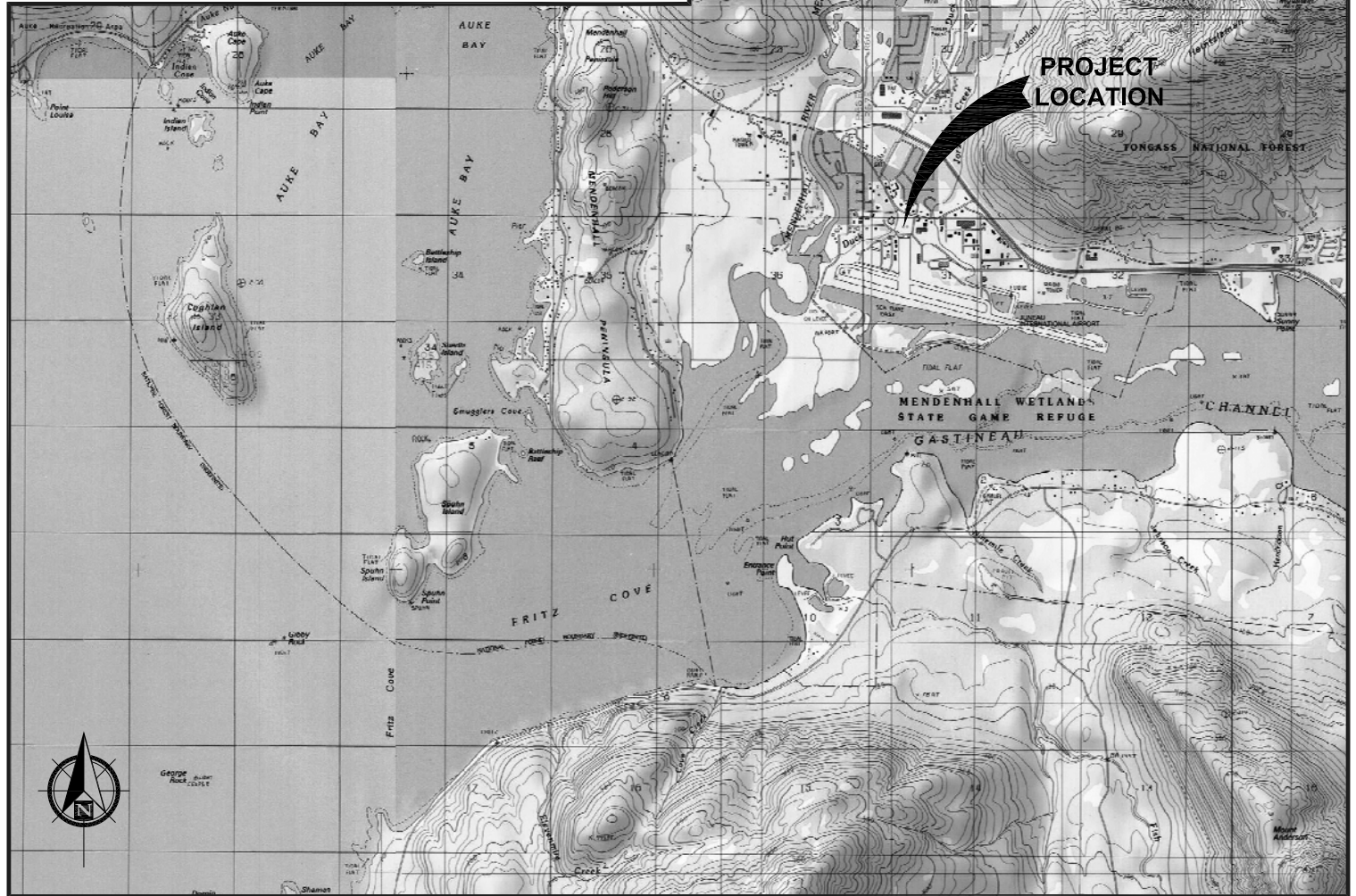
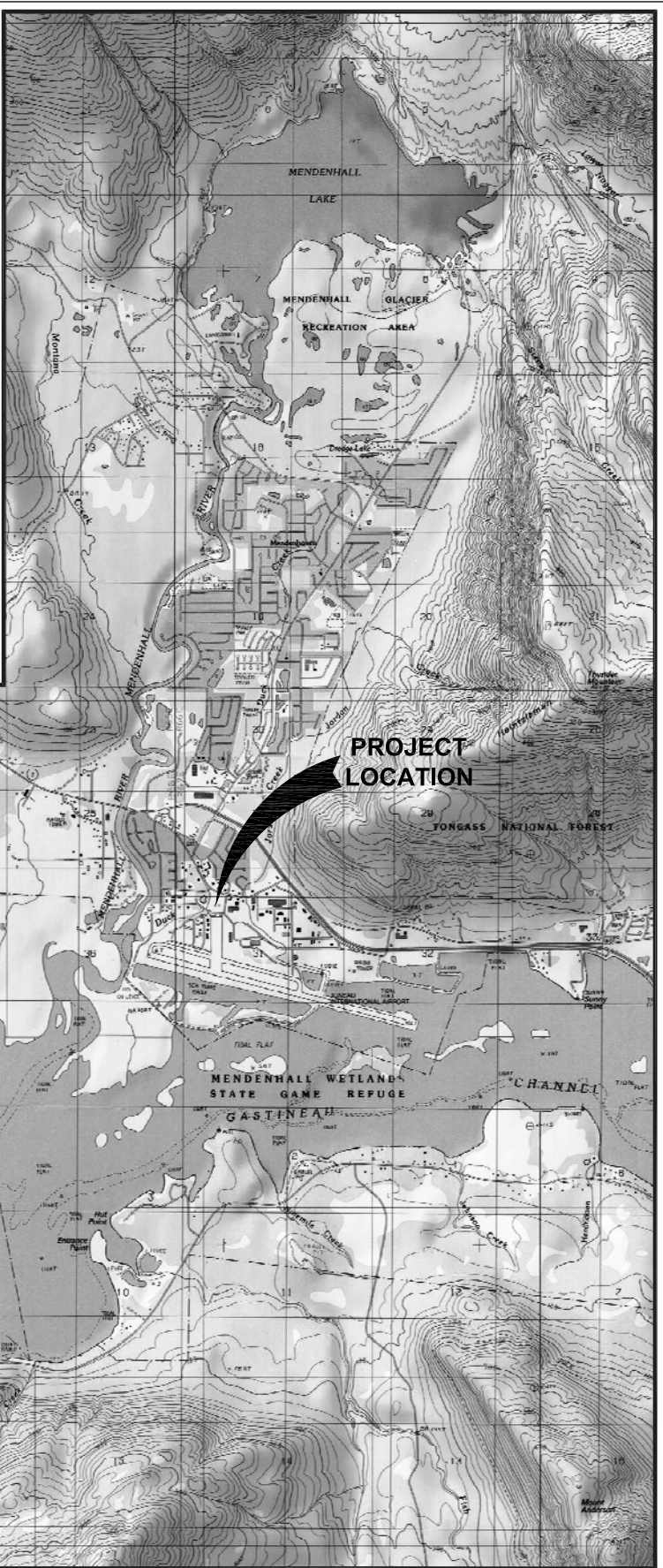
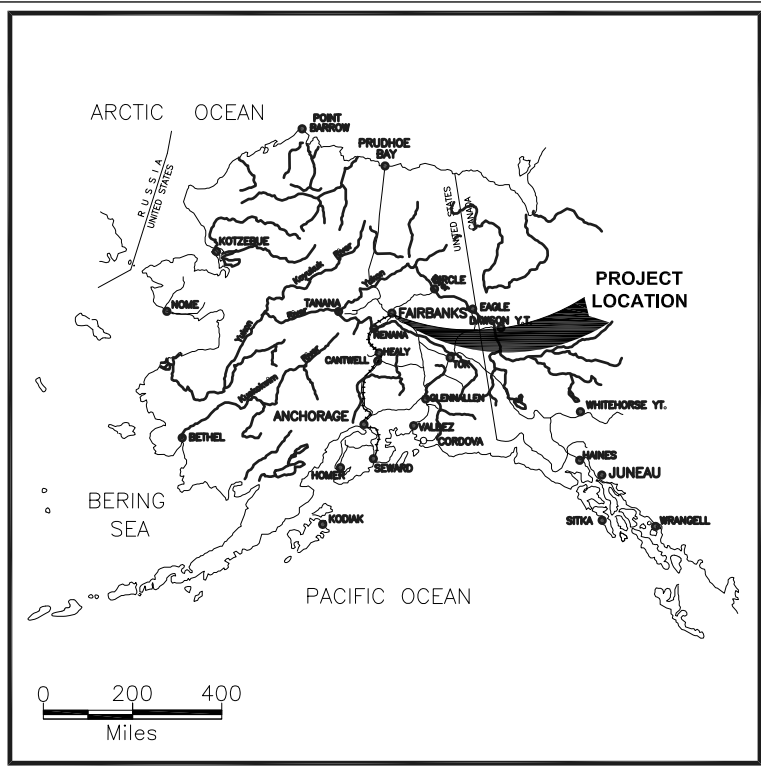
Tara Martin, Environmental Professional for **NORTECH**, has a B.S. in Geophysical Engineering and has experience conducting property assessments, environmental investigations, groundwater monitoring, laboratory analysis, and other environmental fieldwork.

A handwritten signature in black ink that reads "Tara Martin".

NORTECH,
Tara R. Martin, Environmental Professional

APPENDIX A

Figures



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Location Map
 TRAV Biannual Sampling
 9200 Glacier Highway
 Juneau, Alaska

SCALE: 1"=1 mile	FIGURE:
DESIGN: AD	1
DRAWN: CET/CMR	
PROJECT NO: 12-1076	
DWG: 121076a1	
DATE: 11-1-12	



SITE LOCATION

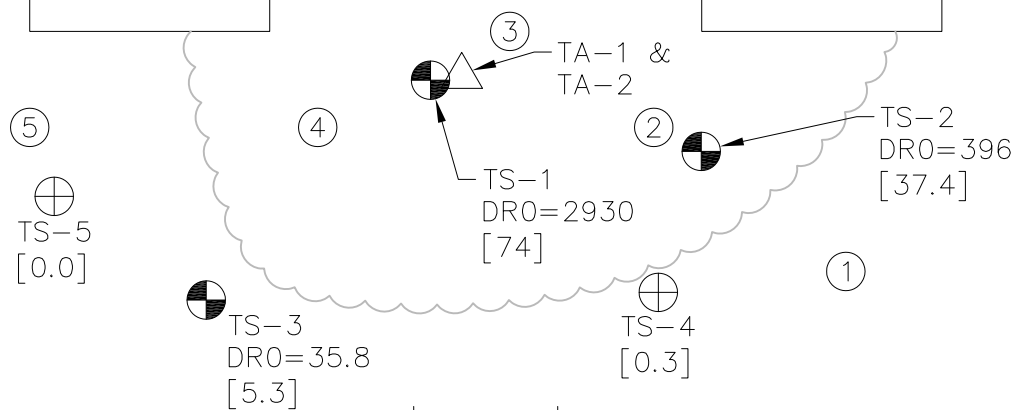


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Vicinity Map
TRAV Biannual Sampling
9200 Glacier Highway
Juneau, Alaska

SCALE: 1" = 150'	FIGURE: 2
DESIGN: AD	
DRAWN: CET/CMR	
PROJECT NO: 12-1076	
DWG: 121076a2	
DATE: 11-1-12	

EXTERIOR FOUNDATION WALL



FOUNDATION STEM WALL

KEY:

- ⑤ NUTRIENT ADDITION PORTS
- ⊗ SOIL BORING AND LABARATORY SAMPLE LOCATION. RESULTS SHOWN IN mg/kg.
- ⊕ SOIL BORING LOCATION
- △ AIR SAMPLE LOCATION
- [0.3] PID SCREENING RESULT IN ppm
- ~~~~~ REMAINING AFFECTED AREA



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2012 Site Assessment Map
 Travelodge Crawlspace
 9200 Glacier Highway
 Juneau, Alaska

SCALE: 1" = 4'	FIGURE: 3
DESIGN: AD	
DRAWN: CET/CMR	
PROJECT NO: 12-1076	
DWG: 121076a3	
DATE: 11-1-12	

APPENDIX B
Site Photographs



Photo 1: General Site conditions.



Photo 2: TS-1 soil boring. Showing soil types and groundwater encountered.



Photo 3: *TS-2 soil boring location. Soil types and groundwater encountered.*



Photo 4: *TS-3 soil boring location. Soil types and capillary fringe encountered.*



Photo 5: TS-3 soil boring showing capillary fringe.



Photo 6: TS-4 soil boring location. Soil types and groundwater encountered.



Photo 7: TS-5 soil boring location. Showing soil types and groundwater encountered.



Photo 8: Pump used for collection of TA-01.



Photo 9: Pump used for collection of TA-02.



Photo 10: DryCal calibrator used with calibration tube to control air sample collection flow rates.



Photo 11: TA-01 air sample collection flow rate.

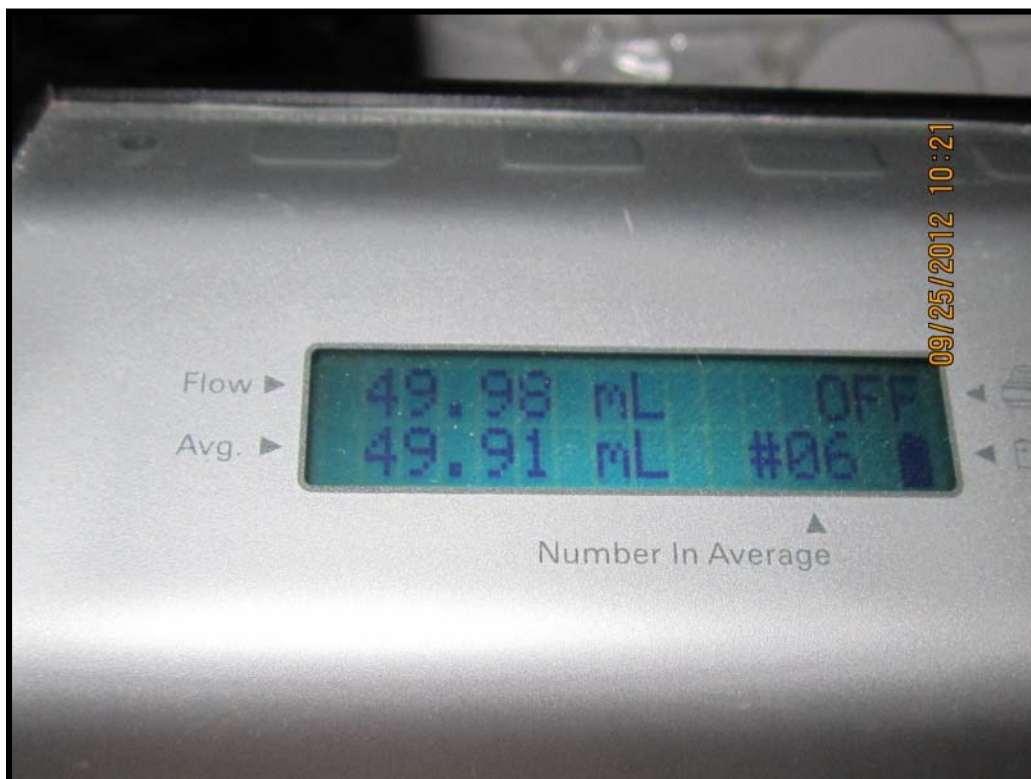


Photo 12: TA-02 air sample collection flow rate.



Photo 13: Air sample collection setup. TA-01 on left and TA-02 on right.

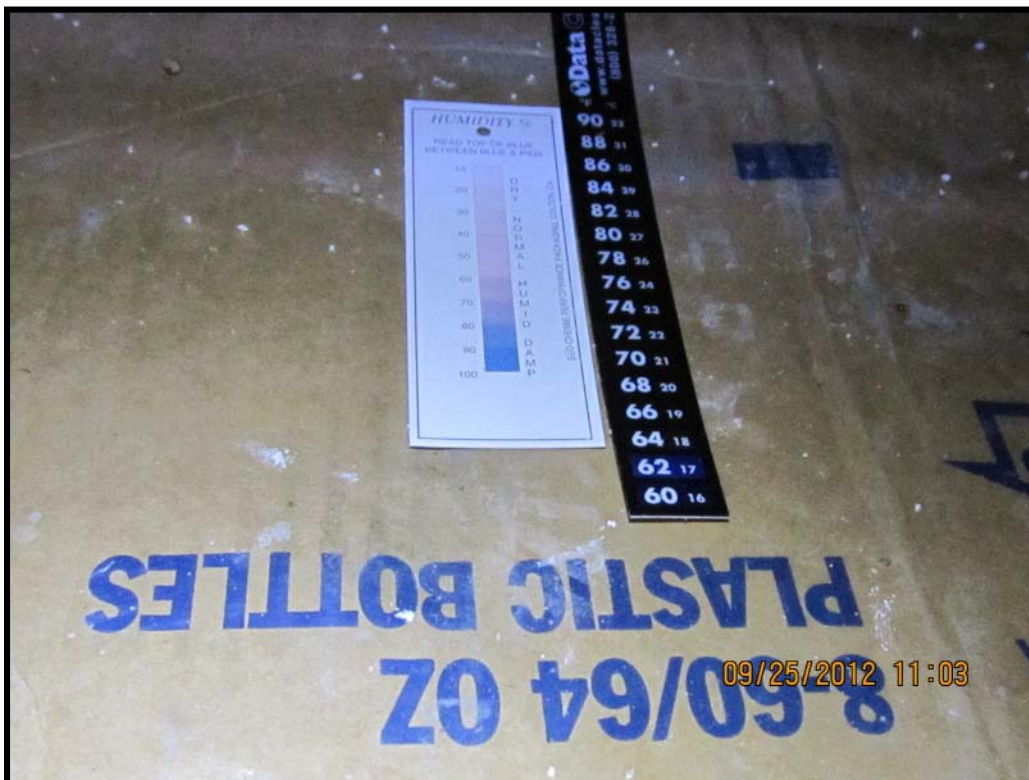


Photo 14: Temperature and humidity of crawlspace during air sample collection.

APPENDIX C
Field Notebook

Travelodge 9200 Glacier Hwy



Rite in the Rain

ALL-WEATHER

FIELD

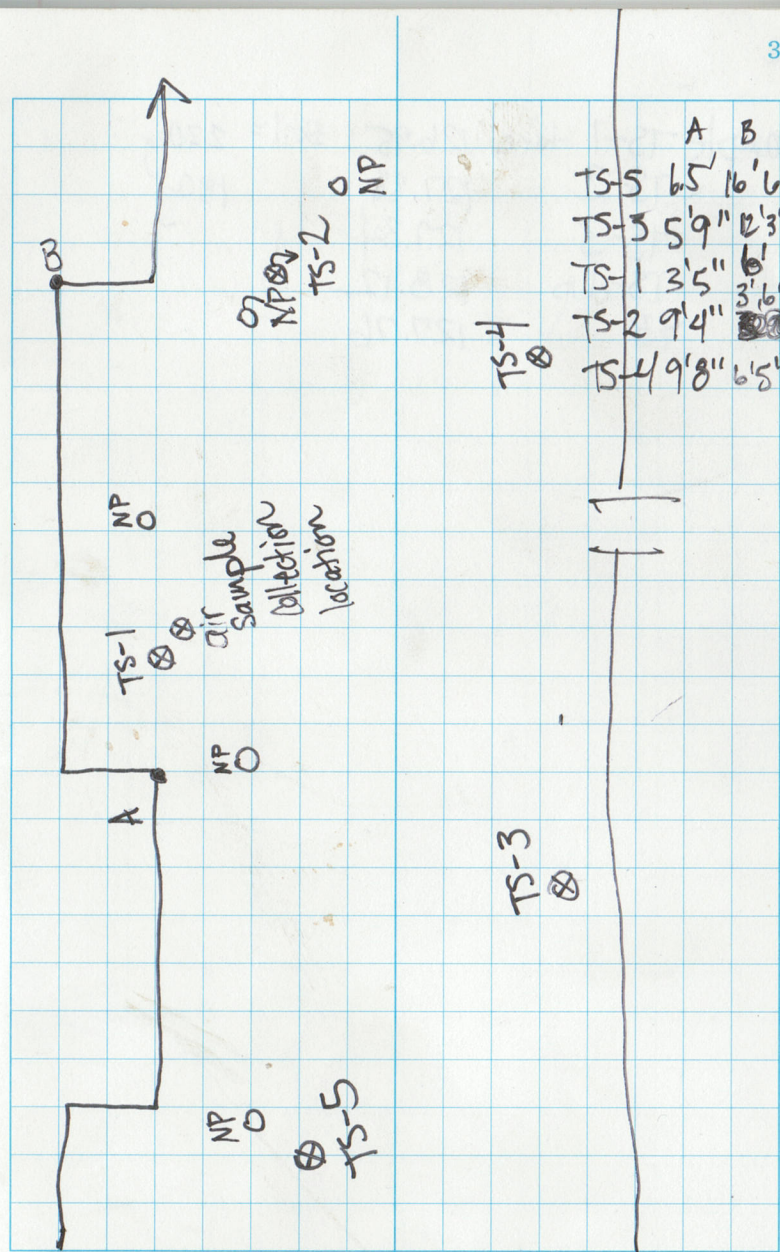
Nº 351

12-1076
10-1084
08-1008
SBL Rpt

2

9-25-12

- 0930 onsite T. Richards & A. Bruce
setting up. using Sensodyne pumps +
dry cal calibrator for air
- 1020 begin collection w/ #5 at 200 ml/min
flow rate through 'calibration tube'.
- 1023 begin collection w/ #2 at 50 ml/min
- 1105 collect TA-01 from pump #5.
humidity ~80%, temperature 62-64°F
post flow rate 187 ml/min
- 1315 collect TA-03 as trip blank
humidity ~80% temp 62°F
- 1323 collect TA-02 from pump #2
post flow rate 49.14 ml/min
- 1340 collect TS-1 @ 1' bgs. sand, gw
PID=74 ppm Sheen=95-100% white
- 1345 collect TS-2 @ 10" bgs, sand, gw infiltrating
PID=37.4 ~~TA duplicate~~ sheen=90% white
- 1355 collect TS-3 @ 18" bgs sheen=70% fine
PID=5.3 + duplicate
- 1400 collect TS-4 @ 1' bgs sheen=90% white
PID=0.3 ppm not submitted
- 1405 collect TS-5 @ 18" bgs sheen=60% v. faint
PID=0.0 ppm
- using Mini RAE 3000 PID
- 1430 offsite



APPENDIX D
Laboratory Reports



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

Project: 12-1076
Client: Nortech
SGS Work Order: 1124655

A handwritten signature in black ink that reads "Heather L. Hall".

Heather L. Hall
2012.10.19 12:59:46
-08'00'

Released by: SGS North America Inc.
Environmental Services – Alaska Division
Quality Service Manager

Contents (Bookmarked in PDF):

Cover Page
Case Narrative
Sample Results Forms
Quality Control Summary Forms
Chain of Custody/Sample Receipt Forms
Attachments (if applicable)



Case Narrative

Client NORTECH Nortech
Workorder 1124655 12-1076

Printed Date/Time 10/19/2012 12:52

Sample ID Client Sample ID

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

1124655001 PS TS-1

AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.
AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

1124655002 PS TS-2

AK102/103 - The pattern is consistent with a weathered middle distillate.
AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

1124655003 PS TS-3

AK102/103 - Unknown hydrocarbon with several peaks is present.
AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

1124655004 PS TS-dup

AK102/103 - Unknown hydrocarbon with several peaks is present.
AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

1118918 * LCS LCS for HBN 1381978 [XXX/28139]

AK102 - LCS recovery does not meet QC criteria (biased low); associated samples to be reextracted.

1118919 * LCSD LCSD for HBN 1381978 [XXX/2813]

AK102/103 - LCS/LCSD RPD does not meet QC criteria. Associated samples to be reextracted.

1119540 * LCSD LCSD for HBN 1382177 [XXX/2815]

AK102 - LCSD does not meet QC criteria. (biased low 74%)

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

Jason Ginter
Nortech
5438 Shaune Dr, #B
Juneau, AK 99801

Work Order: 1124655
12-1076
Client: Nortech
Report Date: October 19, 2012

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities. The following descriptors or qualifiers may be found in your report:

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

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



Detectable Results Summary

Print Date: 10/19/2012 12:52 pm

Client Sample ID: **TS-1**

SGS Ref. #: 1124655001

Semivolatile Organic Fuels Department

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	2930	mg/Kg
Residual Range Organics	122	mg/Kg

Client Sample ID: **TS-2**

SGS Ref. #: 1124655002

Volatile Fuels Department

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Toluene	73.3	ug/Kg

Semivolatile Organic Fuels Department

Diesel Range Organics	396	mg/Kg
Residual Range Organics	39.8	mg/Kg

Client Sample ID: **TS-3**

SGS Ref. #: 1124655003

Semivolatile Organic Fuels Department

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	35.8	mg/Kg
Residual Range Organics	201	mg/Kg

Client Sample ID: **TS-dup**

SGS Ref. #: 1124655004

Semivolatile Organic Fuels Department

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	42.3	mg/Kg
Residual Range Organics	386	mg/Kg



SGS Ref.# 1124655001
Client Name Nortech
Project Name/# 12-1076
Client Sample ID TS-1
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Collected Date/Time 09/25/2012 13:40
Received Date/Time 09/26/2012 10:52
Technical Director Stephen C. Ede

Sample Remarks:

AK103 - Unknown hydrocarbon with several peaks is present.

AK102 - The pattern is consistent with a weathered middle distillate.

AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>									
Benzene	ND	11.5	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Ethylbenzene	ND	23.0	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
o-Xylene	ND	23.0	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
P & M -Xylene	ND	46.0	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Toluene	ND	23.0	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
<u>Surrogates</u>									
1,4-Difluorobenzene <surr>	92.2		%	SW8021B	B	72-119	09/25/12	10/02/12	HM
<u>Semivolatile Organic Fuels Department</u>									
Diesel Range Organics	2930	115	mg/Kg	AK102	A		10/03/12	10/10/12	EAB
Residual Range Organics	122	22.9	mg/Kg	AK103	A		10/03/12	10/05/12	EAB
<u>Surrogates</u>									
5a Androstane <surr>	129		%	AK102	A	50-150	10/03/12	10/10/12	EAB
n-Triacontane-d62 <surr>	98		%	AK103	A	50-150	10/03/12	10/05/12	EAB
<u>Solids</u>									
Total Solids	86.0		%	SM21 2540G	A			09/27/12	CNP



SGS Ref.# 1124655002
Client Name Nortech
Project Name/# 12-1076
Client Sample ID TS-2
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Collected Date/Time 09/25/2012 13:45
Received Date/Time 09/26/2012 10:52
Technical Director Stephen C. Ede

Sample Remarks:

AK102/103 - The pattern is consistent with a weathered middle distillate.

AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>									
Benzene	ND	17.9	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Ethylbenzene	ND	35.7	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
o-Xylene	ND	35.7	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
P & M -Xylene	ND	71.5	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Toluene	73.3	35.7	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
<u>Surrogates</u>									
1,4-Difluorobenzene <surr>	93.4		%	SW8021B	B	72-119	09/25/12	10/02/12	HM
<u>Semivolatile Organic Fuels Department</u>									
Diesel Range Organics	396	22.9	mg/Kg	AK102	A		10/03/12	10/05/12	EAB
Residual Range Organics	39.8	22.9	mg/Kg	AK103	A		10/03/12	10/05/12	EAB
<u>Surrogates</u>									
5a Androstane <surr>	53.2		%	AK102	A	50-150	10/03/12	10/05/12	EAB
n-Triacontane-d62 <surr>	59.9		%	AK103	A	50-150	10/03/12	10/05/12	EAB
<u>Solids</u>									
Total Solids	86.2		%	SM21 2540G	A			09/27/12	CNP



SGS Ref.# 1124655003
Client Name Nortech
Project Name/# 12-1076
Client Sample ID TS-3
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Collected Date/Time 09/25/2012 13:55
Received Date/Time 09/26/2012 10:52
Technical Director Stephen C. Ede

Sample Remarks:

AK102/103 - Unknown hydrocarbon with several peaks is present.

AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>									
Benzene	ND	19.3	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Ethylbenzene	ND	38.6	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
o-Xylene	ND	38.6	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
P & M -Xylene	ND	77.2	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Toluene	ND	38.6	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
<u>Surrogates</u>									
1,4-Difluorobenzene <surr>	90.9		%	SW8021B	B	72-119	09/25/12	10/02/12	HM
<u>Semivolatile Organic Fuels Department</u>									
Diesel Range Organics	35.8	25.0	mg/Kg	AK102	A		10/03/12	10/05/12	EAB
Residual Range Organics	201	25.0	mg/Kg	AK103	A		10/03/12	10/05/12	EAB
<u>Surrogates</u>									
5a Androstane <surr>	66.7		%	AK102	A	50-150	10/03/12	10/05/12	EAB
n-Triacontane-d62 <surr>	80.6		%	AK103	A	50-150	10/03/12	10/05/12	EAB
<u>Solids</u>									
Total Solids	79.1		%	SM21 2540G	A			09/27/12	CNP



SGS Ref.# 1124655004
Client Name Nortech
Project Name/# 12-1076
Client Sample ID TS-dup
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Collected Date/Time 09/25/2012 13:35
Received Date/Time 09/26/2012 10:52
Technical Director Stephen C. Ede

Sample Remarks:

AK102/103 - Unknown hydrocarbon with several peaks is present.

AK102 - LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>									
Benzene	ND	19.0	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Ethylbenzene	ND	38.1	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
o-Xylene	ND	38.1	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
P & M -Xylene	ND	76.2	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
Toluene	ND	38.1	ug/Kg	SW8021B	B		09/25/12	10/02/12	HM
<u>Surrogates</u>									
1,4-Difluorobenzene <surr>	91.5		%	SW8021B	B	72-119	09/25/12	10/02/12	HM
<u>Semivolatile Organic Fuels Department</u>									
Diesel Range Organics	42.3	25.3	mg/Kg	AK102	A		10/03/12	10/05/12	EAB
Residual Range Organics	386	25.3	mg/Kg	AK103	A		10/03/12	10/05/12	EAB
<u>Surrogates</u>									
5a Androstane <surr>	76.7		%	AK102	A	50-150	10/03/12	10/05/12	EAB
n-Triacontane-d62 <surr>	93.2		%	AK103	A	50-150	10/03/12	10/05/12	EAB
<u>Solids</u>									
Total Solids	78.5		%	SM21 2540G	A			09/27/12	CNP



SGS Ref.# 1124655005
Client Name Nortech
Project Name/# 12-1076
Client Sample ID Trip Blank
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Collected Date/Time 09/25/2012 13:40
Received Date/Time 09/26/2012 10:52
Technical Director Stephen C. Ede

Sample Remarks:

Parameter	Results	LOQ	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>									
Benzene	ND	5530	ug/Kg	SW8021B	A		09/25/12	10/02/12	HM
Ethylbenzene	ND	11100	ug/Kg	SW8021B	A		09/25/12	10/02/12	HM
o-Xylene	ND	11100	ug/Kg	SW8021B	A		09/25/12	10/02/12	HM
P & M -Xylene	ND	22100	ug/Kg	SW8021B	A		09/25/12	10/02/12	HM
Toluene	ND	11100	ug/Kg	SW8021B	A		09/25/12	10/02/12	HM
Surrogates									
1,4-Difluorobenzene <surr>	92.3		%	SW8021B	A	72-119	09/25/12	10/02/12	HM



SGS Ref.# 1118200 Method Blank
Client Name Nortech
Project Name/# 12-1076
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch
Method
Date

QC results affect the following production samples:
1124655001, 1124655002, 1124655003, 1124655004

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
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<u>Solids</u>					
Total Solids	99.8			%	09/27/12
Batch	SPT8814				
Method	SM21 2540G				
Instrument					



SGS Ref.# 1119333 Method Blank
Client Name Nortech
Project Name/# 12-1076
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch VXX24098
Method SW5035A
Date 10/02/2012

QC results affect the following production samples:

1124655001, 1124655002, 1124655003, 1124655004, 1124655005

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
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Volatile Fuels Department

Benzene	ND	12.5	4.00	ug/Kg	10/02/12
Ethylbenzene	ND	25.0	7.80	ug/Kg	10/02/12
o-Xylene	ND	25.0	7.80	ug/Kg	10/02/12
P & M -Xylene	ND	50.0	15.0	ug/Kg	10/02/12
Toluene	8.75J	25.0	7.80	ug/Kg	10/02/12

Surrogates

1,4-Difluorobenzene <surr>	92.2	72-119		%	10/02/12
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Batch VFC11201
Method SW8021B
Instrument Agilent 7890 PID/FID



SGS Ref.# 1119538 Method Blank
Client Name Nortech
Project Name/# 12-1076
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch XXX28156
Method SW3550C
Date 10/03/2012

QC results affect the following production samples:

1124655001, 1124655002, 1124655003, 1124655004

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
<u>Semivolatile Organic Fuels Department</u>					
Diesel Range Organics	ND	20.0	6.20	mg/Kg	10/05/12
Surrogates					
5a Androstane <surr>	65.2	60-120		%	10/05/12
Batch	XFC10638				
Method	AK102				
Instrument	HP 6890 Series II FID SV D R				
Residual Range Organics	ND	20.0	6.20	mg/Kg	10/05/12
Surrogates					
n-Triacontane-d62 <surr>	72.1	60-120		%	10/05/12
Batch	XFC10638				
Method	AK103				
Instrument	HP 6890 Series II FID SV D R				



SGS Ref.# 1118201 Duplicate
Client Name Nortech
Project Name/# 12-1076
Original 1124700006
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch
Method
Date

QC results affect the following production samples:
1124655001, 1124655002, 1124655003, 1124655004

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
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Solids

Total Solids	87.7	88.3	%	1	(< 15)	09/27/2012
Batch	SPT8814					
Method	SM21 2540G					
Instrument						



SGS Ref.# 1119334 Lab Control Sample
 1119335 Lab Control Sample Duplicate
Client Name Nortech
Project Name/# 12-1076
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch VXX24098
Method SW5035A
Date 10/02/2012

QC results affect the following production samples:

1124655001, 1124655002, 1124655003, 1124655004, 1124655005

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
<u>Volatile Fuels Department</u>							
Benzene	LCS	1390	111	(75-125)		1250 ug/Kg	10/02/2012
	LCSD	1310	105		6	(< 20)	1250 ug/Kg 10/02/2012
Ethylbenzene	LCS	1310	105	(75-125)		1250 ug/Kg	10/02/2012
	LCSD	1230	98		6	(< 20)	1250 ug/Kg 10/02/2012
o-Xylene	LCS	1250	100	(75-125)		1250 ug/Kg	10/02/2012
	LCSD	1170	94		6	(< 20)	1250 ug/Kg 10/02/2012
P & M -Xylene	LCS	2520	101	(80-125)		2500 ug/Kg	10/02/2012
	LCSD	2370	95		6	(< 20)	2500 ug/Kg 10/02/2012
Toluene	LCS	1350	108	(70-125)		1250 ug/Kg	10/02/2012
	LCSD	1270	102		6	(< 20)	1250 ug/Kg 10/02/2012
Surrogates							
1,4-Difluorobenzene <surr>	LCS		97	(72-119)			10/02/2012
	LCSD		96		1		10/02/2012

Batch VFC11201
Method SW8021B
Instrument Agilent 7890 PID/FID



SGS Ref.# 1119539 Lab Control Sample
1119540 Lab Control Sample Duplicate
Client Name Nortech
Project Name/# 12-1076
Matrix Soil/Solid (dry weight)

Printed Date/Time 10/19/2012 12:52
Prep Batch XXX28156
Method SW3550C
Date 10/03/2012

QC results affect the following production samples:

1124655001, 1124655002, 1124655003, 1124655004

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
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Semivolatile Organic Fuels Department

Diesel Range Organics	LCS	140	84	(75-125)		167 mg/Kg	10/05/2012
	LCSD	124	74 *		13	(< 20)	167 mg/Kg 10/05/2012

Surrogates

5a Androstane <surr>	LCS		80	(60-120)			10/05/2012
	LCSD		68		16		10/05/2012

Batch XFC10638
Method AK102
Instrument HP 6890 Series II FID SV D R

Residual Range Organics	LCS	150	90	(60-120)		167 mg/Kg	10/05/2012
	LCSD	126	76		17	(< 20)	167 mg/Kg 10/05/2012

Surrogates

n-Triacontane-d62 <surr>	LCS		85	(60-120)			10/05/2012
	LCSD		73		15		10/05/2012

Batch XFC10638
Method AK103
Instrument HP 6890 Series II FID SV D R



SGS Ref.# 1119338 Matrix Spike
 1119339 Matrix Spike Duplicate

Printed Date/Time 10/19/2012 12:52
 Prep Batch VXX24098
 Method AK101 Extraction (S)
 Date 10/02/2012

Original 1124655001
 Matrix Soil/Solid (dry weight)

QC results affect the following production samples:
 1124655001, 1124655002, 1124655003, 1124655004, 1124655005

Parameter	Qualifiers	Original Result	QC Result	Pet Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department									
Benzene	MS	ND	799	107	(75-125)			745 ug/Kg	10/02/2012
	MSD		810	109		1	(< 20)	745 ug/Kg	10/02/2012
Ethylbenzene	MS	ND	728	98	(75-125)			745 ug/Kg	10/02/2012
	MSD		737	99		1	(< 20)	745 ug/Kg	10/02/2012
o-Xylene	MS	ND	702	94	(75-125)			745 ug/Kg	10/02/2012
	MSD		709	95		1	(< 20)	745 ug/Kg	10/02/2012
P & M -Xylene	MS	ND	1407	95	(80-125)			1488 ug/Kg	10/02/2012
	MSD		1430	96		1	(< 20)	1488 ug/Kg	10/02/2012
Toluene	MS	ND	779	105	(70-125)			745 ug/Kg	10/02/2012
	MSD		788	106		1	(< 20)	745 ug/Kg	10/02/2012
Surrogates									
1,4-Difluorobenzene <surr>	MS		715	96	(72-119)				10/02/2012
	MSD		715	96		0			10/02/2012
Batch	VFC11201								
Method	SW8021B								
Instrument	Agilent 7890 PID/FID								



SGS North America Inc. CHAIN OF CUSTODY RECORD

1124655



nd
ork
a
:ky

1 CLIENT: Nortech-Juneau
 CONTACT: Jason Ginter PHONE NO: 586-6013
 PROJECT NAME: 12-1076 PROJECT PWSID/ PERMIT#: _____
 REPORTS TO: J. Ginter EMAIL: ginter@nortechengr.com
 INVOICE TO: 2400 College Rd. Fairbanks AK P.O. #: _____

SGS Reference #: _____ page 1 of 1

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/MATRIX CODE	# CONTAINERS		SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required	REMARKS/LOC ID
					C	S				
	TS-1	9-25-12	1340	S	2	G			3	PREP AK102
	TS-2		1345	L	1	L				PREP AK103
	TS-3		1355	L	1	L				BTEX 8021
	TS-dup		1335	L	1	L				
	Trip blank	9-25-12			1					
	Trip blank				1					

4 DOD Project? YES NO Data Deliverable Requirements:
 Cooler ID _____
 Requested Turnaround Time and/or Special Instructions: STD TAT

Temperature Blank °C: 10.7 20.2 or Ambient []
 Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT (See attached Sample Receipt Form)

5 Collected/Relinquished By: (1) Jana Martin Date: 9-25-12 Time: 1730 Received By:
 Relinquished By: (2) _____ Date: _____ Time: _____ Received By:
 Relinquished By: (3) _____ Date: _____ Time: _____ Received By:
 Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____



SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	<i>WJ</i>
Temperature blank compliant* (i.e., 0-6°C after correction factor)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: _____ @ _____ w/ Therm.ID: <i>202</i> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled." If temperature(s) <0°C, were all sample containers ice free?	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Delivery method (specify all that apply): USPS <input type="checkbox"/> Alert Courier <input checked="" type="checkbox"/> Road Runner <input type="checkbox"/> Client Lynden <input type="checkbox"/> Carlile <input type="checkbox"/> ERA <input checked="" type="checkbox"/> AK Air FedEx <input type="checkbox"/> UPS <input type="checkbox"/> NAC <input type="checkbox"/> PenAir Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Yes No <input checked="" type="radio"/> N/A Note ABN/tracking # <input checked="" type="radio"/> See Attached or N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	SRF Initiated by: <i>Adw</i> <input checked="" type="radio"/> N/A <input type="radio"/> N/A
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ <1hr; in which case, use times on COC.</i> Were analyses requested unambiguous?	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: _____	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes No N/A <input checked="" type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A	<i>Adw 2/26/12</i>
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <input checked="" type="radio"/> N/A	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time or site-specific QC (e.g., BMS/BMSD/BDUP) samples, were the COC & bottles flagged (e.g., stickers) accordingly? For RUSH/SHORT HT, was email sent?	Yes No <input checked="" type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: <i>Adw</i> PM = _____
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: <input checked="" type="radio"/> N/A <input type="radio"/> N/A
Additional notes (if applicable):		

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

Alert Expeditors Inc.
DBA/Petroleum Courier Service

332299

Citywide Delivery
272-0349 • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 9/26/14
From North
To SES

Collect Prepay Advance Charges
Account
Job # PO#

Order
76820941
GSA

1124655


Shipped Signature _____
Received By: [Signature] Total Charge 1052

027 JNU 8682 0941

027-8682 0941

Shipper's Name and Address

NORTECH
2400 College Rd
Fairbanks, AK 99709
USA

Shipper's Account Number
27442126076
Customer's ID Number
10588

Not Negotiable

Air Waybill

Issued By

Alaska Air Cargo
ALASKA AIRLINES & HORIZON AIR

P.O. BOX 68900 SEATTLE, WA 98168
800-225-2752 ALASKACARGO.COM

Tel: 9074525688

Consignee's Name and Address

SGS North America Inc
200 W Potter Drive
Anchorage, AK 99518
USA

Consignee's Account Number
27400215947

Also Notify

Alaska

Tel: 9075622343

Tel:

Issuing Carrier's Agent and City

Accounting Information

NORTECH
2400 College Rd
Fairbanks, AK 99709
USA

10588

Agent's IATA Code

Account No.

1124655



Airport of Departure (Addr. of First Carrier) and Requested Routing

Juneau

SRN/12-1076
GoldStreak

To By First Carrier

ANC Alaska Airlines

To / By

To / By

Currency

WT/VAL

Other

Registered

Customs

USD

PX

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

NVD

NCV

Airport of Destination

Anchorage

Flight/Date

AS 073/26

Flight/Date

Amount of Insurance

XXX

Handling Information

NOA 907-562-2343

SCI

No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	13.0	L			13.0		AS AGREED	SOIL SAMPLES Dims: 13 x 9 x12 x 1
1	13.0						AS AGREED	GSX Volume: 0.813

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			MYC 2.60 SCC 2.00
	Valuation Charge		
	Tax		
	Total Other Charges Due Agent		
	Total Other Charges Due Carrier		
	Total Prepaid	Total Collect	
AS AGREED			

Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.

For: NORTECH

Signature of Shipper or his Agent

John

THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

25 Sep 2012 17:46

Juneau

Alaska Airlines

Executed On (Date)

at (Place)

Signature of Issuing Carrier or its Agent

027-8682 0941

10/12/2012
Ms. Ashley Bruce
Nortech Engineering
5438 Shaun Dr.
Ste B
Juneau AK 99801

Project Name: Travelodge
Project #: 12-1076
Workorder #: 1209568

Dear Ms. Ashley Bruce

The following report includes the data for the above referenced project for sample(s) received on 9/27/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-17 VI are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Kelly Buettner
Project Manager

WORK ORDER #: 1209568

Work Order Summary

CLIENT: Ms. Ashley Bruce
Nortech Engineering
5438 Shaun Dr.
Ste B
Juneau, AK 99801

BILL TO: Accounts Payable
Nortech Engineering
2400 College Road
Fairbanks, AK 99709

PHONE: 907-586-6813

P.O. #

FAX:

PROJECT # 12-1076 Travelodge

DATE RECEIVED: 09/27/2012

CONTACT: Kelly Buettner

DATE COMPLETED: 10/11/2012

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	TA-01	Modified TO-17 VI
02A	TA-02	Modified TO-17 VI
03A	TA-03	Modified TO-17 VI
04A	Lab Blank	Modified TO-17 VI
05A	CCV	Modified TO-17 VI
06A	LCS	Modified TO-17 VI
06AA	LCSD	Modified TO-17 VI

CERTIFIED BY:



Technical Director

DATE: 10/12/12

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.

Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563

(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020



LABORATORY NARRATIVE
Modified EPA Method TO-17 (VI Tubes)
Nortech Engineering
Workorder# 1209568

Three TO-17 VI Tube samples were received on September 27, 2012. The laboratory performed the analysis via modified EPA Method TO-17 using GC/MS in the full scan mode. TO-17 'VI' sorbent tubes are thermally desorbed onto a secondary trap. The trap is thermally desorbed to elute the components into the GC/MS system for further separation.

A modification that may be applied to EPA Method TO-17 at the client's discretion is the requirement to transport sorbent tubes at 4 deg C. Laboratory studies demonstrate a high level of stability for VOCs on the TO-17 'VI' tube at room temperature for periods of up to 14 days. Tubes can be shipped to and from the field site at ambient conditions as long as the 14-day sample hold time is upheld. Trip blanks and field surrogate spikes are used as additional control measures to monitor recovery and background contribution during tube transport.

Since the TO-17 VI application significantly extends the scope of target compounds addressed in EPA Method TO-15 and TO-17, the laboratory has implemented several method modifications outlined in the table below. Specific project requirements may over-ride the laboratory modifications.

<i>Requirement</i>	<i>TO-17</i>	<i>ATL Modifications</i>
Initial Calibration	%RSD$\leq 30\%$ with 2 allowed out up to 40%	VOC list: %RSD$\leq 30\%$ with 2 allowed out up to 40% SVOC list: %RSD$\leq 30\%$ with 2 allowed out up to 40%
Daily Calibration	%D for each target compound within +/-30%.	Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene within +/-40%D
Audit Accuracy	70-130%	Second source recovery limits for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene = 60-140%.
Distributed Volume Pairs	Collection of distributed volume pairs required for monitoring ambient air to insure high quality.	If site is well-characterized or performance previously verified, single tube sampling may be appropriate. Distributed pairs may be impractical for soil gas collection due to configuration and volume constraints.

Receiving Notes

A Temperature Blank was included with the shipment. Temperature was measured and was not within 4 ± 2 °C. Coolant in the form of blue ice was present. Analysis proceeded.

Analytical Notes

A sampling volume of 9.00 L was used to convert ng to ug/m³ for the associated Lab Blank and sample TA-03.

The reported CCV and LCS for each daily batch may be derived from more than one analytical file.

Due to unacceptable linearity of 1,4-Dioxane in the initial calibration, 1,4-Dioxane was removed from the analyte list and cannot be reported.

Due to the linear calibration range of the instrument, the reporting limit for 2,2,4-Trimethylpentane was raised from 4.7ng to 9.3ng.

Due to the linear calibration range of the instrument, the reporting limit for Naphthalene was raised from 0.5ng to 1.0ng.

All Quality Control Limit exceedences and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds EPA METHOD TO-17

Client Sample ID: TA-01

Lab ID#: 1209568-01A

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 11	0.11	0.62	0.23 J	1.3 J
2,2,4-Trimethylpentane	0.22	1.0	0.30	1.4

Client Sample ID: TA-02

Lab ID#: 1209568-02A

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Isopentane	0.11	0.33	0.62	1.8
Freon 11	0.11	0.62	0.60 J	3.4 J
Benzene	0.11	0.36	0.17	0.54
2,2,4-Trimethylpentane	0.22	1.0	0.33	1.5
Toluene	0.11	0.42	0.32	1.2

Client Sample ID: TA-03

Lab ID#: 1209568-03A

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 11	0.11	0.62	0.71 J	4.0 J
Methylene Chloride	0.67	2.3	2.1	7.4



Air Toxics

Client Sample ID: TA-01

Lab ID#: 1209568-01A

EPA METHOD TO-17

File Name:	11101114	Date of Extraction: N/A	Date of Collection: 9/25/12 11:05:00 AM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 03:20 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 114	0.11	0.78	Not Detected	Not Detected
Vinyl Chloride	0.11	0.29	Not Detected	Not Detected
1,3-Butadiene	0.11	0.24	Not Detected	Not Detected
Isopentane	0.11	0.33	Not Detected	Not Detected
Freon 11	0.11	0.62	0.23 J	1.3 J
1,1-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Methylene Chloride	0.67	2.3	Not Detected	Not Detected
Freon 113	0.11	0.86	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
1,1-Dichloroethane	0.11	0.44	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Hexane	0.11	0.39	Not Detected	Not Detected
Chloroform	0.11	0.54	Not Detected	Not Detected
1,2-Dichloroethane	0.11	0.44	Not Detected	Not Detected
1,1,1-Trichloroethane	0.11	0.60	Not Detected	Not Detected
Benzene	0.11	0.36	Not Detected	Not Detected
Carbon Tetrachloride	0.11	0.70	Not Detected	Not Detected
Cyclohexane	0.11	0.38	Not Detected	Not Detected
1,2-Dichloropropane	0.11	0.51	Not Detected	Not Detected
Trichloroethene	0.11	0.60	Not Detected	Not Detected
2,2,4-Trimethylpentane	0.22	1.0	0.30	1.4
Heptane	0.11	0.46	Not Detected	Not Detected
Methylcyclohexane	0.11	0.44	Not Detected	Not Detected
1,1,2-Trichloroethane	0.11	0.60	Not Detected	Not Detected
4-Methyl-2-pentanone	0.11	0.46	Not Detected	Not Detected
Toluene	0.11	0.42	Not Detected	Not Detected
2-Hexanone	0.11	0.46	Not Detected	Not Detected
Tetrachloroethene	0.11	0.76	Not Detected	Not Detected
Chlorobenzene	0.11	0.51	Not Detected	Not Detected
Ethyl Benzene	0.11	0.48	Not Detected	Not Detected
m,p-Xylene	0.11	0.48	Not Detected	Not Detected
o-Xylene	0.11	0.48	Not Detected	Not Detected
Styrene	0.11	0.47	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.11	0.77	Not Detected	Not Detected
Cumene	0.11	0.54	Not Detected	Not Detected
Propylbenzene	0.11	0.54	Not Detected	Not Detected
4-Ethyltoluene	0.11	0.54	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.11	0.54	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.66	3.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,4-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,2-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected



Air Toxics

Client Sample ID: TA-01

Lab ID#: 1209568-01A

EPA METHOD TO-17

File Name:	11101114	Date of Extraction: N/A	Date of Collection: 9/25/12 11:05:00 AM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 03:20 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
1,2,4-Trichlorobenzene	0.11	0.82	Not Detected	Not Detected
Hexachlorobutadiene	0.11	1.2	Not Detected	Not Detected
Naphthalene	0.021	0.11	Not Detected	Not Detected
2-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
1-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
Acenaphthylene	0.089	0.56	Not Detected	Not Detected
Acenaphthene	0.088	0.56	Not Detected	Not Detected
Fluorene	0.082	0.56	Not Detected	Not Detected
Phenanthrene	0.076	0.56	Not Detected	Not Detected
Anthracene	0.076	0.56	Not Detected	Not Detected
Fluoranthene	0.067	0.56	Not Detected	Not Detected
Pyrene	0.067	0.56	Not Detected	Not Detected
TPH (Diesel Range C10-C24)	12	110	Not Detected	Not Detected

Air Sample Volume(L): 9.00

J = Estimated value due to bias in the CCV.

Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	62	50-150
Toluene-d8	94	50-150
Naphthalene-d8	85	50-150



Air Toxics

Client Sample ID: TA-02

Lab ID#: 1209568-02A

EPA METHOD TO-17

File Name:	11101117	Date of Extraction: NA	Date of Collection: 9/25/12 1:23:00 PM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 05:31 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 114	0.11	0.78	Not Detected	Not Detected
Vinyl Chloride	0.11	0.29	Not Detected	Not Detected
1,3-Butadiene	0.11	0.24	Not Detected	Not Detected
Isopentane	0.11	0.33	0.62	1.8
Freon 11	0.11	0.62	0.60 J	3.4 J
1,1-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Methylene Chloride	0.67	2.3	Not Detected	Not Detected
Freon 113	0.11	0.86	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
1,1-Dichloroethane	0.11	0.44	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Hexane	0.11	0.39	Not Detected	Not Detected
Chloroform	0.11	0.54	Not Detected	Not Detected
1,2-Dichloroethane	0.11	0.44	Not Detected	Not Detected
1,1,1-Trichloroethane	0.11	0.60	Not Detected	Not Detected
Benzene	0.11	0.36	0.17	0.54
Carbon Tetrachloride	0.11	0.70	Not Detected	Not Detected
Cyclohexane	0.11	0.38	Not Detected	Not Detected
1,2-Dichloropropane	0.11	0.51	Not Detected	Not Detected
Trichloroethene	0.11	0.60	Not Detected	Not Detected
2,2,4-Trimethylpentane	0.22	1.0	0.33	1.5
Heptane	0.11	0.46	Not Detected	Not Detected
Methylcyclohexane	0.11	0.44	Not Detected	Not Detected
1,1,2-Trichloroethane	0.11	0.60	Not Detected	Not Detected
4-Methyl-2-pentanone	0.11	0.46	Not Detected	Not Detected
Toluene	0.11	0.42	0.32	1.2
2-Hexanone	0.11	0.46	Not Detected	Not Detected
Tetrachloroethene	0.11	0.76	Not Detected	Not Detected
Chlorobenzene	0.11	0.51	Not Detected	Not Detected
Ethyl Benzene	0.11	0.48	Not Detected	Not Detected
m,p-Xylene	0.11	0.48	Not Detected	Not Detected
o-Xylene	0.11	0.48	Not Detected	Not Detected
Styrene	0.11	0.47	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.11	0.77	Not Detected	Not Detected
Cumene	0.11	0.54	Not Detected	Not Detected
Propylbenzene	0.11	0.54	Not Detected	Not Detected
4-Ethyltoluene	0.11	0.54	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.11	0.54	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.66	3.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,4-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,2-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected



Client Sample ID: TA-02

Lab ID#: 1209568-02A

EPA METHOD TO-17

File Name:	11101117	Date of Extraction: N/A	Date of Collection: 9/25/12 1:23:00 PM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 05:31 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
1,2,4-Trichlorobenzene	0.11	0.82	Not Detected	Not Detected
Hexachlorobutadiene	0.11	1.2	Not Detected	Not Detected
Naphthalene	0.021	0.11	Not Detected	Not Detected
2-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
1-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
Acenaphthylene	0.089	0.56	Not Detected	Not Detected
Acenaphthene	0.088	0.56	Not Detected	Not Detected
Fluorene	0.082	0.56	Not Detected	Not Detected
Phenanthrene	0.076	0.56	Not Detected	Not Detected
Anthracene	0.076	0.56	Not Detected	Not Detected
Fluoranthene	0.067	0.56	Not Detected	Not Detected
Pyrene	0.067	0.56	Not Detected	Not Detected
TPH (Diesel Range C10-C24)	12	110	Not Detected	Not Detected

Air Sample Volume(L): 9.00

J = Estimated value due to bias in the CCV.

Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	61	50-150
Toluene-d8	105	50-150
Naphthalene-d8	120	50-150



Air Toxics

Client Sample ID: TA-03

Lab ID#: 1209568-03A

EPA METHOD TO-17

File Name:	11101113	Date of Extraction: N/A	Date of Collection: 9/25/12 1:16:00 PM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 02:36 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 114	0.11	0.78	Not Detected	Not Detected
Vinyl Chloride	0.11	0.29	Not Detected	Not Detected
1,3-Butadiene	0.11	0.24	Not Detected	Not Detected
Isopentane	0.11	0.33	Not Detected	Not Detected
Freon 11	0.11	0.62	0.71 J	4.0 J
1,1-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Methylene Chloride	0.67	2.3	2.1	7.4
Freon 113	0.11	0.86	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
1,1-Dichloroethane	0.11	0.44	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Hexane	0.11	0.39	Not Detected	Not Detected
Chloroform	0.11	0.54	Not Detected	Not Detected
1,2-Dichloroethane	0.11	0.44	Not Detected	Not Detected
1,1,1-Trichloroethane	0.11	0.60	Not Detected	Not Detected
Benzene	0.11	0.36	Not Detected	Not Detected
Carbon Tetrachloride	0.11	0.70	Not Detected	Not Detected
Cyclohexane	0.11	0.38	Not Detected	Not Detected
1,2-Dichloropropane	0.11	0.51	Not Detected	Not Detected
Trichloroethene	0.11	0.60	Not Detected	Not Detected
2,2,4-Trimethylpentane	0.22	1.0	Not Detected	Not Detected
Heptane	0.11	0.46	Not Detected	Not Detected
Methylcyclohexane	0.11	0.44	Not Detected	Not Detected
1,1,2-Trichloroethane	0.11	0.60	Not Detected	Not Detected
4-Methyl-2-pentanone	0.11	0.46	Not Detected	Not Detected
Toluene	0.11	0.42	Not Detected	Not Detected
2-Hexanone	0.11	0.46	Not Detected	Not Detected
Tetrachloroethene	0.11	0.76	Not Detected	Not Detected
Chlorobenzene	0.11	0.51	Not Detected	Not Detected
Ethyl Benzene	0.11	0.48	Not Detected	Not Detected
m,p-Xylene	0.11	0.48	Not Detected	Not Detected
o-Xylene	0.11	0.48	Not Detected	Not Detected
Styrene	0.11	0.47	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.11	0.77	Not Detected	Not Detected
Cumene	0.11	0.54	Not Detected	Not Detected
Propylbenzene	0.11	0.54	Not Detected	Not Detected
4-Ethyltoluene	0.11	0.54	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.11	0.54	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.66	3.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,4-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,2-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected

Client Sample ID: TA-03

Lab ID#: 1209568-03A

EPA METHOD TO-17

File Name:	11101113	Date of Extraction: N/A	Date of Collection: 9/25/12 1:16:00 PM
Dil. Factor:	1.00	Date of Analysis: 10/11/12 02:36 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
1,2,4-Trichlorobenzene	0.11	0.82	Not Detected	Not Detected
Hexachlorobutadiene	0.11	1.2	Not Detected	Not Detected
Naphthalene	0.021	0.11	Not Detected	Not Detected
2-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
1-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
Acenaphthylene	0.089	0.56	Not Detected	Not Detected
Acenaphthene	0.088	0.56	Not Detected	Not Detected
Fluorene	0.082	0.56	Not Detected	Not Detected
Phenanthrene	0.076	0.56	Not Detected	Not Detected
Anthracene	0.076	0.56	Not Detected	Not Detected
Fluoranthene	0.067	0.56	Not Detected	Not Detected
Pyrene	0.067	0.56	Not Detected	Not Detected
TPH (Diesel Range C10-C24)	12	110	Not Detected	Not Detected

Air Sample Volume(L): 9.00

J = Estimated value due to bias in the CCV.

Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	50-150
Toluene-d8	106	50-150
Naphthalene-d8	106	50-150



Client Sample ID: Lab Blank

Lab ID#: 1209568-04A

EPA METHOD TO-17

File Name:	11101112	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 01:52 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Freon 114	0.11	0.78	Not Detected	Not Detected
Vinyl Chloride	0.11	0.29	Not Detected	Not Detected
1,3-Butadiene	0.11	0.24	Not Detected	Not Detected
Isopentane	0.11	0.33	Not Detected	Not Detected
Freon 11	0.11	0.62	Not Detected	Not Detected
1,1-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Methylene Chloride	0.67	2.3	Not Detected	Not Detected
Freon 113	0.11	0.86	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
1,1-Dichloroethane	0.11	0.44	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.11	0.44	Not Detected	Not Detected
Hexane	0.11	0.39	Not Detected	Not Detected
Chloroform	0.11	0.54	Not Detected	Not Detected
1,2-Dichloroethane	0.11	0.44	Not Detected	Not Detected
1,1,1-Trichloroethane	0.11	0.60	Not Detected	Not Detected
Benzene	0.11	0.36	Not Detected	Not Detected
Carbon Tetrachloride	0.11	0.70	Not Detected	Not Detected
Cyclohexane	0.11	0.38	Not Detected	Not Detected
1,2-Dichloropropane	0.11	0.51	Not Detected	Not Detected
Trichloroethene	0.11	0.60	Not Detected	Not Detected
2,2,4-Trimethylpentane	0.22	1.0	Not Detected	Not Detected
Heptane	0.11	0.46	Not Detected	Not Detected
Methylcyclohexane	0.11	0.44	Not Detected	Not Detected
1,1,2-Trichloroethane	0.11	0.60	Not Detected	Not Detected
4-Methyl-2-pentanone	0.11	0.46	Not Detected	Not Detected
Toluene	0.11	0.42	Not Detected	Not Detected
2-Hexanone	0.11	0.46	Not Detected	Not Detected
Tetrachloroethene	0.11	0.76	Not Detected	Not Detected
Chlorobenzene	0.11	0.51	Not Detected	Not Detected
Ethyl Benzene	0.11	0.48	Not Detected	Not Detected
m,p-Xylene	0.11	0.48	Not Detected	Not Detected
o-Xylene	0.11	0.48	Not Detected	Not Detected
Styrene	0.11	0.47	Not Detected	Not Detected
1,1,2,2-Tetrachloroethane	0.11	0.77	Not Detected	Not Detected
Cumene	0.11	0.54	Not Detected	Not Detected
Propylbenzene	0.11	0.54	Not Detected	Not Detected
4-Ethyltoluene	0.11	0.54	Not Detected	Not Detected
1,3,5-Trimethylbenzene	0.11	0.54	Not Detected	Not Detected
1,2,4-Trimethylbenzene	0.66	3.2	Not Detected	Not Detected
1,3-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,4-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected
1,2-Dichlorobenzene	0.11	0.67	Not Detected	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 1209568-04A

EPA METHOD TO-17

File Name:	11101112	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 01:52 PM	

Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
1,2,4-Trichlorobenzene	0.11	0.82	Not Detected	Not Detected
Hexachlorobutadiene	0.11	1.2	Not Detected	Not Detected
Naphthalene	0.021	0.11	Not Detected	Not Detected
2-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
1-Methylnaphthalene	0.0096	0.056	Not Detected	Not Detected
Acenaphthylene	0.089	0.56	Not Detected	Not Detected
Acenaphthene	0.088	0.56	Not Detected	Not Detected
Fluorene	0.082	0.56	Not Detected	Not Detected
Phenanthrene	0.076	0.56	Not Detected	Not Detected
Anthracene	0.076	0.56	Not Detected	Not Detected
Fluoranthene	0.067	0.56	Not Detected	Not Detected
Pyrene	0.067	0.56	Not Detected	Not Detected
TPH (Diesel Range C10-C24)	12	110	Not Detected	Not Detected

Air Sample Volume(L): 9.00

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	50-150
Toluene-d8	118	50-150
Naphthalene-d8	111	50-150

Client Sample ID: CCV

Lab ID#: 1209568-05A

EPA METHOD TO-17

File Name:	11101104	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 07:58 AM	

Compound	%Recovery
Freon 114	123
Vinyl Chloride	119
1,3-Butadiene	142 Q
Isopentane	118
Freon 11	134 Q
1,1-Dichloroethene	113
Methylene Chloride	106
Freon 113	117
trans-1,2-Dichloroethene	113
1,1-Dichloroethane	118
cis-1,2-Dichloroethene	114
Hexane	107
Chloroform	126
1,2-Dichloroethane	106
1,1,1-Trichloroethane	106
Benzene	75
Carbon Tetrachloride	112
Cyclohexane	91
1,2-Dichloropropane	109
Trichloroethene	102
2,2,4-Trimethylpentane	84
Heptane	101
Methylcyclohexane	104
1,1,2-Trichloroethane	111
4-Methyl-2-pentanone	118
Toluene	97
2-Hexanone	127
Tetrachloroethene	106
Chlorobenzene	104
Ethyl Benzene	106
m,p-Xylene	101
o-Xylene	96
Styrene	105
1,1,2,2-Tetrachloroethane	108
Cumene	104
Propylbenzene	109
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	110
1,3-Dichlorobenzene	111
1,4-Dichlorobenzene	111
1,2-Dichlorobenzene	111

Client Sample ID: CCV

Lab ID#: 1209568-05A

EPA METHOD TO-17

File Name:	11101104	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 07:58 AM	

Compound	%Recovery
1,2,4-Trichlorobenzene	121
Hexachlorobutadiene	121
Naphthalene	129
2-Methylnaphthalene	133 Q
1-Methylnaphthalene	120
Acenaphthylene	128
Acenaphthene	122
Fluorene	115
Phenanthrene	115
Anthracene	122
Fluoranthene	93
Pyrene	84
TPH (Diesel Range C10-C24)	114

Air Sample Volume(L): 1.00

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	50-150
Toluene-d8	99	50-150
Naphthalene-d8	130	50-150

Client Sample ID: LCS

Lab ID#: 1209568-06A

EPA METHOD TO-17

File Name:	11101106	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 09:25 AM	

Compound	%Recovery
Freon 114	126
Vinyl Chloride	121
1,3-Butadiene	141 Q
Isopentane	120
Freon 11	124
1,1-Dichloroethene	123
Methylene Chloride	121
Freon 113	117
trans-1,2-Dichloroethene	129
1,1-Dichloroethane	123
cis-1,2-Dichloroethene	115
Hexane	111
Chloroform	125
1,2-Dichloroethane	112
1,1,1-Trichloroethane	117
Benzene	95
Carbon Tetrachloride	116
Cyclohexane	111
1,2-Dichloropropane	114
Trichloroethene	106
2,2,4-Trimethylpentane	101
Heptane	104
Methylcyclohexane	107
1,1,2-Trichloroethane	101
4-Methyl-2-pentanone	105
Toluene	104
2-Hexanone	121
Tetrachloroethene	110
Chlorobenzene	108
Ethyl Benzene	109
m,p-Xylene	108
o-Xylene	111
Styrene	105
1,1,2,2-Tetrachloroethane	119
Cumene	114
Propylbenzene	115
4-Ethyltoluene	102
1,3,5-Trimethylbenzene	107
1,2,4-Trimethylbenzene	103
1,3-Dichlorobenzene	107
1,4-Dichlorobenzene	107
1,2-Dichlorobenzene	109



Air Toxics

Client Sample ID: LCS

Lab ID#: 1209568-06A

EPA METHOD TO-17

File Name:	11101106	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 09:25 AM	

Compound	%Recovery
1,2,4-Trichlorobenzene	96
Hexachlorobutadiene	97
Naphthalene	90
2-Methylnaphthalene	92
1-Methylnaphthalene	88
Acenaphthylene	95
Acenaphthene	87
Fluorene	87
Phenanthrene	93
Anthracene	107
Fluoranthene	116
Pyrene	110
TPH (Diesel Range C10-C24)	Not Spiked

Air Sample Volume(L): 1.00

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	50-150
Toluene-d8	104	50-150
Naphthalene-d8	102	50-150



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1209568-06AA

EPA METHOD TO-17

File Name:	11101107	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 10:09 AM	

Compound	%Recovery
Freon 114	122
Vinyl Chloride	124
1,3-Butadiene	142 Q
Isopentane	121
Freon 11	123
1,1-Dichloroethene	128
Methylene Chloride	119
Freon 113	117
trans-1,2-Dichloroethene	134 Q
1,1-Dichloroethane	125
cis-1,2-Dichloroethene	122
Hexane	113
Chloroform	121
1,2-Dichloroethane	118
1,1,1-Trichloroethane	122
Benzene	106
Carbon Tetrachloride	117
Cyclohexane	116
1,2-Dichloropropane	114
Trichloroethene	111
2,2,4-Trimethylpentane	118
Heptane	108
Methylcyclohexane	110
1,1,2-Trichloroethane	103
4-Methyl-2-pentanone	107
Toluene	113
2-Hexanone	122
Tetrachloroethene	114
Chlorobenzene	109
Ethyl Benzene	110
m,p-Xylene	112
o-Xylene	107
Styrene	103
1,1,2,2-Tetrachloroethane	117
Cumene	111
Propylbenzene	114
4-Ethyltoluene	102
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	104
1,4-Dichlorobenzene	102
1,2-Dichlorobenzene	103



Client Sample ID: LCSD

Lab ID#: 1209568-06AA

EPA METHOD TO-17

File Name:	11101107	Date of Extraction: NA	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/11/12 10:09 AM	

Compound	%Recovery
1,2,4-Trichlorobenzene	92
Hexachlorobutadiene	93
Naphthalene	84
2-Methylnaphthalene	82
1-Methylnaphthalene	78
Acenaphthylene	82
Acenaphthene	71
Fluorene	69
Phenanthrene	79
Anthracene	86
Fluoranthene	86
Pyrene	80
TPH (Diesel Range C10-C24)	Not Spiked

Air Sample Volume(L): 1.00

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	50-150
Toluene-d8	107	50-150
Naphthalene-d8	97	50-150

APPENDIX E
Laboratory Data Review Checklists

Laboratory Data Review Checklist

Completed by:	T. R. Martin		
Title:	Environmental Professional	Date:	Nov 7, 2012
CS Report Name:	Site Remediaton Assessment Report	Report Date:	11-26-12
Consultant Firm:	Nortech Environmental Engineering, Health & Safety		
Laboratory Name:	SGS, Alaska Division	Laboratory Report Number:	1124655
ADEC File Number:	1513.38.076	ADEC RecKey Number:	

1. Laboratory

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

Yes No NA (Please explain.) Comments:

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

Yes No NA (Please explain) Comments:

not transferred

2. Chain of Custody (COC)

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

Yes No NA (Please explain) Comments:

b. Correct analyses requested?

Yes No NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No NA (Please explain) Comments:

good condition

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

Yes No NA (Please explain) Comments:

sample receipt form present, no discrepancies

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

Comments:

data usable

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain) Comments:

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

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

Comments:

LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain)

Comments:

b. All applicable holding times met?

Yes No NA (Please explain)

Comments:

LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

c. All soils reported on a dry weight basis?

Yes No NA (Please explain)

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA (Please explain)

Comments:

LOQs for the trip blank elevated

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

Comments:

data usable. trip blank data had no detections between the LOQ and LOD.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No NA (Please explain)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

none

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

Yes No NA (Please explain) Comments:

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

Comments:

data usable

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

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

LCSD recovery does not meet QC criteria (biased low). Sample was re-extracted outside of the 14 day hold time, with passing QC, and the results confirm. The original data (within hold time) are reported.

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

Yes No NA (Please explain) Comments:

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

Comments:

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

Yes No NA (Please explain) Comments:

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

data usable

c. Surrogates - Organics Only

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

no failed surrogates

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

Comments:

data usable

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

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

Yes No NA (Please explain.) Comments:

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

Yes No NA (Please explain.) Comments:

one cooler sent

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

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

Comments:

data usable

e. Field Duplicate

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

Yes No NA (Please explain.)

Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

TS-dup is a duplicate of TS-3

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

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

Yes No NA (Please explain.)

Comments:

f. Decontamination or Equipment Blank (if applicable)

Yes No NA (Please explain)

Comments:

disposable sample collection equipment used

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

ii. If above PQL, what samples are affected?

Comments:

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

Comments:

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

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Reset Form

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:

- 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:

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:

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:

- 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:

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

Comments:

4. Case Narrative

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

Comments:

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

Comments:

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

Comments:

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

Comments:

5. Samples Results

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

Yes No N/A (Please explain.)

Comments:

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:

d. Was the data quality or usability affected?

Comments:

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:

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

Comments:

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:

- 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:

- 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:

- 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:

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

Yes No N/A (Please explain.)

Comments:

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:

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:

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:

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

Yes No N/A (Please explain.)

Comments:

- 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:

- 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:

- i. Were all results less than the PQL?

Yes No N/A (Please explain.)

Comments:

- ii. If above PQL, what samples are affected?

Comments:

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

Comments:

7. Other Data Flags/Qualifiers

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

Yes No N/A (Please explain.)

Comments:

APPENDIX F
Conceptual Site Model

Human Health Conceptual Site Model Scoping Form

Site Name:

File Number:

Completed by:

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- | | |
|--|--|
| <input checked="" type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input type="checkbox"/> Other: <input type="text"/> |

Release Mechanisms *(check potential release mechanisms at the site)*

- | | |
|---|--|
| <input type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks | <input type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

Impacted Media *(check potentially-impacted media at the site)*

- | | |
|---|--|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*) | <input checked="" type="checkbox"/> Groundwater |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

Receptors *(check receptors that could be affected by contamination at the site)*

- | | |
|--|--|
| <input type="checkbox"/> Residents (adult or child) | <input checked="" type="checkbox"/> Site visitor |
| <input checked="" type="checkbox"/> Commercial or industrial worker | <input type="checkbox"/> Trespasser |
| <input checked="" type="checkbox"/> Construction worker | <input type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Complete

Comments:

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

Structures on Site are connected to municipal water service

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Incomplete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

Laboratory BTEX soil sample results for the 2012 event were non detect. Xylenes were detected in soil during the 2010 event, but below cleanup levels.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)



Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?



If both boxes are checked, label this pathway complete:

Incomplete

Comments:

Laboratory BTEX soil sample results for the 2012 event were non detect. Xylenes were detected in soil during the 2010 event, but below cleanup levels. Laboratory results for air monitoring conducted during 2012 are all below ADEC cleanup levels.

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed:

Comments:

groundwater is not used as a water source for consumption, recreation, or construction. Site uses municipal water source.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed:

Comments:

groundwater is not used as a water source for consumption, recreation, or construction. Site uses municipal water source.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

Check the box if further evaluation of this pathway is needed:

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:

Comments:

no recreation, or subsistence activities around the sediments.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*