

July 8, 2023

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RESTORATION

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Subject: Final Report for Sampling of Diesel-Impacted Soil at 5101 and 5150 Eldorado Drive, in Wasilla, Alaska. ADEC File No. 2265.38.042.

Ms. Krebs-Barsis:

Restoration Science & Engineering, LLC (RSE) is providing this soil sampling report for June 23, 2023 sampling of contaminated soil placed on properties identified as 5101 and 5150 Eldorado Drive in Wasilla, Alaska (Figure 1, Attachment A). The Alaska Department of Environmental Conservation (ADEC) issued a letter to the responsible party Mr. James Spikes dated December 13, 2022, requesting him to retain a Qualified Environmental Professional (QEP) to develop a workplan for cleanup or characterization of the previously identified diesel-impacted soil (ADEC 2022). RSE prepared a workplan for review by the ADEC relative to requirements under 18 AAC 75 (RSE 2023). The workplan describes proposed sampling activities as required to demonstrate the status of impacted soil that may remain on site. Based on conversations with Mr. Spikes, he conducted removal of the subject contaminated soil in an unpermitted 2022 cleanup action.

Background

After receiving notification of a possible illicit dumping event, on November 9, 2015 ADEC personnel collected soil samples from an area where observations indicated placement of contaminated soil had occurred. The suspected disposal site was observed in a low-lying area along an unimproved roadway set between the two properties (ADEC 2015a, b). Additional ADEC reporting documentation and photos are provided in the project workplan (RSE 2023).

The area where the dumping took place is located at the southern end of Eldorado Drive approximately 15-foot downslope from the road surface in an approximately 20 ft by 40 ft area. In October of 2015, ADEC personnel established a sampling grid and field-screening samples were collected from the center of each grid cell. The soil samples were field-screened using heated headspace methodology with a Mini Rae 3000 Photoionization Detector (PID). One sample destined for laboratory analysis was collected from the location of highest field screening result (sample 15-LRID7-10). Because of the high percentage of organic material observed at the site, a background sample was collected from soil roughly 30 feet west of the sampling grid (sample 15-LRID11-12) to determine if organics would bias results high (ADEC 2015a). An additional sample was also collected from the east end of a gravel pullout located at the end of Eldorado Drive (15- LRID12-6); where a stockpile of unknown origin was observed

but has since been removed. Analytical samples were submitted for laboratory analysis of gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and toxicity characteristic leaching procedures (TCLP) Metals. Samples 15-LRID7-10 and 15-LRID12-6 exhibited concentrations of DRO at 500 mg/Kg and 1060 mg/Kg, respectively; both of which exceed the ADEC soil migration to groundwater cleanup level of 250 mg/Kg for DRO. The background sample (15-LRID11-12) exhibited a concentration of DRO at 45.3 mg/Kg and may indicate background values from natural organic matter (ADEC 2015a).

RSE understands that the original contaminated soil consisted of a gravelly sand and after Mr. Spikes reportedly removed a portion or most of that contaminated soil, pit run gravel was brought to the site as fill. The source of the pit run soil was reportedly the nearby Central Gravel pit. Based on this RSE attempted to sample the original gravelly sand soil and avoid sampling of the pit run soil or organic topsoil unless observations support sampling these matrices. Field observations yielded very little remaining gravelly sand soil with the area largely covered with a mixture of organic topsoil with minor amounts of sand and gravel.

Contaminants of Potential Concern

Based upon the contaminant identified as diesel, and discussions with ADEC, Table 1 provides the contaminants of potential concern (COPCs) identified for this project.

Table 1. COPCs in Soil

COPC	Matrix	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Soil Cleanup Level¹
Diesel Range Organics	Soil	DRO	AK 102	250 mg/Kg
Polynuclear Aromatic Hydrocarbons	Soil	PAH SIMs	EPA 8270D	Varies

¹18 AAC 75 ADEC Method 2 soil cleanup level for migration to groundwater Tables B1 and B2

Investigation Methods

RSE Qualified Environmental Professional (QEP) David Nyman, PE, worked with RSE Environmental Scientist Logan Suiter to set up a sample grid comprised of approximate 6 ft by 5 ft cells within the approximate 20 ft by 50 ft soil disposal area for a total of 32 cells. The location of the grid was sited on top of the sampling grid established during initial assessment of the site by ADEC’s Gay Harpole in October 2015 and where visibly disturbed soil was observed (ADEC 2015a). Additionally, GPS coordinates collected by ADEC during that same investigation were used to confirm the project location (ADEC 2015b). ADEC personnel Alena Voigt and Naomi Mason were present on site to observe the sampling activities.

RSE screened samples collected from each cell location at depths of 6 to 12 inches below ground surface and soil judged most likely to yield indication of hydrocarbons. Screening samples were collected into Ziploc™ bags and field-screened using warm water sheen screening method

described below. The screening sample was also visually observed for evidence of hydrocarbon impacts with observations noted in the project field book. RSE planned to collect laboratory samples from the screening locations that yielded the strongest results indicative of presence of hydrocarbons. As screening results did not yield evidence of sheening consistent with hydrocarbons, samples were selected from three locations distributed across the area and in more granular soil, if present. Lab samples were collected directly from in-situ soil. RSE observed very little mineral soil and most of the soil sampled consisted predominantly of loam material with visible organics. In some cases, RSE dug to depths deeper than 12-inches where a tan loam (silt with organics) was observed, and indicative of native undisturbed topsoil as could be observed in a background test hole dug about 10 feet into the adjacent forest.

Field Screening

RSE personnel field screened soil samples using the warm water sheen screen method. For this method, RSE placed an aliquot portion (approximately 2 grams) of soil into warm water in a clear glass container, swirled the water and examined the water surface for evidence of rainbow or otherwise suspected hydrocarbon sheen. The strength or extent of the sheen was noted (if observed) while exposing the water surface to sunlight from several different angles. Observations were recorded in the project field notes. The sheen screen water was deposited back to the sample location of origin after screening. Field personnel will noted the sample ID, location, depth, soil type, and the screening result for each sample location. Sheening was not observed in any of the samples screened.

Soil Sample Collection

Soil samples were collected for laboratory analyses to compare the soil hydrocarbon concentrations to ADEC soil cleanup standards. As evidence of hydrocarbons via the sheen screen test or other observations was absent, soil samples were collected from three of the sample grid cells based on the QEP's judgement. Laboratory soil samples were collected using clean stainless-steel spoons and placed into method-specific containers provided by the laboratory. Samples were stored in a clean sample cooler chilled to between 0 and 6 °C and transported under chain-of-custody to SGS North America, Inc. in Anchorage on the same day of collection. Soil samples were analyzed for the COPCs as outlined in Table 1. A single blind duplicate sample was collected for each analytical method. Sample "Cell 33" was collected as blind duplicate of sample Cell 15.

Consumables such as plastic bags, gloves and used jars were disposed of as solid waste at the RSE office. Non-consumables such as spoons and other field equipment were decontaminated using Alconox™ and warm water in the RSE equipment room.

Quality Assurance and Quality Control

Soil field screening and sampling was conducted by an RSE QEP. Samples were collected in accordance with 18 AAC 75 and applicable ADEC regulations and guidance documents. Blind

duplicate samples were collected at 10% frequency. RSE did not submit a trip blank as volatile compounds were not included in the COPCs. A temperature blank was included the sample cooler. RSE completed a sample data quality assurance review and the ADEC Laboratory Review checklist for the laboratory report received. A deviation from the workplan was that the grid area was expanded from a 40 ft length to a 50 ft length.

Field documentation was reviewed for completeness, accuracy, and the presence of unexpected results. The SGS laboratory report 1232933 is provided in Attachment C. RSE completed the ADEC Laboratory Data Review Checklist for each laboratory report received provided in Attachment D. RSE field notes are provided in Attachment E and Site Photos in Attachment F. The following highlights quality control flags identified for the lab analyses:

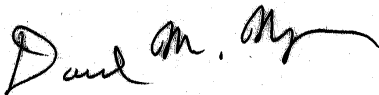
- Sample Cell 24 PAH (8270D) surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria. The associated sample concentrations for all analytes are less than the LOQ.
- Sample Cell 15 PAH (8270D SIM) - The PAH LOQs are elevated due to sample dilution. The sample was diluted due to double spiking of the internal standard.
- Matrix spike for 8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.
- Matrix spike 8270D SIM - PAH recoveries for several analytes do not meet QC criteria.
- Matrix Spike Duplicate for 8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.
- 8270D SIM - PAH MS recoveries for several analytes do not meet QC criteria.
- 8270D SIM - PAH Matrix Spike Duplicate RPD for anthracene does not meet QC criteria

All PAH samples were non-detect and DRO results reported at estimated concentrations or slightly above the Limit of Quantitation. Based on this and data quality review, the data quality is acceptable and useable for comparison to ADEC soil cleanup levels.

Conclusions

Based on analytical results for the sampling of the Lawn Ranger soil disposal site along with field observations, the sampled soil and the site as depicted in records available to RSE, meets ADEC migration to groundwater soil cleanup levels.

Please contact David Nyman, PE at 907-229-7333 if you have any questions or comments. This work plan was prepared by a qualified environmental professional in accordance with 18 AAC 75.



David Nyman, PE

RESTORATION SCIENCE & ENGINEERING LLC

cc: Mr. James Spikes

Attachments:

Attachment A: Site Maps

Attachment B: Analytical Tables

Attachment C: SGS Laboratory Report and Chain of Custody

Attachment D: ADEC Laboratory Data Review Checklist

Attachment E: RSE Field Notes

Attachment F: Site Photos

References:

Alaska Department of Environmental Conservation (ADEC). 2015a. Site Visit Report from Gay Harpole PP&R Cook Inlet Unit, 5150 North Eldorado Road. October 3, 2015.

ADEC. 2015b. Lawn Ranger Illegal Dumping, 5150 Wasilla Alaska. ADEC Spill Number 15239930301. November 2015.

ADEC). 2022. Lawn Ranger Illegal Dumping, Eldorado Drive – Steps to Cleanup. December 13, 2022.

ADEC 2023. Photo Log Lawn Ranger Illegal Dumping – Eldorado Drive File No. 2265.38.042.Hazard ID 26479.

Restoration Science & Engineering, LLC. 2023. Workplan for Sampling of Diesel-Impacted Soil at 5101 and 5150 Eldorado Drive, in Wasilla, Alaska. ADEC File No. 2265.38.042. Revision 1. June 22, 2023.

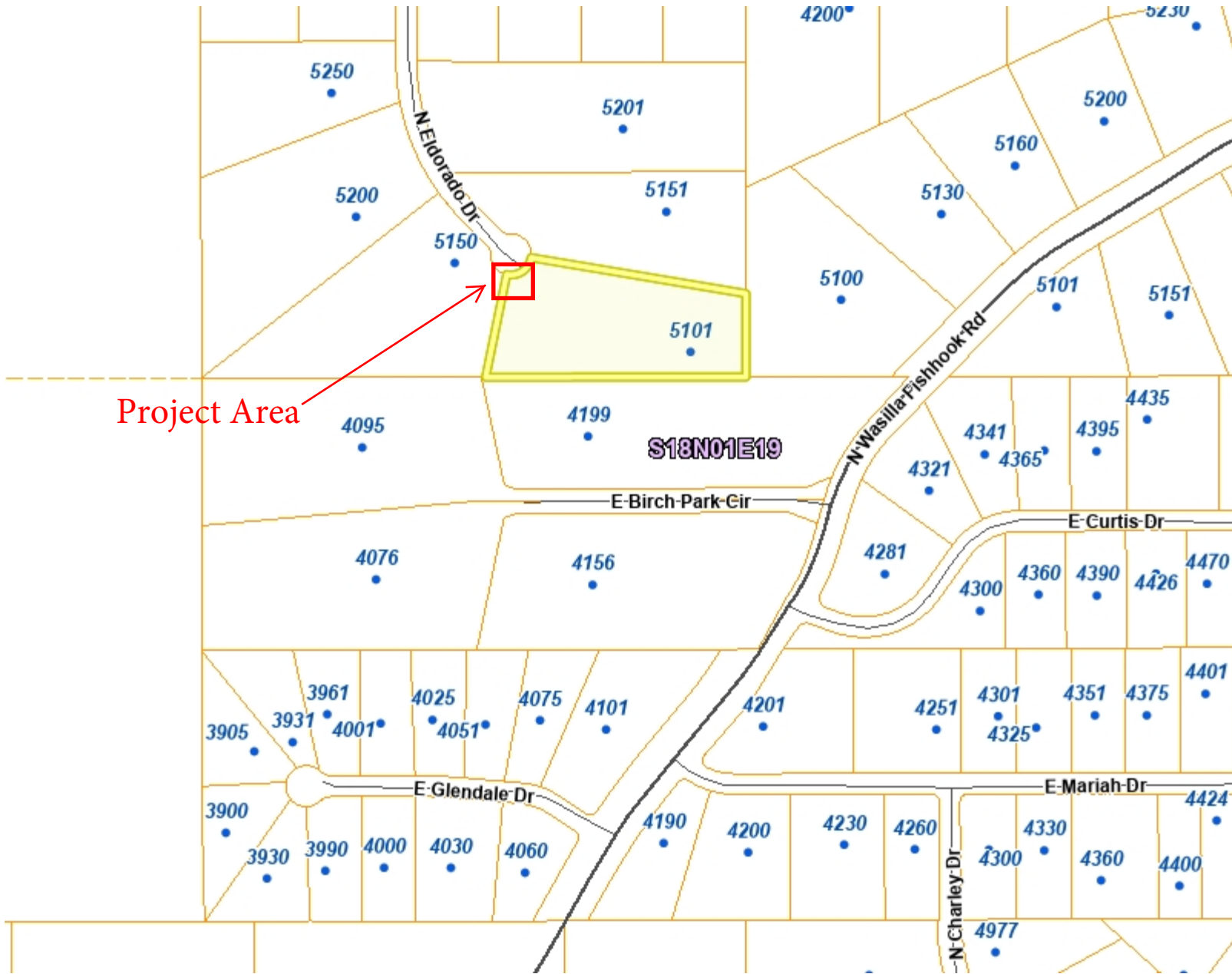
Attachment A

Site Maps





Figure 1: Lawn Range Site 5101 and 5150 Eldorado Drive, Wasilla



Project Area

Legend

- Road Mileposts
- Roads**
 - Highway
 - Major Road
 - Medium Road
 - Minor Road
 - Ramp
 - - Primitve Road
 - - Private Road
 - - Not Constructed
- + Alaska Railroad
- ▭ Mat-Su Borough Boundary
- ▭ Incorporated Cities
- Address Numbers
- ▭ Parcels
- - Government Lot Lines
- ▭ Lakes and Rivers
- ▭ Streams
- ▭ 100 year Flood Zone
- ▭ Section Lines

1 : 9,028

Attachment B
Analytical Tables



TABLE B-1
SOIL at 5101 and 5150 ELDORADO DRIVE
HYDROCARBONS IN SOIL
FIELD DATES: June 23, 2023

HYDROCARBONS IN SOIL					
SAMPLE ID	SGS WORK ORDER	DATE	Sheen Screen Results	PERCENT SOLIDS	DRO
				%	mg/Kg
Cell 24	1232933	6/23/2023	negative	73.3	26.4 J
Cell 15	1232933	6/23/2023	negative	75.1	24.7 J
Cell 33	1232933	6/23/2023	negative	73.0	36.3
Cell 1	1232933	6/23/2023	negative	73.4	32.9
<i>ADEC TABLE B2. METHOD TWO PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS (18 AAC 75) UNDER 40-INCH ZONE MIGRATION TO GROUNDWATER</i>					250

NOTES:

- 1) Diesel Range Organics (DRO) by AK Method 102
- 2) "mg/Kg" means "milligrams per kilogram"
PPMV means "parts per million by volume"
- 3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the Detection Limit (DL); the value presented is the Limit of Detection (LOD)
- 4) J flag indicates the result is an estimated value above the DL but less than the Limit of Quantitation (LOQ)
- 5) Blue highlighting indicates the method DL was greater than the ADEC Method Two Migration to Groundwater (MTG) soil cleanup level
- 6) **Bold** font indicates that the analyte was detected above the DL
- 7) Yellow highlighting indicates the analyte was detected above the ADEC Method Two MTG soil cleanup level for Under 40-inch zone
- 8) **N/A** = not applicable or not analyzed
- 9) Cell 33 is a field duplicate of Cell 15

TABLE B- 2
SOIL at 5101 and 5150 ELDORADO DRIVE
POLYNUCLEAR AROMATIC HYDROCARBONS SIM (PAHs) IN SOIL
FIELD DATES: JUNE 23, 2023

POLYNUCLEAR AROMATIC HYDROCARBON CONCENTRATIONS IN SOIL					
SAMPLE ID	Cell 24	Cell 15	Cell 33	Cell 1	ADEC Method Two Soil Cleanup Level For Migration to Groundwater (µg/Kg)
SGS WORK ORDER NO.	1232933	1232933	1232933	1232933	
DATE	6/23/2023	6/23/2023	6/23/2023	6/23/2023	
PERCENT SOLIDS	73.3	75.1	73.0	73.4	
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
1-Methylnaphthalene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	410
2-Methylnaphthalene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	1,300
Acenaphthene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	37,000
Acenaphthylene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	18,000
Anthracene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	390,000
Benzo(a)Anthracene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	700
Benzo[a]pyrene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	1,900
Benzo[b]Fluoranthene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	20,000
Benzo[g,h,i]perylene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	15,000,000
Benzo[k]fluoranthene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	190,000
Chrysene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	600,000
Dibenzo[a,h]anthracene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	6,300
Fluoranthene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	590,000
Fluorene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	36,000
Indeno[1,2,3-c,d] pyrene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	65,000
Naphthalene	<i>13.6 U</i>	<i>26.6 U</i>	<i>13.6 U</i>	<i>13.5 U</i>	38
Phenanthrene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	39,000
Pyrene	<i>16.9 U</i>	<i>33.3 U</i>	<i>16.9 U</i>	<i>16.9 U</i>	87,000

NOTES:

- 1) Polynuclear Aromatic Hydrocarbons by Selective Ion Monitoring technique (PAH SIM) analyzed via EPA 8270D.
- 2) "ug/Kg" means "micrograms per kilogram".
- 3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the Limit of Detection (LOD); the value presented is the LOD.
- 4) J flag indicates the result is an estimated value above the LOD but less than the Limit of Quantitation (LOQ).
- 5) **Bold** font indicates that the analyte was detected above the LOQ.
- 6) N/A means not analyzed, or not applicable.
- 7) Cel 33 is a duplicate of Cell 15

Attachment C
SGS Laboratory Report and Chain of Custody





Laboratory Report of Analysis

To: Restoration Science & Eng
911 West 8th Ave Suite 100
Anchorage, AK 99501
(907) 278-1023

Report Number: **1232933**

Client Project: **Lawn Ranger Site**

Dear Logan Sniter,

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

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

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

Sincerely,
SGS North America Inc.

William Wesley
Project Manager
William.Wesley@sgs.com

Date

Preliminary Report - This report is preliminary pending review of 8270 SIM PAH data for sample "Cell 15". These results are not expected to change upon review.

Case Narrative

SGS Client: **Restoration Science & Eng**

SGS Project: **1232933**

Project Name/Site: **Lawn Ranger Site**

Project Contact: **Logan Sniter**

Refer to sample receipt form for information on sample condition.

Cell 24 (1232933001) PS

8270D - Surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria. The associated sample concentrations for all analytes are less than the LOQ.

Cell 15 (1232933002) PS

8270D SIM - The PAH LOQs are elevated due to sample dilution. The sample was diluted due to double spiking of the internal standard.

1232887006MS (1719026) MS

8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.
8270D SIM - PAH MS recoveries for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

1232887006MSD (1719027) MSD

8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.
8270D SIM - PAH MS recoveries for several analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.
8270D SIM - PAH MSD RPD for anthracene does not meet QC criteria.

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

Print Date: 07/07/2023 8:16:49AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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 (JDW Chemistry & Microbiology (Provisionally Certified as of 6/05/2023 for Fluoride EPA300.0, Alkalinity SM2320B, Orthophosphate SM4500P-E and Beryllium, Copper and Mercury 200.8) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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/CVA/CVB	Continuing Calibration Verification
CCC/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
Cell 24	1232933001	06/23/2023	06/23/2023	Soil/Solid (dry weight)
Cell 15	1232933002	06/23/2023	06/23/2023	Soil/Solid (dry weight)
Cell 33	1232933003	06/23/2023	06/23/2023	Soil/Solid (dry weight)
Cell 1	1232933004	06/23/2023	06/23/2023	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 07/07/2023 8:16:54AM

Detectable Results Summary

Client Sample ID: **Cell 24**
 Lab Sample ID: 1232933001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	26.4J	mg/kg

Client Sample ID: **Cell 15**
 Lab Sample ID: 1232933002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	24.7J	mg/kg

Client Sample ID: **Cell 33**
 Lab Sample ID: 1232933003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	36.3	mg/kg

Client Sample ID: **Cell 1**
 Lab Sample ID: 1232933004

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	32.9	mg/kg



Results of Cell 24

Client Sample ID: **Cell 24**
 Client Project ID: **Lawn Ranger Site**
 Lab Sample ID: 1232933001
 Lab Project ID: 1232933

Collection Date: 06/23/23 12:55
 Received Date: 06/23/23 15:24
 Matrix: Soil/Solid (dry weight)
 Solids (%):73.3
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
2-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Acenaphthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Acenaphthylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Benzo(a)Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Benzo[a]pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Benzo[b]Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Benzo[g,h,i]perylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Benzo[k]fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Chrysene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Dibenzo[a,h]anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Fluorene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Indeno[1,2,3-c,d] pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Naphthalene	13.6	U	27.1	6.76	13.6	ug/kg	1		06/27/23 23:13
Phenanthrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13
Pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:13

Surrogates

2-Methylnaphthalene-d10 (surr)	115	*	58-103			%	1		06/27/23 23:13
Fluoranthene-d10 (surr)	91.6		54-113			%	1		06/27/23 23:13

Batch Information

Analytical Batch: XMS13691
 Analytical Method: 8270D SIM (PAH)
 Analyst: HMW
 Analytical Date/Time: 06/27/23 23:13
 Container ID: 1232933001-A

Prep Batch: XXX48065
 Prep Method: SW3550C
 Prep Date/Time: 06/25/23 15:36
 Prep Initial Wt./Vol.: 22.699 g
 Prep Extract Vol: 5 mL



Results of Cell 24

Client Sample ID: Cell 24
Client Project ID: Lawn Ranger Site
Lab Sample ID: 1232933001
Lab Project ID: 1232933

Collection Date: 06/23/23 12:55
Received Date: 06/23/23 15:24
Matrix: Soil/Solid (dry weight)
Solids (%):73.3
Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	26.4	J	27.1	12.2	13.6	mg/kg	1		06/29/23 09:38
Surrogates									
5a Androstane (surr)	82		50-150			%	1		06/29/23 09:38

Batch Information

Analytical Batch: XFC16545
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/29/23 09:38
Container ID: 1232933001-A

Prep Batch: XXX48066
Prep Method: SW3550C
Prep Date/Time: 06/25/23 15:39
Prep Initial Wt./Vol.: 22.699 g
Prep Extract Vol: 5 mL



Results of Cell 15

Client Sample ID: **Cell 15**
 Client Project ID: **Lawn Ranger Site**
 Lab Sample ID: 1232933002
 Lab Project ID: 1232933

Collection Date: 06/23/23 13:00
 Received Date: 06/23/23 15:24
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.1
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
2-Methylnaphthalene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Acenaphthene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Acenaphthylene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Anthracene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Benzo(a)Anthracene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Benzo[a]pyrene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Benzo[b]Fluoranthene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Benzo[g,h,i]perylene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Benzo[k]fluoranthene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Chrysene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Dibenzo[a,h]anthracene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Fluoranthene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Fluorene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Indeno[1,2,3-c,d] pyrene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Naphthalene	26.6	U	53.3	13.3	26.6	ug/kg	2		07/04/23 04:05
Phenanthrene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05
Pyrene	33.3	U	66.6	16.6	33.3	ug/kg	2		07/04/23 04:05

Surrogates

2-Methylnaphthalene-d10 (surr)	102		58-103			%	2		07/04/23 04:05
Fluoranthene-d10 (surr)	108		54-113			%	2		07/04/23 04:05

Batch Information

Analytical Batch: XMS13705
 Analytical Method: 8270D SIM (PAH)
 Analyst: HMW
 Analytical Date/Time: 07/04/23 04:05
 Container ID: 1232933002-A

Prep Batch: XXX48065
 Prep Method: SW3550C
 Prep Date/Time: 06/25/23 15:36
 Prep Initial Wt./Vol.: 22.507 g
 Prep Extract Vol: 5 mL



Results of Cell 15

Client Sample ID: Cell 15
Client Project ID: Lawn Ranger Site
Lab Sample ID: 1232933002
Lab Project ID: 1232933

Collection Date: 06/23/23 13:00
Received Date: 06/23/23 15:24
Matrix: Soil/Solid (dry weight)
Solids (%):75.1
Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	24.7	J	26.6	12.0	13.3	mg/kg	1		06/29/23 09:48
Surrogates									
5a Androstane (surr)	80.1		50-150			%	1		06/29/23 09:48

Batch Information

Analytical Batch: XFC16545
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/29/23 09:48
Container ID: 1232933002-A

Prep Batch: XXX48066
Prep Method: SW3550C
Prep Date/Time: 06/25/23 15:39
Prep Initial Wt./Vol.: 22.507 g
Prep Extract Vol: 5 mL



Results of Cell 33

Client Sample ID: **Cell 33**
 Client Project ID: **Lawn Ranger Site**
 Lab Sample ID: 1232933003
 Lab Project ID: 1232933

Collection Date: 06/23/23 14:00
 Received Date: 06/23/23 15:24
 Matrix: Soil/Solid (dry weight)
 Solids (%):73.0
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
2-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Acenaphthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Acenaphthylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Benzo(a)Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Benzo[a]pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Benzo[b]Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Benzo[g,h,i]perylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Benzo[k]fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Chrysene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Dibenzo[a,h]anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Fluorene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Indeno[1,2,3-c,d] pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Naphthalene	13.6	U	27.1	6.76	13.6	ug/kg	1		06/27/23 23:46
Phenanthrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46
Pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/27/23 23:46

Surrogates

2-Methylnaphthalene-d10 (surr)	84		58-103			%	1		06/27/23 23:46
Fluoranthene-d10 (surr)	89.4		54-113			%	1		06/27/23 23:46

Batch Information

Analytical Batch: XMS13691
 Analytical Method: 8270D SIM (PAH)
 Analyst: HMW
 Analytical Date/Time: 06/27/23 23:46
 Container ID: 1232933003-A

Prep Batch: XXX48065
 Prep Method: SW3550C
 Prep Date/Time: 06/25/23 15:36
 Prep Initial Wt./Vol.: 22.802 g
 Prep Extract Vol: 5 mL



Results of Cell 33

Client Sample ID: **Cell 33**
Client Project ID: **Lawn Ranger Site**
Lab Sample ID: 1232933003
Lab Project ID: 1232933

Collection Date: 06/23/23 14:00
Received Date: 06/23/23 15:24
Matrix: Soil/Solid (dry weight)
Solids (%):73.0
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	36.3		27.1	12.2	13.6	mg/kg	1		06/29/23 09:58
Surrogates									
5a Androstane (surr)	89.2		50-150			%	1		06/29/23 09:58

Batch Information

Analytical Batch: XFC16545
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/29/23 09:58
Container ID: 1232933003-A

Prep Batch: XXX48066
Prep Method: SW3550C
Prep Date/Time: 06/25/23 15:39
Prep Initial Wt./Vol.: 22.802 g
Prep Extract Vol: 5 mL

Results of Cell 1

Client Sample ID: **Cell 1**
 Client Project ID: **Lawn Ranger Site**
 Lab Sample ID: 1232933004
 Lab Project ID: 1232933

Collection Date: 06/23/23 13:04
 Received Date: 06/23/23 15:24
 Matrix: Soil/Solid (dry weight)
 Solids (%):73.4
 Location:

Results by Polynuclear Aromatics GC/MS

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
2-Methylnaphthalene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Acenaphthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Acenaphthylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Benzo(a)Anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Benzo[a]pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Benzo[b]Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Benzo[g,h,i]perylene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Benzo[k]fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Chrysene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Dibenzo[a,h]anthracene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Fluoranthene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Fluorene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Indeno[1,2,3-c,d] pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Naphthalene	13.5	U	27.0	6.76	13.5	ug/kg	1		06/28/23 00:02
Phenanthrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02
Pyrene	16.9	U	33.8	8.45	16.9	ug/kg	1		06/28/23 00:02

Surrogates

2-Methylnaphthalene-d10 (surr)	85.4		58-103			%	1		06/28/23 00:02
Fluoranthene-d10 (surr)	92.9		54-113			%	1		06/28/23 00:02

Batch Information

Analytical Batch: XMS13691
 Analytical Method: 8270D SIM (PAH)
 Analyst: HMW
 Analytical Date/Time: 06/28/23 00:02
 Container ID: 1232933004-A

Prep Batch: XXX48065
 Prep Method: SW3550C
 Prep Date/Time: 06/25/23 15:36
 Prep Initial Wt./Vol.: 22.669 g
 Prep Extract Vol: 5 mL



Results of Cell 1

Client Sample ID: Cell 1
Client Project ID: Lawn Ranger Site
Lab Sample ID: 1232933004
Lab Project ID: 1232933

Collection Date: 06/23/23 13:04
Received Date: 06/23/23 15:24
Matrix: Soil/Solid (dry weight)
Solids (%):73.4
Location:

Results by Semivolatile Organic Fuels

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	32.9		27.0	12.2	13.5	mg/kg	1		06/29/23 10:08
Surrogates									
5a Androstane (surr)	81.6		50-150			%	1		06/29/23 10:08

Batch Information

Analytical Batch: XFC16545
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 06/29/23 10:08
Container ID: 1232933004-A

Prep Batch: XXX48066
Prep Method: SW3550C
Prep Date/Time: 06/25/23 15:39
Prep Initial Wt./Vol.: 22.669 g
Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1857649 [SPT/11818]

Blank Lab ID: 1719092

QC for Samples:

1232933001, 1232933002, 1232933003, 1232933004

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Total Solids	100				%

Batch Information

Analytical Batch: SPT11818

Analytical Method: SM21 2540G

Instrument:

Analyst: WJD

Analytical Date/Time: 6/25/2023 8:09:00PM

Print Date: 07/07/2023 8:17:01AM

Duplicate Sample Summary

Original Sample ID: 1232935001

Duplicate Sample ID: 1719093

QC for Samples:

1232933001, 1232933002, 1232933003, 1232933004

Analysis Date: 06/25/2023 20:09

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	90.9	91.0	%	0.08	(< 15)

Batch Information

Analytical Batch: SPT11818

Analytical Method: SM21 2540G

Instrument:

Analyst: WJD

Print Date: 07/07/2023 8:17:02AM



Method Blank

Blank ID: MB for HBN 1857634 [XXX/48065]
Blank Lab ID: 1719008

Matrix: Soil/Solid (dry weight)

QC for Samples:
1232933001, 1232933002, 1232933003, 1232933004

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	12.5	ug/kg
2-Methylnaphthalene	12.5U	25.0	6.25	12.5	ug/kg
Acenaphthene	12.5U	25.0	6.25	12.5	ug/kg
Acenaphthylene	12.5U	25.0	6.25	12.5	ug/kg
Anthracene	12.5U	25.0	6.25	12.5	ug/kg
Benzo(a)Anthracene	12.5U	25.0	6.25	12.5	ug/kg
Benzo[a]pyrene	12.5U	25.0	6.25	12.5	ug/kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	12.5	ug/kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	12.5	ug/kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	12.5	ug/kg
Chrysene	12.5U	25.0	6.25	12.5	ug/kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	12.5	ug/kg
Fluoranthene	12.5U	25.0	6.25	12.5	ug/kg
Fluorene	12.5U	25.0	6.25	12.5	ug/kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	12.5	ug/kg
Naphthalene	10.0U	20.0	5.00	10.0	ug/kg
Phenanthrene	12.5U	25.0	6.25	12.5	ug/kg
Pyrene	12.5U	25.0	6.25	12.5	ug/kg
Surrogates					
2-Methylnaphthalene-d10 (surr)	102	58-103		0	%
Fluoranthene-d10 (surr)	111	54-113		0	%

Batch Information

Analytical Batch: XMS13705
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent 8890 GC/MS SYA
Analyst: HMW
Analytical Date/Time: 7/4/2023 2:44:00AM

Prep Batch: XXX48065
Prep Method: SW3550C
Prep Date/Time: 6/25/2023 3:36:28PM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

Print Date: 07/07/2023 8:17:06AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232933 [XXX48065]

Blank Spike Lab ID: 1719009

Date Analyzed: 07/04/2023 03:00

Matrix: Soil/Solid (dry weight)

QC for Samples: 1232933001, 1232933002, 1232933003, 1232933004

Results by 8270D SIM (PAH)

Parameter	Blank Spike (ug/kg)			CL
	Spike	Result	Rec (%)	
1-Methylnaphthalene	111	91.7	83	(43-111)
2-Methylnaphthalene	111	89.2	80	(39-114)
Acenaphthene	111	102	91	(44-111)
Acenaphthylene	111	102	92	(39-116)
Anthracene	111	107	96	(50-114)
Benzo(a)Anthracene	111	116	104	(54-122)
Benzo[a]pyrene	111	114	102	(50-125)
Benzo[b]Fluoranthene	111	117	105	(53-128)
Benzo[g,h,i]perylene	111	114	102	(49-127)
Benzo[k]fluoranthene	111	115	104	(56-123)
Chrysene	111	115	103	(57-118)
Dibenzo[a,h]anthracene	111	113	102	(50-129)
Fluoranthene	111	113	101	(55-119)
Fluorene	111	104	93	(47-114)
Indeno[1,2,3-c,d] pyrene	111	114	103	(49-130)
Naphthalene	111	83.7	75	(38-111)
Phenanthrene	111	109	98	(49-113)
Pyrene	111	115	104	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111		96	(58-103)
Fluoranthene-d10 (surr)	111		105	(54-113)

Batch Information

Analytical Batch: XMS13705

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent 8890 GC/MS SYA

Analyst: HMW

Prep Batch: XXX48065

Prep Method: SW3550C

Prep Date/Time: 06/25/2023 15:36

Spike Init Wt./Vol.: 111 ug/kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1232887006
 MS Sample ID: 1719026 MS
 MSD Sample ID: 1719027 MSD

Analysis Date: 07/04/2023 3:16
 Analysis Date: 07/04/2023 3:33
 Analysis Date: 07/04/2023 3:49
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1232933001, 1232933002, 1232933003, 1232933004

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	52400	144	45621	-4720 *	144	45490	-4800 *	43-111	0.25	(< 20)
2-Methylnaphthalene	65100	144	56601	-5880 *	144	56732	-5840 *	39-114	0.13	(< 20)
Acenaphthene	1625U	144	2013J	1400 *	144	1974J	1370 *	44-111	1.90	(< 20)
Acenaphthylene	1625U	144	1625U	0 *	144	816J	569 *	39-116	0.00	(< 20)
Anthracene	1700J	144	1625U	0 *	144	1625U	0 *	50-114	0.00	(< 20)
Benzo(a)Anthracene	1625U	144	1625U	0 *	144	1625U	0 *	54-122	0.00	(< 20)
Benzo[a]pyrene	1625U	144	1625U	0 *	144	1625U	0 *	50-125	0.00	(< 20)
Benzo[b]Fluoranthene	1625U	144	1625U	0 *	144	1625U	0 *	53-128	0.00	(< 20)
Benzo[g,h,i]perylene	1625U	144	1625U	0 *	144	1625U	0 *	49-127	0.00	(< 20)
Benzo[k]fluoranthene	1625U	144	1625U	0 *	144	1625U	0 *	56-123	0.00	(< 20)
Chrysene	1625U	144	1625U	0 *	144	1625U	0 *	57-118	0.00	(< 20)
Dibenzo[a,h]anthracene	1625U	144	1625U	0 *	144	1625U	0 *	50-129	0.00	(< 20)
Fluoranthene	1625U	144	1625U	0 *	144	1625U	0 *	55-119	0.00	(< 20)
Fluorene	5510	144	4928	-409 *	144	4915	-416 *	47-114	0.22	(< 20)
Indeno[1,2,3-c,d] pyrene	1625U	144	1625U	0 *	144	1625U	0 *	49-130	0.00	(< 20)
Naphthalene	37500	144	32418	-3500 *	144	32549	-3400 *	38-111	0.44	(< 20)
Phenanthrene	6870	144	5961	-631 *	144	5974	-621 *	49-113	0.27	(< 20)
Pyrene	1625U	144	1625U	0 *	144	1625U	0 *	55-117	0.00	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		144	1016	707 *	144	991	691 *	58-103	2.40	
Fluoranthene-d10 (surr)		144	175	122 *	144	170	118 *	54-113	2.90	

Batch Information

Analytical Batch: XMS13705
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent 8890 GC/MS SYA
 Analyst: HMW
 Analytical Date/Time: 7/4/2023 3:33:00AM

Prep Batch: XXX48065
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 6/25/2023 3:36:28PM
 Prep Initial Wt./Vol.: 22.77g
 Prep Extract Vol: 5.00mL

Print Date: 07/07/2023 8:17:11AM



Method Blank

Blank ID: MB for HBN 1857635 [XXX/48066]

Blank Lab ID: 1719012

QC for Samples:

1232933001, 1232933002, 1232933003, 1232933004

Matrix: Soil/Solid (dry weight)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>LOD</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	9.00	10.0	mg/kg
Surrogates					
5a Androstane (surr)	85.1	60-120		0	%

Batch Information

Analytical Batch: XFC16545

Analytical Method: AK102

Instrument: Agilent 7890B R

Analyst: T.L

Analytical Date/Time: 6/29/2023 6:49:00AM

Prep Batch: XXX48066

Prep Method: SW3550C

Prep Date/Time: 6/25/2023 3:39:00PM

Prep Initial Wt./Vol.: 22.5 g

Prep Extract Vol: 5 mL

Print Date: 07/07/2023 8:17:13AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232933 [XXX48066]
 Blank Spike Lab ID: 1719013
 Date Analyzed: 06/29/2023 06:59

Spike Duplicate ID: LCSD for HBN 1232933 [XXX48066]
 Spike Duplicate Lab ID: 1719014
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1232933001, 1232933002, 1232933003, 1232933004

Results by AK102

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	1110	1080	98	1110	1080	97	(75-125)	0.75	(< 20)
Surrogates									
5a Androstane (surr)	22.2		86	22.2		85	(60-120)	1.20	

Batch Information

Analytical Batch: **XFC16545**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **T.L**

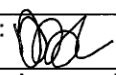
Prep Batch: **XXX48066**
 Prep Method: **SW3550C**
 Prep Date/Time: **06/25/2023 15:39**
 Spike Init Wt./Vol.: 22.2 mg/kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 22.2 mg/kg Extract Vol: 5 mL



1232933



SAMPLE RECEIPT FORM

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	<input checked="" type="radio"/> Yes	No	N/A	
Was temperature between 0-6° C?	<input checked="" type="radio"/> Yes	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time**?	<input checked="" type="radio"/> Yes	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	<input checked="" type="radio"/> Yes	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	Yes	No	<input checked="" type="radio"/> N/A	
If rush was requested by the client, was the requested TAT approved?	<input checked="" type="radio"/> Yes	No	N/A	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	<input checked="" type="radio"/> N/A	If "NO", contact client for information.
Sample Login Completion				
Do ID's on sample containers match COC?	<input checked="" type="radio"/> Yes	No	N/A	
If provided on containers, do dates/times collected match COC?	<input checked="" type="radio"/> Yes	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	<input checked="" type="radio"/> Yes	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? *See form F-083 "Sample Guide"	<input checked="" type="radio"/> Yes	No	N/A	Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	Yes	No	<input checked="" type="radio"/> N/A	
Were all VOA vials free of headspace >6mm?	Yes	No	<input checked="" type="radio"/> N/A	
Were all soil VOA samples received field extracted with Methanol?	Yes	No	<input checked="" type="radio"/> N/A	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	<input checked="" type="radio"/> N/A	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	<input checked="" type="radio"/> N/A	
For Rush/Short Holding time, was the lab notified?	<input checked="" type="radio"/> Yes	No	N/A	
For any question answered "NO", was the Project Manager notified?	Yes	No	<input checked="" type="radio"/> N/A	PM Initials:
Was Peer Review of sample numbering/labelling completed?	Yes	No	N/A	Reviewer Initials: 
Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:				



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1232933001-A	No Preservative Required	OK			
1232933002-A	No Preservative Required	OK			
1232933003-A	No Preservative Required	OK			
1232933004-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

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

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

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

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

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

QN - Insufficient sample quantity provided.

Attachment D

ADEC Laboratory Data Review Checklist



ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	David Nyman, QEP	CS Site Name:	Lawn Range Site	Lab Name:	SGS North America, Inc.
Title:	Lawn Ranger Site	ADEC File No.:	File No. 2265.38.042.	Lab Report No.:	1232933
Consulting Firm:	Restoration Science & Engineering, LLC	Hazard ID No.:		Lab Report Date:	06-29-2023

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A

Comments: All samples submitted to a CS-LAP approved lab SGS

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

Yes No N/A

Comments: All samples to SGS in Anchorage

2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes No N/A

Comments: COC filled out properly and samples remained in RSE custody until delivery to lab

- b. Were the correct analyses requested?

Yes No N/A

Analyses requested: DRO and PAH SIMs

Comments: Analyses as per ADEC approved workplan

3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A

Cooler temperature(s): Cooler at 2.1 degrees C

CS Site Name: Lawn Range Site

Lab Report No.: 1232933

Sample temperature(s): Samples collected less than 8 hrs before lab delivery
Comments: Samples chilled immediately in field and delivered to lab a few hours after collection.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes No N/A

Comments: Sample preservation was to chill between 0 and 6 degrees C

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes No N/A

Comments: No issues

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

Yes No N/A

Comments: No discrepancies

- e. Is the data quality or usability affected?

Yes No N/A

Comments: Data quality not affected

4. Case Narrative

- a. Is the case narrative present and understandable?

Yes No N/A

Comments: Case narrative on page 2/23 of SGS report

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes No N/A

Comments: Minor QC failures were noted and were insignificant due to non detect values

- c. Were all the corrective actions documented?

Yes No N/A

Comments: No corrective actions required

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

Comments: No impact on data quality/usability due to low values and matrix influenced QC failures

5. Sample Results

- a. Are the correct analyses performed/reported as requested on CoC?
Yes No N/A
Comments: PAH SIM and DRO analyses as per COC
- b. Are all applicable holding times met?
Yes No N/A
Comments: Samples analyzed less than one week from date of collection
- c. Are all soils reported on a dry weight basis?
Yes No N/A
Comments: Sample results on dry weight basis
- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes No N/A
Comments: LoQ, LOD and RL are less than cleanup level
- e. Is the data quality or usability affected?
Yes No N/A
Comments: Data quality unaffected

6. QC Samples

- a. Method Blank
- i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes No N/A
Comments: PAH and DRO method blank reported
- ii. Are all method blank results less than LOQ (or RL)?
Yes No
Comments: all method blank results less than LOQ
- iii. If above LoQ or RL, what samples are affected?
Comments: Not applicable
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No N/A
Comments: Not applicable
- v. Data quality or usability affected?
Yes No N/A

CS Site Name: Lawn Range Site
Lab Report No.: 1232933

Comments: Date quality unaffected

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

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

Yes No N/A

Comments: LCS/LCSD reported per matrix

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

Yes No N/A

Comments: Not applicable

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

Yes No N/A

Comments: No surrogate recovery for 2-methylnthalene-d10 for Cell 24 and MS and MSD PAH surrogate recovery for 2-methylnaphthalene-d10 and several analytes were outside limits. All other analyses met recovery criteria.

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

Yes No N/A

Comments: MS RPD for anthracene does not meet QC criteria

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

Comments: MS RPD for batch affected

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

Yes No N/A

Comments: Data flags provided

- vii. Is the data quality or usability affected?

Yes No N/A

Comments: Data quality is unaffected.. samples are non-detect with organic matrices

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A

Comments: MS/MSD are reported

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A

Comments: Not applicable

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes No N/A

Comments: MS PAH surrogate recovery for w-methylenahthalene-d10 and several analytes does not meet criteria due to matrix interference. MSD PAH surrogate recovery for w-methylenahthalene-d10 and several analytes does not meet criteria due to matrix interference

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes No N/A

Comments: PAH MSD RPD for anthracene does not meet QC criteria

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

Comments: sample group affected

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

Yes No N/A

Comments: Data flags provided

- vii. Is the data quality or usability affected?

Yes No N/A

Comments: Data quality is unaffected based on non-detect values.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

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

Yes No N/A

Comments: Not applicable

CS Site Name: Lawn Range Site

Lab Report No.: 1232933

- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes No N/A

Comments: Not applicable

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

Yes No N/A

Comments: not applicable

- iv. Is the data quality or usability affected?

Yes No N/A

Comments: not applicable

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes No N/A

Comments: No volatile analyses

- ii. Are all results less than LoQ or RL?

Yes No N/A

Comments: Not applicable

- iii. If above LoQ or RL, what samples are affected?

Comments: Click or tap here to enter text.

- iv. Is the data quality or usability affected?

Yes No N/A

Comments: Not applicable

f. Field Duplicate

- i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes No N/A

Comments: Field duplicate submitted

- ii. Was the duplicate submitted blind to lab?

Yes No N/A

Comments: Duplicate identified as Cell 33 for actual Cell 15

CS Site Name: Lawn Range Site
Lab Report No.: 1232933

- iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes No N/A

Comments: DRO RPD =38% all PAH results were non detect

- iv. Is the data quality or usability affected? (Explain)

Yes No N/A

Comments: Data quality unaffected

g. Decontamination or Equipment Blanks

- i. Were decontamination or equipment blanks collected?

Yes No N/A

Comments: None collected

- ii. Are all results less than LoQ or RL?

Yes No N/A

Comments: None collected

- iii. If above LoQ or RL, specify what samples are affected.

Comments: None collected

- iv. Are data quality or usability affected?

Yes No N/A

Comments: Data Quality unaffected

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

- a. Are they defined and appropriate?

Yes No N/A

Comments: Lab flags defined

Attachment E

Field Notes



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No 393

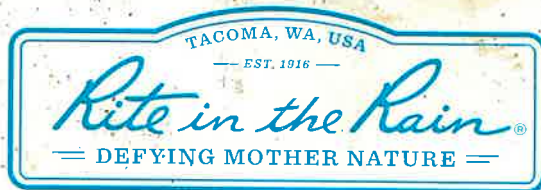
Project: 23-2701

LAWN RANGER SITE

JUNE 2023

5101 & 5105 ELDORADO

WASILLA AK



Name RESTORATION Science

Address 911 W. 8th Ave STE 100
Anchorage AK 99501

Phone 907-278-1023

Email DNYMAN@restorsci.com

Projects 23-2701

LAWN RANGER SITE

5150 ELDERADO

WASILLA AK



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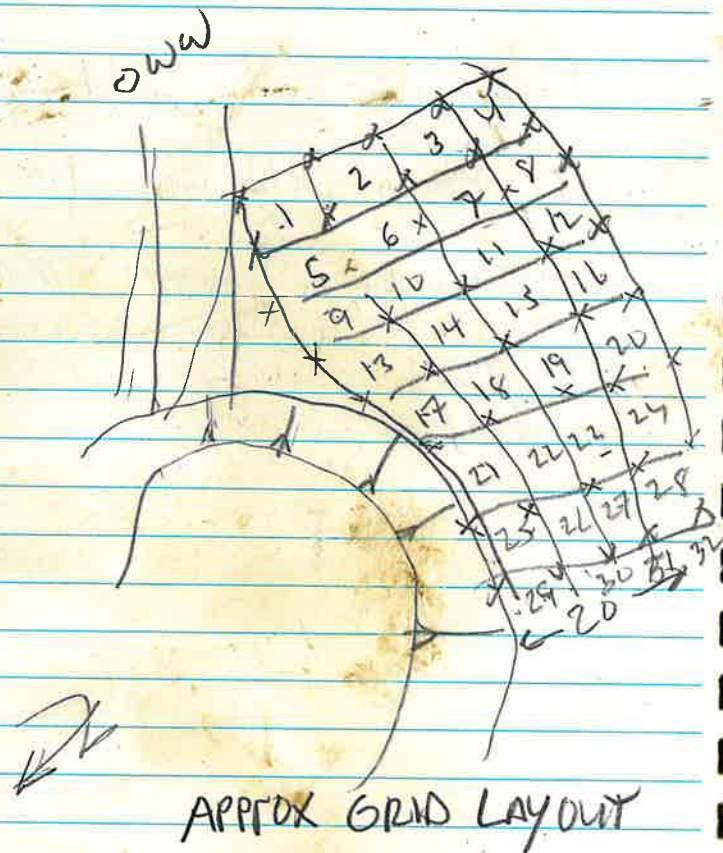
Lawn Range

623-23

same

9:50 Finish setting up grid

10:01 Begin dig in cell #1



(2)

Lawn Ranger 623-23

Cell 1 - Brown loam w/ plant roots
gravel trace sand

Dig to 8' soil changes to
tan soil at 12" (NATIVE?)
negative sheen screen

CELL 2 - Gray sandy gravel w/
cobbles. Collect depth 8"
sheen screen is negative

CELL 3 10:18 Dig to 7"
Brown gravelly sand w/ loam
organics -
sheen screen =

CELL 4 10:21 SANDY silt w/ gravel
Brown - Dig 8" collect
sheen screen Negative

Cell 5 10:34 Gray Sandy/gravelly w/ loam
10" bgs is natural loam
8" collect, sheen screen negative

Cell 6 10:36 brown loam w/ cobbles
7" Bgs collect Brown loam/silt
w/ gravel trace cobbles
NO sheen

Site on the Rain

LAWN RANGER 6-23-23

CELL 7 12" sandy loam/silt w
4 incl. - 12" BGS

CELL 8 Brown sandy silty w/
Gravel No sheen

CELL 9 Brown loam w/ trace
10:57 gravel/cobble/sand
sheen screen = Neg - fine

CELL 10 Brown sand w/ trace
gravel & silt
sheen - negative

CELL 11 Brown silty w/ sand trace
gravel 10"
NO sheen

CELL 12 Brown silty w/ trace
11:17 sand & gravel.
NO sheen

CELL 16 Sandy Brown loam/silt
trace gravel No sheen

(4)

LAWN RANGER 6-23-23

11:24 CELL 13

SAME

13" BGS Brown loam trace
NO NO sheen.

CELL 14 12" BGS Brown silty w/
trace sand pe gravel.
cell NO sheen.

15 11:36 Brown silty soil w/ trace
sand/gravel - small sand inclusion
NO sheen on sand inclusion

CELL 17 18" BGS encounter tan loam
at 8" BGS - Brown sandy
loam/silt - NO sheen

CELL 18 10" BGS Brown sandy silty
w gravel - NO sheen

CELL 19 Brown silty/loam
trace gravel/sand
sheen test = 0

CELL 20 Brown silty w/ gravel
NO sheen 12" T

cell 21 Brown loam 12" BGS
NO sheen (5) *Put in the Rain*

LAWN RANGER 6-23-23

CELL 22 Brown sandy silt w/
trace gravel
No shear

CELL 23 Brown loam/silt w/
trace of sand/gravel
NO shear @ 7"

CELL 24 Brown loam, possible
odor - w/ gray zone
No shear

CELL 25 Brown silt/loam
trace gravel 6" BSS
NATURAL loam at 6" BSS
NO shear

CELL 26 Brown silt - NATURAL TAN
silt @ 4" - NO shear
sample at 6"

CELL 27 TAN NATURAL soil @ 6"
collet sample @ 5"
Brown silt w/ organics
NO shear

(6)

LAWN RANGER 6-23-23

(SAME)

CELL 28 Brown sandy silt
9" BSS NO shear

cell 30 Brown sandy silt w/
gravel 10" - NO shear

cell 31 Brown silt w/ gravel
trace sand NO shear

cell 32 Brown silt w/ gravel
NO shear

Pick samples - cell 24
cell 15, 2

12:55 collect sample cell 24

13:00 collect 15 & Dup - coll
16 w/ Dummy Time 14:00

13:04 collect cell 1 (Dup = cell 33)

All samples in 8 oz
jar placed in cooler/gel

Dean M 6-23-23

(7)
Rite in the Rain

Attachment F

Site Photos





Grid 1 Soil Test Hole with Granular Material Visible



Sandy Loam Material from Cell 1



Sample Grid with Soil Sample Locations Visible



Sample Grid with Soil Sample Locations Visible



Typical Cell Sample Hole