Fall 9-29-2021

SILVER BOW CREEK/BUTTE AREA NPL SITE BUTTE PRIORITY SOILS OPERABLE UNIT

Pioneer Technical Services, Inc.

Atlantic Richfield Company

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Butte MT 59701

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Liability Manager

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September 29, 2021

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RE: Draft Final RMAP Butte High School Soil Remedial Action Work Plan (RAWP)

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to submit the Draft Final RMAP Butte High School Soil Remedial Action Work Plan (RAWP). The report and appendices may be downloaded at the following link:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/ErokEfLV0yNIo74cXTfQEhAB2Z_VDZbdmY1znIx0H7I7Aw

If you have any questions or comments, please call me at (907) 355-3914.

Sincerely,

Mike McAnulty

Mike Mc Anulty
Liability Manager & Global Risk Champion
Remediation Management Services Company
An affiliate of **Atlantic Richfield Company**

Atlantic Richfield Company

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Butte MT 59701

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Curt Coover / CDM - email
James Freeman / DOJ - email
John Sither / DOJ - email
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Dave Bowers / DEQ - email
Carolina Balliew / DEQ - email
Matthew Dorrington / DEQ - email
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Ray Vinkey / NRDP - email
Harley Harris / NRDP - email
Katherine Hausrath / NRDP - email
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Ted Duaime / MBMG - email
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Becky Summerville / MR - email
Kristen Stevens / UP - email
Robert Bylsma / UP - email
John Gilmour / Kelley Drye - email
Leo Berry / BNSF - email
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Karen Helfrich / Pioneer - email
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Connie Logan/ Pioneer – email
Ian Magruder/ CTEC- email
CTEC of Butte – email
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File: MiningSharePoint@bp.com - email
BPSOU SharePoint - upload

SILVER BOW CREEK/BUTTE AREA NPL SITE
BUTTE PRIORITY SOILS OPERABLE UNIT

Draft Final

2021 Residential Metals Abatement Program (RMAP)
Butte High School
Soil Remedial Action Work Plan (RAWP)

Butte-Silver Bow County

and

Atlantic Richfield Company

September 29, 2021

SILVER BOW CREEK/BUTTE AREA NPL SITE
BUTTE PRIORITY SOILS OPERABLE UNIT

Draft Final

2021 Residential Metals Abatement Program (RMAP)
Butte High School
Soil Remedial Action Work Plan (RAWP)

Prepared for:

Butte-Silver Bow County
Superfund Division
155 W. Granite
Butte, Montana 59701

and

Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Prepared by:

Pioneer Technical Services, Inc.
1101 S. Montana Street
Butte, Montana 59701

September 29, 2021

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DOCUMENT MODIFICATION SUMMARY

Modification	Author	Version	Description	Date
0	Jesse Schwarzrock	Draft Final	Issued for Agency Review	09/29/21

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was developed to outline a portion of the remedial action (RA) work resulting from the 2021 Residential Metals Abatement Program (RMAP) school soil sampling event completed in July and August 2021. The sampling event was conducted in accordance with the *Final Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan* (QAPP) *(Non-Residential Parcels)* (Butte-Silver Bow County and Atlantic Richfield Company, 2021).

2.0 SCHOOL SOIL REMEDIATION SCOPE

The scope of work covered by this RAWP includes the following school(s):

- Butte High School (see Table 1).

3.0 SCHOOL SOIL REMEDIATION SCHEDULE

The main goal of this scope of work is to complete remediation work prior to the end of the 2021 construction season. Coordination work is on-going with relevant stakeholders.

4.0 REMEDIAL ACTION WORK PLAN

4.1 Butte High School Remedial Action

Remediation at Butte High School consists of three polygons totaling approximately 0.60 acres in the grass covered area northeast of the school building:

- Polygon GA3 (9,953 square feet);
- Polygon GA5 (7,871 square feet); and
- Polygon GA7 (9,470 square feet).

All three polygons are irrigated by the school district and have a well-maintained grass cover (see Figures 1 and 2). The Individual Site Work Plan (ISWP) is provided in Attachment A.

4.1.1 Excavation

Two of the three polygons (GA3 and GA5) have lead exceedances to a depth of 12 inches. The third polygon (GA7) has a lead exceedance to a depth of 6 inches. Based on this information, the removal area will be dictated by the original sampling polygon areas with the RMAP maximum remove depth of 14 inches below existing ground surface (see Figures 3 and 4).

The removal areas contain mature trees as well as multiple underground utilities.

A 1-foot mandatory buffer will be maintained around all existing utilities. If achieving the removal depth means encroaching within the 1-foot mandatory utility buffer, excavation work will stop when at the 1-foot from utility mark. No removal work will take place within 1-foot of

existing utilities. As mandated by Atlantic Richfield Company's *Remediation Management - CoW Defined Practices*, mechanical excavation is not allowed within 2-feet of existing utilities. Therefore, any excavation work within 2-feet of the utility shall be hand excavation. The excavation depth shall be measured from below the existing sod cover, where applicable. Sod cover is typically in the range of 1 to 2 inches thick (this dimension involves the sod mat only and does not include the length of blades of grass or full depth of roots).

Removal work will be required within existing tree canopies. This removal work will be sensitive in nature due to concern of causing damage to the tree roots or possibly affecting the structural stability of the trees which could cause the landowner issues in the future.

Full depth removal will be attempted within tree canopies but will not be feasible in all areas due to the presence of tree roots. In these areas, the minimum removal goal will be removing the existing cover material (sod/aggregate) plus approximately 2 inches of native material (see Figure 3). The on-site EPA representative will be consulted to help make these removal decisions.

In areas with heavy tree roots where full depth removal is not feasible, a lime barrier will not be placed. A separation fabric plus growth medium will be placed to backfill the excavation footprint. The final surface material (sod/wood chips/landscaping material) will be determined through upcoming conversations with school officials.

All excavated material will be disposed of within the Butte Mine Waste Repository (see Figure 5). Depth verification of the excavation area will consist of measuring using a hand tape and utilizing existing perimeter features (i.e., the elevation of the concrete curbing/tree areas/native soil around the excavation perimeter).

The excavation areas contain an existing sprinkler system. It is anticipated that the portion of the system within the removal areas will need to be removed as part of the soil excavation task. If this turns out to be the case, the portion of the system removed during excavation will be replaced with in kind materials following backfill placement and prior to sod placement. All work associated with the school district's sprinkler system will be approved by school officials prior to beginning the work.

Care will be taken to protect existing concrete sidewalk and curbing in and around the work area. In the event that any existing concrete infrastructure is damaged, it will be replaced.

In the event that excavations are not able to be backfilled during the same shift that they were developed, site control measures will be implemented during non-working hours. This may include perimeter control via safety cones and caution tape, construction fencing, or other approved methods.

4.1.2 Backfill

Once the on-site U.S. Environmental Protection Agency (EPA) representative has approved the excavation area, backfill work will begin (see Figure 3). A 2-inch-thick layer of sugar beet lime

(see Section 5.1 and Attachment B) will be placed at the bottom of the excavation in case underlying native soils have pH issues.

Once the lime layer is in place, a separation fabric (see Section 5.2 and Attachment C) will be placed consistent with current RMAP practices. The separation fabric will indicate the boundary between remediated and native soils for any future excavation work in this area.

Once the separation fabric has been installed, 12 inches of growth medium (see Section 5.3 and Attachment D) will be placed. The growth medium will not be compacted to attain a specific density and moisture content but will be slightly compacted to impede future settling of the backfill material. The surface of backfilled area will be prepared in such a manner that it will be amenable to sod placement (i.e., smooth, not overly steep, no abrupt edges, etc.).

4.1.3 Underground Stormwater Storage System

Polygon GA3 contains an underground stormwater storage system. According to project as-built drawings, there is a 6 inch thick layer of topsoil, followed by a geoweb material, followed by a 12 inch thick aggregate layer. Conversations with the Engineer indicate that the topsoil layer varies significantly with the south end of the footprint having almost no topsoil present between the sod and geoweb material. The existing topsoil layer will be removed (to a maximum depth of 12") and replaced with 12 inches of growth medium (see Section 5.3 and Attachment D). The existing geoweb material will be left in place. No separation fabric or lime material will be placed over top of the underground stormwater storage system. End dump construction traffic will be prohibited over top of the storage system. Tracked equipment will be allowed but will be minimized to the extent possible.

4.1.4 Cover Placement

Within polygon GA7 there are underground high voltage electric lines running to the Butte High School Welding Shop. In this area, a 14" thick cover will be placed in lieu of excavation and soil replacement due to safety concerns (see Detail 3 on Figure 3). The exact footprint of the cover placement will be field fit with the on-site EPA representative pending the site utility investigation.

4.1.5 Revegetation

Given the maintained, irrigated nature of this portion of the property, sod placement is more appropriate than seeding. Sod procurement is detailed in Section 5.4.

All areas disturbed during construction including ingress/egress will receive sod. After final grading of backfill areas has been completed, areas to be sodded will be raked or otherwise cleared of stones larger than 1-inch in any diameter, sticks, stumps, and other debris which might interfere with sodding, growth of grasses, or subsequent maintenance of grass-covered areas.

4.2 Dust Control

This work will be performed adjacent to school and residential areas; consequently, controlling fugitive dust emissions is a high priority. If fugitive dust emissions become significant during the course of the work, all work will be shut down until alternative and satisfactory dust control methods are determined. The contractor shall be responsible for acquiring water for dust control from a source of the contractor's choice.

4.3 Best Management Practices (BMPs)

Best management practices (BMPs) will be installed as necessary to ensure sediment does not leave the work area. Once sod is established, the BMPs will be removed.

5.0 MATERIALS

5.1 Sugar Beet Lime Source

Sugar beet lime will be procured from Western Sugar Cooperative in Billings, Montana. This material is currently begin hauled from Billings to the Anaconda Smelter National Priorities List (NPL) Site. Internal quality assurance data from the past 3 months are provided in Attachment B. The corresponding laboratory reports are located in Attachment B-1.

5.2 Fabric Material

Geotex 801 will be used for the separation fabric to provide a barrier between the growth medium and native soils. The material specifications are located in Attachment C.

5.3 Backfill Borrow Source

The Kaw Avenue growth medium borrow stockpile will be used for all required backfill material (the location is shown on Figure 6). The Agency approved quality assurance data are provided in Attachment D, and the corresponding laboratory reports are located in Attachments D-1 and D-2.

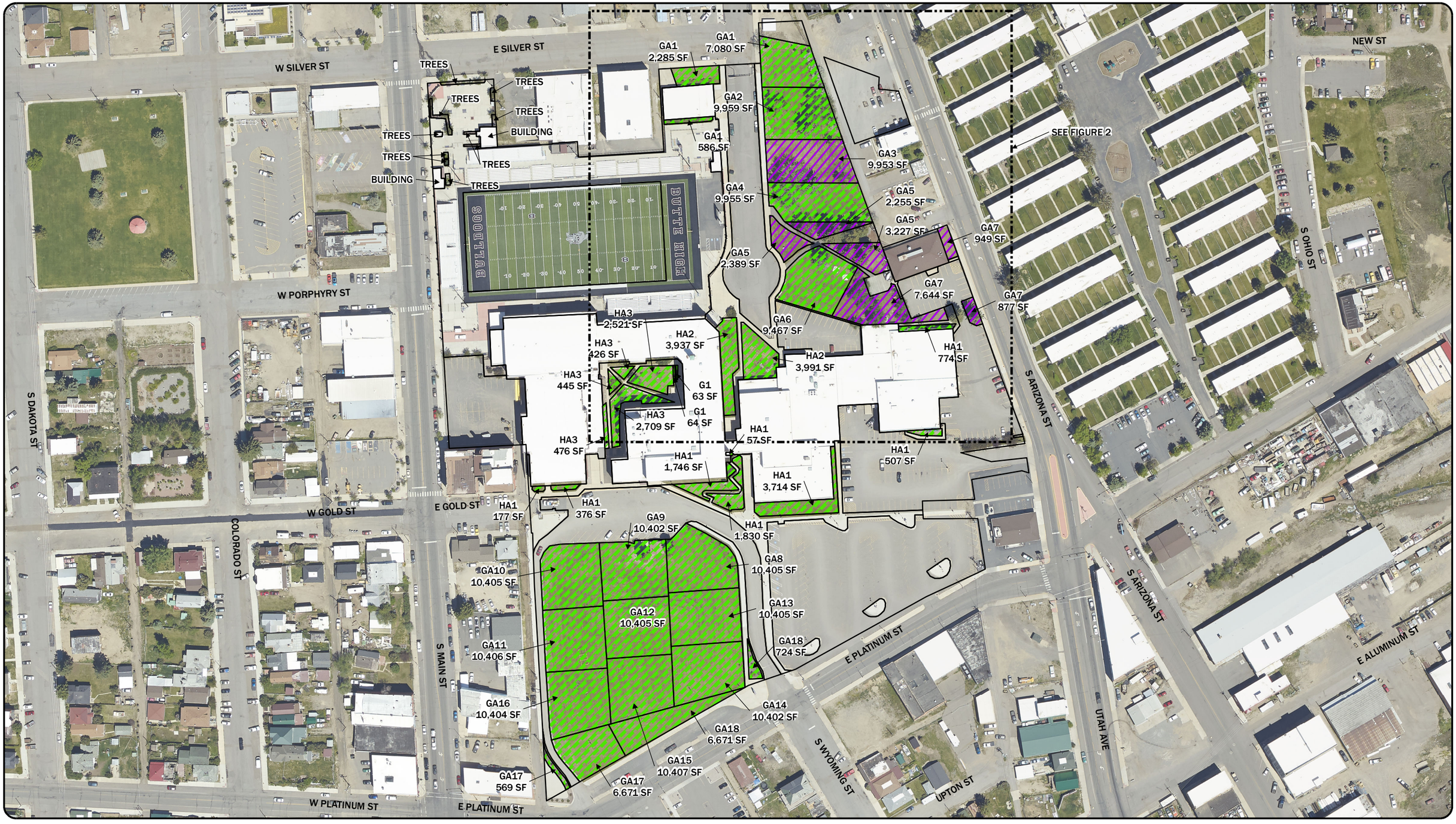
5.4 Sod

Kentucky bluegrass sod will be procured from Summit Valley Turf in Whitehall, Montana.

6.0 REFERENCES

Butte-Silver Bow County and Atlantic Richfield Company, 2021. Silver Bow Creek/Butte Area NPL Site Butte Priority Soils Operable Unit, Final Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP). July 2021.

FIGURES



LEGEND

- No Action Required
- 14" Removal

N

DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 75 150 300
Feet

FIGURE 1

BUTTE HIGH SCHOOL SITE OVERVIEW

PIONEER TECHNICAL SERVICES, INC.

DATE: 9/29/2021

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NOTES:

1. REMEDIATION WITHIN 14" REMOVAL AREAS WILL BE COMPLETED PER DETAIL 1 ON FIGURE 3.

2. REMEDIATION WITHIN TREE CANOPY AREAS WILL BE COMPLETED PER DETAIL 2 ON FIGURE 3.

3. 14" COVER PLACEMENT TO BE COMPLETED PER DETAIL 3 ON FIGURE 3.

4. REMEDIATION AROUND UTILITIES/UTILITY CORRIDORS WILL BE COMPLETED IN ACCORDANCE WITH BP'S CURRENT GROUND DISTURBANCE POLICY.

UNDERGROUND STORMWATER STORAGE SYSTEM. PER AS-BUILTS, THERE IS APPROXIMATELY 6" OF COVER SOIL, FOLLOWED BY A GEOWEB, THEN A 1' AGGREGATE LAYER ON TOP OF THE STORAGE TANKS. THE TOPSOIL LAYER WILL BE REMOVED AND REPLACED (TO A 12" MAXIMUM DEPTH) ON TOP OF THE EXISTING GEOWEB. NO SEPARATION FABRIC OR LIME LAYER WILL BE PLACED OVER TOP THE STORMWATER STORAGE SYSTEM.

PLACE 14" COVER TO AVAOID DISTURBING HIGH VOLTAGE UNDERGROUND ELECTRIC. EXACT COVER AREA TO BE FIELD FIT WITH EPA REPRESENTATIVE PENDING UTILITY INVESTIGATION.

GA1 2,285 SF
GA1 586 SF
GA1 7,080 SF
GA2 9,959 SF
GA3 9,953 SF
GA4 9,955 SF
GA5 2,255 SF
GA5 2,389 SF
GA5 3,227 SF
GA6 9,467 SF
GA7 7,644 SF
GA7 949 SF
GA7 877 SF
HA1 774 SF
HA2 3,937 SF
HA2 3,991 SF
HA3 426 SF
HA3 2,521 SF
HA3 445 SF
HA3 2,709 SF
HA3 476 SF
G1 63 SF
G1 64 SF
S WYOMING ST
S ARIZONA ST

LEGEND
- No Action Required
- 14" Removal
- 14" Cover
- HDPE
- UNDERGROUND STORAGE SYSTEM

N

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SOURCE: PIONEER

0 40 80 160
Feet

FIGURE 2

PIONEER TECHNICAL SERVICES, INC.

BUTTE HIGH SCHOOL RA WORK AREA

DATE: 9/29/2021

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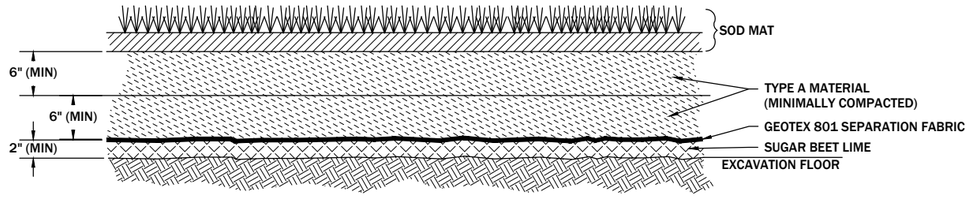
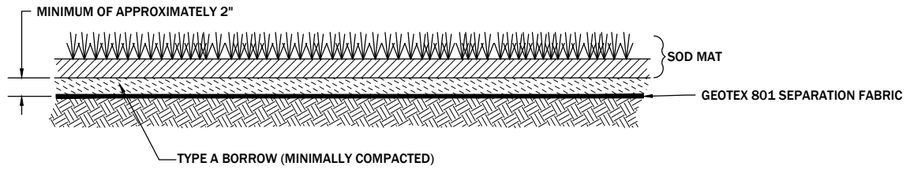


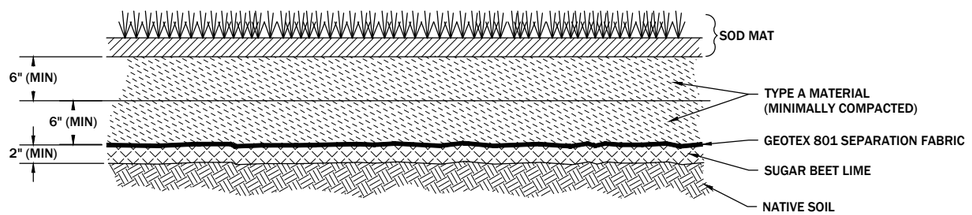
14" SOIL AND SOD REMOVAL/REPLACEMENT DETAIL (1)

NOTE: 14" OF NATIVE SOIL TO BE REMOVED. IT WILL BE REPLACED WITH 2" OF LIME, A SEPARATION FABRIC, AND 12" OF TYPE A KAW AVENUE STOCKPILE GROWTH MEDIUM.



TREE CANOPY REMOVAL/REPLACEMENT DETAIL (2)

NOTE: A FULL 14" OF REMOVAL WILL BE ATTEMPTED WITHIN TREE CANOPIES, BUT WILL NOT BE FEASIBLE IN ALL AREAS DUE TO TREE ROOTS. IN THESE AREAS, A MINIMUM REMOVAL OF THE EXISTING COVER MATERIAL (SOD/AGGREGATE) PLUS 2" OF NATIVE MATERIAL WILL BE ATTEMPTED. IN THIS SCENARIO, NO LIME WILL BE PLACED. A SEPARATION FABRIC, 2" OF KAW AVENUE STOCKPILE GROWTH MEDIUM, AND WOOD CHIPS/LANDSCAPING MATERIAL CHOSEN BY THE OWNER WILL BE PLACED TO BACKFILL THE EXCAVATION AREA.



14" SOIL COVER PLACEMENT DETAIL (3)

NOTE: 14" OF NATIVE SOIL TO BE REMOVED. IT WILL BE REPLACED WITH 2" OF LIME AND 12" OF TYPE A GROWTH MEDIUM.

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FIGURE 3

REMOVAL CROSS SECTIONS

PIONEER TECHNICAL SERVICES, INC.

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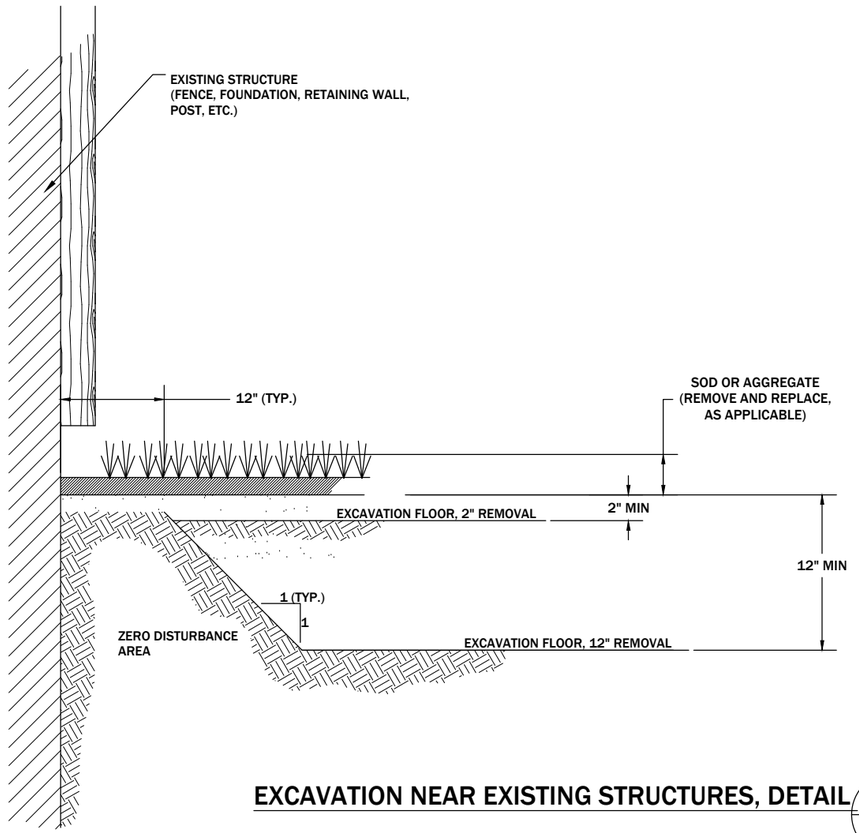
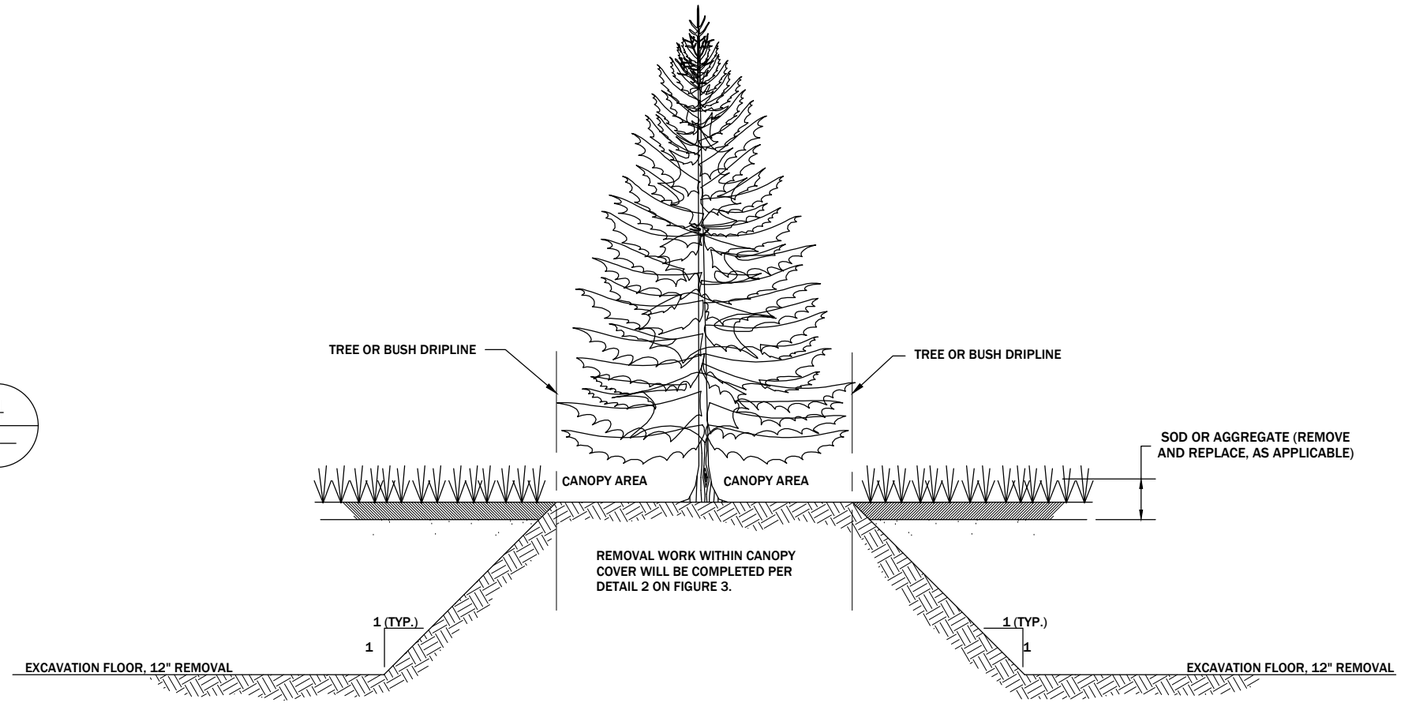


EXCAVATION NEAR EXISTING STRUCTURES, DETAIL 4



EXCAVATION NEAR EXISTING TREES, BUSHES, AND SHRUBS, DETAIL 5

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FIGURE 4

PIONEER TECHNICAL SERVICES, INC.

REMOVAL DETAILS

DATE: 9/29/2021

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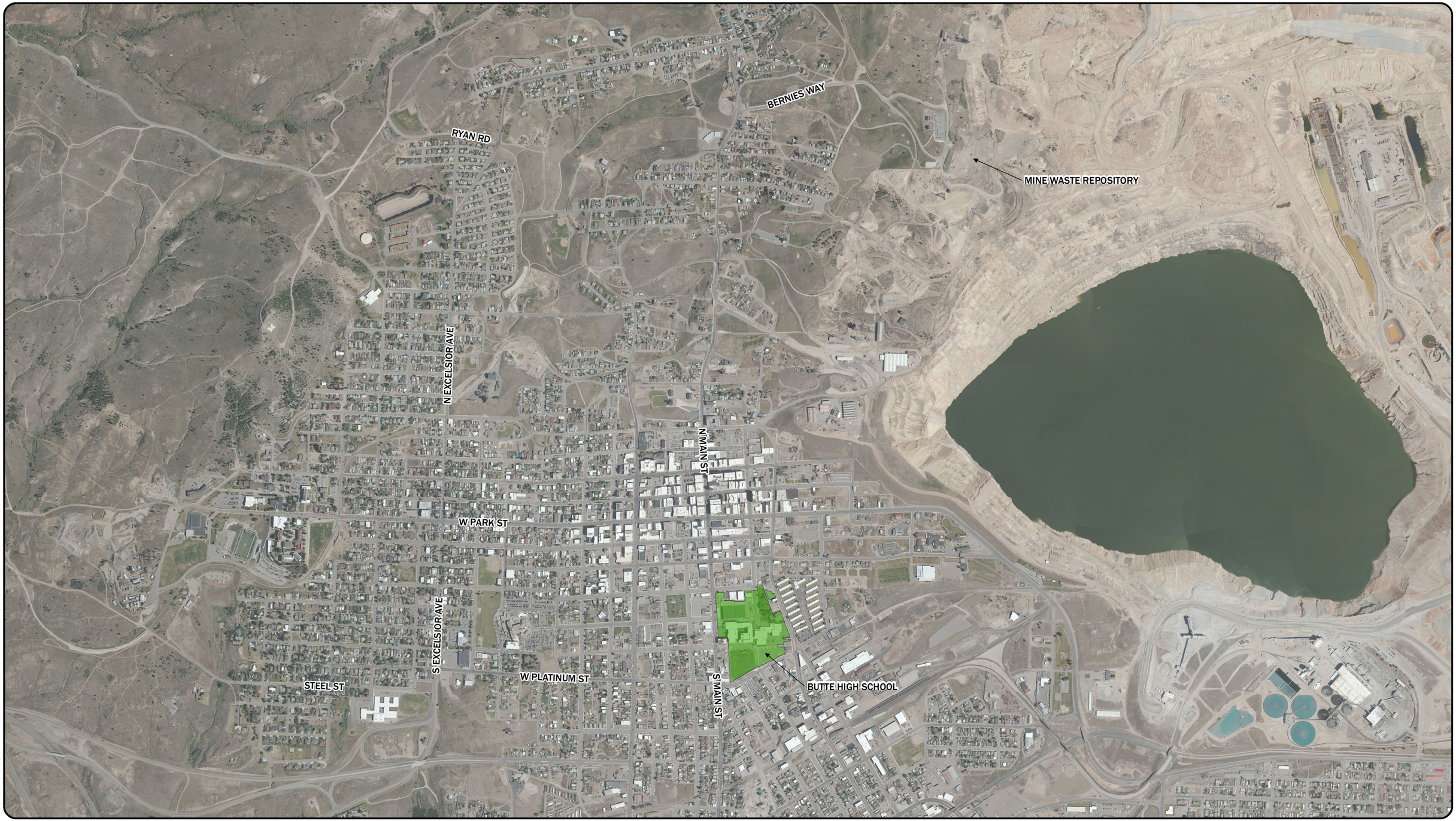

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UNITS: FEET
SOURCE: PIONEER

0 600 1,200 2,400
Feet

FIGURE 5

MINE WASTE REPOSITORY LOCATION

PIONEER TECHNICAL SERVICES, INC.

DATE: 9/29/2021

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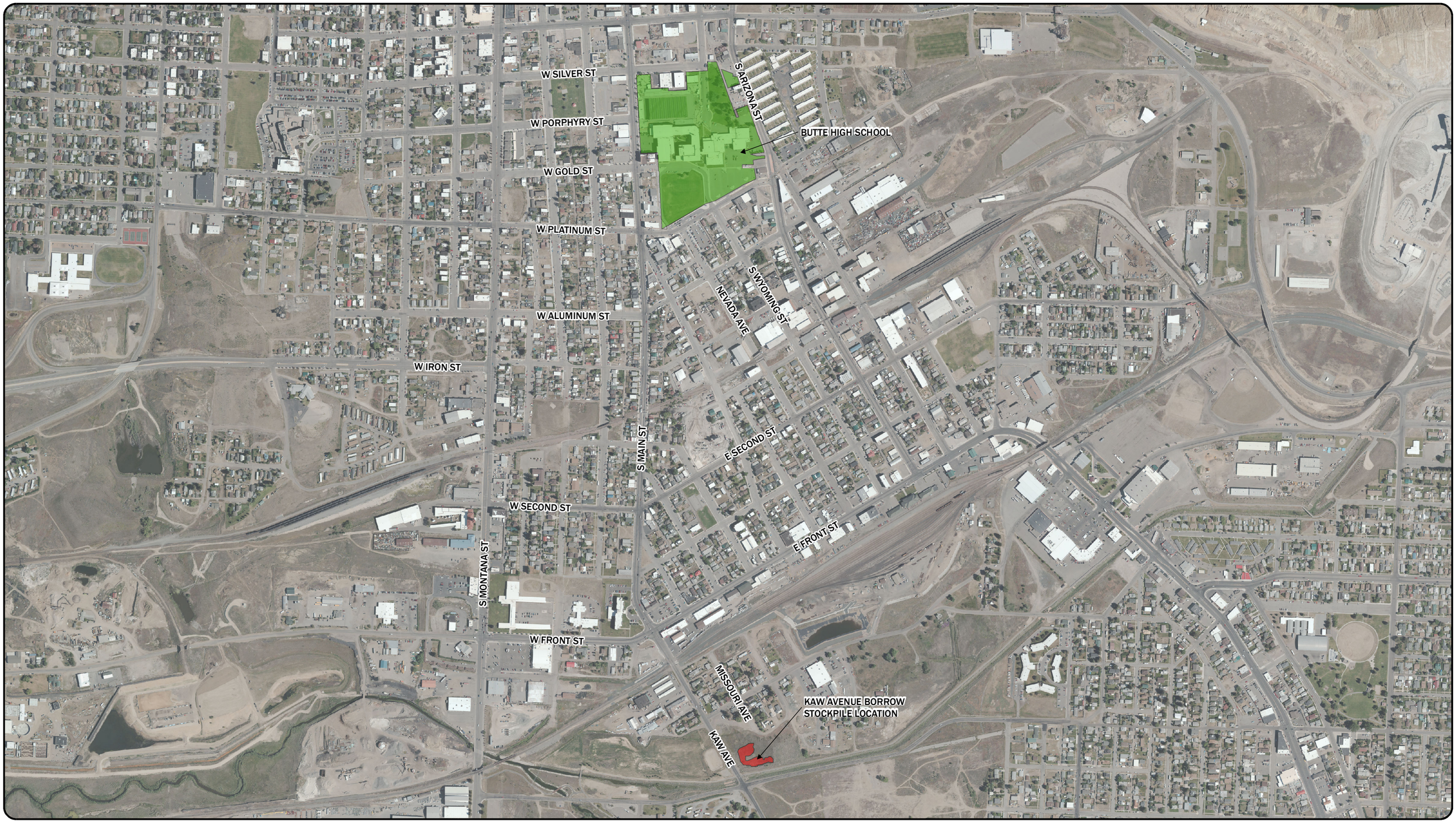

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PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: FEET
SOURCE: PIONEER

0 350 700 1,400
Feet

FIGURE 6

KAW AVENUE
BORROW STOCKPILE
LOCATION

PIONEER TECHNICAL SERVICES, INC.

DATE: 9/29/2021

Path: Z:\Shared\Active Projects\ARCO\BPSOU\RMAP\GIS\School RAWP Figures\ButteHigh\RAWP_ButteHighSchool6.mxd

TABLES

TABLE 1: BUTTE HIGH SCHOOL PROPERTY INFORMATION

Count	Res-ID	Geocode	Name	Owner	Construction Date
1	S-0009	01119713454100000	Butte High School	School District #1	1937/1968

ATTACHMENT A

DRAFT BUTTE HIGH SCHOOL

INDIVIDUAL SITE WORK PLAN (ISWP)

ADDRESS: 401 S WYOMING STREET
PROPERTY ID: S-0009

S-0009

LEGEND

- No Action Required
- 12" Removal
- 24" Removal
- Un-Samplable Area

NOTES:

1. LOOK ON BACK OF SHEET FOR DATA TABLE.

BUTTE HIGH SCHOOL
INDIVIDUAL SITE WORK PLAN

RESIDENTIAL METALS ABATEMENT PROGRAM (RMAP)

BUTTE, MONTANA
SHEET 1 OF 2

DRAFT
DATA VALIDATION NOT YET COMPLETE

Boundaries on this site work plan DO NOT represent a legal survey. These boundaries are to be used for general reference only. No liability is assumed by Atlantic Richfield Company or Pioneer Technical Services for the accuracy of these.

N

150 75 0 150
Feet

Atlantic Richfield Company
A BP affiliated company

BY: PIONEER TECHNICAL SERVICES, INC.

Date: 9/6/2021
Revision#: 0
File Name: RMAP_ISWP_ButteHighSchool

REMEDIAL ACTION SUMMARY TABLE

Resident ID	SAMPLING COMPONENTS	COMPONENT SURFACE AREA (Square Feet)	COMPONENT ARSENIC CONCENTRATION (mg/kg)					COMPONENT LEAD CONCENTRATION (mg/kg)					COMPONENT MERCURY CONCENTRATION (mg/kg)					ESTIMATED QUANTITIES		
S-0009			0-2"	2-6"	6-12"	12-18"	18-24"	0-2"	2-6"	6-12"	12-18"	18-24"	0-2"	2-6"	6-12"	12-18"	18-24"	Excavation (Cubic Yards)	General Backfill (Cubic Yards)	Sod (Square Feet)
S-0009-HA1	High Access Area 1 (HA1)	9,181	43	58	67	N/A	N/A	97	275	657	N/A	N/A	0.05	0.23	0.22	N/A	N/A	0.0	0.0	0
S-0009-HA2	High Access Area 2 (HA2)	7,928	47	54	55	N/A	N/A	238	660	1,070	N/A	N/A	0.07	0.14	0.18	N/A	N/A	0.0	0.0	0
S-0009-HA3	High Access Area 3 (HA3)	6,577	59	52	49	N/A	N/A	160	362	529	N/A	N/A	0.07	0.12	0.36	N/A	N/A	0.0	0.0	0
S-0009-GA1	Grass Area 1 (GA1)	9,951	27	32	48	N/A	N/A	281	262	375	N/A	N/A	0.15	0.09	0.33	N/A	N/A	0.0	0.0	0
S-0009-GA2	Grass Area 2 (GA2)	9,959	36	32	50	N/A	N/A	482	207	721	N/A	N/A	0.14	0.09	0.17	N/A	N/A	0.0	0.0	0
S-0009-GA3	Grass Area 3 (GA3)	9,953	32	76	82	N/A	N/A	194	1,520	5,220	N/A	N/A	0.27	0.39	1.10	N/A	N/A	368.6	368.6	9,953
S-0009-GA4	Grass Area 4 (GA4)	9,955	35	51	52	N/A	N/A	268	186	573	N/A	N/A	0.18	0.10	0.25	N/A	N/A	0.0	0.0	0
S-0009-GA5	Grass Area 5 (GA5)	7,871	64	80	180	N/A	N/A	1,840	1,790	2,370	N/A	N/A	0.64	1.40	0.82	N/A	N/A	291.5	291.5	7,871
S-0009-GA6	Grass Area 6 (GA6)	9,467	36	53	35	N/A	N/A	273	158	227	N/A	N/A	0.18	0.08	0.04	N/A	N/A	0.0	0.0	0
S-0009-GA7	Grass Area 7 (GA7)	9,470	39	39	86	N/A	N/A	370	2,090	731	N/A	N/A	0.31	0.13	0.12	N/A	N/A	350.7	350.7	9,470
S-0009-GA8	Grass Area 8 (GA8)	10,405	58	72	62	N/A	N/A	154	700	758	N/A	N/A	0.07	0.14	0.15	N/A	N/A	0.0	0.0	0
S-0009-GA9	Grass Area 9 (GA9)	10,402	30	27	9	N/A	N/A	92	124	69	N/A	N/A	0.04	0.05	0.05	N/A	N/A	0.0	0.0	0
S-0009-GA10	Grass Area 10 (GA10)	10,405	42	57	54	N/A	N/A	68	384	357	N/A	N/A	0.10	0.17	0.05	N/A	N/A	0.0	0.0	0
S-0009-GA11	Grass Area 11 (GA11)	10,406	35	60	57	N/A	N/A	123	310	891	N/A	N/A	0.05	0.20	1.20	N/A	N/A	0.0	0.0	0
S-0009-GA12	Grass Area 12 (GA12)	10,405	43	53	54	N/A	N/A	104	257	467	N/A	N/A	0.07	0.16	0.40	N/A	N/A	0.0	0.0	0
S-0009-GA13	Grass Area 13 (GA13)	10,405	28	43	22	N/A	N/A	153	251	130	N/A	N/A	0.05	0.33	0.09	N/A	N/A	0.0	0.0	0
S-0009-GA14	Grass Area 14 (GA14)	10,402	40	53	55	N/A	N/A	229	683	671	N/A	N/A	0.10	0.17	0.24	N/A	N/A	0.0	0.0	0
S-0009-GA15	Grass Area 15 (GA15)	10,407	64	52	35	N/A	N/A	66	262	344	N/A	N/A	0.04	0.18	0.21	N/A	N/A	0.0	0.0	0
S-0009-GA16	Grass Area 16 (GA16)	10,404	62	39	40	N/A	N/A	167	299	370	N/A	N/A	0.05	0.17	0.12	N/A	N/A	0.0	0.0	0
S-0009-GA17	Grass Area 17 (GA17)	7,240	41	70	52	N/A	N/A	131	254	1,130	N/A	N/A	0.05	0.13	2.50	N/A	N/A	0.0	0.0	0
S-0009-GA18	Grass Area 18 (GA18)	7,394	43	88	86	N/A	N/A	296	250	1,040	N/A	N/A	0.06	0.14	0.57	N/A	N/A	0.0	0.0	0
S-0009-G1	Garden Area 1 (G1)	127	28	33	35	54	55	53	55	60	656	766	0.22	0.25	0.17	1.00	0.48	0.0	0.0	0
		Max:	64	88	180	54	55	1,840	2,090	5,220	656	766	0.64	1.40	2.50	1.00	0.48	1,010.9	1,010.9	27,294.0
	Component Arsenic Concentration is ≥ 250 mg/kg.																			
	Component Lead Concentration is ≥ 1,200 mg/kg.																			
	Component Mercury Concentration is ≥ 147 mg/kg.																			
N/A	= Not applicable per 2021 RMAP Quality Assurance Project Plan.																			

BUTTE HIGH SCHOOL
INDIVIDUAL SITE WORK PLAN

RESIDENTIAL METALS
ABATEMENT PROGRAM (RMAP)

BUTTE, MONTANA
SHEET 2 OF 2

DRAFT
DATA VALIDATION NOT YET COMPLETE

Atlantic Richfield Company
A BP affiliated company

BY:

PIONEER TECHNICAL SERVICES, INC.

ATTACHMENT B

SUGAR BEET LIME QA DATA

APPENDIX B - SUGAR BEET LIME QA DATA
(From ARWW&S, RDU 3)

	Sample ID	Date Collected	Butte Hill Reveg Spec:	Lime % as $CaCO_3$ Min of 65%	% Passing No. 60 Screen (dry) Min of 50%
1	21RDU3_SBL_020	06/14/21		71.6%	96.5%
2	21RDU3_SBL_021	06/14/21		71.6%	97.9%
3	21RDU3_SBL_022	06/14/21		70.6%	87.6%
4	21RDU3_SBL_023	06/14/21	Volume Tested:	71.6%	94.5%
5	21RDU3_SBL_024	06/29/21	Approximatley	76.2%	82.3%
6	21RDU3_SBL_025	07/26/21	4,500 cy	76.2%	98.4%
7	21RDU3_SBL_026	07/26/21		77.3%	97.6%
8	21RDU3_SBL_027	08/03/21		80.9%	99.0%
9	21RDU3_SBL_028	08/03/21		79.9%	99.3%
			MAX:	80.9%	99.3%
			MIN:	70.6%	82.3%
			AVE:	75.1%	94.8%

ATTACHMENT B-1

ENERGY LABS DATA REPORTS

ANALYTICAL SUMMARY REPORT

June 29, 2021

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B21061463 Quote ID: B5361

Project Name: ARWW&S

Energy Laboratories Inc Billings MT received the following 4 samples for Woodard and Curran on 6/16/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21061463-001	21RDU3_SBL_020	06/14/21 13:05	06/16/21	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B21061463-002	21RDU3_SBL_021	06/14/21 13:10	06/16/21	Solid	Same As Above
B21061463-003	21RDU3_SBL_022	06/14/21 13:15	06/16/21	Solid	Same As Above
B21061463-004	21RDU3_SBL_023	06/14/21 13:20	06/16/21	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S
Report Date: 06/29/21

Lab ID: B21061463-001
Client Sample ID: 21RDU3_SBL_020
Collection Date: 06/14/21 13:05
DateReceived: 06/16/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	23.6	wt%		0.2		D2974	06/21/21 09:29 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	71.6	%		0.1		USDA23c	06/29/21 11:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	48.0	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm
No. 60 (250um), Passed	96.5	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	52.0	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm

Lab ID: B21061463-002
Client Sample ID: 21RDU3_SBL_021
Collection Date: 06/14/21 13:10
DateReceived: 06/16/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	23.1	wt%		0.2		D2974	06/21/21 09:29 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	71.6	%		0.1		USDA23c	06/29/21 11:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	73.0	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm
No. 60 (250um), Passed	97.9	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	27.0	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S
Report Date: 06/29/21

Lab ID: B21061463-003
Client Sample ID: 21RDU3_SBL_022
Collection Date: 06/14/21 13:15
DateReceived: 06/16/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	21.8	wt%		0.2		D2974	06/21/21 09:29 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	70.6	%		0.1		USDA23c	06/29/21 11:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	91.6	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm
No. 60 (250um), Passed	87.6	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	8.4	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm

Lab ID: B21061463-004
Client Sample ID: 21RDU3_SBL_023
Collection Date: 06/14/21 13:20
DateReceived: 06/16/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	23.6	wt%		0.2		D2974	06/21/21 09:29 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	71.6	%		0.1		USDA23c	06/29/21 11:36 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	97.3	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm
No. 60 (250um), Passed	94.5	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	06/21/21 10:24 / srm
Pan	2.7	wt%-wet		0.1		SSSA 15-2	06/29/21 08:25 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B21061463 **Report Date:** 06/29/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA23c**									Batch: R363125
Lab ID: **B21061463-001A DUP**	Sample Duplicate				Run: MISC-SOIL_210629A				06/29/21 11:36
Lime as CaCO3	71.1	%	0.10				0.7	30	
Lab ID: **LCS-2106291136**	Laboratory Control Sample				Run: MISC-SOIL_210629A				06/29/21 11:36
Lime as CaCO3	9.00	%	0.10	93	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B21061463

Login completed by: Leslie S. Cadreau
Date Received: 6/16/2021

Reviewed by: BL2000\rshular
Received by: JJH

Reviewed Date: 6/19/2021
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	22.8°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Woodard & Curran	ARWW&S	State: MT	Yes ☐ No ☐
Report Mail Address (Required):	**Contact Name:** / **Phone/Fax:**	**Cell:**	**Sampler: (Please Print)**
1015 S Montana St Suite A, Butte MT, 59701	Garret Craig (406)291-2617	(406)291-2617	Kevin Welliever, Dakota Roush
☒ No Hard Copy Email: gcraig@woodardcurran.com	**Invoice Contact & Phone:**	**Purchase Order:**	**Quote/Bottle Order:**
	Kevin Bethke (406)586-8364		

Invoice Address (Required):
1800 Koch Suite A, Bozeman MT, 59715

☒ No Hard Copy Email: kbethke@woodardcurran.com

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED	Standard Turnaround (TAT)
1 21RDU3_SBL_020	6/14/2021	13:05	S	✔		✔
2 21RDU3_SBL_021	6/14/2021	13:10	S	✔		✔
3 21RDU3_SBL_022	6/14/2021	13:15	S	✔		✔
4 21RDU3_SBL_023	6/14/2021	13:20	S	✔		✔
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:
Cooler ID(s):
Receipt Temp ____ °C
On Ice: Y N
Custody Seal On Bottle Y N On Cooler Y N
Intact Y N
Signature Match Y N

LABORATORY USE ONLY 621061463

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Kevin Welliever	6/15/2021 12:00				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time:	Signature:
			Jessika Warman	6/16/21 09:35	

Sample Disposal: Return to Client: _____ Lab Disposal: _____

ANALYTICAL SUMMARY REPORT

July 09, 2021

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B21070238 Quote ID: B5361

Project Name: ARWW&S RDU 3 0232257.02

Energy Laboratories Inc Billings MT received the following 1 sample for Woodard and Curran on 7/2/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21070238-001	21RDU3_SBL_024	06/29/21 14:00	07/02/21	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S RDU 3 0232257.02
Lab ID: B21070238-001
Client Sample ID: 21RDU3_SBL_024

Report Date: 07/09/21
Collection Date: 06/29/21 14:00
DateReceived: 07/02/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	18.8	wt%		0.2		D2974	07/08/21 12:24 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	76.2	%		0.1		USDA23c	07/09/21 14:22 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	96.1	wt%-wet		0.1		SSSA 15-2	07/09/21 08:37 / srm
No. 60 (250um), Passed	82.3	wt%-dry		0.1		SSSA 15-2	07/08/21 15:14 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	07/08/21 15:14 / srm
Pan	3.9	wt%-wet		0.1		SSSA 15-2	07/09/21 08:37 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B21070238 **Report Date:** 07/09/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA23c									Batch: R363644
Lab ID: LCS-2107090802	Laboratory Control Sample				Run: MISC-SOIL_210709A				07/09/21 08:02
Lime as CaCO3	9.50	%	0.10	89	70	130			
Lab ID: B21070238-001A DUP	Sample Duplicate				Run: MISC-SOIL_210709A				07/09/21 14:22
Lime as CaCO3	77.3	%	0.10				1.4	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B21070238

Login completed by: Richard L. Shular
Date Received: 7/2/2021
Reviewed by: BL2000\lcadreau
Received by: tkb
Reviewed Date: 7/7/2021
Carrier name: Return-FedEx Ground N/C

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	28.0°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT **(Provide as much information as possible.)**

Company Name	Project Name, PWS, Permit, Etc	Sample Origin	EPA/State Compliance
Woodard & Curran	ARWW&S RDU 3 0232257.02	State MT	Yes ☐ No ☐

Report Mail Address (Required)	Contact Name	Phone/Fax	Cell	Sampler (Please Print)
1015 S Montana St Suite C, Butte MT, 59701	Garrett Craig	(406)291-2617	(406)291-2617	

☒ No Hard Copy Email gcraig@woodardcurran.com

Invoice Contact & Phone	Purchase Order	Quote/Bottle Order
Kevin Bethke (406)586-8364		

Invoice Address (Required)
1800 Koch Suite A, Bozeman MT, 59715

☒ No Hard Copy Email kbethke@woodardcurran.com

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State: ____
- ☐ Other ____
- ☐ EDD/EDT (Electronic Data)
- Format: ____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

R U S H — Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality
1	21RDU3_SBL_024	6/29/2021	14:00	S	✓
2					
3					
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY
- Shipped by:
- Cooler ID(s):
- Receipt Temp ____ °C
- On Ice Y N
- Custody Seal: On Bottle Y N; On Cooler Y N
- Intact Y N
- Signature Match Y N
- B21070238-001

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
HANNAH FOSTER	6/29/2021 5:00PM				
Hannah Foster	6/29/21 5:00pm	Hannah Foster			
			Received by Laboratory: Taylor Burns	7/2/21 0930	[signature]

Sample Disposal: Return to Client ____ Lab Disposal ____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ANALYTICAL SUMMARY REPORT

August 09, 2021

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B21072301 Quote ID: B5361

Project Name: ARWW&S RDU 3, 0232257.02

Energy Laboratories Inc Billings MT received the following 2 samples for Woodard and Curran on 7/28/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21072301-001	21RDU3_SBL_025	07/26/21 10:15	07/28/21	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B21072301-002	21RDU3_SBL_026	07/26/21 10:20	07/28/21	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S RDU 3, 0232257.02
Report Date: 08/09/21

Lab ID: B21072301-001
Client Sample ID: 21RDU3_SBL_025
Collection Date: 07/26/21 10:15
DateReceived: 07/28/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	19.8	wt%		0.2		D2974	08/03/21 12:14 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	76.2	%		0.1		USDA23c	08/09/21 16:25 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	81.4	wt%-wet		0.1		SSSA 15-2	08/06/21 09:25 / srm
No. 60 (250um), Passed	98.4	wt%-dry		0.1		SSSA 15-2	08/03/21 13:39 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	08/03/21 13:39 / srm
Pan	18.6	wt%-wet		0.1		SSSA 15-2	08/06/21 09:25 / srm

Lab ID: B21072301-002
Client Sample ID: 21RDU3_SBL_026
Collection Date: 07/26/21 10:20
DateReceived: 07/28/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	17.4	wt%		0.2		D2974	08/03/21 12:14 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	77.3	%		0.1		USDA23c	08/09/21 16:25 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	75.7	wt%-wet		0.1		SSSA 15-2	08/06/21 09:25 / srm
No. 60 (250um), Passed	97.6	wt%-dry		0.1		SSSA 15-2	08/03/21 13:39 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	08/03/21 13:39 / srm
Pan	24.3	wt%-wet		0.1		SSSA 15-2	08/06/21 09:25 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B21072301 **Report Date:** 08/09/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA23c**									Batch: R365192
Lab ID: **B21072301-001A DUP**	Sample Duplicate				Run: MISC-SOIL_210809A				08/09/21 16:25
Lime as CaCO3	76.2	%	0.10				0.0	30	
Lab ID: **LCS-2108091625**	Laboratory Control Sample				Run: MISC-SOIL_210809A				08/09/21 16:25
Lime as CaCO3	9.60	%	0.10	90	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B21072301

Login completed by: Leslie S. Cadreau
Date Received: 7/28/2021
Reviewed by: BL2000\rshular
Received by: rr
Reviewed Date: 8/1/2021
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	26.4°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Woodard & Curran	ARWW&S RDU 3, 0232257.02	State: MT	Yes ☐ No ☐

Report Mail Address (Required):	Contact Name:	Phone/Fax:	Cell:	Sampler: (Please Print)
1015 S Montana St Suite A, Butte MT, 59701	Garrett Craig	(406)291-2617	(406)291-2617	Logan Foster
☒ No Hard Copy Email: gcraig@woodardcurran.com	Invoice Contact & Phone: Kevin Bethke (406)586-8364		Purchase Order:	Quote/Bottle Order:

Invoice Address (Required):
1800 Koch Suite A, Bozeman MT, 59715

☐ No Hard Copy Email: kbethke@woodardcurran.com

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1 21RDU3_SBL_025	7/26/21	1015	S	✔	
2 21RDU3_SBL_026	7/26/21	1020	S	✔	
3					
4					
5					
6					
7					
8					
9					
10					

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:
Cooler ID(s):
Receipt Temp ____ °C
On Ice: Y N
Custody Seal On Bottle Y N On Cooler Y N
Intact Y N
Signature Match Y N

LABORATORY USE ONLY 82107231

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Shyla Wesely	7/26/21 1200				
Relinquished by (print): SHYLA WESELY	Date/Time: 7/26/21 1200	Signature:	Received by (print):	Date/Time	Signature:
Sample Disposal: Return to Client: X	Lab Disposal:		Received by Laboratory: Rachael Rupp	Date/Time: 7/28/21 1000	Signature: Rachael Rupp

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

ANALYTICAL SUMMARY REPORT

August 13, 2021

Woodard and Curran
1015 S Montana St
Butte, MT 59701-2805

Work Order: B21080701 Quote ID: B5361

Project Name: ARWW&S RDU3, 0232257.02

Energy Laboratories Inc Billings MT received the following 2 samples for Woodard and Curran on 8/9/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21080701-001	21RDU3_SBL_027	08/03/21 9:00	08/09/21	Solid	Lime as CaCO3, % Moisture Sieve Analysis, Dry Sieve Analysis, Wet
B21080701-002	21RDU3_SBL_028	08/03/21 9:05	08/09/21	Solid	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Woodard and Curran
Project: ARWW&S RDU3, 0232257.02
Report Date: 08/13/21

Lab ID: B21080701-001
Client Sample ID: 21RDU3_SBL_027
Collection Date: 08/03/21 09:00
DateReceived: 08/09/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	24.0	wt%		0.2		D2974	08/12/21 13:57 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	80.9	%		0.1		USDA23c	08/13/21 17:38 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	85.8	wt%-wet		0.1		SSSA 15-2	08/13/21 08:56 / srm
No. 60 (250um), Passed	99.0	wt%-dry		0.1		SSSA 15-2	08/11/21 10:26 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	08/11/21 10:26 / srm
Pan	14.2	wt%-wet		0.1		SSSA 15-2	08/13/21 08:56 / srm

Lab ID: B21080701-002
Client Sample ID: 21RDU3_SBL_028
Collection Date: 08/03/21 09:05
DateReceived: 08/09/21
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture (As Received)	21.9	wt%		0.2		D2974	08/12/21 13:57 / srm
CHEMICAL CHARACTERISTICS							
Lime as CaCO3	79.9	%		0.1		USDA23c	08/13/21 17:38 / srm
SIEVE ANALYSIS							
No. 60 (250um), Retained	55.8	wt%-wet		0.1		SSSA 15-2	08/13/21 08:56 / srm
No. 60 (250um), Passed	99.3	wt%-dry		0.1		SSSA 15-2	08/11/21 10:26 / srm
Pan	< 0.1	wt%-dry		0.1		SSSA 15-2	08/11/21 10:26 / srm
Pan	44.2	wt%-wet		0.1		SSSA 15-2	08/13/21 08:56 / srm

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Woodard and Curran **Work Order:** B21080701 **Report Date:** 08/13/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA23c**									Batch: R365482
Lab ID: **B21080701-001A DUP**	Sample Duplicate				Run: MISC-SOIL_210813B				08/13/21 17:38
Lime as CaCO3	80.9	%	0.10				0.0	30	
Lab ID: **LCS-2108131738**	Laboratory Control Sample				Run: MISC-SOIL_210813B				08/13/21 17:38
Lime as CaCO3	9.90	%	0.10	93	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Woodard and Curran

B21080701

Login completed by: Leslie S. Cadreau
Date Received: 8/9/2021
Reviewed by: BL2000\gmccartney
Received by: srg
Reviewed Date: 8/11/2021
Carrier name: Return-FedEx Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	24.7°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Page 1 of 1

Company Name: Woodard & Curran	Project Name, PWS, Permit, Etc.: ARWW&S RDU 3, 0232257.02	Sample Origin State: MT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 1015 S Montana St Suite C, Butte MT, 59701	Contact Name: Garrett Craig	Phone/Fax: (406)291-2617	Cell: (406)291-2617
☒ No Hard Copy Email: gcraig@woodardcurran.com	Invoice Contact & Phone: Kevin Bethke (406)586-8364	Purchase Order:	Quote/Bottle Order:
Invoice Address (Required): 1800 Koch Suite A, Bozeman MT, 59715			Sampler: (Please Print) Logan Foster
☐ No Hard Copy Email: kbethke@woodardcurran.com			

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	B5361 - Lime Quality	SEE ATTACHED
1	21RDU3_SBL_027	08/03//21	0900	S	✔	
2	21RDU3_SBL_028	08/03/21	0905	S	✔	
3						
4						
5						
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by:

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Y N

Custody Seal On Bottle Y N On Cooler Y N

Intact Y N

Signature Match Y N

LABORATORY USE ONLY B21080701

Custody Record MUST be Signed

Relinquished by (print): Shyla Wesely	Date/Time: 08/04/21 1400	Signature:	Received by (print):	Date/Time: / Signature:
Relinquished by (print): SHYLA WESELY	Date/Time: 8/4/21 1400	Signature:	Received by (print):	Date/Time: / Signature:
Sample Disposal: Return to Client: ✔	Lab Disposal:		Received by Laboratory: Staci Gotthardt	Date/Time: 8/4/21 9:00 Signature: Staci Gotthardt

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ATTACHMENT C

FABRIC SPECIFICATION SHEET

GEOTEX® BY PROPEX

Product Data
GEOTEX® 801

GEOTEX® 801 is a polypropylene, staple fiber, needlepunched nonwoven geotextile produced by Propex, and will meet the following Minimum Average Roll Values (MARV) when tested in accordance with the methods listed below. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.

GEOTEX 801 conforms to the property values listed below[1]. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). This product is NTPEP approved for AASHTO standards.

PROPERTY	TEST METHOD	MARV[2] ENGLISH	MARV[2] METRIC
ORIGIN OF MATERIALS			
% U.S. Manufactured Inputs		100%	100%
% U.S. Manufactured		100%	100%
MECHANICAL			
Tensile Strength (Grab)	ASTM D-4632	205 lbs	912 N
Elongation	ASTM D-4632	50%	50%
CBR Puncture	ASTM D-6241	525 lbs	2336 N
Trapezoidal Tear	ASTM D-4533	80 lbs	356 N
ENDURANCE			
UV Resistance % Retained at 500 hrs	ASTM D-4355	70%	70%
HYDRAULIC			
Apparent Opening Size (AOS)[3]	ASTM D-4751	80 US Std. Sieve	0.180 mm
Permittivity	ASTM D-4491	1.5 sec^{-1}	1.5 sec^{-1}
Water Flow Rate	ASTM D-4491	110 gpm/ft^2	4482 $l/min/m^2$

ROLL SIZES	12.5 ft x 360 ft 15 ft x 300 ft	3.81 m x 109.8 m 4.57 m x 91.5 m

NOTES:
1. The property values listed above are effective 04/2011 and are subject to change without notice.
2. Values shown are in weaker principal direction. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum average roll value.

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Propex Operating Company, LLC · 6025 Lee Highway, Suite 425 · PO Box 22788 · Chattanooga, TN 37422

ph 423 899 0444 · ph 800 621 1273 · fax 423 899 7619

ATTACHMENT D

AGENCY APPROVED

KAW AVENUE

BORROW STOCKPILE DATA

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-1***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	26.9	X	
	Cd	<	4	0.9	X	
	Cu	<	250	66.9	X	
	Hg	<	5	0.03	X	
	Pb	<	100	29.4	X	
	Zn	<	250	132.0	X	
pH (s.u.)		>	5.5	7.9	X	
		<	8.5			
SAR		<	12	1.12	X	
Saturation (%)		<	85	42.7	X	
		>	25			
EC (mmhos/cm)		<	4	1.3	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	13.1	X	

Other Information Requested	
Organic Matter (%)	
	3.70
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	52
Silt (%)	28
Clay (%)	20

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:11:04 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-2***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	15.9	X	
	Cd	<	4	0.5	X	
	Cu	<	250	36.2	X	
	Hg	<	5	0.02	X	
	Pb	<	100	16.0	X	
	Zn	<	250	76.0	X	
pH (s.u.)						
		>	5.5	8.0	X	
		<	8.5			
SAR						
		<	12	0.77	X	
Saturation (%)						
		<	85	43.7	X	
		>	25			
EC (mmhos/cm)						
		<	4	0.9	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	17.3	X	

Other Information Requested	
Organic Matter (%)	
	3.50
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	44
Silt (%)	32
Clay (%)	24

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:12:44 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-3***

Description		Specification		Sample	Specification Met Yes	Specification Met No
Chemical (mg/kg)						
	As	<	97	29.8	X	
	Cd	<	4	0.8	X	
	Cu	<	250	64.7	X	
	Hg	<	5	0.02	X	
	Pb	<	100	23.8	X	
	Zn	<	250	103.0	X	
pH (s.u.)						
		>	5.5	7.8	X	
		<	8.5			
SAR						
		<	12	0.78	X	
Saturation (%)						
		<	85	44.4	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.5	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	12.5	X	

Other Information Requested	
Organic Matter (%)	
	3.60
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	42
Silt (%)	32
Clay (%)	26

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:16:08 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-4***

Description		Specification		Sample	Specification Met Yes	Specification Met No
Chemical (mg/kg)						
	As	<	97	31.0	X	
	Cd	<	4	0.8	X	
	Cu	<	250	77.9	X	
	Hg	<	5	0.03	X	
	Pb	<	100	26.6	X	
	Zn	<	250	129.0	X	
pH (s.u.)						
		>	5.5	7.7	X	
		<	8.5			
SAR						
		<	12	0.56	X	
Saturation (%)						
		<	85	49.4	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.5	X	
Textural Classification (USDA) <2.0 mm						
	Loam					
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam				X	
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	12.2	X	

Other Information Requested	
Organic Matter (%)	3.50
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	34
Silt (%)	38
Clay (%)	28

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:17:59 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-5***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	33.9	X	
	Cd	<	4	0.9	X	
	Cu	<	250	78.2	X	
	Hg	<	5	0.03	X	
	Pb	<	100	26.9	X	
	Zn	<	250	127.0	X	
pH (s.u.)						
		>	5.5	7.8	X	
		<	8.5			
SAR						
		<	12	0.47	X	
Saturation (%)						
		<	85	52.2	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.0	X	
Textural Classification (USDA) <2.0 mm						
	Loam					
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam				X	
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	9.3	X	

Organic Matter (%)	
	3.80

Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A

Particle Size	
Sand (%)	28
Silt (%)	42
Clay (%)	30

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:19:54 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-6***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	43.4	X	
	Cd	<	4	1.0	X	
	Cu	<	250	99.3	X	
	Hg	<	5	0.03	X	
	Pb	<	100	36.1	X	
	Zn	<	250	143.0	X	
pH (s.u.)						
		>	5.5	7.9	X	
		<	8.5			
SAR						
		<	12	0.88	X	
Saturation (%)						
		<	85	49.2	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.4	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	11.0	X	

Other Information Requested	
Organic Matter (%)	3.70
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	34
Silt (%)	40
Clay (%)	26

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McAnulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:22:16 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-7***

Description		Specification		Sample	Specification Met: Yes	Specification Met: No
Chemical (mg/kg)						
	As	<	97	36.6	X	
	Cd	<	4	0.9	X	
	Cu	<	250	85.7	X	
	Hg	<	5	0.03	X	
	Pb	<	100	28.8	X	
	Zn	<	250	133.0	X	
pH (s.u.)						
		>	5.5	7.5	X	
		<	8.5			
SAR						
		<	12	0.39	X	
Saturation (%)						
		<	85	49.3	X	
		>	25			
EC (mmhos/cm)						
		<	4	1.3	X	
Textural Classification (USDA) <2.0 mm						
	Loam					
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam				X	
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	11.5	X	

Other Information Requested	
Organic Matter (%)	
	4.10
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	32
Silt (%)	40
Clay (%)	28

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:24:49 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

BUTTE HILL COVER SOIL APPROVAL SUBMITTAL

8/21/2021

Source: ***Kaw Avenue Stockpile***
Sample #: ***BPSOU-KAW-8***

Description		Specification		Sample	Specification Met Yes	Specification Met No
Chemical (mg/kg)						
	As	<	97	37.8	X	
	Cd	<	4	0.9	X	
	Cu	<	250	82.9	X	
	Hg	<	5	0.03	X	
	Pb	<	100	27.5	X	
	Zn	<	250	131.0	X	
pH (s.u.)						
		>	5.5	7.4	X	
		<	8.5			
SAR						
		<	12	0.79	X	
Saturation (%)						
		<	85	45.7	X	
		>	25			
EC (mmhos/cm)						
		<	4	2.1	X	
Textural Classification (USDA) <2.0 mm						
	Loam				X	
	Sandy loam					
	Sandy clay loam					
	Sandy clay					
	Clay loam					
	Silty clay					
	Silty clay loam					
	Silt loam					
	Silt					
	*Per EPA Approval (Loamy sand)					
Rock Content (%) (by volume)		<	45	12.2	X	

Other Information Requested	
Organic Matter (%)	3.70
Soil Nutrients	
N (mg/kg)	N/A
P (mg/kg)	N/A
K (mg/kg)	N/A
Particle Size	
Sand (%)	46
Silt (%)	28
Clay (%)	26

Legend:

# Value	- Criteria met
# Value	- Does not meet Criteria

Atlantic Richfield Representative: Mike McInulty Date: 8-21-21

EPA Representative: NIKIA GREENE Digitally signed by NIKIA GREENE Date: 2021.08.27 11:26:25 -06'00' Date:

MT DEQ Representative: Date: 8/27/2021

ATTACHMENT D-1

ENERGY LABS DATA REPORT

ANALYTICAL SUMMARY REPORT

August 20, 2021

Pioneer Technical Services
307 E Park Ste 421
Anaconda, MT 59711-2300

Work Order: B21081152 Quote ID: B5332

Project Name: BPSOU School Sampling

Energy Laboratories Inc Billings MT received the following 8 samples for Pioneer Technical Services on 8/12/2021 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B21081152-001	BPSOU-KAW-1	08/10/21 12:30	08/12/21	Soil	Metals, Saturated Paste Conductivity, Saturated Paste Extract Organic Carbon/Matter Walkley-Black pH, Saturated Paste Saturated Paste Extraction ASA Particle Size Analysis / Texture Sodium Adsorption Ratio Saturation Percentage Sieve Analysis, Dry
B21081152-002	BPSOU-KAW-2	08/10/21 12:35	08/12/21	Soil	Same As Above
B21081152-003	BPSOU-KAW-3	08/10/21 12:40	08/12/21	Soil	Same As Above
B21081152-004	BPSOU-KAW-4	08/10/21 12:45	08/12/21	Soil	Same As Above
B21081152-005	BPSOU-KAW-5	08/10/21 12:50	08/12/21	Soil	Same As Above
B21081152-006	BPSOU-KAW-6	08/10/21 12:55	08/12/21	Soil	Same As Above
B21081152-007	BPSOU-KAW-7	08/10/21 13:00	08/12/21	Soil	Same As Above
B21081152-008	BPSOU-KAW-8	08/10/21 13:05	08/12/21	Soil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Pioneer Technical Services
Project: BPSOU School Sampling
Work Order: B21081152

Report Date: 08/20/21

CASE NARRATIVE

Tests associated with analyst identified as ELI-H were subcontracted to Energy Laboratories, 3161 East Lyndale Ave, Helena, MT, EPA Number MT00945.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-001
Client Sample ID: BPSOU-KAW-1

Report Date: 08/20/21
Collection Date: 08/10/21 12:30
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	52	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	20	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	08/19/21 08:57 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	08/19/21 12:46 / eli-h
Saturation	42.7	%		0.1		USDA27a	08/19/21 08:37 / eli-h
Calcium, sat. paste	6.10	meq/L		0.05		SW6010B	08/19/21 23:25 / eli-h
Magnesium, sat. paste	3.16	meq/L		0.08		SW6010B	08/19/21 23:25 / eli-h
Sodium, sat. paste	2.41	meq/L		0.04		SW6010B	08/19/21 23:25 / eli-h
Sodium Adsorption Ratio (SAR)	1.12	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	5.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	13.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	81.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-002
Client Sample ID: BPSOU-KAW-2

Report Date: 08/20/21
Collection Date: 08/10/21 12:35
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	44	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	24	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	8.0	s.u.		0.1		ASA10-3	08/19/21 08:57 / eli-h
Conductivity, sat. paste	0.9	mmhos/cm		0.1		ASA10-3	08/19/21 12:47 / eli-h
Saturation	43.7	%		0.1		USDA27a	08/19/21 08:37 / eli-h
Calcium, sat. paste	4.38	meq/L		0.05		SW6010B	08/19/21 23:42 / eli-h
Magnesium, sat. paste	2.60	meq/L		0.08		SW6010B	08/19/21 23:42 / eli-h
Sodium, sat. paste	1.44	meq/L		0.04		SW6010B	08/19/21 23:42 / eli-h
Sodium Adsorption Ratio (SAR)	0.77	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.5	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	17.3	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	82.7	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-003
Client Sample ID: BPSOU-KAW-3

Report Date: 08/20/21
Collection Date: 08/10/21 12:40
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	42	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	08/19/21 08:58 / eli-h
Conductivity, sat. paste	1.5	mmhos/cm		0.1		ASA10-3	08/19/21 12:47 / eli-h
Saturation	44.4	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	8.57	meq/L		0.05		SW6010B	08/19/21 23:46 / eli-h
Magnesium, sat. paste	3.22	meq/L		0.08		SW6010B	08/19/21 23:46 / eli-h
Sodium, sat. paste	1.90	meq/L		0.04		SW6010B	08/19/21 23:46 / eli-h
Sodium Adsorption Ratio (SAR)	0.78	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.6	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	3.6	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	83.9	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-004
Client Sample ID: BPSOU-KAW-4

Report Date: 08/20/21
Collection Date: 08/10/21 12:45
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	38	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.7	s.u.		0.1		ASA10-3	08/19/21 08:59 / eli-h
Conductivity, sat. paste	1.5	mmhos/cm		0.1		ASA10-3	08/19/21 12:48 / eli-h
Saturation	49.4	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	8.03	meq/L		0.05		SW6010B	08/19/21 23:51 / eli-h
Magnesium, sat. paste	3.97	meq/L		0.08		SW6010B	08/19/21 23:51 / eli-h
Sodium, sat. paste	1.38	meq/L		0.04		SW6010B	08/19/21 23:51 / eli-h
Sodium Adsorption Ratio (SAR)	0.56	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.5	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.2	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	87.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-005
Client Sample ID: BPSOU-KAW-5

Report Date: 08/20/21
Collection Date: 08/10/21 12:50
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	42	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	30	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.8	s.u.		0.1		ASA10-3	08/19/21 09:00 / eli-h
Conductivity, sat. paste	1.0	mmhos/cm		0.1		ASA10-3	08/19/21 12:49 / eli-h
Saturation	52.2	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	5.10	meq/L		0.05		SW6010B	08/19/21 23:55 / eli-h
Magnesium, sat. paste	3.13	meq/L		0.08		SW6010B	08/19/21 23:55 / eli-h
Sodium, sat. paste	0.96	meq/L		0.04		SW6010B	08/19/21 23:55 / eli-h
Sodium Adsorption Ratio (SAR)	0.47	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.8	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	1.6	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	9.3	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	89.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-006
Client Sample ID: BPSOU-KAW-6

Report Date: 08/20/21
Collection Date: 08/10/21 12:55
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	34	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	40	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.9	s.u.		0.1		ASA10-3	08/19/21 09:02 / eli-h
Conductivity, sat. paste	1.4	mmhos/cm		0.1		ASA10-3	08/19/21 12:50 / eli-h
Saturation	49.2	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	6.64	meq/L		0.05		SW6010B	08/20/21 00:04 / eli-h
Magnesium, sat. paste	4.32	meq/L		0.08		SW6010B	08/20/21 00:04 / eli-h
Sodium, sat. paste	2.06	meq/L		0.04		SW6010B	08/20/21 00:04 / eli-h
Sodium Adsorption Ratio (SAR)	0.88	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	11.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	89.0	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-007
Client Sample ID: BPSOU-KAW-7

Report Date: 08/20/21
Collection Date: 08/10/21 13:00
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	32	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	40	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	CL			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.5	s.u.		0.1		ASA10-3	08/19/21 09:02 / eli-h
Conductivity, sat. paste	1.3	mmhos/cm		0.1		ASA10-3	08/19/21 12:51 / eli-h
Saturation	49.3	%		0.1		USDA27a	08/19/21 08:38 / eli-h
Calcium, sat. paste	7.19	meq/L		0.05		SW6010B	08/20/21 00:51 / eli-h
Magnesium, sat. paste	3.45	meq/L		0.08		SW6010B	08/20/21 00:51 / eli-h
Sodium, sat. paste	0.90	meq/L		0.04		SW6010B	08/20/21 00:51 / eli-h
Sodium Adsorption Ratio (SAR)	0.39	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	4.1	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	11.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	88.5	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Pioneer Technical Services
Project: BPSOU School Sampling
Lab ID: B21081152-008
Client Sample ID: BPSOU-KAW-8

Report Date: 08/20/21
Collection Date: 08/10/21 13:05
DateReceived: 08/12/21
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Sand	46	%		1		ASA15-5	08/19/21 12:17 / eli-h
Silt	28	%		1		ASA15-5	08/19/21 12:17 / eli-h
Clay	26	%		1		ASA15-5	08/19/21 12:17 / eli-h
Texture	L			1		ASA15-5	08/19/21 12:17 / eli-h
SATURATED PASTE EXTRACT							
pH, sat. paste	7.4	s.u.		0.1		ASA10-3	08/19/21 09:03 / eli-h
Conductivity, sat. paste	2.1	mmhos/cm		0.1		ASA10-3	08/19/21 12:52 / eli-h
Saturation	45.7	%		0.1		USDA27a	08/19/21 08:39 / eli-h
Calcium, sat. paste	12.8	meq/L		0.05		SW6010B	08/20/21 00:56 / eli-h
Magnesium, sat. paste	3.82	meq/L		0.08		SW6010B	08/20/21 00:56 / eli-h
Sodium, sat. paste	2.29	meq/L		0.04		SW6010B	08/20/21 00:56 / eli-h
Sodium Adsorption Ratio (SAR)	0.79	unitless		0.01		USDA20b	08/20/21 12:23 / eli-h
CHEMICAL CHARACTERISTICS							
Organic Matter	3.7	%		0.2		ASA29-3	08/20/21 12:20 / eli-h
SIEVE ANALYSIS							
1 in (25 mm), Retained	< 0.1	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
No. 10 (2 mm), Retained	12.2	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h
Pan	87.8	wt%-dry		0.1		SSSA 15-2	08/17/21 16:35 / eli-h

Report Definitions:
RL - Analyte Reporting Limit
QCL - Quality Control Limit
MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA10-3**								Analytical Run: SOIL EC_210819A	
Lab ID: **ICV_1_210818_1**	Initial Calibration Verification Standard							08/19/21 12:43	
Conductivity, sat. paste	1.51	mmhos/cm	0.10	107	90	110			
Lab ID: **CCV_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 12:43	
Conductivity, sat. paste	5.22	mmhos/cm	0.10	104	90	110			
Lab ID: **CCV1_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 12:44	
Conductivity, sat. paste	0.924	mmhos/cm	0.10	92	90	110			
Method: **ASA10-3**								Batch: 57600	
Lab ID: **MB-57600**	Method Blank				Run: SOIL EC_210819A			08/19/21 12:45	
Conductivity, sat. paste	ND	mmhos/cm	0.05						
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL EC_210819A			08/19/21 12:46	
Conductivity, sat. paste	4.37	mmhos/cm	0.10	104	80	120			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL EC_210819A			08/19/21 12:49	
Conductivity, sat. paste	1.08	mmhos/cm	0.10				3.1	20	
Method: **ASA10-3**								al Run: SOIL PH METER - ORION A211_210819A	
Lab ID: **ICV_1_210818_1**	Initial Calibration Verification Standard							08/19/21 08:53	
pH, sat. paste	7.03	s.u.	0.10	100	98.6	101.4			
Lab ID: **CCV_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 08:54	
pH, sat. paste	7.04	s.u.	0.10	101	98.6	101.4			
Lab ID: **CCV1_1_210818_1**	Continuing Calibration Verification Standard							08/19/21 08:55	
pH, sat. paste	4.01	s.u.	0.10	100	97.5	102.5			
Method: **ASA10-3**								Batch: 57600	
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL PH METER - ORION A2			08/19/21 08:56	
pH, sat. paste	8.08	s.u.	0.10	100	95	105			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL PH METER - ORION A2			08/19/21 09:01	
pH, sat. paste	7.82	s.u.	0.10				0.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA15-5**									Batch: 57612
Lab ID: **B21081152-002ADUP**	Sample Duplicate				Run: SOIL HYDROMETER_210820				08/19/21 12:17
Sand	44.0	%	1.0				0.0	20	
Silt	32.0	%	1.0				0.0	20	
Clay	24.0	%	1.0				0.0	20	
Texture	L		1.0						
Lab ID: **LCS-57612**	Laboratory Control Sample				Run: SOIL HYDROMETER_210820				08/19/21 12:17
Sand	46.0	%	1.0	110	70	130			
Silt	28.0	%	1.0	88	70	130			
Clay	26.0	%	1.0	100	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **ASA29-3**									Batch: 57606
Lab ID: **LCS-57606**	Laboratory Control Sample				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	1.13	%	0.17	116	70	130			
Lab ID: **MB-57606**	Method Blank				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	ND	%	0.2						
Lab ID: **B21081152-006ADUP**	Sample Duplicate				Run: MISC SOILS_210820A				08/20/21 12:20
Organic Matter	3.74	%	0.17						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B								Analytical Run: ICP2-HE_210819B	
Lab ID: ICV	Initial Calibration Verification Standard								08/19/21 14:52
Calcium	40.3	mg/L	1.0	101	90	110			
Magnesium	39.9	mg/L	1.0	100	90	110			
Sodium	40.0	mg/L	1.0	100	90	110			
Lab ID: CCV	Continuing Calibration Verification Standard								08/19/21 14:56
Calcium	25.2	mg/L	1.0	101	90	110			
Magnesium	24.9	mg/L	1.0	100	90	110			
Sodium	25.4	mg/L	1.0	102	90	110			
Lab ID: ICB	Continuing Calibration Blank								08/19/21 15:00
Calcium	0.0347	mg/L	1.0						
Magnesium	0.0127	mg/L	1.0						
Sodium	0.00124	mg/L	1.0						
Lab ID: ICSA	Interference Check Sample A								08/19/21 15:09
Calcium	483	mg/L	1.0	97	80	120			
Magnesium	535	mg/L	1.0	107	80	120			
Sodium	-0.00132	mg/L	1.0		0	0			
Lab ID: ICSAB	Interference Check Sample AB								08/19/21 15:14
Calcium	489	mg/L	1.0	98	80	120			
Magnesium	536	mg/L	1.0	107	80	120			
Sodium	19.6	mg/L	1.0	98	80	120			
Method: SW6010B								Batch: 57600	
Lab ID: MB-57600	Method Blank				Run: ICP2-HE_210819B				08/19/21 23:03
Calcium	ND	mg/L	0.1						
Magnesium	ND	mg/L	0.02						
Sodium	ND	mg/L	0.02						
Calcium, sat. paste	ND	meq/L	0.007						
Magnesium, sat. paste	ND	meq/L	0.002						
Sodium, sat. paste	ND	meq/L	0.0009						
Lab ID: LFB-57600	Laboratory Fortified Blank				Run: ICP2-HE_210819B				08/19/21 23:08
Calcium	48.7	mg/L	1.0	97	80	120			
Magnesium	52.8	mg/L	1.0	106	80	120			
Sodium	52.4	mg/L	1.0	105	80	120			
Calcium, sat. paste	2.43	meq/L	0.050	97	80	120			
Magnesium, sat. paste	4.35	meq/L	0.082	106	80	120			
Sodium, sat. paste	2.28	meq/L	0.043	105	80	120			
Lab ID: LCS-57600	Laboratory Control Sample				Run: ICP2-HE_210819B				08/19/21 23:12
Calcium	209	mg/L	1.0	96	70	130			
Magnesium	80.6	mg/L	1.0	95	70	130			
Sodium	692	mg/L	1.0	113	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **SW6010B**									Batch: 57600
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: ICP2-HE_210819B				08/19/21 23:12
Calcium, sat. paste	10.4	meq/L	0.050	96	70	130			
Magnesium, sat. paste	6.64	meq/L	0.082	95	70	130			
Sodium, sat. paste	30.1	meq/L	0.043	113	70	130			
Lab ID: **B21081152-001AMS2**	Sample Matrix Spike				Run: ICP2-HE_210819B				08/19/21 23:34
Calcium	215	mg/L	1.0	92	70	130			
Magnesium	141	mg/L	1.0	102	70	130			
Sodium	162	mg/L	1.0	107	70	130			
Calcium, sat. paste	10.7	meq/L	0.050	92	70	130			
Magnesium, sat. paste	11.6	meq/L	0.082	102	70	130			
Sodium, sat. paste	7.04	meq/L	0.043	107	70	130			
Lab ID: **B21081152-001AMSD2**	Sample Matrix Spike Duplicate				Run: ICP2-HE_210819B				08/19/21 23:38
Calcium	217	mg/L	1.0	95	70	130	1.2	20	
Magnesium	142	mg/L	1.0	104	70	130	0.9	20	
Sodium	157	mg/L	1.0	102	70	130	3.0	20	
Calcium, sat. paste	10.8	meq/L	0.050	95	70	130	1.2	20	
Magnesium, sat. paste	11.7	meq/L	0.082	104	70	130	0.9	20	
Sodium, sat. paste	6.83	meq/L	0.043	102	70	130	3.0	20	
Lab ID: **B21081152-005Adup**	Sample Duplicate				Run: ICP2-HE_210819B				08/19/21 23:59
Calcium	104	mg/L	1.0				1.9	30	
Magnesium	38.8	mg/L	1.0				1.9	30	
Sodium	22.9	mg/L	1.0				3.8	30	
Calcium, sat. paste	5.20	meq/L	0.050				1.9	30	
Magnesium, sat. paste	3.19	meq/L	0.082				1.9	30	
Sodium, sat. paste	0.994	meq/L	0.043				3.8	30	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: USDA20b									Batch: 57600
Lab ID: B21081152-005ADUP	Sample Duplicate				Run: SOIL CALC_210820A				08/20/21 12:23
Sodium Adsorption Ratio (SAR)	0.480	unitless	0.10				2.1	30	
Lab ID: LCS-57600	Laboratory Control Sample				Run: SOIL CALC_210820A				08/20/21 12:23
Sodium Adsorption Ratio (SAR)	10.3	unitless	0.10	117	80	120			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Pioneer Technical Services **Work Order:** B21081152 **Report Date:** 08/20/21

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **USDA27a**									Batch: 57600
Lab ID: **LCS-57600**	Laboratory Control Sample				Run: SOIL DRYING OVEN 2_21082				08/19/21 08:37
Saturation	42.0	%	0.10	101	80	120			
Lab ID: **B21081152-005ADUP**	Sample Duplicate				Run: SOIL DRYING OVEN 2_21082				08/19/21 08:38
Saturation	51.1	%	0.10				2.3	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Work Order Receipt Checklist

Pioneer Technical Services

B21081152

Login completed by:	Richard L. Shular	Date Received:	8/12/2021
Reviewed by:	BL2000\tedwards	Received by:	its
Reviewed Date:	8/16/2021	Carrier name:	FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	23.0°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

Contact and Corrective Action Comments:

Results due 08/20/21 per Gina Mccartney, Energy Laboratories Project Manager.

bp rm

Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Energy Laboratories	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1120 S 27th St. Billings MT 59101	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Gina McCartney	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 800-735-4489	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision — — —	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP — Contractor —X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	No. Containers / Preservative: Unpreserved	No. Containers / Preservative: H_2SO_4	No. Containers / Preservative: HNO_3	No. Containers / Preservative: HCl	No. Containers / Preservative: Methanol		Requested Analyses: Texture USDA	Requested Analyses: % Course Material (1" and 2mm)	Requested Analyses: Saturation Percentage	Requested Analyses: Electrical Conductivity	Requested Analyses: Sodium Adsorption Ratio	Requested Analyses: Saturated Paste pH	Requested Analyses: Organic Matter (Walkley Black)				Report Type & QC Level: Standard —X / Full Data Package — Note: If sample not collected, indicate "No Sample" in comments and single-strike out. Comments
	BPSOU-KAW-1	08/10/21	12:30	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND B210811-04
	BPSOU-KAW-2	08/10/21	12:35	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -002
	BPSOU-KAW-3	08/10/21	12:40	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -003
	BPSOU-KAW-4	08/10/21	12:45	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -004
	BPSOU-KAW-5	08/10/21	12:50	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -005
	BPSOU-KAW-6	08/10/21	12:55	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -006
	BPSOU-KAW-7	08/10/21	13:00	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -007
	BPSOU-KAW-8	08/10/21	13:05	X					X						X	X	X	X	X	X	X				RUSH TURNAROUND -008

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Dalleman PTS	8/11/21	1600			
Shipment Method:	Fedex Ship Date: 8/11/21						
Shipment Tracking No:	5728 1538 4791					08/11/21	09:00

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

ATTACHMENT D-2

PACE ANALYTICAL DATA REPORT

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

August 19, 2021

Jesse Schwarzrock
Pioneer Technical Services
307 E Park
Suite 421
Anaconda, MT 59711

RE: Project: BPSOU School Sampling
Pace Project No.: 10574177

Dear Jesse Schwarzrock:

Enclosed are the analytical results for sample(s) received by the laboratory on August 12, 2021. The results relate only to the samples included in this report. Results contained within this report conform to the most current version of the TNI standards, BP LaMP Technical Requirements Revision 12.1, and any applicable Quality Assurance Project Plan (QAPP), or Work Plan unless otherwise narrated in the body of this report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Anderson
jennifer.anderson@pacelabs.com
(612)607-6436
Project Manager

Enclosures

cc: Cole Dallaserra, Pioneer Technical
Jennifer Norman, Portage Inc.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Pace Analytical Services, LLC - Minneapolis MN
1700 Elm Street SE, Minneapolis, MN 55414
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
A2LA Certification #: 2926.01*
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

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SAMPLE SUMMARY

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10574177001	**BPSOU-KAW-1**	Solid	08/10/21 12:30	08/12/21 08:50
10574177002	**BPSOU-KAW-1**	Solid	08/10/21 12:30	08/12/21 08:50
10574177003	**BPSOU-KAW-2**	Solid	08/10/21 12:35	08/12/21 08:50
10574177004	**BPSOU-KAW-2**	Solid	08/10/21 12:35	08/12/21 08:50
10574177005	**BPSOU-KAW-3**	Solid	08/10/21 12:40	08/12/21 08:50
10574177006	**BPSOU-KAW-3**	Solid	08/10/21 12:40	08/12/21 08:50
10574177007	**BPSOU-KAW-4**	Solid	08/10/21 12:45	08/12/21 08:50
10574177008	**BPSOU-KAW-4**	Solid	08/10/21 12:45	08/12/21 08:50
10574177009	**BPSOU-KAW-5**	Solid	08/10/21 12:50	08/12/21 08:50
10574177010	**BPSOU-KAW-5**	Solid	08/10/21 12:50	08/12/21 08:50
10574177011	**BPSOU-KAW-6**	Solid	08/10/21 12:55	08/12/21 08:50
10574177012	**BPSOU-KAW-6**	Solid	08/10/21 12:55	08/12/21 08:50
10574177013	**BPSOU-KAW-7**	Solid	08/10/21 13:00	08/12/21 08:50
10574177014	**BPSOU-KAW-7**	Solid	08/10/21 13:00	08/12/21 08:50
10574177015	**BPSOU-KAW-8**	Solid	08/10/21 13:05	08/12/21 08:50
10574177016	**BPSOU-KAW-8**	Solid	08/10/21 13:05	08/12/21 08:50

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SAMPLE ANALYTE COUNT

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10574177001	**BPSOU-KAW-1**	EPA 6020A	BWB	5	PASI-M
10574177002	**BPSOU-KAW-1**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177003	**BPSOU-KAW-2**	EPA 6020A	BWB	5	PASI-M
10574177004	**BPSOU-KAW-2**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177005	**BPSOU-KAW-3**	EPA 6020A	BWB	5	PASI-M
10574177006	**BPSOU-KAW-3**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177007	**BPSOU-KAW-4**	EPA 6020A	BWB	5	PASI-M
10574177008	**BPSOU-KAW-4**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177009	**BPSOU-KAW-5**	EPA 6020A	BWB	5	PASI-M
10574177010	**BPSOU-KAW-5**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177011	**BPSOU-KAW-6**	EPA 6020A	BWB	5	PASI-M
10574177012	**BPSOU-KAW-6**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177013	**BPSOU-KAW-7**	EPA 6020A	BWB	5	PASI-M
10574177014	**BPSOU-KAW-7**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M
10574177015	**BPSOU-KAW-8**	EPA 6020A	BWB	5	PASI-M
10574177016	**BPSOU-KAW-8**	EPA 7471B	LMW	1	PASI-M
		ASTM D2974	JDL	1	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Date: August 19, 2021

Samples analyzed for method 6020 arsenic, cadmium, copper, lead and zinc were analyzed after they were dried and sieved using a number 60 sieve.

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PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Method: **EPA 6020A**
Description: 6020A MET ICPMS
Client: BPAR-PIONEER-MT
Date: August 19, 2021

General Information:
8 samples were analyzed for EPA 6020A by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3050B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 764488

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10574177001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 4075058)
  - Zinc

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Method: **EPA 7471B**
Description: 7471B Mercury
Client: BPAR-PIONEER-MT
Date: August 19, 2021

General Information:
8 samples were analyzed for EPA 7471B by Pace Analytical Services Minneapolis. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 7471B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-1 **Lab ID: 10574177001** Collected: 08/10/21 12:30 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**26.9**	mg/kg	0.50	0.11	1	08/19/21 08:25	08/19/21 11:57	7440-38-2	
Cadmium	**0.90**	mg/kg	0.079	0.031	1	08/19/21 08:25	08/19/21 11:57	7440-43-9	
Copper	**66.9**	mg/kg	0.99	0.24	1	08/19/21 08:25	08/19/21 11:57	7440-50-8	
Lead	**29.4**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 11:57	7439-92-1	
Zinc	**132**	mg/kg	5.0	0.89	1	08/19/21 08:25	08/19/21 11:57	7440-66-6	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-1 **Lab ID: 10574177002** Collected: 08/10/21 12:30 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.026**	mg/kg	0.022	0.0094	1	08/16/21 13:44	08/18/21 15:47	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**10.5**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-2 **Lab ID: 10574177003** Collected: 08/10/21 12:35 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**15.9**	mg/kg	0.46	0.10	1	08/19/21 08:25	08/19/21 12:17	7440-38-2	
Cadmium	**0.49**	mg/kg	0.074	0.029	1	08/19/21 08:25	08/19/21 12:17	7440-43-9	
Copper	**36.2**	mg/kg	0.93	0.22	1	08/19/21 08:25	08/19/21 12:17	7440-50-8	
Lead	**16.0**	mg/kg	0.19	0.027	1	08/19/21 08:25	08/19/21 12:17	7439-92-1	
Zinc	**76.0**	mg/kg	4.6	0.83	1	08/19/21 08:25	08/19/21 12:17	7440-66-6	

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-2 **Lab ID: 10574177004** Collected: 08/10/21 12:35 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.022**	mg/kg	0.022	0.0095	1	08/16/21 13:44	08/18/21 15:53	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**11.7**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-3 **Lab ID: 10574177005** Collected: 08/10/21 12:40 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**29.8**	mg/kg	0.49	0.11	1	08/19/21 08:25	08/19/21 12:20	7440-38-2	
Cadmium	**0.82**	mg/kg	0.078	0.031	1	08/19/21 08:25	08/19/21 12:20	7440-43-9	
Copper	**64.7**	mg/kg	0.98	0.24	1	08/19/21 08:25	08/19/21 12:20	7440-50-8	
Lead	**23.8**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 12:20	7439-92-1	
Zinc	**103**	mg/kg	4.9	0.88	1	08/19/21 08:25	08/19/21 12:20	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-3 **Lab ID: 10574177006** Collected: 08/10/21 12:40 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.016J**	mg/kg	0.020	0.0086	1	08/16/21 13:44	08/18/21 15:55	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**10.9**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-4 **Lab ID: 10574177007** Collected: 08/10/21 12:45 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**31.0**	mg/kg	0.45	0.099	1	08/19/21 08:25	08/19/21 12:31	7440-38-2	
Cadmium	**0.77**	mg/kg	0.073	0.029	1	08/19/21 08:25	08/19/21 12:31	7440-43-9	
Copper	**77.9**	mg/kg	0.91	0.22	1	08/19/21 08:25	08/19/21 12:31	7440-50-8	
Lead	**26.6**	mg/kg	0.18	0.027	1	08/19/21 08:25	08/19/21 12:31	7439-92-1	
Zinc	**129**	mg/kg	4.5	0.82	1	08/19/21 08:25	08/19/21 12:31	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-4 **Lab ID: 10574177008** Collected: 08/10/21 12:45 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.027**	mg/kg	0.019	0.0082	1	08/16/21 13:44	08/18/21 16:00	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**9.4**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-5 **Lab ID: 10574177009** Collected: 08/10/21 12:50 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**33.9**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:34	7440-38-2	
Cadmium	**0.90**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:34	7440-43-9	
Copper	**78.2**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:34	7440-50-8	
Lead	**26.9**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:34	7439-92-1	
Zinc	**127**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:34	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-5 **Lab ID: 10574177010** Collected: 08/10/21 12:50 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.026**	mg/kg	0.022	0.0097	1	08/16/21 13:44	08/18/21 16:02	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**13.3**	%	0.10	0.10	1		08/17/21 10:41		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-6 **Lab ID: 10574177011** Collected: 08/10/21 12:55 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**43.4**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:37	7440-38-2	
Cadmium	**1.0**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:37	7440-43-9	
Copper	**99.3**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:37	7440-50-8	
Lead	**36.1**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:37	7439-92-1	
Zinc	**143**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:37	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-6 **Lab ID: 10574177012** Collected: 08/10/21 12:55 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.027**	mg/kg	0.020	0.0088	1	08/16/21 13:44	08/18/21 16:03	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**7.2**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-7 **Lab ID: 10574177013** Collected: 08/10/21 13:00 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**36.6**	mg/kg	0.47	0.10	1	08/19/21 08:25	08/19/21 12:41	7440-38-2	
Cadmium	**0.91**	mg/kg	0.075	0.030	1	08/19/21 08:25	08/19/21 12:41	7440-43-9	
Copper	**85.7**	mg/kg	0.94	0.23	1	08/19/21 08:25	08/19/21 12:41	7440-50-8	
Lead	**28.8**	mg/kg	0.19	0.028	1	08/19/21 08:25	08/19/21 12:41	7439-92-1	
Zinc	**133**	mg/kg	4.7	0.85	1	08/19/21 08:25	08/19/21 12:41	7440-66-6	

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ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-7 **Lab ID: 10574177014** Collected: 08/10/21 13:00 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.032**	mg/kg	0.018	0.0079	1	08/16/21 13:44	08/18/21 16:05	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**8.4**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-8 **Lab ID: 10574177015** Collected: 08/10/21 13:05 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020A MET ICPMS	Analytical Method: EPA 6020A Preparation Method: EPA 3050B Pace Analytical Services - Minneapolis								
Arsenic	**37.8**	mg/kg	0.50	0.11	1	08/19/21 08:25	08/19/21 12:44	7440-38-2	
Cadmium	**0.86**	mg/kg	0.080	0.031	1	08/19/21 08:25	08/19/21 12:44	7440-43-9	
Copper	**82.9**	mg/kg	1.0	0.24	1	08/19/21 08:25	08/19/21 12:44	7440-50-8	
Lead	**27.5**	mg/kg	0.20	0.029	1	08/19/21 08:25	08/19/21 12:44	7439-92-1	
Zinc	**131**	mg/kg	5.0	0.90	1	08/19/21 08:25	08/19/21 12:44	7440-66-6	

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: BPSOU School Sampling
Pace Project No.: 10574177

Sample: BPSOU-KAW-8 **Lab ID: 10574177016** Collected: 08/10/21 13:05 Received: 08/12/21 08:50 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
7471B Mercury	Analytical Method: EPA 7471B Preparation Method: EPA 7471B Pace Analytical Services - Minneapolis								
Mercury	**0.028**	mg/kg	0.020	0.0086	1	08/16/21 13:44	08/18/21 16:06	7439-97-6	
Dry Weight / %M by ASTM D2974	Analytical Method: ASTM D2974 Pace Analytical Services - Minneapolis								
Percent Moisture	**8.6**	%	0.10	0.10	1		08/17/21 10:42		N2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 763252
QC Batch Method: EPA 7471B
Analysis Method: EPA 7471B
Analysis Description: 7471B Mercury Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

METHOD BLANK: 4069399 Matrix: Solid
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	<0.0087	0.020	0.0087	08/18/21 15:44	

LABORATORY CONTROL SAMPLE: 4069400

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.48	0.47	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4069402 4069403

Parameter	Units	10574177002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.026	0.5	0.53	0.50	0.53	93	95	80-120	5	20	

SAMPLE DUPLICATE: 4069401

Parameter	Units	10574177002 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	mg/kg	0.026	0.028	8	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 764488
QC Batch Method: EPA 3050B
Analysis Method: EPA 6020A
Analysis Description: 6020A Solids UPD4
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177001, 10574177003, 10574177005, 10574177007, 10574177009, 10574177011, 10574177013, 10574177015

METHOD BLANK: 4075056 Matrix: Solid
Associated Lab Samples: 10574177001, 10574177003, 10574177005, 10574177007, 10574177009, 10574177011, 10574177013, 10574177015

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	<0.11	0.50	0.11	08/19/21 11:50	
Cadmium	mg/kg	<0.031	0.079	0.031	08/19/21 11:50	
Copper	mg/kg	<0.24	0.99	0.24	08/19/21 11:50	
Lead	mg/kg	<0.029	0.20	0.029	08/19/21 11:50	
Zinc	mg/kg	<0.89	5.0	0.89	08/19/21 11:50	

LABORATORY CONTROL SAMPLE: 4075057

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	48.1	54.5	113	80-120	
Cadmium	mg/kg	48.1	56.5	118	80-120	
Copper	mg/kg	48.1	57.1	119	80-120	
Lead	mg/kg	48.1	56.3	117	80-120	
Zinc	mg/kg	48.1	55.9	116	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 4075058 4075059

Parameter	Units	10574177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	26.9	48.1	47.6	82.6	82.6	116	117	75-125	0	20	
Cadmium	mg/kg	0.90	48.1	47.6	58.1	57.4	119	119	75-125	1	20	
Copper	mg/kg	66.9	48.1	47.6	127	124	125	119	75-125	3	20	
Lead	mg/kg	29.4	48.1	47.6	85.6	85.6	117	118	75-125	0	20	
Zinc	mg/kg	132	48.1	47.6	194	191	130	123	75-125	2	20	M1

SAMPLE DUPLICATE: 4075963

Parameter	Units	10574177001 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/kg	26.9	27.3	2	20	
Cadmium	mg/kg	0.90	0.94	5	20	
Copper	mg/kg	66.9	68.1	2	20	
Lead	mg/kg	29.4	30.0	2	20	
Zinc	mg/kg	132	133	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: BPSOU School Sampling
Pace Project No.: 10574177

QC Batch: 763834
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight / %M by ASTM D2974
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10574177002, 10574177004, 10574177006, 10574177008, 10574177010, 10574177012, 10574177014, 10574177016

SAMPLE DUPLICATE: 4072583

Parameter	Units	10573913001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.6	6.3	5	30	N2

SAMPLE DUPLICATE: 4072770

Parameter	Units	10574177014 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.4	7.9	6	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: BPSOU School Sampling
Pace Project No.: 10574177

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BPSOU School Sampling
Pace Project No.: 10574177

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10574177001	**BPSOU-KAW-1**	EPA 3050B	764488	EPA 6020A	764645
10574177003	**BPSOU-KAW-2**	EPA 3050B	764488	EPA 6020A	764645
10574177005	**BPSOU-KAW-3**	EPA 3050B	764488	EPA 6020A	764645
10574177007	**BPSOU-KAW-4**	EPA 3050B	764488	EPA 6020A	764645
10574177009	**BPSOU-KAW-5**	EPA 3050B	764488	EPA 6020A	764645
10574177011	**BPSOU-KAW-6**	EPA 3050B	764488	EPA 6020A	764645
10574177013	**BPSOU-KAW-7**	EPA 3050B	764488	EPA 6020A	764645
10574177015	**BPSOU-KAW-8**	EPA 3050B	764488	EPA 6020A	764645
10574177002	**BPSOU-KAW-1**	EPA 7471B	763252	EPA 7471B	764049
10574177004	**BPSOU-KAW-2**	EPA 7471B	763252	EPA 7471B	764049
10574177006	**BPSOU-KAW-3**	EPA 7471B	763252	EPA 7471B	764049
10574177008	**BPSOU-KAW-4**	EPA 7471B	763252	EPA 7471B	764049
10574177010	**BPSOU-KAW-5**	EPA 7471B	763252	EPA 7471B	764049
10574177012	**BPSOU-KAW-6**	EPA 7471B	763252	EPA 7471B	764049
10574177014	**BPSOU-KAW-7**	EPA 7471B	763252	EPA 7471B	764049
10574177016	**BPSOU-KAW-8**	EPA 7471B	763252	EPA 7471B	764049
10574177002	**BPSOU-KAW-1**	ASTM D2974	763834		
10574177004	**BPSOU-KAW-2**	ASTM D2974	763834		
10574177006	**BPSOU-KAW-3**	ASTM D2974	763834		
10574177008	**BPSOU-KAW-4**	ASTM D2974	763834		
10574177010	**BPSOU-KAW-5**	ASTM D2974	763834		
10574177012	**BPSOU-KAW-6**	ASTM D2974	763834		
10574177014	**BPSOU-KAW-7**	ASTM D2974	763834		
10574177016	**BPSOU-KAW-8**	ASTM D2974	763834		

Borrow Hy

bp rm Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ____

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision ___ ___ ___	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor ___ X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Report Type & QC Level: Standard ___ x ; Full Data Package ___

WO#: 10574177

10574177

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	7471 Mercury, dry weight	Report Type & QC Level
	BPSOU-KAW-1	08/10/21	12:30	X				2						X	X	RUSH TURNAROUND ~~001~~ 002
	BPSOU-KAW-2	08/10/21	12:35	X				2						X	X	RUSH TURNAROUND ~~002~~ 004
	BPSOU-KAW-3	08/10/21	12:40	X				2						X	X	RUSH TURNAROUND ~~003~~ 006
	BPSOU-KAW-4	08/10/21	12:45	X				2						X	X	RUSH TURNAROUND ~~004~~ 008
	BPSOU-KAW-5	08/10/21	12:50	X				2						X	X	RUSH TURNAROUND ~~005~~ 010
	BPSOU-KAW-6	08/10/21	12:55	X				2						X	X	RUSH TURNAROUND ~~006~~ 012
	BPSOU-KAW-7	08/10/21	13:00	X				2						X	X	RUSH TURNAROUND ~~007~~ 014
	BPSOU-KAW-8	08/10/21	13:05	X				2						X	X	RUSH TURNAROUND ~~008~~ 016

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Denney / PTS	8/11/21	1600	[illegible] / PACE	8/12/21	850
Shipment Method:	FedEx Overnight Ship Date: 8/11/21						
Shipment Tracking No:	9950 9446 8703						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: (Yes) / No | Temp Blank: (Yes) / No | Cooler Temp on Receipt: 2.9 °F (C) | Trip Blank: Yes / (No) | MS/MSD Sample Submitted: Yes / (No)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - ESI**	Document Revised: 12Aug2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0149 Rev.01**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt – ESI Tech Specs

Client Name: BP - Pioneer

Project #: WO#: 10574177
PM: JMA Due Date: 08/19/21
CLIENT: BP-PIONEER

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9550 9946 8703 **See Exceptions** ☐ **ENV-FRM-MIN4-0142**

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.9 °C **Average Corrected Temp (no temp blank only):** _____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: true **Cooler Temp Corrected w/temp blank:** 2.9 °C

USDA Regulated Soil: (☐ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** HB 8/12/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☒ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐
Rush Turn Around Time Requested?	☒ Yes	☐ No		6.
Sufficient Sample Volume?	☒ Yes	☐ No		
Triple Volume Provided for MS/MSD (if more than 10 samples)?	☐ Yes	☐ No	☒ N/A	7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ **ENV-FRM-MIN4-0142**
Matrix: ☐ Water ☒ Soil ☐ Oil ☐ Other _____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS *If adding preservative to a container it must be added to associated field and equipment blanks (verify with PM first)	☐ Yes	☐ No	☒ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐ **ENV-FRM-MIN4-0142**
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO contaners?	☐ Yes	☐ No	☒ N/A	13. **See Exception** ☐ **ENV-FRM-MIN4-0140**
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☐ No	☒ N/A	
3 Trip Blanks Present?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased): _____

Temp Log: Temp must be maintained at <6°C during login, record temp every 20 mins		
Opened Time: 1145	Temp: 2.9	Corrected Temp: 2.9
Time:	put in cooler	
Time: 1158	Temp: 3.0	Corrected Temp: 3.0

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: _____ **Date:** 08/16/2021

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Labeled by: HB (2)

Internal Transfer Chain of Custody

4023149

Pace Analytical®
www.pacelabs.com

[X] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No

Workorder: 10574177 Workorder Name: BPSOU School Sampling

Owner Received Date: 8/12/2021 Results Requested By: 8/19/2021

Report To	Subcontract To
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6436	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	PB					Requested Analysis: Air Dry & Sieve												LAB USE ONLY
1	BPSOU-KAW-1	PS	8/10/2021 12:30	10574177001	Solid	1						X												001
2	BPSOU-KAW-2	PS	8/10/2021 12:35	10574177003	Solid	1						X												002
3	BPSOU-KAW-3	PS	8/10/2021 12:40	10574177005	Solid	1						X												003
4	BPSOU-KAW-4	PS	8/10/2021 12:45	10574177007	Solid	1						X												004
5	BPSOU-KAW-5	PS	8/10/2021 12:50	10574177009	Solid	1						X												005
6	BPSOU-KAW-6	PS	8/10/2021 12:55	10574177011	Solid	1						X												006
7	BPSOU-KAW-7	PS	8/10/2021 13:00	10574177013	Solid	1						X												007
8	BPSOU-KAW-8	PS	8/10/2021 13:05	10574177015	Solid	1						X												008

Transfers	Released By	Date/Time	Received By	Date/Time
1	FedEX	8/13/21 0940	MBerseth Pace	8/13/21 0940
2				
3				

Comments
IR40-Rush
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Laboratory Management Program LaMP Chain of Custody Record

40231693 Benson Mobile

BP Site Node Path: _____ Req Due Date (mm/dd/yy): _____ Rush TAT: XX No ___

BP Facility No: _____ Lab Work Order Number: _____

Lab Name: Pace Analytical Services	Facility Address:	Consultant/Contractor: Pioneer Technical Services
Lab Address: 1700 Elm Street Minneapolis, MN 55414	City, State, ZIP Code:	Consultant/Contractor Project No: BPSOU School Sampling
Lab PM: Jennifer Anderson	Lead Regulatory Agency:	Address: 307 E Park Suite 421, Anaconda MT, 59711
Lab Phone: 612-607-1700	California Global ID No.:	Consultant/Contractor PM: Jesse Schwarzrock
Lab Shipping Accnt:	Enfos Proposal No:	Phone: 406-697-0949 Email: jschwarzrock@pioneer-technical.com
Lab Bottle Order No:	Accounting Mode: Provision ___ ___ ___	Email EDD To: Jesse Schwarzrock
Other Info:	Stage: Activity:	Invoice To: BP ___ Contractor ___ X

BP Project Manager (PM): Mike Mc Anulty

BP PM Phone: 406-723-1822

BP PM Email: mcanumc@bp.com

Report Type & QC Level: Standard ___ x ; Full Data Package ___

Note: If sample not collected, indicate "No

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Containers	Unpreserved	H2SO4	HNO3	HCl	Methanol		Requested Analyses: Air dry&sieve*, 6020 (As, Cd, Cu, Pb, Zn)	Requested Analyses: 7471 Mercury, dry weight								Comments
8001	BPSOU-KAW-1	08/10/21	12:30	X				2							X	X								RUSH TURNAROUND
8002	BPSOU-KAW-2	08/10/21	12:35	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-3	08/10/21	12:40	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-4	08/10/21	12:45	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-5	08/10/21	12:50	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-6	08/10/21	12:55	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-7	08/10/21	13:00	X				2							X	X								RUSH TURNAROUND
	BPSOU-KAW-8	08/10/21	13:05	X				2							X	X								RUSH TURNAROUND

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Kile Denney						
Sampler's Company:	Pioneer Technical Services	Kile Dellbaum / PTS	8/11/21	1600			
Shipment Method:	FedEx Overnight Ship Date: 8/11/21	Fed Ex	8/13/21	0940	M Benson Pace	8/13/21	0940
Shipment Tracking No:	9950 9946 9537						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

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Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Pace Minn Project # 40231493

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass								Plastic					Vials						Jars				General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN						
001																																2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016			VP																													2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

8/13/21

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

Pace Analytical® 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 26Mar2020
	Document No.: ENV-FRM-GBAY-0014-Rev.00	Author: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40231493

40231493

Client Name: Pace Minn

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 9550 9946 9537

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☒ no

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other

Thermometer Used SR - 90 IR 8/13/21 **Type of Ice:** Wet Blue Dry (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: N/A /Corr: N/A

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 8/13/21 /Initials: HB

Labeled By Initials:

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. IRWO HB 8/13/21
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	(☒) Yes ☒No HB 8/13/21	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☒N/A	
-Pace IR Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: S	☒Yes (☒) No HB ☐N/A	12. 005 Time 12:4 HB 8/13/21
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: Date/Time:

Comments/ Resolution:

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Internal Transfer Chain of Custody

4023 1493

Pace Analytical®
www.pacelabs.com

[X] Samples Pre-Logged into eCOC.

State Of Origin: MT
Cert. Needed: [ ] Yes [x] No

Workorder: 10574177 Workorder Name: BPSOU School Sampling
Owner Received Date: 8/12/2021 Results Requested By: 8/19/2021

Report To

Jennifer Anderson
Pace Analytical Minnesota
1700 Elm Street
Minneapolis, MN 55414
Phone (612)607-6436

Subcontract To

Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436

PB

WO#: 10574177
10574177

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Air Dry & Sieve	LAB USE ONLY
1	BPSOU-KAW-1	PS	8/10/2021 12:30	10574177001	Solid	1	X	001
2	BPSOU-KAW-2	PS	8/10/2021 12:35	10574177003	Solid	1	X	002
3	BPSOU-KAW-3	PS	8/10/2021 12:40	10574177005	Solid	1	X	003
4	BPSOU-KAW-4	PS	8/10/2021 12:45	10574177007	Solid	1	X	004
5	BPSOU-KAW-5	PS	8/10/2021 12:50	10574177009	Solid	1	X	005
6	BPSOU-KAW-6	PS	8/10/2021 12:55	10574177011	Solid	1	X	006
7	BPSOU-KAW-7	PS	8/10/2021 13:00	10574177013	Solid	1	X	007
8	BPSOU-KAW-8	PS	8/10/2021 13:05	10574177015	Solid	1	X	008

Transfers	Released By	Date/Time	Received By	Date/Time
1	FedEX	8/13/21 0940	MBenson Pace	8/13/21 0940
2	[illegible]	8/16/21 [illegible]	[illegible] / Pace	8/16/21 8:5[illegible]
3				

Comments

IR40-Rush
#60 Sieve
Include soil prep log
Follow QAPP

Cooler Temperature on Receipt N/A °C **Custody Seal** (Y) or N **Received on Ice** Y or (N) **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: Pace GreenBay

Project #:

WO#: 10574177

PM: JMA **Due Date: 08/19/21**

CLIENT: BP-PIONEER

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☑Commercial

Tracking Number: 293718 6-1

See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☑Yes ☐No **Seals Intact?** ☑Yes ☐No **Biological Tissue Frozen?** ☐Yes ☐No ☑N/A

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☐None ☐Other:_____ **Temp Blank?** ☐Yes ☑No

Thermometer: ☐T1(0461) ☑T2(1336) ☐T3(0459) ☐OS418-LS ☐T4(0254) ☐T5(0489) ☐160285052 **Type of Ice:** ☐Wet ☐Blue ☑None ☐Dry ☐Melted

Did Samples Originate in West Virginia? ☐Yes ☑No **Were All Container Temps Taken?** ☐Yes ☐No ☑N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:**_____ °C

Correction Factor: True **Cooler Temp Corrected w/temp blank:**_____ °C

Average Corrected Temp (no temp blank only): 19.7 °C ☑See Exceptions ENV-FRM-MIN4-0142 ☐1 Container

USDA Regulated Soil: (☐ N/A, water sample/Other:_____)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☑No

Date/Initials of Person Examining Contents: HKB 8/17/21

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☑No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☑Yes	☐No		1.
Chain of Custody Relinquished?	☑Yes	☐No		2.
Sampler Name and/or Signature on COC?	☐Yes	☑No	☐N/A	3.
Samples Arrived within Hold Time?	☑Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☑No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☑Yes	☐No		6.
Sufficient Volume?	☑Yes	☐No		7.
Correct Containers Used? -Pace Containers Used?	☑Yes ☑Yes	☐No ☐No		8.
Containers Intact?	☑Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☑N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☐Water ☑Soil ☐Oil ☐Other_____	☑Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐ ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☑N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☐Yes	☐No	☑N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐Yes	☐No	☑N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐ ENV-FRM-MIN4-0142 Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐Yes	☐No	☑N/A	13. **See Exception** ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☑N/A	
Trip Blank Present?	☐Yes	☐No	☑N/A	14.
Trip Blank Custody Seals Present?	☐Yes	☐No	☑N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: _____ **Date:** 08/19/2021

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: HKB(1)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) Exception Form**	Document Revised: 04Jun2020 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0142 Rev.01**	Pace Analytical Services - **Minneapolis**

SCUR Exceptions:

Workorder #: 10574177

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank		
Read Temp	Corrected Temp	Average Temp
19.8	T	19.7
19.7	↓	
19.6		
19.6		

Tracking Number/Temperature	

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Comments: