Fall 9-14-2022

Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed Sites - Field Sampling Plan (FSP) BRES No. 158 - Waste Rock Dump

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September 14, 2022

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Re: Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed Sites - Field Sampling Plan (FSP) BRES No. 158 - Waste Rock Dump.

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to submit the Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed (IR) Sites - Field Sampling and Investigation Plan (FSP) Butte Remediation Evaluation System (BRES) No. 158 – Waste Rock Dump per the Agency approval letter dated June 30, 2022. Comments provided in the approval letter are addressed within in this Final FSP below.

The Agency approval letter can be accessed at the following link:

https://pioneertechnicalservices.sharepoint.com/:b:/s/submitted/EUKe2UBVmYRIuoKZvsHbHgkBfmXgvVe97sdCjBepjfvR9g.[1]

As described in Appendix D, Attachment C to the 2020 BPSOU Consent Decree (CD) (available at https://www.co.silverbow.mt.us/2161/ButtePriority-Soils-Operable-Unit-Conse), sites listed as IR Solid Media Sites within the BPSOU were reclaimed prior to the establishment of the Butte Hill Revegetation Specifications (BHRS), which is Appendix B of Appendix E to the U.S. Environmental Protection Agency (EPA) 2006 Record of Decision (ROD) contained in the CD. Since additional reclamation work may be required to bring the sites into compliance with the BHRS, the sites will be evaluated to assess past actions and to identify any site-specific conditions that fail to meet the BHRS.

[1] Please note the link provided is valid for one year from the date of this submittal.

The site evaluation will include a review of available previous BRES field evaluations and site construction completion reports along with on-site evaluation and sampling. The site evaluation will include sampling within the existing site boundary performed according to the Atlantic Richfield Company *2022 Final Insufficiently Reclaimed Sites Quality Assurance Project Plan (QAPP)* (referred to as IR Sites QAPP), which is a component of the BPSOU Solid Media Management Project Plan. The IR Sites QAPP is available at the following link:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEoBe5IIf5IQO01hBO43ZROgpg.[2]

The extents of sampling are shown on Figure 1 which includes proposed alterations to the expand the sampling boundary. Field sampling within the existing boundary will be performed per the 2022 IR Sites QAPP to determine whether contaminants are present, whether growth media is adequate, and whether there are previously unidentified sources contributing to site deficiencies.

Additional sampling performed in adjacent areas outside of the existing site boundary to characterize gap zones where site characterization may be unknown or incomplete will be conducted according to the Atlantic Richfield Company *Final Unreclaimed Sites Quality Assurance Project Plan (QAPP)* (referred to as the Unreclaimed Sites QAPP) which also is a component of the BPSOU Solid Media Management Project Plan available at the following link:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Ev1dhUeMuUdLjU8tnuV5RioBvJZRYc2HpgEjM9KzT-PpjQ.[3]

Sample results in the areas outside of the existing site boundary will be evaluated to determine if contaminants are present beyond the site boundary at concentrations exceeding action levels listed in Table 1 or Table 2 in the Unreclaimed Sites QAPP. Final sampling data will be used to assist in determining the final site declaration.

This FSP provides details related to the field evaluation of the IR site BRES No. 158 – Waste Rock Dump. Proposed soil sampling stations and areas of known deficiencies are shown on Figure 1.

The site evaluation will be completed in 2022. A site summary and declaration will be prepared to present all available site data and describe which, if any, BHRS criteria are not met. The site will be evaluated following the Commercial Land Use Waste Identification and Action Level Criteria provided in the IR and Unreclaimed Sites QAPPs. A remedial action work plan (RAWP) describing actions that will be implemented at the site will be provided for Agency review and approval.

A list of FSPs, provided below, will be updated to record the status and progress related to FSP submittals.

[2] Please note the link provided is valid for one year from the date of this submittal.
[3] Please note the link provided is valid for one year from the date of this submittal.

Submittal	Site	Submittal Date	Approval Date
1	BRES No. 104 – Colorado Dump Shaft	9/29/2021	11/5/2021
1R	BRES No. 104 – Colorado Dump Shaft, Final Revised	12/2/2021	12/6/2021
2	BRES No. 154 – Clark Mill Tailings NE	12/1/2021	12/6/2021
3	BRES No. 30 – Atlantic-1	1/12/2022	2/22/2022
4	BRES No. 16 – Curry	1/12/2022	2/22/2022
5	BRES No. 8 – Belle of Butte	3/11/2022	
6	BRES No. 38 – Sister Dump	6/16/2022	
7	BRES No. 32 – Corra 2 Dumps	6/20/2022	6/30/2022
8	BRES No. 158 – Waste Rock Dump	6/20/2022	7/11/2022
9	BRES No. 50 – Zelia	6/22/2022	6/30/2022
10	BRES No. 93 – Soudan Dump	6/23/2022	6/30/2022
11	BRES No. 96 – Washoe Dump	6/23/2022	7/11/2022
12	BRES No. 133 – Dexter Mill	7/14/2022	7/26/2022
13	BRES No. 37 – Josephine Shaft	7/20/2022	7/26/2022
14	BRES No. 34 – Eveline	7/22/2022	8/2/2022

The crosswalk list provided below references where pertinent field sample collection and documentation elements are discussed.

	Reference Location		
Element	**FSP**	**IR Sites QAPP**	**Unreclaimed Sites QAPP**
Title page and approval authority.		Page i	Page i
Introduction and appropriate Agency-approved QAPP reference.	X		
Goals and objectives of sampling.		Section 2.4, Section 3.2	Section 2.4, Section 3.2
Proposed schedule for field work.	X		
Site figure including sampling stations, number and depth of samples to be collected, and sample field identification (ID).	X	Section 3.2.1	Section 3.2.1
Field activity methods and procedures, standard operating procedures.		Section 3.2, Table 4	Section 3.2, Table 4
Sample labeling and shipping.		Section3.2.5, Appendix C	Section3.2.5, Appendix C
Sample analysis specifying X-ray fluorescence vs. laboratory analysis and laboratory name.		Section 3.3	Section 3.3
Figure showing the site and/or area represented by a sample, sample ID, and aliquot stations for composite samples.	X		

Background

The Waste Rock Dump (BRES No. 158) is approximately 0.13 acres located along Clayton Street and immediately east of several residential properties. Work completed by ARCO in 1998 encompassed 0.05 acres (plus or minus 2,000 square feet). Approximately 200 cubic yards of existing mine waste was removed and hauled to the Butte-Silver Bow (BSB) mine waste repository. The waste rock was removed to the natural surrounding slope conditions. After grading was complete, 12 inches of BSB landfill cover soil was installed. The construction activities occurred from September 18 to September 22, 1998.

Dillon manure was incorporated into the cover soil at a ratio of 6:1, landfill soil to Dillon manure. Fertilizer was applied on October 28, 1998, at a per acre rate of 60 Nitrogen (N), 80 potassium oxide (K_2O), and 150 phosphorus pentoxide (P_2O_5) pounds per acre. Straw mulch was spread by hand. The site was drill seeded on October 28, 1998, with 19 pounds per acre of the primary seed mixture.

Previous Evaluation Findings

The site was evaluated in 2019 during the recurring BRES site evaluation process. Review of previous site evaluations will be incorporated into site evaluation, sampling, and forthcoming remedial action. Preliminary review of the evaluation finding indicates issues with weeds, erosion, exposed waste, gullies, and barren areas. A gully forming through the center of the access road is transporting material to the southern boundary. Barren areas appear to be disturbed from the use of large equipment and motorized traffic exposing potential slag tested at 6.00 pH. Imported gravel is being used to counteract the erosion of the road; the source of gravel is unknown.

Previous Sampling Efforts

Data obtained from the Geocortex web-based database at https://eis2.woodardcurran.com/Html5Viewer/index.html?viewer=BPButte.BPSOU contain the records for previous soil samples collected near BRES 158 Waste Rock Dump. The approximate sample stations are included on Figure 1 with results provided in Table 1 below. Sample results do not exceed ROD Solid Media soil screening criteria. The BPSOU action levels are listed in Table 1 and Table 2 of the IR Sites QAPP Section 2.4.

Table 1: Previous Sampling
Results from BPSOU Soil Sampling

COCs	Sample ID: **038WA01-0**	Sample ID: **FSUA-7**
Arsenic	122 mg/kg	67 mg/kg
Cadmium	1 mg/kg	0 mg/kg
Copper	59 mg/kg	244 mg/kg
Lead	899 mg/kg	3,780 mg/kg
Zinc	709 mg/kg	2,970 mg/kg
pH	3.87 S.U.	3.63 S.U.
COC: contaminants of concern. mg/kg: milligrams per kilogram. S.U. Standard Unit		

Preliminary Site Evaluation

A preliminary site visit was conducted to better qualify existing site conditions and identify areas of focus for additional evaluation. Site photographs from the spring of 2022 are included in this section for reference. The south access was blocked, and BSB laid 20 cubic yards of EPA-approved cover soil. No notes from the work were completed about seeding. Within the rock outcropping area of the site, there are many different piles of material from an unknown source. There was active erosion along the north boundary of the Site with run-on and runoff occurring, which has caused extreme washout on the side of the roadway (Photograph 6). To redirect storm water flows, BSB has installed temporary berms (Photograph 5).

Photograph 1: Area of Previous Remediation in 2021.

Photograph 2: Good Grass Cover West of New Reclamation Work.

Photograph 3: Rock Outcropping or Rock Dump.

Photograph 4: Sediment Runoff from Site to Road.

Photograph 5: Temporary Dirt Berms Installed by BSB to Mitigate Sediment Transportation through the Site and onto the Roadway.

Photograph 6: Storm Water is Eroding onto and under the Roadway.

Site Characterization Plan

Per the IR Sites QAPP, the site will be sampled at 2 depth intervals [(1) 0 to 6 inches and (2) 6 to 18 inches] to determine whether mining related waste is present and/or confirm the depth of previous reclamation efforts. Additional samples obtained outside of the existing site boundary will be obtained from 3 depth intervals [(3) 0 to 2 inches, (4) 2 to 6 inches, and (5) 6 to 12 inches] per the Unreclaimed Sites QAPP sampling protocol. Figure 1 illustrates the proposed sample stations. Opportunistic samples may be obtained in the field at the discretion of field sampling personnel or Agency oversight representative(s). The field team leader will be responsible for determining the appropriate sampling protocol as dictated by the location of the opportunistic sample(s).

Results will be used to prepare the site declaration and prescribe site remedial improvements. The overall site will be sampled following procedures in the IR Sites QAPP using a systematic procedure to determine the spatial characterization of waste, parameters of previous reclamation, and extent of transient material. Sampling performed outside of the existing boundary will be used to determine if waste extends beyond the existing boundary at concentrations which exceed levels listed in Table 1 or Table 2 of the Unreclaimed Sites QAPP and will be used to assist in the determination of the final site declaration.

Existing site grading and drainages will be evaluated to determine storm water flow patterns and identify if additional storm water controls will help prevent sediment migration. The location and condition of existing storm water features will be field-verified and recorded to be used in corrective actions. Contributing sources of storm water upgradient and adjacent to the site will also be investigated.

Items identified below will be evaluated to determine whether they are adequate and to identify if additional remedial measures are necessary. The following provides the minimum potential site characterization items to consider. Additional items may be identified during the remedial design process.

- Investigate controlled site access requirements.
- Evaluate plant species cover to BHRS seed mix specifications.
    - Coordinate and confirm plant species with biology/plant ecologist or related subject matter expert.
- Evaluate site storm water controls to mitigate run-on/runoff.
- Identify remedial improvements to mitigate site erosion and vegetative areas to meet BHRS.
- Identify maintenance items for successful long-term operation.

Final remedial cap configuration (i.e., vegetative or engineered) will be coordinated with the landowner's end usage. A final RAWP will be provided for Agency review and approval.

Sampling Procedure

All soil sampling and characterization activities and procedures within the existing site boundary from the sample stations listed below will follow the IR Sites QAPP. The IR Sites QAPP also describes

the quality assurance/quality control policies and procedures that will be used during sample collection and analysis.

Sample Station	2 Depth Intervals (inches)
IR-158-SS01	(1) 0-6, (2) 6-18
IR-158-SS02	(1) 0-6, (2) 6-18
IR-158-SS03	(1) 0-6, (2) 6-18
IR-158-SS04	(1) 0-6, (2) 6-18
IR-158-SS05	(1) 0-6, (2) 6-18

All soil sampling and characterization activities beyond the existing site boundary at sample stations listed below will follow the Unreclaimed Sites QAPP.

Sample Station	3 Depth Intervals (inches)
IR-158-SS06	(3) 0-2, (4) 2-6, and (5) 6-12
IR-158-SS07	(3) 0-2, (4) 2-6, and (5) 6-12

Fieldwork is anticipated to be conducted in 2022.

Site Summary Report and Declaration

After the site evaluation and data collection activities have been completed, a summary report will be prepared and submitted to Agencies for review and approval. The report will include a summary of all available site sampling data and a site declaration specifying any deficient BHRS criteria.

If you have questions or comments, please do not hesitate to call me at (907) 355-3914.

Sincerely,

Mike McAnulty

Mike Mc Anulty
Liability Manager
Remediation Management Services Company
An affiliate of **Atlantic Richfield Company**

Attachments:

Figure 1 – Insufficiently Reclaimed Sites BRES No. 158 Waste Rock Dump Proposed Sample Stations
Attachment 1: Document Links

Cc: Patricia Gallery / Atlantic Richfield - email
Chris Greco / Atlantic Richfield – email

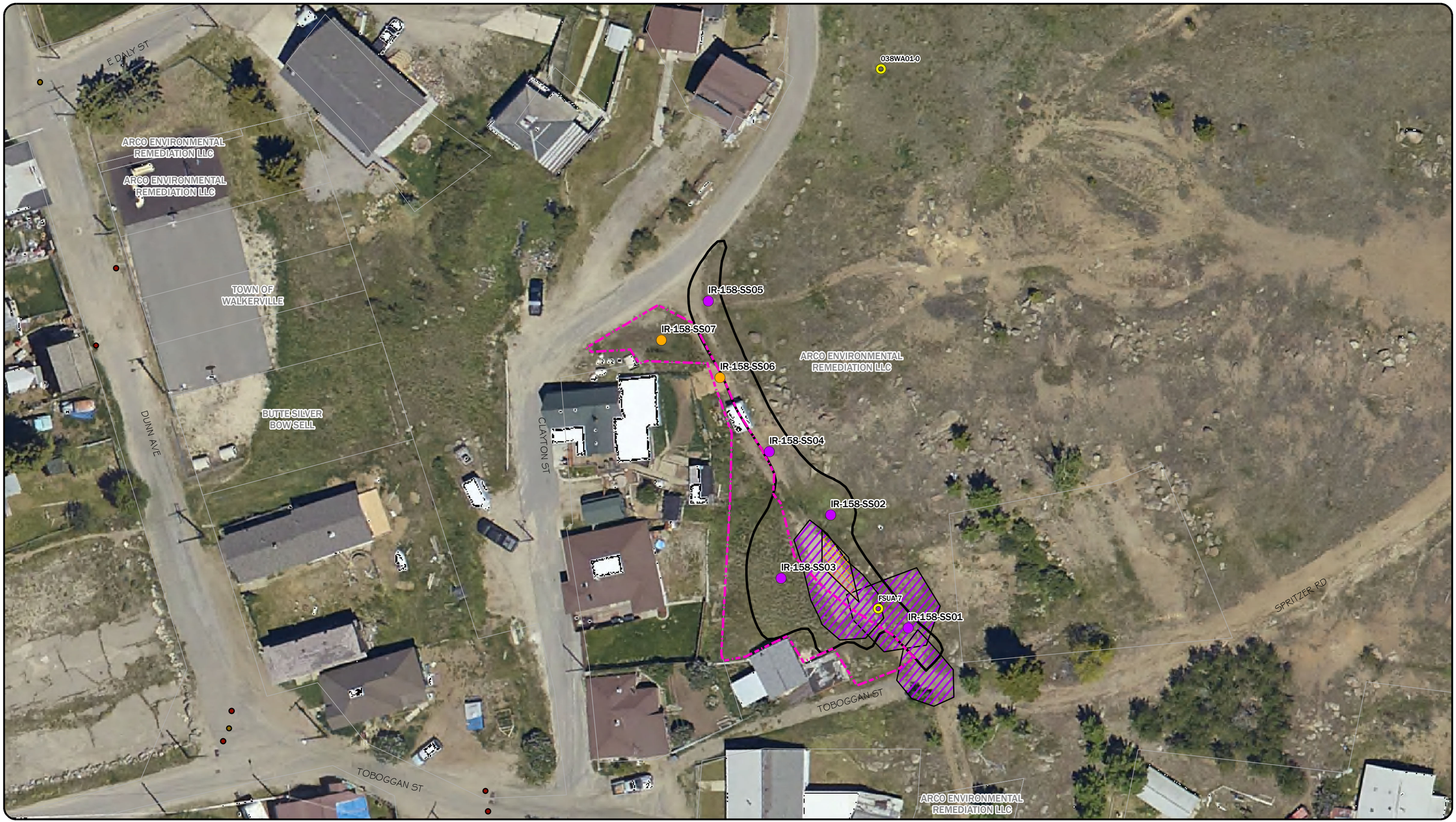
Josh Bryson / Atlantic Richfield - email
Loren Burmeister / Atlantic Richfield – email
Dave Griffis / Atlantic Richfield - email
Jean Martin / Atlantic Richfield - email
Irene Montero / Atlantic Richfield - email
David A. Gratson / Environmental Standards / email
Mave Gasaway / DGS - email
Brianne McClafferty / Holland & Hart - email
Joe Vranka / EPA - email
David Shanight / CDM - email
Curt Coover / CDM - email
James Freeman / DOJ - email
John Sither / DOJ - email
Dave Bowers / DEQ - email
Carolina Balliew / DEQ - email
Matthew Dorrington / DEQ – email
Wil George / DEQ – email
Jim Ford / NRDP - email
Pat Cunneen / NRDP - email
Harley Harris / NRDP - email
Katherine Hausrath / NRDP - email
Meranda Flugge / NRDP - email
Ted Duaime / MBMG - email
Gary Icopini / MBMG - email
Becky Summerville / MR - email
Kristen Stevens / UP - email
Robert Bylsma / UP - email
John Gilmour / Kelley Drye - email
Leo Berry / BNSF - email
Robert Lowry / BNSF - email
Brooke Kuhl / BNSF – email
Lauren Knickrehm / BNSF - email
Jeremie Maehr / Kennedy Jenks - email
Annika Silverman / Kennedy Jenks - email
Matthew Mavrinac / RARUS - email
Harrison Roughton / RARUS - email
Brad Gordon / RARUS - email
Mark Neary / BSB - email
Eric Hassler / BSB - email
Julia Crain / BSB - email
Chad Anderson / BSB - email
Brandon Warner / BSB – email
Abigail Peltomaa / BSB - email
Eileen Joyce / BSB – email
Sean Peterson/BSB – email
Gordon Hart / BSB – email

Jeremy Grotbo / BSB – email
Karen Maloughney / BSB – email
Josh Vincent / WET - email
Craig Deeney / TREC - email
Scott Bradshaw / TREC - email
Brad Archibald / Pioneer - email
Pat Sampson / Pioneer - email
Joe McElroy / Pioneer – email
Andy Dare / Pioneer – email
Karen Helfrich / Pioneer - email
Leesla Jonart / Pioneer - email
Randa Colling / Pioneer – email
Ian Magruder/ CTEC- email
CTEC of Butte – email
Scott Juskiewicz / Montana Tech – email

File: MiningSharePoint@bp.com - email
BPSOU SharePoint – upload

Figures

Figure 1: Insufficiently Reclaimed Sites BRES No. 158 Waste Rock Dump Proposed Sample Stations



LEGEND

- SAMPLE UNDER IR QAPP
- SAMPLE UNDER UR QAPP
- HISTORIC SAMPLE STATIONS
- INSUFFICIENTLY RECLAIMED AREA
- PROPOSED IR BOUNDARY CHANGES
- PROPERTY OWNERSHIP
- BRES EVALUATION EXPOSED WASTE
- BRES EVALUATION BARREN AREA

THE PARCEL BOUNDARIES SHOWN ARE FOR REFERENCE USE ONLY AND DO NOT REPRESENT A LEGAL SURVEY

N

DISPLAYED AS:
PROJECTION/ZONE: MSP
DATUM: NAD 83
UNITS: INT'L FT
SOURCE: PIONEER/BSB/AR/QSI 2020

0 21 42 84
Feet

FIGURE 1

INSUFFICIENTLY RECLAIMED SITES
BRES No. 158 WASTE ROCK DUMP
PROPOSED SAMPLE STATIONS

PIONEER TECHNICAL SERVICES, INC.

DATE: 5/11/2022

Path: Z:\Shared\Active Projects\ARCO\BPSOU\LandSupport\SolidMedia\Insufficiently_Unreclaimed\IR_Sampling\IR158_Fig_001_22.mxd

Attachment 1
Document Links

Document Links

Insufficiently Reclaimed Sites QAPP:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Eid2SfSSinhOsfQXY5CXGEoBe5IIf5IQO01hBO43ZROgpg[4].

Unreclaimed Sites QAPP:

https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/Ev1dhUeMuUdLjU8tnuV5RioBvJZRYc2HpgEjM9KzT-PpjQ [5].

[4] Please note the link provided is valid for one year from the date of this submittal.
[5] Please note the link provided is valid for one year from the date of this submittal.