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Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed (IR) Sites Field Sampling Plan (FSP) BRES No. 48 – Old Glory West

Mike McAnulty

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Liability Manager

September 11, 2023

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RE: Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed (IR) Sites Field Sampling Plan (FSP) BRES No. 48 – Old Glory West

Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company to distribute the Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed (IR) Sites – Field Sampling and Investigation Plan (FSP) Butte Remediation Evaluation System (BRES) No. 48 – Old Glory West.

Agency comments received August 10, 2023, are addressed below and changes were made to the FSP to address these comments as appropriate. Note, accessible hyperlinks to the Agency-approved Final QAPPs are included within the text of the FSP.

Agency Comment:

1. *Figure 1. To date, EPA has not agreed that all previous reclamation on private property will automatically be transferred to the RMAP program. The BRES No. 48 - Old Glory West is an example and EPA believes that the original boundary is a fairly close representation of the original reclamation work performed at this site. Therefore, if the sampling results indicate that further remedial work is necessary at this site, the areas on private property to the west and northwest that are not actively maintained by the landowner (e.g., lawn areas) must also be considered and included in the RAWP for this site, if a RAWP is necessary.*

Atlantic Richfield Response: Comment Noted. If deemed appropriate based on results obtained during 2023 sampling a remedial action work plan, including additional appropriate details, will be developed and submitted for Agency review and approval. The adjacent private parcel, not actively

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maintained by the current landowner, may be incorporated into the remedial design to provide a suitable cohesive, protective remedial cap subject to cooperation from the property owner.

Agency Comment:

- 2. Sampling Procedure, Page 9: Samples being collected under the UR Site QAPP have a sample ID listed as "IR-17" indicating they are for BRES No.17. Please revise to indicate they are being collected for BRES No. 48.*

Atlantic Richfield Response: The referenced text has been revised, indicating that all samples will be collected for BRES No. 48.

Agency Comment:

- 3. Please confirm the naming convention for samples collected under the Unreclaimed Sites QAPP as all proposed samples begin with a prefix "IR" including the samples being collected under the UR Sites QAPP. Please revise as appropriate.*

Atlantic Richfield Response: The sample naming convention provided in the FSP follows Section 3.2.2 Sample Identification in the Agency-approved BPSOU 2023 Final Insufficiently Reclaimed Areas Quality Assurance Project Plan (QAPP). As described in the FSP, sample stations located within the original site boundary will follow the Final IR QAPP. These stations are listed in the FSP as IR-48-SS01 through SS05 and will include two depth intervals. The sample stations located outside the original site boundary are listed in the FSP as IR-48-SS06 and IR-48-SS07 and will include three depth intervals per the Final Unreclaimed (UR) Sites QAPP.

Figure 1 illustrates the site sampling boundary and sample stations. Sample stations are color coded and the appropriate QAPP referenced in the figure legend to provide field personnel with a discernable visual reference. After discussion with the Agencies, this comment has been clarified and resolved.

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

Sincerely,



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

Atlantic Richfield Company

Mike Mc Anulty

Liability Manager

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Amy Steinmetz / DEQ – email
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Carolina Balliew / DEQ – email
Katie Garcin-Forba / DEQ – email
Jim Ford / NRDP – email
Pat Cunneen / NRDP – email
Katherine Hausrath / NRDP – email
Ted Duaine / MBMG – email
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John DeJong / 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
Doug Brannan / 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
Brandon Warner / BSB – email
Abigail Peltomaa / BSB – email
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Sean Peterson/BSB – email
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Randa Colling / Pioneer – email

Ian Magruder/ CTEC – email

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BPSOU SharePoint – upload



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Ref: 8MO

August 10, 2023

Mr. Mike McAnulty
Liability Manager
Atlantic Richfield Company
317 Anaconda Road
Butte, Montana 59701

Re: Approval letter for the Butte Priority Soils Operable Unit (BPSOU) Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 48 – Old Glory West (dated July 25, 2023)

Dear Mike:

The U. S. Environmental Protection Agency (EPA), in consultation with the Montana Department of Environmental Quality (DEQ), is approving the *Draft Final Insufficiently Reclaimed Sites – Field Sampling Plan (FSP) BRES No. 48 – Old Glory West (dated July 25, 2023)* with the following comments. It is EPA's expectation that the following comments will be addressed prior to final distribution of this FSP. Please attach the Insufficiently Reclaimed Sites quality assurance project plan (QAPP) and the Unreclaimed Sites QAPP to this FSP and distribute once the comments have been addressed.

Comments

1. Figure 1. To date, EPA has not agreed that all previous reclamation on private property will automatically be transferred to the RMAP program. The BRES No. 48 - Old Glory West is an example and EPA believes that the original boundary is a fairly close representation of the original reclamation work performed at this site. Therefore, if the sampling results indicate that further remedial work is necessary at this site, the areas on private property to the west and northwest that are not actively maintained by the landowner (e.g., lawn areas) must also be considered and included in the RAWP for this site, if a RAWP is necessary.
2. Sampling Procedure, Page 9: Samples being collected under the UR Site QAPP have a sample ID listed as "IR-17" indicating they are for BRES No.17. Please revise to indicate they are being collected for BRES No. 48.
3. Please confirm the naming convention for samples collected under the Unreclaimed Sites QAPP as all proposed samples begin with a prefix "IR" including the samples being collected under the UR Sites QAPP. Please revise as appropriate.

If you have any questions or concerns, please call me at (406) 457-5019.

Sincerely,

**NIKIA
GREENE**

Digitally signed by
NIKIA GREENE

Date: 2023.08.10
11:47:53 -06'00'

Nikia Greene
Remedial Project Manager

Butte File
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Re: Butte Priority Soils Operable Unit (BPSOU) Final Insufficiently Reclaimed Sites Field Sampling Plan (FSP) BRES No. 48 – Old Glory West.

Dear Agency Representatives:

I am writing to you on behalf of Atlantic Richfield Company (Atlantic Richfield) 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. 48 – Old Glory West.

As described in Appendix D, Attachment C, Section 7.0 of 2020 BPSOU Consent Decree (CD) (available at <https://www.co.silverbow.mt.us/2161/ButtePriority-Soils-Operable-Unit-Consent-Decree>), sites listed as IR Solid Media Sites within the BPSOU were reclaimed prior to the establishment of the Butte Hill Revegetation Specifications (BHRS), Appendix A of 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.

The site evaluation will include a review of available 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 *2023 Final Insufficiently Reclaimed Sites Quality Assurance Project Plan (QAPP)* (referred to herein as IR Sites QAPP). A link to the IR Sites QAPP is provided in Attachment 1.

This FSP describes field evaluation of the IR Site BRES No. 48 – Old Glory West. The sampling boundary and proposed soil sampling stations and deficiencies identified during previous BRES evaluations are shown on Figure 1.

Field sampling within the existing boundary will be performed to determine whether contaminants are present, whether the existing cap and supported growth media are sufficiently protective of human health and the environment, how observed site conditions compare to the BHRS, and whether there are previously unidentified conditions contributing to site deficiencies.

The site evaluation is anticipated to be completed in 2023. 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 Residential Land Use Soil Action Levels for Human Health, Soil Screening Criteria, and cover soil Chemical Suitability Criteria provided in the IR Sites QAPP. Samples obtained outside of the existing reclaimed area will be evaluated following the Soil Action Levels for Human Health and Soil Screening Criteria for Waste Identification in the Atlantic Richfield 2023 *Unreclaimed (UR) Sites QAPP* (referred to herein as UR Sites QAPP). A link to the UR Sites QAPP is provided in Attachment 1.

If further remediation is recommended after the evaluation and sampling is complete, a remedial action work plan (RAWP) describing actions that will be implemented at the site will be provided for Agency review and approval.

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

Element	Reference Location		
	FSP	IR Sites QAPP	UR Sites QAPP
Title Page and Approval Authority	Approval Letter	Page i	Page i
Site Introduction and Appropriate Agency-Approved QAPP* Reference	Page 1, Page 2		
Data Quality Objectives		Section 2.5	Section 2.5
Site and Sampling Objectives	Figure 1	Section 3.0	Section 3.0
Proposed Schedule for Site Field Work	Page 2		
Site Figure	Figure 1		
Sampling Procedures and Standard Operating Procedures (SOPs)		Section 3.2 Appendix B	Section 3.2 Appendix B
Sample Analysis Methods		Section 3.3	Section 3.3

Background

The Old Glory West (BRES No. 48) site is approximately 0.51 acre located northwest of the intersection of West Pacific Street and Sutter Street in a residential neighborhood. As described in

the BPSOU *Source Areas and Reclaimed Boundary Adjustments*¹, ARCO performed reclamation in 1990 and 1991. Most of the mine waste was removed, and the area was sloped to match the surrounding topography. Lime rock from the Anaconda Quarry was applied at a rate of 350 tons per acre. Clean fill from the Minnie Irvine borrow area was applied at a depth of 18 inches. A granular 11-52-0 fertilizer mix was broadcast at a rate of 300 pounds per acre. Following the application of the fertilizer, the area was chisel plowed. A double disc drill seeder was used to plant the Walkerville EPA seed mixture described in the BPSOU *Solid Media Management Program Plan*² at a rate of 20 pounds per acre. Straw was spread at a rate of 2 tons per acre.

An adjusted boundary was proposed for BRES No. 48 – Old Glory West, to accurately represent the reclaimed area and align site boundaries with completed site remediation efforts. As described in the BPSOU *Source Areas and Reclaimed Boundary Adjustments*¹, this was completed by using a high resolution aerial image and visual comparisons to identify the areas of apparent remediation. Note that the Agencies have not approved the proposed adjusted boundary. To verify the proposed boundary adjustment, samples will be collected in areas that are included in the proposed boundary area, but just out of the original boundary area.

Previous Evaluation Findings

As specified in the CD, information collected during previous site investigations has been reviewed and incorporated into the proposed sampling design. Atlantic Richfield and Butte-Silver Bow performed field verification that confirmed the proposed boundary extended into residential areas. Given the date of remediation, the site should be investigated to ensure the cap is adequate for operation and maintenance.

The site was evaluated in 2017 and 2021 during the recurring 4-year cycle of field evaluations of previously reclaimed sites within the BPSOU. The results of both BRES Field Evaluation Summary and Technical Recommendation Reports indicate several of the same issues throughout the site. A variety of non-desirable vegetation, primarily including knapweed and cheat grass dominate areas of the site. Sparsely vegetated areas on the east side of the site have been observed. Site edges have been investigated to determine if engineered controls would aid in reducing further deposition and erosion from the site. Personal usage from private property owners near the site includes storing materials, dumping garbage, and driving vehicles through the site, which is contributing to an increase in depleted vegetation and erosion.

Subsidence issues on the site were documented in 2019, and shallow workings were observed in the northwest portion of the site. BSB and Montana Bureau of Mines and Geology (MBMG) have been working on these areas of concern, and it was determined sampling should occur.

The private property with the sodded yard was previously sampled and abated in 2001. The east yard of this property was abated again in 2018. The residential yard has been reclaimed under the

¹ Atlantic Richfield Company and Butte-Silver Bow, 2022. Draft Final Source Areas and Boundary Adjustments. Prepared by Pioneer Technical Services, Inc. April 4, 2022.

² Atlantic Richfield Company and Butte-Silver Bow, 2022. Revised Draft Final Solid Media Management Program Plan. Prepared by Pioneer Technical Services, Inc. August 1, 2022.

Residential Metals Abatement Program (RMAP) and controlled through county ordinances. The revised boundary uses property boundaries to the west of the area and Sutter Street to the east to exclude any private properties within the original boundary. Sample results will be included in the forthcoming evaluation summary report, if available.

Previous Sampling Efforts

The Geocortex web-based database at <https://eis2.woodardcurran.com/Html5Viewer/index.html?viewer=BPButte.BPSOU> contains the records for previous soil samples collected within the BPSOU. The approximate sample stations located on BRES No. 48 – Old Glory West are included on Figure 1 with results provided in Table 1 below. Sample results highlighted below exceed CD solid media soil screening criteria. The BPSOU soil action levels and screening criteria are listed in Table 1 and Table 2, respectively, in Section 2.5 of the IR Sites QAPP.

Table 1: Previous Sampling Results from BPSOU Soil Sampling

COCs	Sample ID: WD-062
Arsenic	89 mg/kg
Cadmium	29 mg/kg
Copper	417 mg/kg
Lead	7,800 mg/kg
Zinc	7,260 mg/kg
pH	4.27 S.U.

COC: Contaminant of concern. mg/kg: milligrams per kilogram. S.U.: standard unit.

Preliminary Site Evaluation

A preliminary site evaluation was conducted during the development of this sampling plan to inspect current site conditions and identify focus areas for further investigation. The investigation found well established vegetation, various weeds present throughout the site, two barren areas with major erosion and sediment migration, and trash and other materials being stored on the site. Photograph 1 through Photograph 7 show current site conditions.



Photograph 1: Site overview from intersection of Pacific Street and Sutter Street.

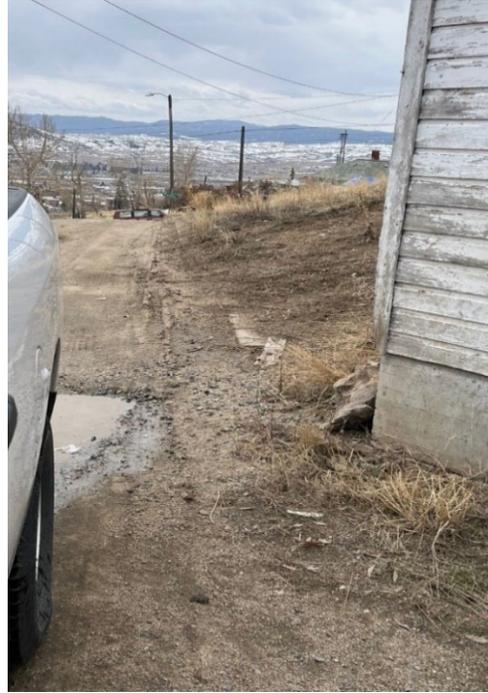


Photograph 2: Erosion spilling onto site.

Sediment from the private property owner to the west of the site on Pacific Street is migrating onto site. The material is rocky with wood debris and other garbage. It appears to be migrating with the natural flow of runoff from the site.



Photograph 3: Erosion and sediment on the east side of site facing north.



Photograph 4: Erosion on the east side of site facing south.

The east side of the site next to Sutter Street shows a significant amount of erosion, sediment migration, and low vegetation areas. The sediment appears to be spilling over the curb and running south down Sutter Street to Pacific Street. Rebar was found sticking out of the curbing along Sutter Street.



Photograph 5: Area on site used as a road.



Photograph 6: Barren area with migration over curbing.

An area on the site is used by private property owners via vehicles to access their property. This area is low in vegetation and is transporting sediment over the curb onto Sutter Street as seen on Photograph 5. A second barren area to the north of the road activity was also found during the evaluation. This appears to be another vehicle access area; however, it does not run through the site. A rill was observed in this area transporting runoff and sediment and is shown on Photograph 6.



Photograph 7: Debris and garbage dumped on site.

Debris and garbage piles were present during the evaluation of the site on the north portion of the site. This area is located next to a large pine tree and has low vegetation and various weeds. This area of the site appears to be accessed by private property owners frequently. A piece of rebar was discovered in the ground and was covered with a red rebar cap as shown on the right side of Photograph 7.

Figure 1 illustrates the proposed sample stations as sited during the preliminary site evaluation. Adjusted boundary lines, previous sample locations, and other previous findings are included on Figure 1.

Site Characterization Plan

Per the IR Sites QAPP, the site will be sampled at two depth intervals [(1) 0 to 6 inches and (2) 6 to 18 inches] to determine whether waste is present and/or confirm the depth of previous reclamation efforts. 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 number and depth of samples as dictated by field conditions.

Samples collected within the approved BRES boundary will be sampled following procedures in the IR Sites QAPP using a systematic procedure to determine the extent of waste present, previous reclamation, and transient material. Samples collected outside of the original BRES boundary will be collected following the protocol described in the 2023 UR Sites QAPP. Samples obtained outside of the original 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 UR Sites QAPP sampling protocol.

Field and laboratory analytical results will be used to prepare the site declaration and prescribe site remedial improvements.

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. Contributing sources of storm water upgradient and adjacent to the site will also be investigated.

At minimum, items identified below, but not specifically detailed in the QAPP, may be evaluated to determine adequacy and to identify if additional remedial measures are necessary. Additional items also may be identified during the remedial design process.

- Evaluate relative percent vegetative cover (as needed).
 - Coordinate and confirm plant species with biology/plant ecologist or related subject matter expert (as needed).
- Evaluate the performance of existing storm water controls to mitigate run-on/runoff.
- Evaluate location and condition of existing storm water controls.
- Identify potential remedial improvements to mitigate site erosion and vegetative areas to meet the BHRS.
- Identify necessary maintenance for successful long-term operation.
- Evaluate steep slopes for erosion of possible mining waste and potential for regrading.

The 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 prior to implementation.

Sampling Procedure

All soil sampling and characterization activities and procedures within the existing site boundary will follow the IR Sites QAPP. Samples will be obtained from the sample stations listed below. The IR Sites QAPP describes the quality assurance/quality control policies and procedures that will be used during sample collection and analyses.

Sample Station	Two Depth Intervals (inches)
IR-48-SS01	(1) 0-6, (2) 6-18
IR-48-SS02	(1) 0-6, (2) 6-18
IR-48-SS03	(1) 0-6, (2) 6-18
IR-48-SS04	(1) 0-6, (2) 6-18
IR-48-SS05	(1) 0-6, (2) 6-18

All soil sampling and characterization activities and procedures outside of the existing site boundary will follow the UR Sites QAPP. Samples will be obtained from the sample stations listed below.

Sample Station	Three Depth Intervals (inches)
IR-48-SS06	(3) 0-2, (4) 2-6, (5) 6-12
IR-48-SS07	(3) 0-2, (4) 2-6, (5) 6-12

This field work is anticipated to be completed in 2023, depending on site conditions.

Site Summary Report and Declaration

After the site evaluation and data collection activities are complete, a site evaluation 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 criteria as specified in the CD.

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

Sincerely,

Mike McNulty

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

Attachments:

- Figure 1 – Insufficiently Reclaimed Sites BRES No. 48 - Old Glory West Proposed Sample Stations
- Attachment 1 – Document Links
- Attachment 2 – FSP Submittal List

Cc: Chris Greco / Atlantic Richfield – email
Josh Bryson / Atlantic Richfield – email
Mike Mc Anulty / Atlantic Richfield – email
Loren Burmeister / Atlantic Richfield – email
Dave Griffis / Atlantic Richfield – email
Jean Martin / Atlantic Richfield – email
Irene Montero / Atlantic Richfield – email
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Brienne McClafferty / Holland & Hart – email
David Shanight / CDM - email
Curt Coover / CDM - email
James Freeman / DOJ - email
Amy Steinmetz / DEQ - email
Dave Bowers / DEQ – email
Katie Garcin-Forba / DEQ – email
Carolina Balliew / DEQ - email
Jim Ford / NRDP - email
Pat Cunneen / NRDP - email
Katherine Hausrath / NRDP - email
Ted Duaime / MBMG - email
Gary Icopini / MBMG - email
Becky Summerville / MR - email
John DeJong / 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
Doug Brannan / Kennedy Jenks - email
Matthew Mavrinac / RARUS - email
Harrison Roughton / RARUS - email
Brad Gordon / RARUS - email
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Ian Magruder/ CTEC – email
CTEC of Butte – email
Scott Juskiewicz / Montana Tech – email

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Figures

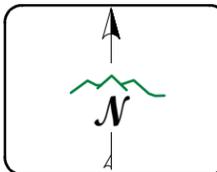
Figure 1 – Insufficiently Reclaimed Sites BRES No. 48 - Old Glory West Proposed Sample Stations



LEGEND

- SAMPLE UNDER IR QAPP
- SAMPLE UNDER UR QAPP
- HISTORIC SAMPLE STATIONS
- SANITARY SEWER
- PROPERTY OWNERSHIP
- ACCESS PROPERTY OWNERSHIP
- BRES BOUNDARY (ORIGINAL)
- BRES BOUNDARY (PROPOSED ADJUSTMENT)

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



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

FIGURE 1 INSUFFICIENTLY RECLAIMED SITE BRES No.48 OLD GLORY WEST

DATE: 4/28/2023

Attachment 1
Document Links

Document Links

Insufficiently Reclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EuRW3KcNuu9CqOHRiP3ENvsBOUc-dYqdITUbZZtCVROTAA>³

Unreclaimed Sites QAPP:

<https://pioneertechnicalservices.sharepoint.com/:f:/s/submitted/EtZbDgcepsdEie6VxUMdW88BbKopRVYj5ZsLN0sG3RkrhA>⁴

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

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

Attachment 2
FSPs Submittal List

Site	Submittal Date	Approval Date
BRES No. 104 – Colorado Dump Shaft	9/29/2021	11/5/2021
BRES No. 104 – Colorado Dump Shaft, Final Revised	12/2/2021	12/6/2021
BRES No. 154 – Clark Mill Tailings NE	12/1/2021	12/6/2021
BRES No. 30 – Atlantic-1	1/12/2022	2/22/2022
BRES No. 16 – Curry	1/12/2022	2/22/2022
BRES No. 8 – Belle of Butte	3/11/2022	9/26/2022
BRES No. 38 – Sister Dump	6/16/2022	9/26/2022
BRES No. 32 – Corra 2 Dump	6/20/2022	6/30/2022
BRES No. 158 – Waste Rock Dump	6/20/2022	7/11/2022
BRES No. 50 Zelia	6/22/2022	6/30/2022
BRES No. 93 – Soudan Dump	6/23/2022	6/30/2022
BRES No. 96 Washoe Dump	6/23/2022	7/11/2022
BRES No. 133 – Dexter Mill	7/14/2022	7/26/2022
BRES No. 37 – Josephine Shaft	7/20/2022	7/26/2022
BRES No. 34 – Eveline Dump	7/22/2022	8/2/2022
BRES No. 17 – Paymaster	7/25/2023	8/10/2023
BRES No. 31 – Waste Dump #5	7/25/2023	8/10/2023
BRES No. 48 – Old Glory West	7/25/2023	8/10/2023
BRES No. 66 – West Ruby Dump	7/25/2023	8/10/2023
BRES No. 68 – Little Mina-2	7/25/2023	8/10/2023
BRES No. 174 – Buffalo South and Buffalo Ditch	7/25/2023	8/10/2023
BRES No. 84 – Mandan Park	7/25/2023	8/2/2023