

**RECORD OF DECISION AMENDMENT**  
**for the**  
**BUTTE PRIORITY SOILS OPERABLE UNIT**  
**of the**  
**SILVER BOW CREEK/BUTTE AREA**  
**SITE**  
**Butte and Walkerville, Montana**



1954



Future

**U.S. Environmental Protection Agency**  
**Montana Department of Environmental Quality**



## **PART 1 – DECLARATION**

### **Site Name and Location**

Silver Bow Creek/Butte Area Site, Butte Priority Soils Operable Unit (BPSOU), OU #08, CERCLIS ID Number: MTD980502777; SSID: 0823. The BPSOU is located in portions of Butte and Walkerville, Montana.

### **Statement of Basis and Purpose of this Amendment**

This document amends the 2006 BPSOU Record of Decision (EPA 2006), as amended by the 2011 BPSOU Explanation of Significant Differences (ESD) (EPA 2011a) (hereinafter, the 2006/2011 BPSOU Record of Decision), for the remedial action to clean up mining-related contamination at the BPSOU. The amended remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act as amended (CERCLA), 42 U.S.C. §§ 9601 *et seq.* and, to the extent practicable, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 40 CFR Section 300.

This document is issued by United States Environmental Protection Agency (EPA), the lead agency, with the concurrence of Montana Department of Environmental Quality (DEQ), the supporting agency.

The selected remedy is based on the administrative record for the 2020 BPSOU Record of Decision Amendment and will become part of that administrative record per the NCP, Section 300.825(a)(2). The administrative record and copies of key documents are available for public review at Montana Tech Library at 1300 West Park Street, Butte, Montana 59701. The administrative record is also maintained at the EPA-Montana Office, 10 West 15th Street, Suite 3200, in Helena, Montana and can be viewed during normal business hours.

### **Assessment of the BPSOU**

The BPSOU is located in portions of Butte and Walkerville in southwestern Montana. Mining, milling and smelting activities conducted for nearly 100 years resulted in the contamination of soils, surface water, and groundwater, primarily through disposal practices from milling and smelting operations, as well as smelter emissions. The primary contaminants of concern are arsenic, cadmium, copper, lead, mercury and zinc. As stated in the 2006 BPSOU Record of Decision and documented in the administrative record, there are many pathways at the BPSOU site that create unacceptable risks to human health and the environment. The remedial action selected in the 2006 BPSOU Record of Decision as amended in the 2011 BPSOU ESD and the further amended response actions described in this 2020 Record of Decision Amendment are necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment at the BPSOU.

### **Description of the Record of Decision Amendment**

The 2020 BPSOU Record of Decision Amendment addresses a fundamental change to the original 2006 BPSOU Record of Decision and the 2011 BPSOU ESD. It waives certain State of Montana in-stream surface water quality standards to corresponding protective federal standards (Section

4). These waivers of in-stream surface water quality standards apply to the acute copper and zinc in-stream water quality standards upon the effective date of this record of decision amendment. Other waivers of in-stream standards, identified more specifically below, will become effective only after remedial action is implemented and extensive in-stream monitoring is conducted, and will be triggered only if necessary. These waivers are based on a finding that compliance with such requirements is technically impracticable from an engineering perspective, pursuant to section 121(d)(4)(C) of CERCLA, 42 U.S.C. Section 9622(d)(4)(C) and 40 CFR Section 300.430(f)(1)(ii)(C)(3). These standards are replaced by federal water quality criteria, which are protective of aquatic life when no contaminated sediments are present. The 2020 Record of Decision Amendment also includes six significant changes (Section 5) that expand upon components of the original remedy. Finally, it includes 13 minor modifications (Appendix A) for the purpose of documenting them in the administrative record. Taken together, the combined changes reflect a fundamental change to the previously selected remedy, and are documented in this record of decision amendment, in accordance with the NCP.

### **Statutory Determinations**

The selected remedy, as amended, meets the mandates of CERCLA § 121 and the NCP. It is protective of human health and the environment, complies with all federal and state requirements that are applicable or relevant and appropriate to the remedial action or appropriately waives these requirements, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

The remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. Active treatment of mining waste would be significantly more expensive due to the large quantities of materials impacted. Although they are present in large volumes, the solid materials within the BPSOU are generally low in toxicity and can be reliably removed or contained without treatment.

Because the selected remedy, as amended, will continue to result in mining waste contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, statutory 5-year reviews have been initiated at the BPSOU and will continue to ensure that remedies remain protective of human health and the environment. The 5-year reviews will continue to focus on areas where waste has been left in place or where remaining concentrations of site-related contamination do not allow for unlimited use of the property.

**Authorizing Signatures**

This 2020 BPSOU Record of Decision Amendment, along with unaltered portions of the 2006/2011 BPSOU Record of Decision, documents the selected remedy for OU #8, the Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area National Priorities List Site. This remedy was selected by EPA with the concurrence of the State of Montana, as authorized by the EPA signatory below and the DEQ letter of concurrence.



Andrew R. Wheeler  
Administrator  
United States Environmental Protection Agency

2-4-2020  
Date





February 4, 2020

Gregory Sopkin, Regional Administrator  
US Environmental Protection Agency  
Region 8  
1595 Wynkoop Street  
Denver, CO 80202-8917

**RE: State Concurrence February 2020 Amendment to the Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site.**

Dear Mr. Sopkin,

The Montana Department of Environmental Quality (DEQ) concurs with the 2020 Record of Decision Amendment for the Butte Priority Soils Operable Unit (BPSOU), Silver Bow Creek/Butte Area NPL Site in Montana, on the following conditions: (1) the proposed 2020 Consent Decree is entered for BPSOU; and (2) the expanded Residential Metals Abatement Program (RMAP) is implemented through a Unilateral Administrative Order. The expanded components of the original remedy—as originally outlined in the 2006 ROD and as amended in this 2020 ROD Amendment—will lead to improvements in the surface water quality within BPSOU, and provide greater protections to human health via the expanded RMAP. DEQ appreciates the Environmental Protection Agency's (EPA's) willingness to consider our input as to the protectiveness of the overall remedy, as well as our comments and suggestions as to the scope of the expansion of the original remedy. DEQ offers our continued support as we move to the remedial design and implementation of these remedial action elements, as well as the long-term operations and maintenance of this remedy to protect human health and the environment.

The State of Montana has spent significant resources investigating the sources of contamination in BPSOU. The State's implementation of the Parrot Tailings Waste Removal Project, using natural resource damage restoration authority, addresses the State's long-standing concerns with the primary source area of mine waste contamination to the alluvial groundwater system. This source removal effort, combined with remedy requirements to capture and treat contaminated groundwater that is discharging to and adversely impacting Blacktail Creek or Silver Bow Creek surface water at the compliance points or to instream sediments anywhere in BPSOU as outlined in the proposed 2020 Consent Decree for BPSOU and attachments, ensures that the creeks will be protected.

This ROD Amendment does allow for the waiver of existing surface water quality standards from the State standards in DEQ-7 to the federal water quality standards. Specifically, the ROD Amendment establishes an upfront waiver of DEQ-7 standards for copper and zinc during acute, wet-weather events. The ROD Amendment also provides for contingent waivers of aluminum, arsenic, cadmium, copper, lead, mercury, silver, and zinc during acute, wet-weather conditions and chronic, normal flow conditions only if non-compliance with the DEQ-7 standards is demonstrated after construction of the technically practicable remedial elements. DEQ concurs with such waivers based on the technical impracticability of meeting the State standards for all contaminants during all flow conditions, provided the proposed 2020 Consent Decree for BPSOU is entered.

DEQ's concurrence is predicated on the full implementation of the expanded components of the original remedy as outlined in this ROD Amendment, and the work commitments outlined in the proposed 2020 Consent Decree for BPSOU. These expanded components, include, but are not limited to:

- removal of additional wastes in the Diggings East Stormwater Basin Area and the Northside Tailings/East Buffalo Gulch Area, and the removal of contaminated sediments, streambanks and floodplains of Blacktail Creek and the Butte Reduction Works Smelter Area;
- construction of basins to treat, through passive settling of sediments, the stormwater at Diggings East, Buffalo Gulch, Grove Gulch, and Northside Tailings/East Buffalo Gulch; and
- capture of contaminated groundwater that discharges to Blacktail Creek or Silver Bow Creek that causes an exceedance of a surface water standard at a surface water compliance points or an instream sediment performance criterion anywhere within the BPSOU, as outlined in the Surface Water Management Plan attached to the Consent Decree.

This plan provides, in part, the methodology for evaluating the effectiveness of the additional contaminated groundwater capture agreed to and requires additional sediment removals if the contaminated groundwater is unacceptably impacting sediments. These actions will help ensure the continued protectiveness of Blacktail and Silver Bow Creeks. These actions represent the technically practicable elements that can be implemented within BPSOU to address contamination of historic mine wastes that impact surface water and sediment quality within the BPSOU.

In addition to the expanded components of the original surface water remedy, this ROD Amendment also provides an important expansion of the RMAP program. This program is essential to the protectiveness of the remedy, as it directly addresses where citizens live - their homes. Expanding the boundary of this program to address rural residential properties (outside of the BPSOU boundaries) is an important step in ensuring the long-term protectiveness of the remedy for those potentially impacted by contamination from historic mine waste. DEQ's support for the current soil cleanup levels is contingent upon continued implementation of the RMAP under a Unilateral Administrative Order or future consent decree.

Sincerely,



George Mathieus  
Deputy Director  
Montana Department of Environmental Quality



## Part 2 – Decision Summary

### TABLE OF CONTENTS

<b>LIST OF FIGURES .....</b>	<b>ii</b>
<b>LIST OF TABLES .....</b>	<b>iii</b>
<b>LIST OF APPENDICES .....</b>	<b>iii</b>
<b>LIST OF ACRONYMS .....</b>	<b>iv</b>
<b>1.0 INTRODUCTION AND STATEMENT OF PURPOSE .....</b>	<b>1</b>
1.1 Site Name and Location.....	1
1.2 Purpose for the Amendment .....	1
1.3 Administrative Record.....	2
1.4 Terms Important to Understanding the Record of Decision Amendment .....	4
<b>2.0 HISTORY, CONTAMINATION, AND THE 2006/2011 REMEDY .....</b>	<b>5</b>
2.1 Site Description.....	6
2.2 Nature and Extent of Contamination .....	6
2.3 Previous Cleanup Activities.....	9
2.4 Activities Conducted since the 2006 BPSOU Record of Decision.....	9
2.5 Surface Water Remedial Action Objectives and Overall Remedial Goals.....	11
2.6 Summary of the Original Remedy for Surface Water .....	11
<b>3.0 BASIS FOR REVISIONS TO THE 2006/2011 REMEDY .....</b>	<b>12</b>
3.1 Fundamental Change to the Original 2006/2011 Remedy.....	13
3.2 Significant Changes to the Original 2006/2011 Remedy .....	15
<b>4.0 DESCRIPTION OF THE FUNDAMENTAL CHANGE TO THE REMEDY ....</b>	<b>16</b>
4.1 The Remedy Established in the 2006/2011 Record of Decision Remedy .....	16
4.2 The 2020 Selected Remedy in the 2020 Record of Decision Amendment.....	17
4.2.1 Modification of Performance Standards.....	17
4.2.2 Modification of Surface Water RAOs.....	21
<b>5.0 DESCRIPTION OF SIGNIFICANT CHANGES .....</b>	<b>22</b>
5.1 Expand Mine Waste Removal in Silver Bow Creek and Blacktail Creek Areas.....	22
5.1.1 2006/2011 Remedy Component – Waste Removal from Blacktail and Silver Bow Creek Channels.....	22
5.1.2 2020 Selected Remedy .....	23
5.2 Expand Contaminated Groundwater Control and Capture System West and South of BPSOU Subdrain.....	27
5.2.1 2006/2011 Remedy Component – Surface Water Management for Base Flow Remediation.....	27
5.2.2 2020 Selected Remedy .....	27
5.3 Remove Mine Waste to Construct Storm Water Controls.....	28
5.3.1 2006/2011 Remedy Component – Iterative BMP Program for Storm Water Remediation .....	28
5.3.2 2020 Selected Remedy .....	28

5.4	Clarify Flow Augmentation Contingency.....	29
5.4.1	2006/2011 Remedy Component – In-Stream Flow Augmentation Contingency .....	29
5.4.2	2020 Selected Remedy .....	29
5.5	Clarify Storm Water Treatment Contingency.....	31
5.5.1	2006/2011 Remedy Component – Storm Water Treatment Contingency .....	31
5.5.2	2020 Selected Remedy .....	31
5.6	Remove Requirement for Infiltration Barriers on the Parrot Tailings, Diggings East and Northside Tailings Mine Waste Areas .....	31
5.6.1	2006/2011 Remedy Component – Evaluation and Implementation of Infiltration Barriers .....	31
5.6.2	2020 Selected Remedy .....	31
<b>6.0</b>	<b>EVALUATION OF MODIFICATION .....</b>	<b>32</b>
6.1	Threshold Criteria .....	32
6.1.1	Overall Protection of Human Health and the Environment .....	32
6.1.2	Compliance with ARARs.....	33
6.2	Primary Balancing Criteria .....	34
6.2.1	Long-term Effectiveness and Permanence .....	34
6.2.2	Reduction of Toxicity, Mobility, or Volume .....	35
6.2.3	Short-term Effectiveness .....	36
6.2.4	Implementability .....	36
6.2.5	Cost.....	37
6.3	Modifying Criteria .....	37
6.3.1	State Acceptance .....	37
6.3.2	Community Acceptance .....	38
<b>7.0</b>	<b>STATUTORY DETERMINATIONS.....</b>	<b>38</b>
<b>8.0</b>	<b>PUBLIC PARTICIPATION .....</b>	<b>39</b>
<b>9.0</b>	<b>REFERENCES .....</b>	<b>40</b>

## LIST OF FIGURES

Figure 1	Silver Bow Creek/Butte Area Site Operable Units
Figure 2	BPSOU Surface Boundary
Figure 3	Timeline of Response Actions and Remedial Activities Leading to the 2006 BPSOU Record of Decision
Figure 4	Locations of Surface Water Remedy Components
Figure 5	Mine Waste Repository Locations and Potential Haul Routes

## **LIST OF TABLES**

- |         |  |
|---------|--|
| Table 1 | In-Stream Chronic Surface Water Performance Standards and Proposed Waived-to Chronic Performance Standards (Base Flow and Normal High Flow Conditions) |
| Table 2 | In-Stream Acute Surface Water Performance Standards and Proposed Waived-to Acute Performance Standards (Wet Weather Conditions)                        |
| Table 3 | Significant Changes to the Original Remedy   |

## **LIST OF APPENDICES**

- Appendix A Minor Modifications to the Original Remedy
- Appendix B Responsiveness Summary

## LIST OF ACRONYMS

ug/l	micrograms per liter
agencies	EPA and DEQ
ARAR BLM	applicable or relevant and appropriate requirement
BMP	Biotic Ligand Model
BPSOU	best management practice
BPSOU ROD	Butte Priority Soils Operable Unit The 2006 BPSOU Record of Decision as amended by the 2011 Explanation of Significant Differences and the 2020 BPSOU Record of Decision Amendment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, as amended
CFR	Code of Federal Regulations
COC	contaminant of concern
DEQ	Montana Department of Environmental Quality
Circular DEQ-7	State of Montana's water quality standards
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant differences
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
RAO	remedial action objective
RMAP	Residential Metals Abatement Program
SWCDP	BPSOU Surface Water Compliance Determination Plan
SWMP	BPSOU Surface Water Management Plan
TCRAs	time-critical response actions
TI	technical impracticability
U.S.C.	United States Code

## 1.0 INTRODUCTION AND STATEMENT OF PURPOSE

### 1.1 Site Name and Location

Site Name: Silver Bow Creek/Butte Area Site  
CERCLIS ID Number: MTD980502777  
Operable Unit: Butte Priority Soils Operable Unit (BPSOU),  
08  
Original Record of Decision: September 21, 2006 (U.S. Environmental  
Protection Agency [EPA] 2006)  
Explanation of Significant Differences (ESD): July 18, 2011 (EPA 2011a)

### 1.2 Purpose for the Amendment

Since the 2006 BPSOU Record of Decision (EPA 2006) and 2011 BPSOU ESD (EPA 2011a), hereinafter referred to as the 2006/2011 BPSOU Record of Decision, were issued, the responsible parties have implemented significant portions of the BPSOU remedy, but more necessary work remains. The EPA, the Montana Department of Environmental Quality (DEQ) and the current responsible parties have been analyzing remaining technical issues and evaluations, primarily focused on the current remedy's surface water component, while other remedial work continues.

Additional detailed studies have been conducted to help finalize remaining components of the remedy. Most have centered around how to achieve in-stream water quality standards and best protect surface water quality in Blacktail Creek and Silver Bow Creek below the confluence with Blacktail Creek, given the physical constraints of the BPSOU. As a result, more extensive and more detailed remediation is required beyond what was originally specified in the 2006 BPSOU Record of Decision.

Even with this additional remediation, surface water data and modeling evaluations indicate there is uncertainty as to whether all of the 2006/2011 BPSOU Record of Decision remedial goals and the State of Montana's in-stream water quality standards, referred to as Circular DEQ-7 standards (DEQ 2017), for surface water could be met. This uncertainty resulted in EPA conducting a surface water technical impracticability (TI) evaluation, in consultation with DEQ, to determine the likelihood of meeting remedial goals and applicable or relevant and appropriate requirement (ARAR) standards for in-stream surface water. A variety of surface water and storm water remedial components were evaluated quantitatively in the TI evaluation.

Under CERCLA, ARAR standards that initially apply to cleanup can be waived and, if necessary, replaced by other protective standards, where appropriate, if it is technically impracticable from an engineering perspective to meet the initial

standards. *See*, section 121(e) of CERCLA, 42 U.S.C. Section 9621(e) and 40 C.F.R. Section 300.430(f)(ii)(C)(3). Based on the 2018 TI evaluation results, EPA, in consultation with DEQ, chose to modify the remedy established in the 2006/2011 BPSOU Record of Decision to waive certain Circular DEQ-7 standards for specific contaminants of concern (COCs) and under specific flow regimes, necessitating this record of decision amendment.

This record of decision amendment presents a brief overview of the BPSOU and prior enforcement activities for implementation of BPSOU response actions. It also includes the basis for the amendment and its specific components based on new information, evaluation of alternatives, description of the selected remedy, and statutory determinations. This amendment does not change components of the 2006/2011 BPSOU Record of Decision except as specifically described herein. The 2006/2011 BPSOU Record of Decision remedial components which are not removed or modified in this document remain in effect.

The EPA is the lead agency and DEQ is the support agency. The EPA is issuing this record of decision amendment as part of its responsibilities under of Section 117 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended, and the National Contingency Plan (NCP) at Section 300.435 (c)(2)(ii).

For consistency with the consent decree, use of the acronym BPSOU ROD will refer to the end product of the amendment process—the 2006 BPSOU Record of Decision as amended by the 2011 Explanation of Significant Differences and the 2020 BPSOU Record of Decision Amendment. In all other instances, EPA will refer to either the 2006/2011 BPSOU Record of Decision or the 2020 BPSOU Record of Decision Amendment.

### **1.3 Administrative Record**

This record of decision amendment is part of the administrative record for the BPSOU, along with significant documents prepared since the 2011 BPSOU ESD (EPA 2011a) that contributed to the modification of the original surface water remedy. The complete administrative record for the 2020 BPSOU Record of Decision Amendment is housed at Montana Tech Library, 1300 West Park Street, Butte, Montana 59701. The library is open to the public Monday through Friday from 8:30 a.m. to 4:30 p.m. The telephone number is (406) 496-4281. The administrative record is also maintained at the EPA-Montana Office, 10 West 15th Street, Suite 3200, in Helena, Montana and can be viewed during normal business hours.

The following key documents are among the documents available in the administrative record, and their contents support the need for this amendment and the conclusions presented herein:

- *Record of Decision. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site* (EPA 2006)
- *Explanation of Significant Differences to the 2006 Butte Priority Soils Operable Unit Record of Decision. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site* (EPA 2011a)
- *Unilateral Administrative Order for Partial Remedial Design, Remedial Action and Certain Operation and Maintenance Activities for the Butte Priority Soils Operable Unit. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site* (EPA 2011b)
- *2011-2013 Ground Water Data Analysis Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site* (EPA 2015)
- *2008 to 2013 Surface Water Characterization Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*, (EPA and DEQ2017)
- *Surface Water Technical Impracticability Evaluation Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site.* (EPA 2019a)
- *Groundwater and Surface Water Interaction Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*, (EPA 2018)
- *Proposed Plan to Amend the 2006/2011 Record of Decision, Butte Priority Soils Operable Unit*, (EPA 2019b)
- *Further Remedial Elements Scope of Work, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site*, (EPA 2019c)
- *BPSOU Surface Water Management Plan or SWMP, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site*, (EPA 2019d)
- *BPSOU Surface Water Compliance Determination Plan or SWCDP, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site*, (EPA 2019e)
- *2019 Status For the 2011 Unilateral Administrative Order Work Plan for BPSOU Partial Remedial Design/Remedial Action Implementation, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site*, (EPA 2019f)

- *Ongoing Remedial Elements Scope of Work, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site, (EPA 2019g)*
- *Description of the Wet Weather Remedial Element, Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site, (EPA 2019h)*

#### 14 **Terms Important to Understanding the Record of Decision Amendment**

Certain terms are useful for understanding the changes made to the 2006/2011 BPSOU Record of Decision in this record of decision amendment. Terms described below for exposure and metals analysis are used in a manner that is consistent with Superfund activities throughout the nation. Terms described below for flow regime are specific to the BPSOU. They are defined here to avoid confusion due to differences between usage within the BPSOU site record and the usage in EPA guidance.

##### **Exposure**

- **Acute exposure.** Instantaneous *or* short term. Applies to infrequent wet weather flows in the creek (1-hour average), usually an event like a summer thunderstorm.
- **Chronic exposure.** Long term. *Applies* to base flow or normal high flow in the creek (average conditions over 4 days).

##### **Analysis and Standards**

- **Dissolved metals analysis.** Analysis of water after it has been filtered (typically a 0.45-micron filter). The filtered (dissolved) concentration is always less than or equal to the unfiltered (total) concentration described below. Most federal water quality criteria are based on dissolved metals analysis because, in EPA's view, a dissolved metal is more bioavailable to aquatic life. Dissolved metals analysis-based standards are considered protective of surface water when there are no contaminated sediments present in a surface water body.
- **Total recoverable metals (or total metals).** Analysis of an unfiltered water sample, including any solid undissolved sediments, visible or microscopic. For metals that are the subject of this ARARs waiver, Montana bases its numeric standards on the federal water quality criteria but applies them to a total recoverable sample instead of a filtered sample, thus making the Montana standards slightly more conservative than the federal criteria. The State of Montana applies total recoverable metals analysis analytical results to surface water standards to incorporate the additional risk to aquatic environments in water bodies that also have contaminated sediments that currently do not have state or federal sediment protectiveness standards. There are also minor



correction factors and other nuanced differences between the state and federal standards.

### **Flow Regime**

- **Base flow.** Base flow is defined as times when groundwater inflow comprises the greatest percentage of flow within surface water. Both surface water flow and groundwater discharge to surface water vary seasonally, but base flow generally occurs in late summer and winter when surface water conditions are fairly stable (i.e., not rising or falling and stormwater or snowmelt runoff is not occurring). For compliance evaluations, chronic aquatic life and human health water quality standards apply to base flow conditions.
- **Normal high flow.** Normal high flow is defined as normal flow that increases above base flow when the regional winter mountain snowpack melts and there is no local wet weather event. In general, the highest concentrations of contaminants are associated with normal high flows and wet weather event flows. As with base flow conditions, for compliance evaluations, COC concentrations at normal high flow are compared to chronic aquatic life and human health performance standards.
- **Wet weather flow.** For the BPSOU, wet weather flow is defined as short duration periods when runoff is occurring from Butte Hill as measured at storm drain outfalls and/or when samples are collected at any of the wet weather discharge points. In general, wet weather flow conditions are highly variable and typically occur during rainfall and snowmelt events from spring through late summer and early fall. For compliance evaluations, COC concentrations in samples collected during wet weather flow conditions are compared to acute aquatic life performance standards. This definition is further clarified in remedial design documents such as the BPSOU Compliance Determination Plan, Section 2.1.1.

## **2.0 HISTORY, CONTAMINATION, AND THE 2006/2011 REMEDY**

Per EPA record of decision guidance (EPA 1999), the introductory sections of a typical record of decision are addressed only briefly in a record of decision amendment. A more detailed summary of previous BPSOU investigations and site conditions is presented in the 2006 BPSOU Record of Decision. Detailed descriptions of the unacceptable site risks found at BPSOU are contained in Section 7 of the 2006 BPSOU Record of Decision. The following focuses on site background relevant to the surface water remedy (including additional groundwater controls to support the surface water remedy) modified by this record of decision amendment.

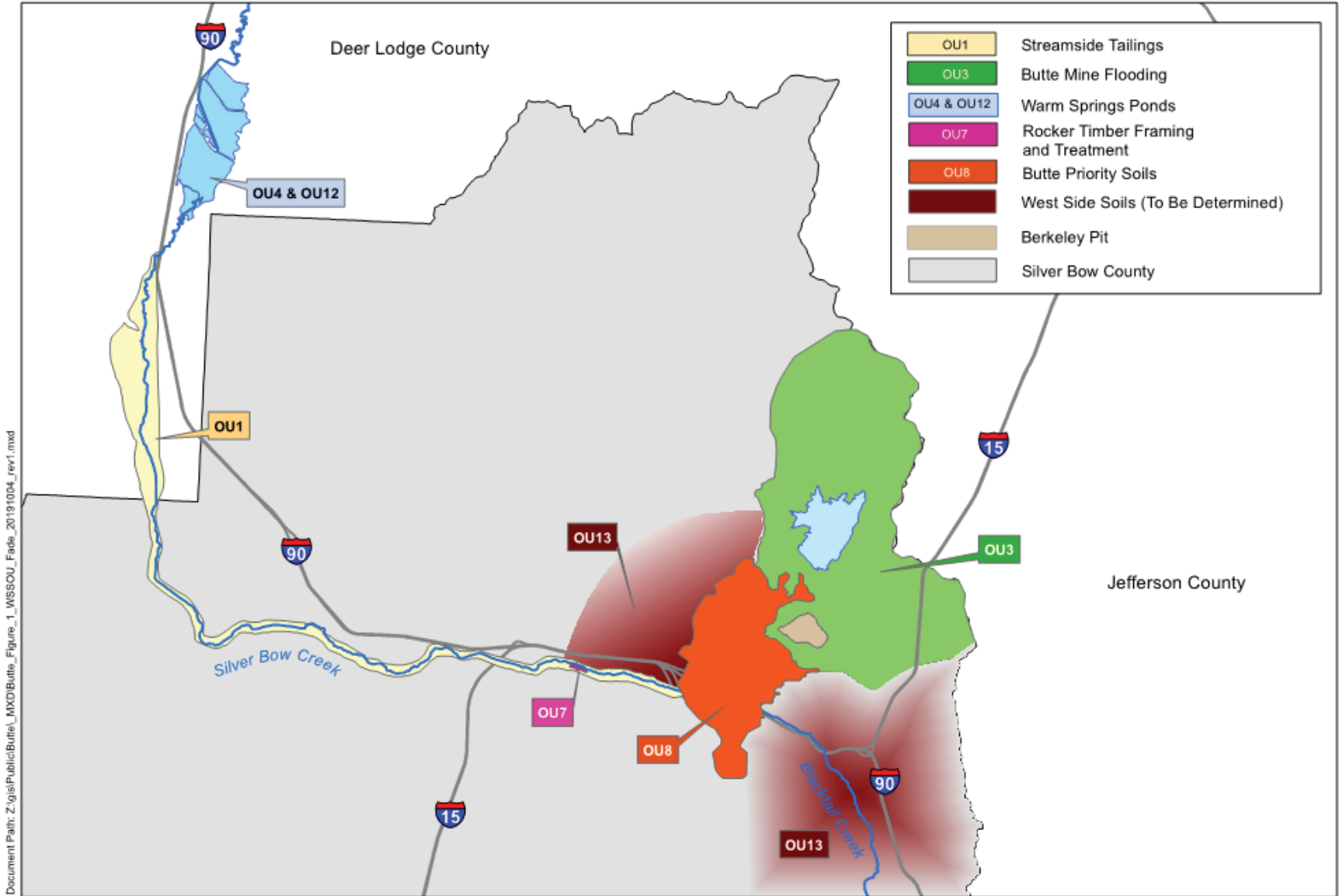
## **2.1 Site Description**

The Silver Bow Creek/Butte Area Site represents one of four contiguous Superfund sites on EPA's National Priorities List (NPL) in the upper Clark Fork River Basin (Figure 1). The other Clark Fork Basin Superfund Sites are the Anaconda Smelter Site, the Clark Fork River/Milltown Reservoir Site and the Montana Pole Site. The four sites extend 140 miles from the area north of Butte to the Milltown Reservoir near Missoula, Montana. The BPSOU lies within the Butte portion of the Silver Bow Creek/Butte Area site, encompassing the Town of Walkerville, the part of Butte north of Silver Bow Creek and west of the Berkeley Pit, and a section of land that extends south from Silver Bow Creek to Timber Butte (Figure 2). The surface boundary for BPSOU is modified by this record of decision amendment from the 2006 BPSOU Record of Decision boundary definition and is shown in Figure 2.

## **2.2 Nature and Extent of Contamination**

The BPSOU is centered on Butte Hill, which is the location of the historic Butte Mining District. Extensive underground mining, milling, smelting and mineral processing resulted in widespread distribution of mine waste such as waste rock, mill tailings, smelter emissions and slag. These wastes have interacted with water, resulting in impacted soil, groundwater, and surface water at a number of locations throughout BPSOU. Sources include mine waste piles, tailings deposits, smelter emissions, and contaminated railroad beds. Arsenic and metals contained in, or released from, these wastes to soil, surface water, and groundwater pose significant risks to human and ecological receptors if left uncontrolled. COCs for surface water are arsenic and metals (aluminum, cadmium, copper, iron, lead, mercury, silver, and zinc).

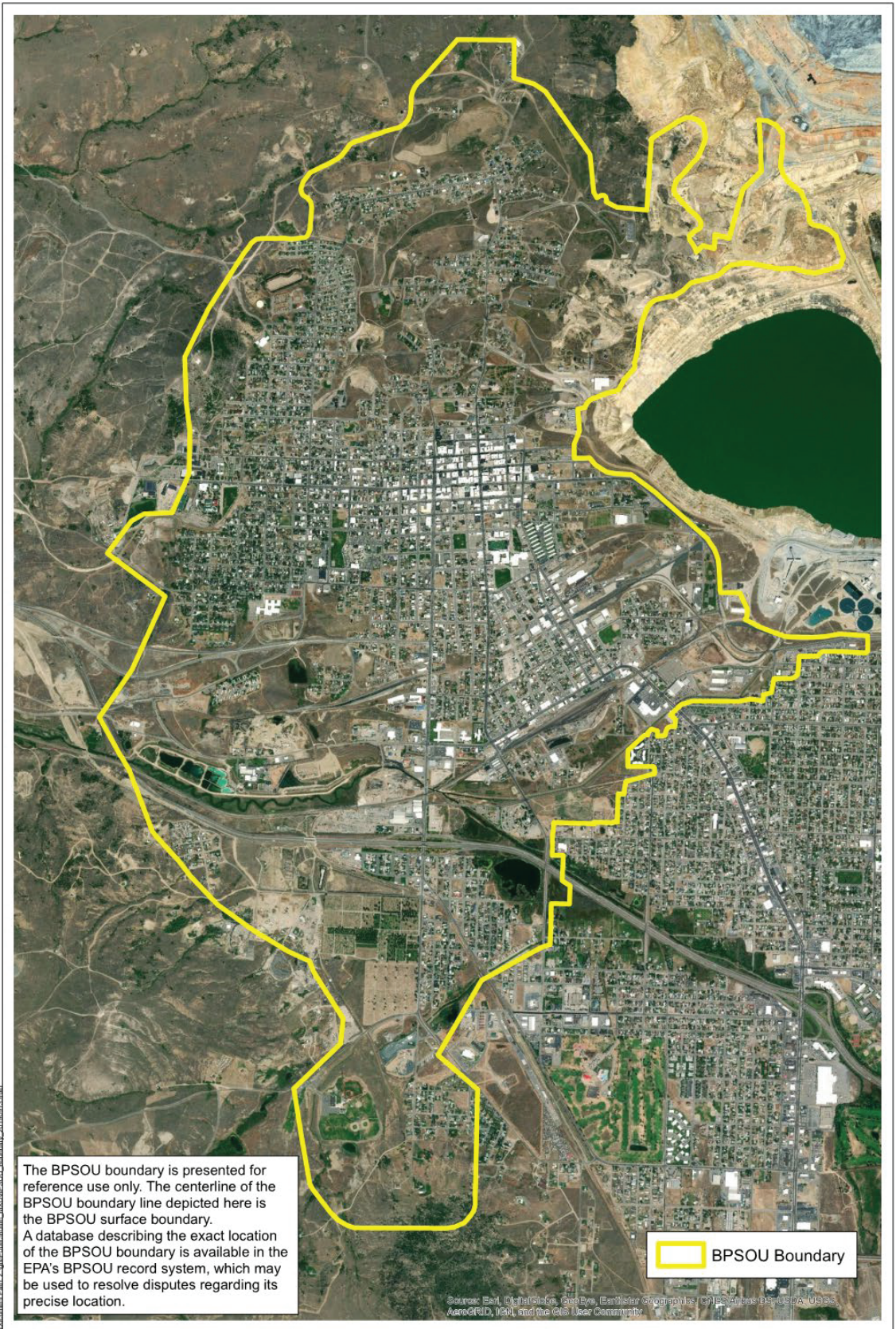
EPA began work at the BPSOU in 1987, starting with strategic removals—time critical response actions (TCRAs) and expedited response actions (ERAs)—to address areas of greatest risk first. Remedial investigation and feasibility study investigations began in the 1990s and were completed in 2005. A record of decision was issued in 2006 and an ESD was signed in 2011. Remedial design and construction began in 2006 and continue to the present, including collection and evaluation of significant amounts of data.



**Figure 1**  
**Silver Bow Creek/Butte Area Site Operable Units**  
Butte Priority Soils Operable Unit  
Silver Bow Creek/Butte Area Site

COORD SYS ZONE: MT SP  
DATUM: NAD83  
UNITS: FEET

0 2.25 4.5 Miles



**Figure 2**  
**BPSOU Surface Boundary**  
 Butte Priority Soils Operable Unit  
 Silver Bow Creek/Butte Area Site

0 0.25 0.5 1 Miles

**EPA**  
 Environmental Protection Agency

COORD SYS ZONE: MT SP  
 DATUM: NAD83  
 UNITS: FEET

Data collected since 2006 has demonstrated that there are remaining uncontrolled sources of contamination that have the potential to contribute to surface water contamination within the BPSOU (see Section 3.0). These known sources vary, depending on flow regime, and include two distinct conditions:

- **Base flow and normal high flow conditions:** Sources for these conditions include mine waste (waste rock and tailings) via contaminated groundwater discharge where it is not captured by the existing groundwater capture system; COC-laden sediment deposits along the bed, banks, and *adjacent* floodplain; and upstream sources outside of the BPSOU.
- **Wet weather flow conditions:** Sources for these conditions include mine waste via runoff and contaminated *groundwater* discharge and upstream sources outside of the BPSOU.

Based on the analysis of additional surface water, sediments, sediment pore water, groundwater and near-stream solid media, it was found that the 2006/2011 BPSOU Record of Decision remedy did not address certain source areas that are impacting surface water (EPA 2015; EPA and DEQ 2017; and EPA 2018a). These findings support the expanded waste removals, additional contaminated groundwater capture, additional stormwater controls and related remedial actions included in this amendment.

### 2.3 Previous Cleanup Activities

Butte was added to the original Silver Bow Creek site in 1987, and numerous removal and remedial actions have occurred to address site contamination. Many large mine waste removal actions and storm water control actions were undertaken prior to issuing the 2006 BPSOU Record of Decision and are listed and described in that document. A timeline of activities leading to the 2006 BPSOU Record of Decision is provided in Figure 3.

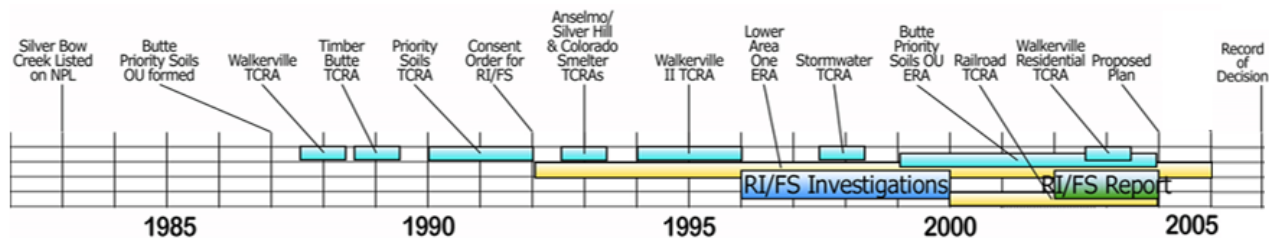


Figure 3. Timeline of Response Actions and Remedial Activities Leading to the 2006 BPSOU Record of Decision

### 2.4 Activities Conducted since the 2006 BPSOU Record of Decision

Since 2006, many remedial activities have been completed or are ongoing, including:

- Extensive residential metals abatement

- Installation of extensive storm water best management practices (BMPs) and other storm water source control measures
- Improvements to and ongoing operation of groundwater treatment at the Butte Treatment Lagoons
- Extension of the groundwater collection system
- Ongoing collection and treatment of groundwater
- Monitoring of surface water and groundwater
- Remediation of additional source areas
- Maintenance of reclaimed mine waste areas
- Operation of a mine waste repository
- Syndicate and Alice Open Mine Pit remediation
- Significant additional investigations
- A number of smaller remedial activities

This work was done under a CERCLA § 106 unilateral administrative order issued by EPA in 2011 (EPA 2011b) and predecessor orders. That order left the full implementation of the surface water component of the remedy open, pending further evaluation of site conditions and additional analysis.

Long-term surface water monitoring conducted at the downstream end of the site by USGS (Station 12323250) has shown that the total recoverable copper concentrations decreased from approximately 200 µg/L in 1993 to approximately 11 µg/L in 2013 during normal flow conditions and remains at that level today. The chronic performance standard for copper in surface water was exceeded 100% of the time until 2005 when contaminated groundwater collections systems were implemented. Currently, State of Montana surface water quality criteria are met for all COCs during normal flow conditions, with the exception of copper and zinc (which, as noted above, are now met most of the time). Storm water monitoring at the site shows that the magnitude of exceedance of acute performance standards has decreased significantly, but work remains to achieve acute performance standard compliance.

Fish were once considered to be extirpated from Silver Bow Creek. Fish populations were suppressed by COCs in surface water and excessive nutrients from the Metro wastewater treatment plant discharge. As remedial work progressed, fish surveys were conducted, but the population was too low prior to

2015 to obtain reliable population estimates. Monitoring since 2015 has identified populations of sculpin, suckers, brook trout, westslope cutthroat trout, and dace in Silver Bow Creek within Lower Area One, the only station within BPSOU with data. Key to the population improvements have been upgrades to the wastewater treatment plant which became fully operational in 2016, ongoing remedial actions within BPSOU, and the remedial actions within the downstream Streamside Tailings Operable Unit.

## **25 Surface Water Remedial Action Objectives and Overall Remedial Goals**

Remedial action objectives (RAOs) presented in the 2006 BPSOU Record of Decision for contaminated surface water remain unchanged for the record of decision amendment, except for the need to waive certain Circular DEQ-7 standards (DEQ 2017), which will be replaced by federal water quality criteria.

The RAOs are:

- Prevent ingestion or direct contact with contaminated surface water that would result in an unacceptable risk to human health.
- Return surface water to a quality that supports its beneficial uses.
- Prevent source areas from releasing contaminants to surface water that would cause the receiving water to violate surface water ARARs and remedial goals for the BPSOU and prevent degradation of downstream surface water sources, including during storm events. This RAO is modified to recognize the ARAR waivers and replacement standards described in Section 4.
- Ensure that point source discharges from any water treatment facility (e.g., water treatment plant, wetland) meet ARARs.
- Prevent further degradation of surface water.
- Meet the more restrictive of chronic aquatic life or human health standards for surface water identified in Circular DEQ-7 through the application of B-1 class standards. This RAO is modified to recognize the ARAR waivers and replacement standards in Section 4.

## **26 Summary of the Original Remedy for Surface Water**

There are a number of in-stream ARARs related to surface water and storm water control for the BPSOU. A main remedial goal in the 2006/2011 BPSOU Record of Decision is that water quality in surface water complies with Circular DEQ-7, and a main remedial action objective is for sources of contaminants to surface water (via solid media, contaminated groundwater discharge, or wet weather runoff) to be controlled. The overall remedial goal for Blacktail Creek and Silver Bow Creek downstream of its confluence with Blacktail Creek in the 2006/2011 BPSOU

Record of Decision is to maintain the in-stream concentration of site-specific COCs (aluminum, arsenic, cadmium, copper, iron, lead, mercury, silver, and zinc) below the numeric surface water quality standards identified in Circular DEQ-7 for all flow conditions throughout the length of Blacktail Creek, Grove Gulch Creek, and Silver Bow Creek within and directly downstream of the BPSOU. The Circular DEQ-7 standards, with the exception of aluminum, are all based on the comparison to total recoverable sample analytical results.

Circular DEQ-7 standards are as stringent as, or more stringent than, the corresponding federal water quality criteria enacted by EPA. When determining compliance with the performance standards, the most stringent of the human health or aquatic water quality criterion is applied. The 2006/2011 BPSOU Record of Decision stated that COC concentrations must meet human health standards and not allow zones of acute aquatic life toxicity (i.e., mixing zones) or allow the aquatic life chronic 4-day average and the acute 1-hour (instantaneous) concentrations to exceed the Circular DEQ-7 aquatic life criteria.

### **3.0 BASIS FOR REVISIONS TO THE 2006/2011 REMEDY**

Since the 2006 BPSOU Record of Decision was issued, the responsible parties have implemented significant portions of the remedy, but more work remains. The responsible parties, EPA, and DEQ have analyzed remaining technical issues and evaluations pertaining to components of the surface water remedy and their implementation.

As listed in Section 2.4, additional detailed studies were conducted between 2011 and 2018 to help finalize conceptual aspects for the remedy. The documents resulting from these studies are part of the Administrative Record (Section 1.3) and include:

- *2011-2013 Ground Water Data Analysis Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*
- *2008 to 2013 Surface Water Characterization Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*
- *2019 Surface Water Technical Impracticability Evaluation Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*
- *2018 Groundwater and Surface Water Interaction Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*
- *2018 and 2019 Remedial Elements Scope of Work. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*

These studies have centered around how to best protect surface water quality in Blacktail Creek and Silver Bow Creek downstream of its confluence with Blacktail Creek, given the



physical limitations of the BPSOU. As a result, EPA and DEQ have modified and expanded the surface water remedy (including additional groundwater capture) to provide for more extensive and more detailed remediation than what was originally specified. However, even with the additional planned remediation, in-stream surface water modeling evaluations indicated there is uncertainty whether Circular DEQ-7 surface water quality standards could be met even after all technically practicable additional remedy components were implemented as explained more fully below. This uncertainty resulted in a detailed TI evaluation that determined the likelihood of meeting remedial goals and ARAR standards for surface water established in the 2006 BPSOU Record of Decision (i.e., Circular DEQ-7 standards) through implementation of a variety of surface water, groundwater, and storm water remedial components. The TI report evaluation analyzed the effectiveness of base flow, normal high flow, and wet weather remedial technologies. The evaluation included planned remedial actions (e.g., sediment removal, stream bank removal, storm water basins) and maximum cleanup scenarios (e.g., diversion of stormwater from the drainage above the Silver Bow Creek confluence with Blacktail Creek to the Berkeley Pit for treatment).

The TI evaluation (EPA 2018a) determined that the TI waivers of acute standards for copper and zinc are justified for surface water under wet weather flow regimes only for these specific COCs because, in large part, surface water coming into the BPSOU during wet weather events was already above the water quality criteria. There was a high level of certainty associated with this finding. The report's findings are detailed in the next section.

These additional studies, evaluations and remedial design activities have resulted in the need for one fundamental change and six significant changes to the original remedy as described below. This record of decision amendment also includes 13 minor modifications for the purpose of documenting them in the administrative record (Appendix A).

### **3.1 Fundamental Change to the Original 2006/2011 Remedy**

Under CERCLA, ARAR standards that initially apply to a site cleanup can be waived and replaced by other protective standards, where appropriate, if it is technically impracticable from an engineering perspective to meet those initial standards. This is known as a TI waiver.

The TI evaluation made the following conclusions for the different surface water flow regimes:

- **TI waiver for total recoverable copper and zinc for wet weather flow conditions.** Total recoverable copper and zinc are highly unlikely to meet Circular DEQ-7 acute water quality standards during most wet weather flow conditions, regardless of measures used to control COCs within BPSOU. Thus, these standards are waived as technically impracticable and replaced with the federal recommended aquatic life criteria. The replacement water quality

standards are called “waived-to performance standards.” In general, the same hardness-based numerical formulae apply, but the analysis done on in-stream surface water samples is for dissolved metals as opposed to the State’s DEQ-7 total metals-based standards. A dissolved conversion factor is applied, and there is no minimum or maximum value for hardness.

- **Potential post-construction waivers for base and normal high flow conditions.** Under base flow and normal high flow conditions, chronic total recoverable copper and lead Circular DEQ-7 standards may be met after additional stormwater controls are constructed and near and in-stream mine waste removals and contaminated groundwater capture are completed. However, because the TI evaluation demonstrated there is uncertainty associated with meeting these contaminant standards, these performance standards could be waived and replaced but only if necessary. Post-remediation monitoring will have to show exceedances occurred more than once in 3 years and were not due to a malfunction of the remedy or could not be corrected by additional remedial actions before these standards are waived and replaced by federal water quality criteria.
- **Potential post-construction waivers for wet weather conditions.** Under wet weather conditions, acute total recoverable cadmium, lead, and silver Circular DEQ-7 standards may be met after the storm water control systems are expanded, contaminated groundwater discharge to the creeks is controlled in accordance with the SWMP, and other remediation actions are taken. However, because the TI evaluation demonstrated there is uncertainty associated with meeting these contaminant standards, these performance standards could also be waived and *replaced* but only if necessary. Post-remediation monitoring will have to show exceedances occurred more than once in 3 years and were not due to a malfunction of the remedy or could not be corrected by additional remedial actions before these standards are waived and replaced by federal water quality criteria.

Reasons why the Circular DEQ-7 in-stream water quality performance standards cannot be met for all COCs under all flow conditions include:

- **Size.** Silver Bow Creek is a small stream<sup>1</sup> with limited ability to assimilate contaminated storm water. During runoff events, flow from uncontrolled storm water drainages can easily exceed base flow in the stream channel. Sometimes most of the water in Silver Bow Creek is storm water runoff.

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<sup>1</sup> The harmonic mean flow for Silver Bow Creek within the BPSOU is 10 cubic feet per second.

- **Upstream contamination.** During storm events, Blacktail Creek, upstream of BPSOU, often exceeds State of Montana DEQ-7 standards, preventing water quality standards from being met downstream within BPSOU.
- **Lack of space.** Few locations are available to contain and manage the contaminated storm water from Butte Hill.
- **Widespread sources of copper and zinc.** Mine waste was used throughout Butte as fill for road beds and municipal infrastructure. There is no one place or group of places that can be remediated that will fix all the storm water issues.
- **Other Sources.** An active mine in Butte, other typical urban sources of arsenic and metals and some areas of naturally occurring arsenic and metals contamination within the BPSOU contribute somewhat to in-stream water COC concentrations.

EPA does not waive ARARs without considerable site understanding and analysis and an alternative remedial strategy that is protective of human health and the environment. In this case, the waived-to standards are the water quality criteria set by EPA under its Clean Water Act authority. The federal standards, combined with the extensive additional cleanup work described in this record of decision amendment, including additional contaminated groundwater control from discharge to surface water, and contaminated sediment removal, monitoring and management, are protective of aquatic receptors and suitable to use as waived-to performance standards. Because in-stream human health standards must also be met and the replacement standards are more stringent than the human health standards, human health is protected. Furthermore, the remedy is being expanded to include additional cleanup actions associated with the surface water component of the remedy. The surface water TI evaluation report, the proposed plan describing the additional remedial actions (EPA 2018), and the other documents addressing these issues (see Section 1.3) are available in the EPA administrative record for the BPSOU.

### **3.2 Significant Changes to the Original 2006/2011 Remedy**

Even though many confounding factors at the BPSOU make it impracticable to meet all of the Circular DEQ-7 water quality performance standards during storm events, the magnitude and frequency of those exceedances will be significantly reduced through implementation of the rest of the surface water remedy. EPA and DEQ, jointly referred to as the agencies, incorporated new data and analysis along with the community's desire to increase the amount of mine waste removals in the Silver Bow Creek and Blacktail Creek floodplain areas, while also allowing future land uses identified by the community wherever it was practicable, into this record of decision amendment.

The TI evaluation not only provided justification for a waiver of specific ARARs, but it also helped show which remedial elements would be the most effective. The work elements for surface water developed by the agencies during the TI evaluation include greater specificity in the BMPs for storm water (locations and sizes of detention basins), significant expansion of the mine waste removal in Silver Bow Creek floodplain areas associated with BMP implementation, expansion of waste removal in the Blacktail Creek floodplain area, and rerouting of a portion of Silver Bow Creek around and away from the contaminant source at the Butte Reduction Works and slag canyon area accompanied with significant removal of mine wastes in this area to create a clean floodplain. Additional contaminated groundwater capture will be required in all areas where contaminated groundwater is adversely impacting sediments or surface water quality of Blacktail and Silver Bow Creeks within the BPSOU in accordance with the SWMP. Other changes to the surface water remedy include clarification of the option for augmentation of flow to attain remedial goals and removal of the contingency to install a conventional treatment plant for chemical treatment of storm water and removal of the need to evaluate and implement infiltration barriers in the Diggings East and Northside Tailings areas (because mine waste not saturated by groundwater in these areas will be removed instead). The rationale behind these changes and maps depicting their extent are provided in Section 5.

#### **4.0 DESCRIPTION OF THE FUNDAMENTAL CHANGE TO THE REMEDY**

Waiver of existing State of Montana water quality standards for specific COCs under specific circumstances is the sole fundamental change for this record of decision amendment. The change has two components: initial waivers and contingent post-construction waivers. This section presents the storm water component as presented in the 2006/2011 BPSOU Record of Decision and the changes to that component made by the amended remedy. Details of the amended remedy are based on evaluation of extensive additional data obtained since the 2006/2011 BPSOU Record of Decision (including the TI evaluation), State of Montana input, and the community's desire to increase the amount of mine waste removals in the Blacktail Creek and Silver Bow Creek areas, while also allowing potential future end land uses identified by the community.

##### **4.1 The Remedy Established in the 2006/2011 Record of Decision Remedy**

As described in the 2006/2011 BPSOU Record of Decision, an overall remedial goal for Silver Bow Creek is to maintain the in-stream concentration of site-specific COCs (aluminum, arsenic, cadmium, copper, iron, lead, mercury, silver, and zinc) below the numeric surface water quality standards identified in Circular DEQ-7 for all flow conditions throughout the length of Blacktail Creek, Grove Gulch Creek, and Silver Bow Creek below its confluence with Blacktail Creek within and directly downstream of the BPSOU. These standards, with the exception of aluminum, are all based on the total recoverable sample fraction comparison to DEQ-7 standards.

The BPSOU ROD requires an EPA-approved comprehensive, long-term surface water monitoring program that will include collection of compliance and diagnostic flow and chemistry data for normal flow and wet weather conditions in receiving surface waters and within intermittent storm water conveyances at the BPSOU.

## **4.2 The 2020 Selected Remedy in the 2020 Record of Decision Amendment**

### **4.2.1 Modification of Performance Standards**

EPA's modification to the 2006/2011 BPSOU Record of Decision includes waivers of the existing surface water standards both up-front and in the event of contingencies as described below. Tables 1 and 2 provide details of the initial and contingent post-construction waivers and lists COCs for which no waivers are anticipated. Table 1 shows the performance standards for each COC under base flow and normal high flow conditions (chronic conditions), and Table 2 shows the performance standards for each COC under wet weather flow (acute standards).

**Table 1.** In-Stream Chronic Surface Water Performance Standards and Proposed Waived-to Chronic Performance Standards (Base Flow and Normal High Flow Conditions)

COC	2006 Record of Decision Standard <sup>a</sup>	Update for 2020 Amendment		Contingent Post-Construction Waiver <sup>b</sup>	
	Basis: DEQ-7, February 2006	New Standard	Basis and year published	Waived-to Standard if needed	Basis and year published
Aluminum <sup>c</sup>	87 µg/L, dissolved	No change			
Arsenic	10 µg/L, total	No change			
Cadmium <sup>d,e</sup>	0.097 µg/L, total	0.26 µg/L, total	DEQ-7, 2017 updated <sup>2</sup>	None – currently in compliance.	
Copper <sup>d</sup>	2.85 µg/L, total	No change <sup>3</sup>		<b>Contingent waiver to BLM<sub>f</sub></b>	Federal CCC, 2007
Iron	1,000 µg/L, total	No change			
Lead <sup>d</sup>	0.545 µg/L, total	No change		<b>Contingent waiver to 0.54 µg/L, dissolved</b>	Federal CCC, 1980, with diss.CF (1998)
Mercury	0.05 µg/L, total	No change			
Silver	No chronic standard for silver				
Zinc <sup>d</sup>	37 µg/L, total	No change			

**Notes:**

Abbreviations: µg/L = micrograms per liter; mg/L = milligrams per liter; BLM = Biotic Ligand Model; diss. CF = dissolved conversion factor; total = total recoverable or unfiltered sample; CCC = criterion continuous concentration (i.e., chronic)

**Bold italic** font indicates a waiver.

- 2006 BPSOU Record of Decision standards based on February 2006 version of DEQ-7 and represent the more stringent of the Chronic Aquatic or Human Health Standard.
- Numeric replacement performance standards in this table are based on published federal water quality criteria, issued pursuant to section 403(a) of the federal Clean Water Act, 33. U.S.C. § 1314(a). See <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>. All contaminants will be eligible for replacement to other federally accepted performance standards for determining compliance if necessary
- DEQ-7 standards for aluminum refer to the dissolved fraction and do not represent a waiver of a performance standard.
- Standards for cadmium, copper, lead, and zinc are hardness-dependent. Values shown are calculated at a hardness of 25 mg/L unless otherwise shown. Formulas to obtain **chronic** standards in µg/L are shown as follows (exp=exponent and ln=log natural):

COC	Montana DEQ-7 formula (total)	Federal CCC (dissolved)	Dissolved CF
Cadmium	$\exp\{0.7977*\ln(\text{hardness})\}-3.909\}$	$\exp\{0.7977*\ln(\text{hardness})\}-3.909\}*\text{CF}$	$1.101672-\ln(\text{hardness})*(0.041838)$
Copper	$\exp\{0.8545*\ln(\text{hardness})\}-1.702\}$	$\exp\{0.8545*\ln(\text{hardness})\}-1.702\}*\text{CF}$	0.96
Lead	$\exp\{1.273*\ln(\text{hardness})\}-4.705\}$	$\exp\{1.273*\ln(\text{hardness})\}-4.705\}*\text{CF}$	$1.46203-[\ln(\text{hardness})*(0.145712)]$
Zinc	$\exp\{0.8473*\ln(\text{hardness})\}+0.884\}$	$\exp\{0.8473*\ln(\text{hardness})\}+0.884\}*\text{CF}$	0.986

- Montana DEQ-7 hardness-based standards for the total recoverable fraction have a minimum and maximum hardness range of 25 to 400 mg/L
  - The Federal CCC or CMC hardness-based standards do not have a minimum or maximum hardness, and the contaminant specific dissolved correction factor should be applied.
  - Conversion Factor introduced in 1998 publication of recommended water quality criteria (Federal Register v.63, No. 237, pp. 68354-68364).
- The cadmium standards are updated according to the May 2017 version of DEQ-7.
  - The BLM criterion in place at the time of compliance standard determination shall be the Replacement Standard for copper for both chronic and acute conditions.

<sup>2</sup> The cadmium standard adopted here varies slightly from the DEQ-7 promulgated standard, which is 0.25 µg/L, based on EPA’s calculation for the cadmium standard at a hardness of 25 mg/L using the formula in footnote d which is identical to the formula in footnote 12 of DEQ-7 resulting in a standard of 0.26 µg/L.

<sup>3</sup> As used in Tables 1 and 2, “No change” indicated no initial waiver of these standards. Contingent waiver values are expressed in the “Waived to Standard” column of Tables 1 and 2.

**Table 2.** In-Stream Acute Surface Water Performance Standards and Proposed Waived-to Acute Performance Standards (Wet Weather Conditions)

COC	2006 Record of Decision Standard <sup>a</sup>	Waiver <sup>b,c</sup> or Update for 2020 Amendment		Contingent Post-Construction Waiver <sup>c</sup>	
	Basis: DEQ-7, February 2006	New Standard	Basis and Year Published	Waived-to Standard if needed	Basis and Year Published
Aluminum <sup>d</sup>	750 µg/L, dissolved	No change			
Arsenic	340 µg/L, total	No change			
Cadmium <sup>e,f</sup>	0.52 µg/L, total	0.49 µg/L, total	DEQ-7, 2017 updated	<b><i>Contingent waiver to 0.49 µg/L, dissolved</i></b>	Federal CMC, 2016, with diss. CF
Copper <sup>e</sup>	3.79 µg/L, total	<b><i>3.6 µg/L, dissolved</i></b>	Federal CMC, 1995, with diss. CF (1998)	<b><i>Contingent waiver to BLM<sup>g</sup></i></b>	Federal CMC, 2007
Iron	No acute standard for iron				
Lead	13.98 µg/L, total	No change		<b><i>Contingent waiver to 14 µg/L, dissolved</i></b>	Federal CMC, 1980, with diss. CF (1998)
Mercury	1.7 µg/L, total	No change			
Silver <sup>e</sup>	0.374 µg/L, total	No change		<b><i>Contingent waiver to 0.30 µg/L, dissolved</i></b>	Federal CMC, 1980, with diss. CF (1998)
Zinc <sup>e</sup>	37 µg/L, total	<b><i>36 µg/L, dissolved</i></b>	Federal CMC, 1995, with diss. CF (1998)	<b><i>Contingent waiver to the applicable Federal standard at time of Compliance Standard Determination</i></b>	

**Notes:**

Abbreviations: µg/L = micrograms per liter; mg/L = milligrams per liter; BLM = Biotic Ligand Model; diss. CF = dissolved conversion factor; total = total recoverable or unfiltered sample; CMC = criterion maximum concentration (i.e., acute); ***Bold italic*** font indicates a waiver

- 2006 BPSOU Record of Decision standards based on February 2006 version of DEQ-7 and represent the Acute Aquatic Standard.
- DEQ-7 standards for acute copper and zinc are waived and replaced with federal water quality criteria based on section 121(d)(4)(C) of CERCLA, 42 U.S.C. § 9621(d)(4)(C), referred to as the technical impracticability waiver.
- Numeric replacement performance standards in this table are based on published federal water quality criteria, issued pursuant to section 403(a) of the federal Clean Water Act, 33 U.S.C. § 1314(a). See <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>. All contaminants will be eligible for replacement to other federally accepted performance standards for determining compliance if necessary
- DEQ-7 standards for aluminum refer to the dissolved fraction and do not represent a waiver of a performance standard.
- Standards for cadmium, copper, lead, silver, and zinc are hardness-dependent. Values shown are calculated at a hardness of 25 mg/L unless otherwise shown. Formulas to obtain **acute** standards in µg/L are shown as follows (exp=exponent and ln=log natural):

COC	Montana DEQ-7 formula (total)	Federal CMC (dissolved)	Dissolved CF
Cadmium	$\exp\{0.9789*\ln(\text{hardness})\}-3.866\}$	$\exp\{0.9789*\ln(\text{hardness})\}-3.866\}*\text{CF}$	$1.136672-[\ln(\text{hardness})*(0.041838)]$
Copper	$\exp\{0.9422*\ln(\text{hardness})\}-1.7\}$	$\exp\{0.9422*\ln(\text{hardness})\}-1.7\}*\text{CF}$	0.96
Lead	$\exp\{1.273*\ln(\text{hardness})\}-1.46\}$	$\exp\{1.273*\ln(\text{hardness})\}-1.46\}*\text{CF}$	$1.46203-[\ln(\text{hardness})*(0.145712)]$
Silver	$\exp\{1.72*\ln(\text{hardness})\}-6.52\}$	$\exp\{1.72*\ln(\text{hardness})\}-6.59\}*\text{CF}$	0.85
Zinc	$\exp\{0.8473*\ln(\text{hardness})\}+0.884\}$	$\exp\{0.8473*\ln(\text{hardness})\}+0.884\}*\text{CF}$	0.978

- Montana DEQ-7 hardness-based standards for total recoverable fraction have a minimum and maximum hardness range of 25 to 400 mg/L
- The Federal CCC or CMC hardness-based standards do not have a minimum or maximum hardness, and the contaminant specific dissolved correction factor should be applied.
- Conversion Factor introduced in 1998 publication of recommended water quality criteria (Federal Register v.63, No. 237, pp. 68354-68364).

- The cadmium standards are updated according to the May 2017 version of DEQ-7.
- The Biotic Ligand Model (BLM) criterion in place at the time of compliance standard determination shall be the Replacement Standard for copper for both chronic and acute conditions. For acute conditions (wet weather events), the BLM standard or any other appropriate EPA-approved methodology that will perform in non-equilibrium conditions such as storm water or diel pH cycling shall be used. The criteria for defining frequency for collection of individual parameters will be defined in the Surface Water Monitoring Plan.

The modified selected remedy includes:

- Waiver of the State of Montana’s Circular DEQ-7 acute aquatic life standards for copper and zinc based on a total recoverable (unfiltered) sample and adopt the federal acute aquatic life standards based on a dissolved (filtered) sample as shown on in Table 2. This change to federal acute aquatic life standards based on a dissolved sample is protective of surface water in the BPSOU because all contaminated sediments will be removed and replaced with clean sediments and the contaminant pathways to these sediments will be addressed with the additional remedial actions now required.
- Adoption of the current Circular DEQ-7 allowance for one exceedance of water quality standards in 3 years. This exceedance rate allowance was accounted for in the TI evaluation and applies to both the chronic and acute standards.
- Adoption of the updated Circular DEQ-7 aquatic life standard for cadmium (May 2017). This change applies to both the chronic and acute standards (Tables 1 and 2). Because the cadmium standard is not waived initially, the new Circular DEQ-7 standard will apply unless the contingent post-construction waiver is invoked.
- Modification of point of compliance as described in Appendix A. As described in the 2006/2011 BPSOU Record of Decision, an overall remedial goal for Silver Bow Creek is to maintain the in-stream concentration of site-specific COCs below the numeric surface water quality standards identified in Circular DEQ-7 for all flow conditions throughout the length of Blacktail Creek, Grove Gulch Creek, and Silver Bow Creek below its confluence with Blacktail Creek within and directly downstream of the BPSOU. This surface water compliance requirement from the 2006/2011 BPSOU Record of Decision (Section 12.6.6.2) will be changed to two points of compliance at SS-06G and SS-07 only (Figure A-3). Other monitoring stations will remain in the network as needed, but compliance will be determined at these two farthest downstream stations. Effluent from the Butte wastewater treatment plant enters between SS-06G and SS-07. The surface water sampling methodology will be modified to allow for additional compositing methods at the compliance sampling locations.

After implementation of the remedy (post-construction) and a period of monitoring, the following waivers will be granted, if necessary, based on



post-construction surface water monitoring data and in accordance with the SWCDP:

- If after a period of monitoring of 9 to 12 years, acute performance standards (cadmium, lead, and silver) for these previously unwaived COCs are not met, waivers of these standards will be granted but only after construction of these portions of the remedy are completed and shown to be functioning as intended. The waived-to standards are shown in Table 2.
- If after a period of monitoring of 9 to 12 years, chronic performance standards (copper and lead) for these previously unwaived COCs are not met, waivers of these standards will be granted but only after construction of these portions of the remedy are completed and shown to be functioning as intended. The waived-to standards are shown in Table 1.
- If after a period of monitoring of 9 to 12 years, dissolved acute performance standards for copper and zinc are not met, further waivers to the federal water quality criteria in place at that time may be granted but only after construction of these portions of the remedy are completed and shown to be functioning as intended. These waived-to standards are shown in Table 2.

For aluminum, arsenic, and iron, no changes to the human health or aquatic life standards based on Circular DEQ-7 at the time of the 2006 BPSOU Record of Decision are necessary as these COCs are in compliance currently. These are summarized for reference in Tables 1 and 2.

#### **4.2.2 Modification of Surface Water RAOs**

RAOs presented in the 2006 BPSOU Record of Decision for contaminated surface water remain unchanged for this amendment, except for the need to waive certain Circular DEQ-7 standards (DEQ 2017) to federal water quality criteria.

The two modified RAOs are shown below, with the modification in italics. The other RAOs (see Section 2.5) remain unchanged.

- Prevent source areas from releasing contaminants to surface water that would cause the receiving water to violate surface water ARARs and remedial goals (*or replacement standards for ARARs appropriately waived*) for the BPSOU and prevent degradation of downstream surface water sources, including during storm events.

- *Meet or appropriately waive and replace* the more restrictive of chronic aquatic life or human health standards for surface water identified in Circular DEQ-7 through the application of B-1 class standards.<sup>4</sup>

## 5.0 DESCRIPTION OF SIGNIFICANT CHANGES

Although many factors at the BPSOU make it impracticable to meet copper and zinc water quality performance standards during storm events, it is possible to significantly reduce the magnitude and frequency of exceedances through implementation of the surface water remedy. Work elements for surface water developed by the agencies during the TI evaluation represent four of the six significant changes to the original remedy and are described in Sections 5.1 through 5.3. Three components in the 2006/2011 BPSOU Record of Decision are rendered unnecessary by the modifications and will be removed as part of the selected alternative (5.4 through 5.6). The original remedy component for each is summarized and compared to the selected alternative. Table 3 provides a side-by-side comparison of the six significant changes to the original surface water remedy as modified by this 2020 BPSOU Record of Decision Amendment.

### 5.1 Expand Mine Waste Removal in Silver Bow Creek and Blacktail Creek Areas

#### 5.1.1 2006/2011 Remedy Component – Waste Removal from Blacktail and Silver Bow Creek Channels

COCs occur in stream sediments, the stream banks, and nearby floodplain from Blacktail Creek above the confluence and through Silver Bow Creek to Lower Area One. The original remedy required excavation of contaminated sediment, stream banks, and adjacent floodplain wastes from the reach of Blacktail Creek just above the confluence with Silver Bow Creek down to the reconstructed floodplain and stream channel in Lower Area One.

The original 2006/2011 remedy also included removal of contaminated sediments, stream banks, and nearby floodplain wastes and contaminated soils to minimize impacts to surface water quality. The stream and floodplain were required to be reconstructed according to an EPA-approved design. After waste removal, further evaluation of surface water quality in this area was required. If contaminated groundwater inflow was found to adversely affect surface water quality, additional hydraulic controls and groundwater capture was required to be implemented.

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<sup>4</sup>“B-1 waters are suitable for drinking, culinary, and food processing purposes after conventional treatment; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply,” Montana Clean Water Act.

### **5.1.2 2020 Selected Remedy**

While the removal of contaminated sediments, stream banks, and nearby floodplain wastes was included in all of the alternatives considered for the selected remedy in the 2006/2011 BPSOU Record of Decision and is an established remedial component, the scope of the removals required under this amendment is more extensive than envisioned in the original remedy. The expanded scope is based on extensive data collected in these areas and these wastes' impact to surface water and sediment quality and in part on significant public input on additional waste removals. Additional hydraulic control of contaminated groundwater discharge to the creeks is also included in this remedial action rather than leaving it as a contingency. The 2020 selected remedy also includes action in the stream corridor areas shown in Figure 4.

**Table 3. Significant Changes to the Original Remedy**

Existing Record of Decision (2006/2011)		2020 Record of Decision Amendment	
Component	Description of Component	Expansion	Description of Modified Remedy
<b>Sediment and Waste Removal</b> from Blacktail and Silver Bow Creek Channels, Banks, and Floodplains	<ul style="list-style-type: none"> <li>Excavate contaminated sediment, stream banks, and adjacent floodplain wastes from the reach of Blacktail Creek above its confluence with Silver Bow Creek, and Silver Bow Creek through the Butte Reduction Works, and down to the reconstructed floodplain and stream channel in Lower Area One.</li> </ul>	<p><b>Expand waste removals</b> in streams upstream and downstream of confluence.</p> <p><b>Move Silver Bow Creek</b> out of the slag canyon area of BRW.</p>	<ul style="list-style-type: none"> <li>Based on analysis of data collected during remediation and extensive public input, expand removals and require additional hydraulic control.</li> <li><b>Upstream direction.</b> Add bank sediment and nearby floodplain waste removal along Blacktail Creek (George Street to Grove Gulch).</li> <li><b>Downstream direction.</b> Remove tailings, slag, contaminated soils, and other waste from Butte Reduction Works (southern portion of the site) to allow Silver Bow Creek to be moved into the new corridor (Figure 4).</li> </ul>
Surface Water Management for <b>Base Flow Remediation</b>	<ul style="list-style-type: none"> <li>Groundwater control and capture is primary component of remedial action addressing surface water contamination during base flow conditions.</li> <li>Add appropriate hydraulic controls and groundwater capture if groundwater not captured by the existing capture systems is found to discharge to and adversely affect surface water quality.</li> </ul>	<p><b>Expand contaminated groundwater control and capture</b> system anywhere within BPSOU where surface water (at points of compliance) or sediment quality is adversely impacted (as described in the SMWP) through the addition of capture systems to be determined during remedial design.</p>	<ul style="list-style-type: none"> <li>Install contaminated groundwater controls in Butte Reduction Works area to keep contaminated groundwater there from discharging to Silver Bow Creek. Install similar controls along Blacktail Creek.</li> <li>Route contaminated groundwater from new systems to the Butte Treatment Lagoons for treatment.</li> <li>To address end land use concerns and input, revegetate and provide a public area for possible recreational use—a continuous link between remedies upstream (Blacktail Creek and Silver Bow Creek above the confluence with Blacktail Creek) and downstream (through Lower Area One).</li> </ul>
Surface Water Management for <b>Storm Water Remediation</b> – Iterative BMP Program	<ul style="list-style-type: none"> <li>Use iterative process to implement BMPs and monitor to meet water quality performance standards in a 15-year time frame.</li> <li>Specific BMPs are not prescribed but could include storm water ponds if appropriate.</li> </ul>	<p><b>Remove mine waste to construct storm water controls</b> in Silver Bow Creek above the confluence with Blacktail Creek.</p>	<ul style="list-style-type: none"> <li>Construct final storm water controls (primarily detention basins) to settle out contaminated suspended sediments from Buffalo Gulch and drainages reporting to Silver Bow Creek above the confluence with Blacktail Creek for 10-year storm event.</li> <li>Remove buried tailings in Silver Bow Creek above the confluence with Blacktail Creek at Diggings East and Northside Tailings to accommodate new basins. <i>This is in response to evaluation of the data and public input.</i></li> <li>Removed waste that meets the criteria for disposal in a mine waste repository will be disposed in one of the following locations: the proposed Timber Butte repository [see figure 5] near the Copper Mountain Sports Complex or the approved Butte Mine Waste Repository, as determined to be appropriate.</li> </ul>

Existing Record of Decision (2006/2011)		2020 Record of Decision Amendment	
Component	Description of Component	Expansion	Description of Modified Remedy
Surface Water Management for Storm Water Remediation – <b>Storm Water Treatment Contingency</b>	<ul style="list-style-type: none"> <li>▪ Capture/treat storm water runoff if BMPs do not achieve goal of meeting surface water performance standards in Silver Bow Creek during storm water events.</li> <li>▪ Evaluate amount of storm water that could practicably be treated. Collect and treat storm flows (up to maximum practicable design criterion) by lime precipitation in a newly constructed plant.</li> </ul>	<b>Remove contingency requirement</b> for storm water treatment.	<ul style="list-style-type: none"> <li>▪ Total recoverable copper and zinc are highly unlikely to meet Circular DEQ-7 acute water quality standards during most wet weather flow conditions regardless of measures implemented to control COCs, including treating storm water in a treatment plant.</li> <li>▪ Storm water capture and conventional treatment is impracticable due to space and technical limitations.</li> <li>▪ Detention basins treat storm water by settling suspended solids making this contingency unnecessary.</li> </ul>
<b>In-Stream Flow Augmentation Contingency</b>	<ul style="list-style-type: none"> <li>▪ Add off-site source water, if needed, to supplement surface water remedial components to improve flow and quality of water in Silver Bow Creek but only after the major remedial components are designed and implemented.</li> </ul>	<b>Remove flow augmentation contingency.</b>	<ul style="list-style-type: none"> <li>▪ The modified remedy would be protective without the need for flow augmentation.</li> <li>▪ Butte Mine Flooding OU's eventual treated water discharge may fulfill this contingency, but the timeline for that water is unknown and may be decades in the future. No other likely water sources are available (the active mine imports water).</li> </ul>
<b>Evaluation of Infiltration Barriers</b>	<ul style="list-style-type: none"> <li>▪ Evaluate infiltration barriers over wastes in the lower portion of Silver Bow Creek above the confluence with Blacktail Creek corridor below Harrison Avenue (Diggings East and Northside Tailings).</li> </ul>	<b>Remove requirement</b> for evaluation of infiltration barriers	<ul style="list-style-type: none"> <li>▪ With removal of mine wastes that are not saturated by groundwater at the Diggings East and Northside Tailings to accommodate storm water basins, this requirement is no longer necessary.</li> </ul>



Figure 4  
Locations of Surface Water Remedy Components  
Butte Priority Soils Operable Unit  
Silver Bow Creek /Butte Area Site

Figure produced by Land Design, Inc.

Based on the analysis of additional surface water, sediments, sediment pore water, groundwater, and near-stream solid media, EPA and DEQ determined that the 2006/2011 BPSOU Record of Decision remedy did not sufficiently address areas upstream that are impacting surface water. In the upstream direction, the remedy will be expanded by adding sediment, stream bank and floodplain waste removal along Blacktail Creek from Montana Street to Grove Gulch. In the downstream direction below Montana Street, tailings, slag, contaminated soils, sediments and other waste from the Butte Reduction Works will be removed from the southern portion of the Butte Reduction Works area to allow Silver Bow Creek to be moved out of the slag canyon area of Butte Reduction Works and into the new, cleaner corridor.

## **5.2 Expand Contaminated Groundwater Control and Capture System West and South of BPSOU Subdrain**

### **5.2.1 2006/2011 Remedy Component – Surface Water Management for Base Flow Remediation**

The groundwater component of the 2006/2011 BPSOU Record of Decision remedy is the primary remedial action addressing surface water contamination during base flow conditions. As a contingency, the original remedy included implementation of additional, appropriate groundwater controls and groundwater capture if groundwater that is not captured by the existing groundwater capture systems was found to discharge to surface water and adversely affect surface water quality.

### **5.2.2 2020 Selected Remedy**

Contaminated groundwater that discharges to Blacktail or Silver Bow Creeks that adversely impacts sediment quality anywhere within BPSOU will be addressed with the selected remedy in accordance with the SWMP. If contaminated groundwater impacts surface water quality at the two compliance points (SS-06G and SS-07) it also will be addressed by remedy.

At the Butte Reduction Works site, Silver Bow Creek will be relocated away from its current course through what is known as slag canyon, and into a newly remediated corridor to the south. All wastes in this remediated southern corridor will be removed. Because mine waste saturated by groundwater will be left in-place to the north of the relocated creek, groundwater controls will be installed to keep the resulting contaminated groundwater from discharging to the reconstructed creek channel or to other areas of Silver Bow Creek.

Expanded contaminated groundwater controls will also be installed along Blacktail Creek to keep contaminated groundwater from discharging into

Blacktail Creek or the Confluence Areas. Mine waste removals upgradient from these areas, including the Parrot Tailings Waste Removal Project conducted by the State under its natural resource damage authority, will reduce the contaminant loading to groundwater.

Contaminated groundwater from these new and any other necessary systems will be routed for treatment at the Butte Treatment Lagoons or an alternate equivalent treatment facility.

The remediated areas will be revegetated and may provide the public with an area for possible recreational use and a continuous link between the remedies upstream in Blacktail Creek and Silver Bow Creek above the confluence with Blacktail Creek and downstream through Lower Area One.

### **5.3 Remove Mine Waste to Construct Storm Water Controls**

#### **5.3.1 2006/2011 Remedy Component – Iterative BMP Program for Storm Water Remediation**

The remedy in the 2006/2011 BPSOU Record of Decision established an iterative process of implementing and monitoring BMPs as part of a surface water management program for storm water remediation, with the goal of meeting water quality performance standards within a 15-year time frame. The original remedy did not prescribe specific BMPs to be constructed. Storm water basins were among many BMPs identified in the 2006 BPSOU Record of Decision that could be used if appropriate.

#### **5.3.2 2020 Selected Remedy**

The 2020 selected remedy requires construction of specific storm water controls (primarily detention/retention basins) to settle out contaminated suspended sediments from Buffalo Gulch and the drainages reporting to Silver Bow Creek above the confluence with Blacktail Creek for the 10-year storm event. Certain stormwater controls addressing a 6 month/24-hour storm event will be added to certain drainages within the BPSOU. Tailings, waste, and contaminated soils above high groundwater levels in Silver Bow Creek above the confluence with Blacktail Creek at the Diggings East and Northside Tailings will be removed to accommodate the new basins. In these areas, tailings, wastes, and contaminated soils outside of the basins and within 3-feet of the high groundwater elevation will be removed. These removals of wastes are also in response to public input received. Removed waste that meets the criteria for disposal in a mine waste repository will be disposed in one of the following locations: the proposed Timber Butte repository (see Figure 5) near the Copper Mountain Sports Complex or the approved Butte Mine Waste Repository, as determined to be appropriate.



#### **5.4 Clarify Flow Augmentation Contingency**

##### **5.4.1 2006/2011 Remedy Component – In-Stream Flow Augmentation Contingency**

The remedy in the 2006/2011 BPSOU Record of Decision included the possible addition of off-site source water if necessary, to supplement surface water remedial components to improve the flow and quality characteristics of the water within Silver Bow Creek, but only after the major remedial components described in the 2006/2011 BPSOU Record of Decision were designed and implemented.

##### **5.4.2 2020 Selected Remedy**

The in-stream flow augmentation contingency could potentially be fulfilled by the addition of treated water discharge from the Butte Mine Flooding Operable Unit. No other feasible major water sources for flow augmentation are available (additional imported water is being used at the active mine in Butte). Although discharge of treated water is occurring through a pilot study, the timeline for perennial water discharge from the Butte Mine Flooding Operable Unit is unknown, and a discharge may be decades in the future, depending on how treated water is used in the mine operations. Because of these factors, the agencies have developed the remedy for surface water to be protective without the need for flow augmentation.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

<b>Potential Haul Routes</b>		Remedial Action Project Areas	Atlantic Richfield Property Boundary
Loaded Truck Haul Route	Potential New Repository Areas	Clark Tailings Boundary	
Unloaded Truck Haul Route	Butte Mine Waste Repository	Old Municipal Landfill Boundary	

DISPLAYED AS:  
 PROJECTION/ZONE: NAD83  
 DATUM: NAD83  
 UNIT: INTERNATIONAL FEET  
 SOURCE: PIONEER/ARCO/NAIP

0 500,000 2,000 3,000 Feet

**FIGURE: 5**  
 POTENTIAL BPSOU  
 REPOSITORY SITES  
 AND HAUL ROUTES

Path: P:\ARCO\BPSOU\DRAWING\Repository\Fig-1.mxd

DATE: 8/2019

## **5.5 Clarify Storm Water Treatment Contingency**

### **5.5.1 2006/2011 Remedy Component – Storm Water Treatment Contingency**

The remedy in the 2006/2011 BPSOU Record of Decision remedy included capture and treatment of storm water runoff if BMPs implemented under the Surface Water Management Program do not achieve the goal of meeting surface water performance standards (Circular DEQ-7 standards) in Silver Bow Creek during storm water events. In addition, an evaluation of the amount of storm water that could practicably be treated would be performed. Storm flows up to the maximum practicable design criterion would then be collected and treated by lime precipitation technology. If treatment was required, a conventional lime treatment plant would be constructed for this purpose.

### **5.5.2 2020 Selected Remedy**

The conclusions of the TI analysis indicate that total recoverable copper and zinc are not likely to meet acute water quality performance standards (i.e., Circular DEQ-7 standards) during most wet weather flow conditions, regardless of the measures implemented to control the COCs (including treating storm water at a conventional water treatment plant). Capture and conventional treatment of storm water was determined to be impracticable due to technical and space limitations. The basins described above will treat storm water by settling of suspended solids, making this contingency unnecessary.

## **5.6 Remove Requirement for Infiltration Barriers on the Parrot Tailings, Diggings East and Northside Tailings Mine Waste Areas**

### **5.6.1 2006/2011 Remedy Component – Evaluation and Implementation of Infiltration Barriers**

The remedy in the 2006/2011 BPSOU Record of Decision remedy allowed buried and/or saturated solid media in Lower Area One and Silver Bow Creek above its confluence with Blacktail Creek to remain in place with appropriate groundwater monitoring and institutional controls. To reduce the loading of COCs to groundwater from the Parrot Tailings, the Diggings East, and Northside Tailings, infiltration barriers were to be considered during remedial design and implemented if determined to be appropriate by EPA in consultation with DEQ.

### **5.6.2 2020 Selected Remedy**

The need to evaluate infiltration barriers at the Northside and Diggings East Tailings areas is no longer necessary under the modified remedy as the wastes above groundwater in these areas will be removed and the area will be used for storm water management with lined retention/detention basins.

This evaluation is also not necessary for the Parrot Tailings area, as this area is being addressed through the removal of tailings, waste, and impacted soils above and below groundwater as defined in the State's Parrot Tailings Waste Removal Project conducted under State of Montana natural resource damage authority.

## **6.0 EVALUATION OF MODIFICATION**

CERCLA requires that any fundamental change to a record of decision be evaluated using the nine criteria specified in the NCP and used for all remedial decisions under the Superfund program. The evaluation ensures the remedy can meet EPA's mission of protecting human health and the environment.

The 2020 Record of Decision Amendment's selected remedy for surface water remediation was first evaluated against the two threshold criteria, which must be met for an alternative to move forward. The five primary balancing criteria were then used to compare the 2006/2011 BPSOU Record of Decision remedy to the modified selected remedy. Evaluation against the two modifying criteria was made after the public comment period ended. Results of the evaluation are presented below.

### **6.1 Threshold Criteria**

The amendment's modification was required to meet the two threshold criteria in order to move forward.

#### **6.1.1 Overall Protection of Human Health and the Environment**

The modified remedy must protect human health and the environment, in both the short and long term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals consistent with 40 CFR § 300.430(e)(2)(i).

The amendment's modification is protective in several ways:

- Federal replacement standards for copper and zinc during wet weather events are based on the dissolved (filtered) sample fraction comparison to appropriate water quality standards and are national surface water quality criteria promulgated by EPA pursuant to the Clean Water Act. While not as conservative as Montana standards, they are protective of aquatic life in this circumstance when accompanied by the additional contaminated sediment removal from the creeks and stormwater control components described above, and sediment monitoring and management described in the SWMP (EPA 2019d). Because in-stream human health standards must also be met and the replacement standards

are more stringent than the human health standards, human health is protected.

- Contaminated groundwater capture and removal of contaminated sediments, stream banks, and nearby floodplain wastes was found to be protective in the 2006/2011 BPSOU Record of Decision. Expansion of areas where mine waste is removed and where contaminated groundwater is collected for treatment will provide additional effectiveness because it will improve water quality under both types of flow conditions (base and high flow). Removal of wastes to accommodate storm water BMP construction will further reduce a source of contamination to groundwater.
- In contrast to the approach to storm water control in the 2006/2011 BPSOU Record of Decision, the amendment includes specificity for installation of storm water detention/retention basins and other measures. Basins will improve surface water quality in two ways:
  - Suspended sediment containing COCs will settle out before being released, resulting in lower total recoverable COC concentrations.
  - Water storage will significantly reduce the number of times per year that untreated storm water will be released to surface water, resulting in fewer potential exceedances of performance standards.

### **6.1.2 Compliance with ARARs**

The amendment's selected remedy must comply with ARARs or provide grounds for invoking one of the waivers under section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4). Waiver of certain in-stream surface water standards and use of federal replacement standards for copper and zinc during wet weather events is compliant with the CERCLA statute and its waiver provisions. The CERCLA statute allows ARARs to be waived based on an evaluation that they are technically impracticable from an engineering perspective.

Replacement performance standards (Table 2) for acute copper and zinc during wet weather events are based on the dissolved (filtered) sample fraction and are national surface water quality criteria enacted by EPA pursuant to the Clean Water Act. Based on the results of the TI evaluation, these waivers will be granted prior to any further remedial action taking place in BPSOU. They are protective of aquatic life in this circumstance because the existing contaminated sediments will also be removed, replaced with clean materials, monitored and managed in the creeks. Because in-

stream human health standards must also be met and the replacement standards are more stringent than the human health standards, human health is protected.

The TI evaluation showed uncertainty in the ability of some standards to be met even after remediation. Thus, the selected remedy also includes contingent waivers for surface water ARARs (Tables 1 and 2)—specifically for copper and lead (chronic conditions) and cadmium, lead, and silver (acute conditions) after construction of the remedy. The waivers will be activated only if exceedances are measured *after* the remedy is implemented, the agencies have had an opportunity to evaluate the performance of the remedy, and in accordance with DEQ regulations governing in-stream exceedance allowances in Circular DEQ-7, all as described in the SWCDP.

## **6.2 Primary Balancing Criteria**

Five primary balancing criteria were used to weigh the amendment's selected remedy against the original remedy.

### **6.2.1 Long-term Effectiveness and Permanence**

This criterion assesses the long-term effectiveness and permanence and certainty that the alternative will prove successful. Surface water waivers do not impact remedy performance. Expansion of waste removals, contaminated groundwater controls, and contaminated storm water controls increases long-term effectiveness and permanence and reduces long-term operation and maintenance. Removal of contaminated sediment, stream banks, and nearby floodplain waste was thoroughly evaluated for the 2006/2011 BPSOU Record of Decision and was found to be effective and permanent. The selected remedy expands these existing waste removals and ensures that the Silver Bow and Blacktail Creeks flow through clean remediated areas.

Storm water controls are limited by land availability; thus, there will be times when design capacities are exceeded and untreated storm water discharges to surface water. This may recontaminate sediment and reduce long-term effectiveness. However, the magnitude of recontamination is expected to be less under the selected remedy. Between extreme events, input of less-contaminated sediment from upstream may result in lower COC concentrations.

Contaminated groundwater will be controlled at any locations along Blacktail and Silver Bow Creeks within BPSOU where it is adversely impacting surface water at compliance locations or sediment quality

anywhere as detailed in the SWMP (EPA 2019d). Recontaminated sediment will be removed, if necessary, and replaced with clean materials resulting in a notable improvement in long-term effectiveness and permanence.

Long-term operations and maintenance of the storm water basins and other BMPs are critical components of the remedy. With proper operations and maintenance, the storm water basins are expected to be an effective measure for capturing and removing COCs and contaminated sediment in storm water and are comparable in effectiveness to a storm water treatment plant.

### **6.2.2 Reduction of Toxicity, Mobility, or Volume**

This criterion assesses the degree to which the modification uses recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site. There is no significant difference in reduction of toxicity, mobility, or volume of solid wastes between the 2006/2011 BPSOU Record of Decision and the selected remedy.

The amended remedy increases the rate, volume, and locations of contaminated groundwater collection and treatment in certain areas to prevent discharge of contaminated groundwater to surface water. These actions reduce the toxicity and mobility of contaminants through hydraulic control and treatment.

The physical removal of sediments, banks, and floodplain waste materials under the selected remedy will reduce toxicity and mobility of mining wastes by removing them from the in-stream or near-stream environment. Volumes of those materials will not change with removal from one location to another. Removal of tailings from storm water BMP areas will reduce mobility of COCs to groundwater. Surface water waivers do not impact this criterion.

Little or no treatment of the primary mining wastes will occur as part of the remedy because they are removed from one location (floodplain environments) to another (secure repositories) without treatment. In the feasibility study that preceded the 2006 BPSOU Record of Decision, active treatment was screened out as a potential option for solid media.

Physical removal of sediments in storm water through settling in the basins is considered treatment. Toxicity and mobility of contaminants in storm water are anticipated to be considerably reduced with use of storm water basins. As runoff from wet weather and snowmelt events enter the basins, contaminants will be removed through settling. Accumulated sediments

will periodically be removed from the basins during routine operations and maintenance. There will be no active treatment of these sediments.

### **6.2.3 Short-term Effectiveness**

This criterion assesses short-term impacts of the selected remedy during implementation, including potential risks to the community, impacts on workers, environmental impacts, and time until protection is achieved. There is no significant difference in short-term effectiveness between the 2006/2011 BPSOU Record of Decision remedy and the selected remedy.

Construction activities will use standard equipment, such as excavators and trucks. This type and scale of construction is common locally. Haul routes, either to Timber Butte Repository or the Mine Waste Repository, can be developed to pose lower risks to workers and the community. Other risks, such as those from dust and storm water runoff during construction, can be mitigated.

Removal of sediments will likely include isolating surface waters into half of the channel and removing sediment in a partially dewatered environment. Working in relatively short sections will ease environmental impacts. Work in stream beds and banks may cause short-term adverse impacts on water quality. Impacts may continue through reconstruction and restabilization (the first one or two high flow events) but COC loading reductions occur thereafter. Waste removals away from flowing surface water will have no short-term effects.

Storm water basins will be effective immediately and will reduce total recoverable concentrations of COCs in captured storm water through settling. The basins will reduce peak flow rates from Butte Hill drainages, mitigating the peak load of contaminated storm water entering surface water.

### **6.2.4 Implementability**

This criterion assesses the ease or difficulty of implementation, including technical and administrative feasibility and availability of services and materials. Implementability of the amendment's selected remedy is slightly increased in comparison to the 2006/2011 BPSOU Record of Decision, primarily because of elimination of the potential construction of a storm water treatment plant under the selected remedy increases implementability.

The modified surface water remedy components are readily implementable. Construction of additional storm water basins and expansion of mine waste removals and contaminated groundwater capture areas use techniques of a



type and scale common to the BPSOU. Materials and services needed are readily available nearby.

Rerouting Silver Bow Creek around and away from contaminant sources at the Butte Reduction Works and slag canyon area is implementable. It is similar to stream reconstruction work performed at Lower Area One in the late 1990s and the SSTOU. The construction techniques are similar to those commonly used at BPSOU, and materials and services needed are readily available.

#### **6.2.5 Cost**

Expanded mine waste removal area and waste volumes for the amendment's selected remedy are substantially larger than those envisioned in the 2006/2011 BPSOU Record of Decision. As such, removal costs are expected to be greater for these elements. The 2006/2011 BPSOU Record of Decision did not identify installation of specific storm water basins, but the proposed basins and other stormwater features described in the 2020 Record of Decision amendment are similar to the sediment basins and other stormwater controls found in the original Record of Decision. Costs associated with the stormwater treatment plant contingency and the infiltration barrier contingency, which are removed through this record of decision amendment, reduce the cost of overall remedy by approximately \$48 million (2006 BPSOU Record of Decision Tables 12-3, 12-5, and 12-8). However, those reduced costs are offset by increased costs of approximately \$44 million for the larger waste removals necessary for constructing the stormwater basins (\$13 million), for removing waste upstream in Blacktail Creek (\$5 million), for removing waste in the Butte Reduction Works area (\$15 million), for storm water controls in the Grove Gulch area (\$1 million), for expansion of the Butte Residential Metals Abatement Program (\$3 million), and for additional hydraulic controls for Blacktail Creek and Butte Reduction Works areas (\$7 million). The net cost change from the original 2006 BPSOU Record of Decision is estimated to be an overall reduction of approximately \$4 million from the \$157 million remedy cost estimated in the 2006 BPSOU Record of Decision which falls within the acceptable -30% to +50% cost range.

### **6.3 Modifying Criteria**

The two final criteria, state and community acceptance, were evaluated after the public comment period ended.

#### **6.3.1 State Acceptance**

This criterion discusses the state's position and key concerns related to the record of decision amendment's modifications. The State of Montana,

acting through DEQ, is in agreement with the surface water TI waiver and modifications to the surface water remedy which implement technically practicable measures to restore and protect surface water quality.

### **6.3.2 Community Acceptance**

Community acceptance was assessed based on comments received on the proposed plan. EPA received a variety of comments on the April 2019 *Proposed Plan for a BPSOU Record of Decision Amendment*. Some comments were generally supportive of the amended remedial plan. Other comments were opposed to the waiver of DEQ-7 acute copper and zinc water quality standards, the omission of the waste removal of the Parrot Tailings area under the amended remedy, and the lack of requirements to re-construct Silver Bow Creek in the area above the confluence with Blacktail Creek to the Montana Resources active mine boundary, among other issues. Community comments were carefully considered by the agencies and specific responses to comments are provided and addressed in Appendix B. Many of the comments received identify issues that can be addressed during the remedial design of the specific components of the amended BPSOU remedy.

End land use for the Silver Bow Creek area above the confluence with Blacktail Creek was of particular concern to many community residents. Although not a remedy element, EPA has worked with the State of Montana and the responsible parties to develop detailed end land use plans that will accommodate many of the community end land use plans for this area and for other areas of a remediated Silver Bow Creek and Blacktail Creek within the BPSOU. EPA will continue to work with these parties, the community and EPA's Technical Assistance Grant recipient to implement and accommodate these end land use plans as the remedy implementation process proceeds.

## **7.0 STATUTORY DETERMINATIONS**

The types of actions to be completed in the selected remedy presented in this 2020 BPSOU Record of Decision Amendment are essentially the same as the remedy presented in the 2006 BPSOU Record of Decision. The amended remedy is more specific, and the extent or scale of action is somewhat larger, but the applicability to statutory determination are unchanged. Therefore, the statutory determination section presented in the 2006 BPSOU Record of Decision is still accurate. A summary of these determinations are as follows.

The selected remedy presented in this amendment satisfies CERCLA § 121 requirements as it is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-

effective, and uses permanent solutions and alternative treatment technologies to the maximum extent possible.

The remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. Active treatment of mining waste would be significantly more expensive due to the large quantities of materials impacted. Although they are present in large volumes, the solid materials within the BPSOU are generally low in toxicity and can be reliably removed or contained.

Because the remedy, as amended, results in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

#### **Documentation of Significant Changes from Proposed Plan**

There are no significant changes in this record of decision amendment from those described in the *2019 Proposed Plan for a BPSOU Record of Decision Amendment*.

### **8.0 PUBLIC PARTICIPATION**

Under CERCLA § 117(c), 42 U.S.C. § 9617(c), and the NCP, 40 CFR § 300.435(c)(2)(ii), EPA must publish proposed changes to existing remedies that fundamentally alter the basic features of a selected remedy with respect to scope, performance, or cost and provide the public an opportunity for comment on the proposed changes. Changes proposed for the BPSOU fundamentally alter the basic features of the 2006/2011 remedy, prompting the issuance of a proposed plan for amendment of the BPSOU 2006/2011 Record of Decision.

As documented below, the public participation requirements set out in the NCP have been met through the proposed plan and public comment process:

- EPA issued a proposed plan that highlighted proposed changes to the original surface water remedy on April 11, 2019.
- A public notice regarding issuance of the plan and the start of the public comment period was placed in the *Montana Standard* (April 11, 2019) and *Butte Weekly* (April 17, 2019).
- A 60-day public comment period ran from April 11, 2019 to June 11, 2019.
- EPA hosted two public meetings at the Montana Tech Campus Library Auditorium, 1300 West Park St., in Butte from 6:00-8:30 p.m. on April 23 and May 23, 2019. A reminder ad for the second meeting ran on May 21, 2019. Copies of the proposed plan and a fact sheet were provided at the meetings.

- A 30-day extension to the comment period was requested, and it was extended through July 11, 2019. A public notice of the extension was published in the *Montana Standard* and *Butte Weekly*.
- The proposed plan and the supporting administrative record were available throughout that period on the EPA website and at the Montana Tech Library.
- Public comment was received and evaluated prior to finalization of the 2020 Record of Decision Amendment.
- EPA received comments from 101 separate entities/individuals on the proposed plan during the public comment period. A responsiveness summary, which includes each comment, criticism, and/or new relevant information submitted, followed by a response to each, is included as Appendix B of this document.
- EPA will publish a notice of the availability of the amended record of decision in the *Montana Standard* and *Butte Weekly*.
- This 2020 Record of Decision Amendment is a part of the administrative record for the BPSOU and is available at each information repository for public review prior to the commencement of the remedial action described herein.

In addition to the above, the community's desire is to increase the amount of mine waste removals in Silver Bow Creek above the confluence with Blacktail Creek area to allow for future land uses. This desire was incorporated into the remedial elements wherever practicable.

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**APPENDIX A**  
**MINOR MODIFICATIONS TO THE**  
**ORIGINAL REMEDY**

Thirteen minor modifications to the original remedy for the BPSOU are presented below for the purpose of documenting them in the administrative record.

### **1. Clarify and Expand BPSOU Boundary**

There are three areas where boundary adjustments were made (Figure A-1). The first revision to the boundary incorporates both banks of Grove Gulch to just upstream of its confluence with Blacktail Creek. In this area, the original boundary traced Kaw Avenue instead of explicitly including the east bank of Grove Gulch on the east side of Kaw Avenue. The revised boundary is also expanded east to accommodate a proposed small storm water basin upstream of where Grove Gulch crosses the interstate. The second revision was made around the Diggings East source area. The original boundary adjacent to the Diggings East source area did not fully incorporate this area and it was revised to accommodate a proposed stormwater basin along with the areas that are planned to be remediated. The third revision was made along the border of the BPSOU and the Butte Mine Flooding operable unit. This change was made to match the BPSOU boundary to the BMFOU boundary. The remainder of the BPSOU boundary is unchanged.

### **2. Change and Expand RMAP Boundary**

The 2006 BPSOU Record of Decision allows for residential cleanup expansion, as needed. In 2011, the Residential Metals Abatement Program (RMAP) attic dust program was expanded to areas south and west of the BPSOU boundary, encompassing the southern urban area of Butte. This modification expands the RMAP boundary further to encompass rural residential development (outside the BPSOU) to the north, south, and west, including Rocker, and to exclude the Beal Mountain, Solvay, and Continental Mine areas (Figure A-2). Work in the expanded area will include all RMAP facets (soils, living area dust, lead-based paint, and attic dust) except for the property-by-property systematic sampling and assessment approach. Properties outside the BPSOU boundary but within the RMAP expansion area will be sampled by request only.

### **3. Revise Points of Compliance and Determination of Compliance**

As described in the 2006/2011 BPSOU Record of Decision, an overall remedial goal for Silver Bow Creek is to maintain the in-stream concentration of site-specific COCs below the numeric surface water quality standards identified in Circular DEQ-7 for all flow conditions throughout the length of Blacktail Creek, Grove Gulch Creek, and Silver Bow Creek below its confluence with Blacktail Creek within and directly downstream of the BPSOU. The prescriptive surface water monitoring of the 2006/2011 BPSOU Record of Decision (Section 12.6.6.2) will be simplified to points of compliance at SS-06G and SS-07 (Figure A-3). Other monitoring stations will remain in the network as needed, but compliance will be determined at these two farthest downstream stations. Effluent from the Butte wastewater treatment plant enters between SS-06G and SS-07. The surface water sampling methodology will be modified to allow for additional compositing methods at the compliance sampling locations.

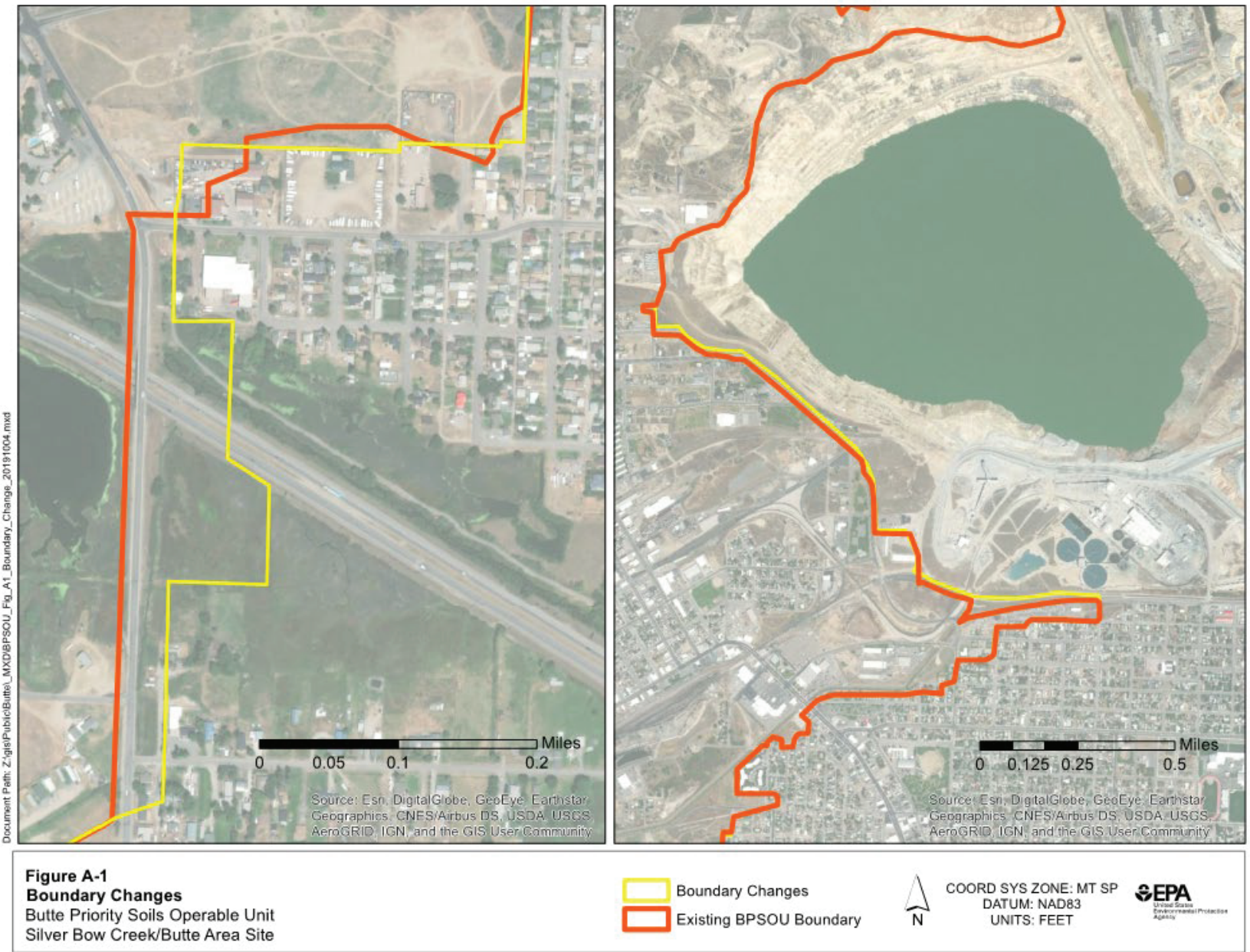
### **4. Simplify Compliance Determination**

The 2006/2011 BPSOU Record of Decision specified a flow-weighted concentration approach to determining compliance. The modified approach is simpler. Upstream and downstream samples



will be collected, regardless of flow conditions in the creek. If concentrations from downstream stations exceed the performance standard, concentrations would be compared to those measured at the upstream station. Upstream stations can be modified or changed with EPA and DEQ approval. If the concentration upstream is greater than downstream, the downstream sample is in compliance.

Figure A-1. Boundary Changes



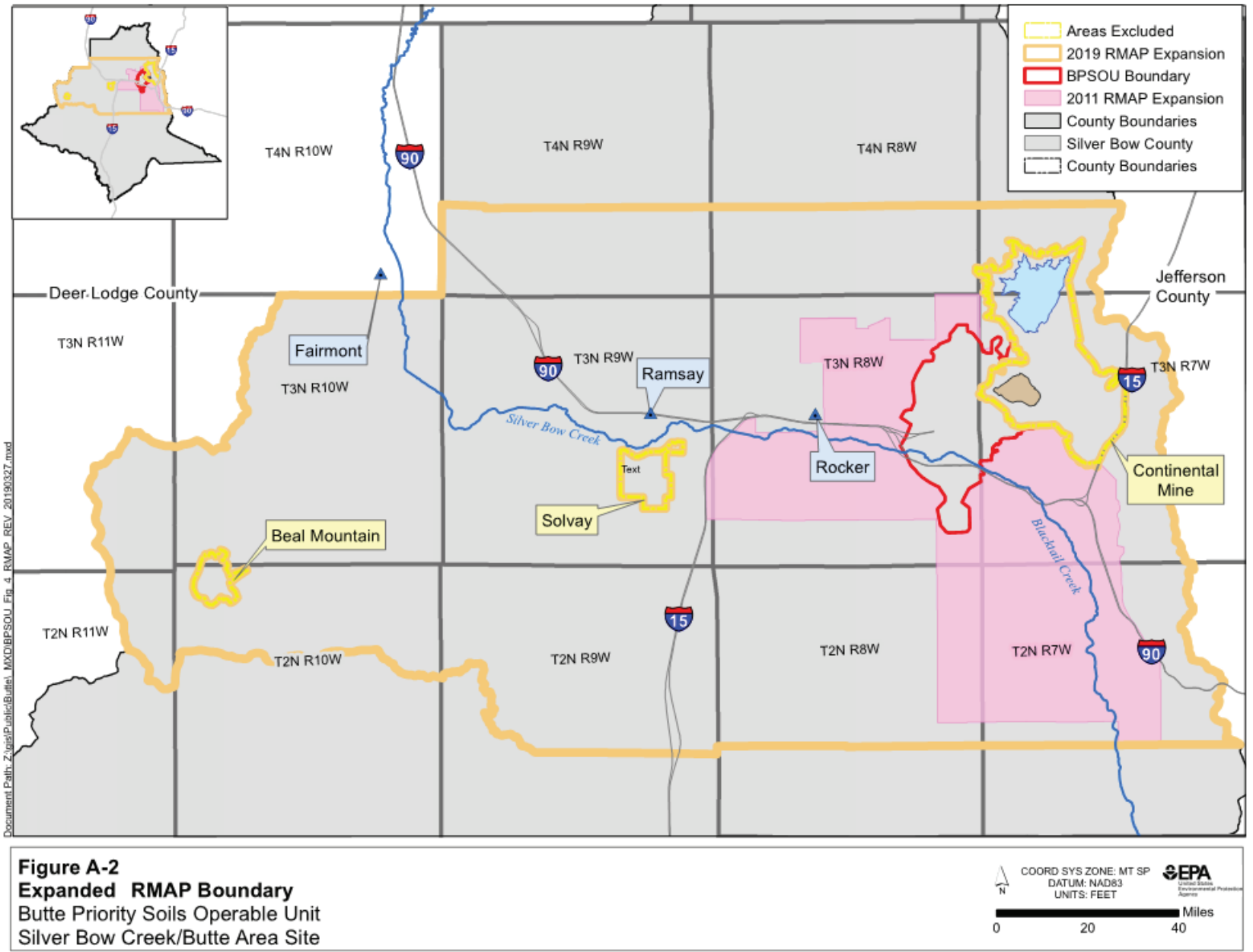
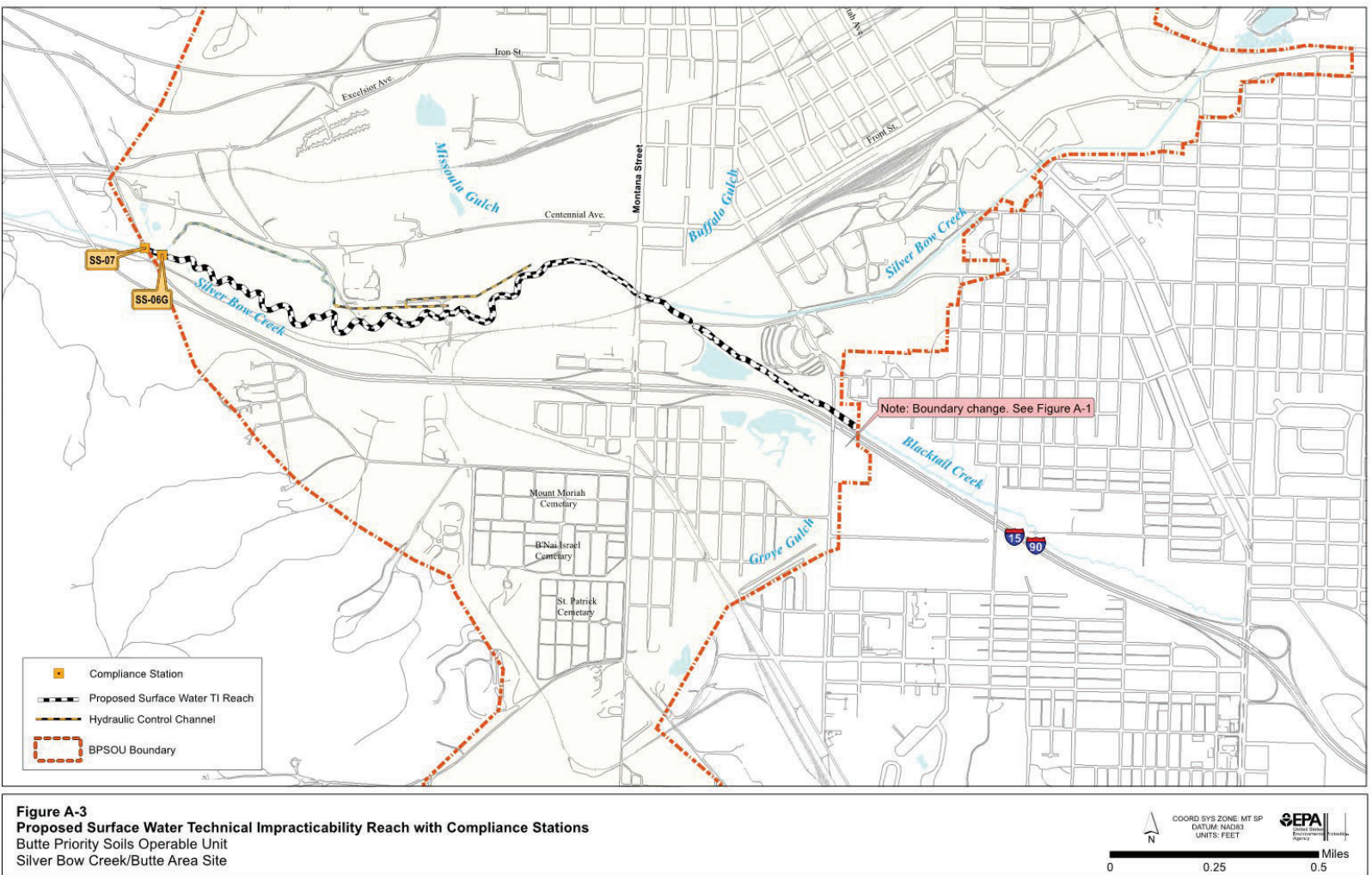


Figure A-2. Boundary Changes.

Figure A-3. Surface Water Technical Impracticability Reach with Compliance Stations.



## **5. Allow Sludge Dewatering, Drying, and Management**

The 2006/2011 BPSOU Record of Decision stated that the Butte Reduction Works area would not be used for Butte Treatment Lagoon sludge management. However, with approved modifications and upgrades to the Butte Treatment Lagoons, a safe and protective area for sludge management was developed and is now allowed for use. Sludge from the lagoons is now dried nearby and then disposed of in the Butte Mine Waste Repository.

## **6. Revise Definition of Wet Weather Events for Surface Water Flow Regime**

For compliance monitoring, wet weather flow conditions and wet weather events will be defined as when there is measurable outflow from any of the primary outlets of the following main existing or planned storm water basins within the BPSOU: CB-9 in Missoula Gulch, the Diggings East basin, the Buffalo Gulch basin, and the East Buffalo Gulch/Northside Tailings basin.

## **7. Modify West Camp Pumping Level Requirements**

Water levels will be allowed to exceed the specified elevation described in the 2006/2011 BPSOU Record of Decision for brief periods to provide short-term additional capacity in the Butte Treatment Lagoons for operational flexibility. Under the 2006/2011 BPSOU Record of Decision, the West Camp bedrock groundwater level must be kept below an elevation of 5,435 feet through pumping and then treatment in the Butte Treatment Lagoons. With this modification, if additional capacity is temporarily needed in the lagoons, pumping from West Camp may be paused. A temporary resultant rise in groundwater elevation in the West Camp well is allowed.

## **8. Modify RMAP Target Numbers**

Numbers per year for sampling and remediation are modified from those stated in the 2006/2011 BPSOU Record of Decision to account for additional remediation at properties that are visited multiple times (e.g., for remodels and re-roofing, when Butte-Silver Bow (BSB) County returns to a previously remediated property multiple times).

## **9. Correct Lead Bioavailability Percentage Used**

The integrated exposure uptake biokinetic lead model used to set soil action levels for lead-contaminated soil in BPSOU was run with a bioavailability of 12 percent for soil and 30 percent for indoor dust per the risk assessment. The 2006 BPSOU Record of Decision misstated these as 10 percent for both in Section 7.1.2.

## **10. Correct Test Animals Used**

Bioavailability studies for lead and arsenic described in the 2006 BPSOU Record of Decision used rats and swine, not monkeys and swine. The 2006 BPSOU Record of Decision misstated this in both Sections 7.1.2 and 7.1.3.

## **11. Better Describe Mandate for Future Health Studies**

The 2006/2011 BPSOU Record of Decision requires future human health studies on a periodic basis but does not specifically describe their exact nature. The modification specifies:

- Butte-Silver Bow County, as the lead responsible party for this action, will periodically evaluate medical monitoring (i.e., biomonitoring) data approaches and data compiled under the medical monitoring program every 5 years for a period of 30 years. The first of these studies was completed and approved by EPA in 2014. Five additional periodic medical monitoring studies will be conducted over the next 25 years. Other reviews and potential health studies may be conducted to expand beyond medical monitoring data through discussions with the stakeholder group as these studies continue, and as funding is available, with the Butte-Silver Bow County Health Department as the lead agency in coordinating these reviews and studies. The Agency for Toxic Substances and Disease Control and the Montana Department of Public Health and Human Services will be substantially involved in this effort, along with EPA and DEQ. As the expanded RMAP program is developed, EPA and DEQ will work with community members and Butte Silver Bow County to continually address public health concerns associated with historical mining waste and current public health issues to the extent practical and as funding is available.
- Reports documenting these periodic evaluations will respect the personal privacy of the participants and will be available to the public, EPA, DEQ, and potentially responsible parties for the BPSOU.
- All stakeholder parties will continue to facilitate, participate, and contribute to the Medical Monitoring Working Group and other public health reviews and studies.

## **12. Confirm Compliance with Human Health ARARs for Surface Water is Not Required During Wet Weather Conditions**

As noted above, in-stream surface water quality must meet human health standards in normal flow conditions. The replacement standards are more stringent than human health standards. Human health exposure pathways of concern, which focus on drinking water consumption and consumption of fish, are not likely to occur during acute, wet weather events.

## **13. Use of the Names Metro Storm Drain and MSD Subdrain**

Site documents and the 2006 BPSOU Record of Decision referred to the storm water channel and subdrain between the Montana Resources concentrator and the Visitor's Center as the Metro Storm Drain and MSD subdrain. In accordance with a 2015 decision from State district court, any future reference will now be Silver Bow Creek. Where there is a need to identify a specific geographic area within Silver Bow Creek, documents will reference Silver Bow Creek above or below the confluence with Blacktail Creek and BPSOU subdrain.

**APPENDIX B**  
**RESPONSIVENESS SUMMARY**

**RESPONSIVENESS SUMMARY**

**for the  
BUTTE PRIORITY SOILS OPERABLE UNIT  
of the  
SILVER BOW CREEK/BUTTE AREA  
SITE**

**Butte and Walkerville, Montana**

**Appendix B to the  
Record of Decision Amendment**

**U.S. Environmental Protection Agency  
Montana Department of Environmental Quality**



# TABLE OF CONTENTS

<b>LIST OF TABLES.....</b>	<b>iii</b>
<b>ACRONYMS AND ABBREVIATIONS.....</b>	<b>iv</b>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Overview and Background.....	1
1.2 Community Involvement Activities .....	2
1.3 Overview of Comments Received.....	8
1.4 Protocol for Addressing Comments .....	10
<b>2.0 PUBLIC COMMENTS AND RESPONSES .....</b>	<b>10</b>
2.1 Action Levels .....	11
2.2 Adaptive Management .....	16
2.3 Air Quality .....	17
2.4 Allocation Agreement .....	21
2.5 BPSOU Expansion .....	22
2.6 Bull Trout Impacts .....	24
2.7 Community Involvement.....	30
2.8 Condemnation of Private Property .....	39
2.9 Controlled Groundwater Area Boundary .....	41
2.10 Cost in Remedial Decision-Making .....	41
2.11 Economic Development .....	42
2.12 End Land Use Plan and the Consent Decree .....	46
2.13 Environmental Justice .....	47
2.14 Flooding .....	49
2.15 Funding .....	50
2.16 Groundwater.....	55
2.17 Health Studies .....	61
2.18 Impacts to Butte-Silver Bow Compliance.....	86
2.19 Operable Unit Management .....	87
2.20 Proposed Modification of the 2006/2011 Record of Decision .....	89
2.21 Reclamation.....	104
2.22 Regulatory Process.....	109
2.23 Remedy Effectiveness .....	113
2.24 Risk Issues.....	113
2.25 RMAP Expansion.....	120
2.26 Silver Bow Creek Legal Status .....	133
2.27 Silver Bow Creek above the Confluence Channel Replacement.....	145
2.28 Stormwater Issues .....	167
2.29 Stormwater Retention/Detention Basins .....	179
2.30 Source Erosion to Surface Water .....	190
2.31 Subdrain .....	194
2.32 Surface Water Management Plan .....	195
2.33 Technical Text and Figure Changes for the 2020 Record of Decision Amendment .....	196
2.34 TI Waiver .....	203
2.35 Waste Removal .....	225
2.36 Water Quality District .....	238
<b>3.0 REFERENCES .....</b>	<b>240</b>

## **LIST OF TABLES**

Table 1            List of Topics for Addressing Public Comment and Section Number

## ACRONYMS AND ABBREVIATIONS

µg/dL	micrograms per deciliter
Atlantic Richfield	The Atlantic Richfield Company (also referred to as AR and ARCO in comments)
ARAR	applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BABCGA	Butte Alluvial and Bedrock Controlled Groundwater Area
BMP	best management practice
BPSOU	Butte Priority Soils Operable Unit
BPSOU ROD	2006 BPSOU Record of Decision as amended by the 2011 Explanation of Significant Differences and the 2020 BPSOU Record of Decision Amendment.
BRES	Butte Reclamation Evaluation System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGWA	controlled groundwater area
CTEC	Citizens Technical Environmental Committee
DEQ	Montana Department of Environmental Quality
DNRC	Montana Department of Natural Resources and Conservation
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FWS	U.S. Fish and Wildlife Service
HUD	U.S. Department of Housing and Urban Development
IC	institutional control
ID	identification
mg/kg	milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ppm	parts per million
RAO	remedial action objective
RMAP	Residential Metals Abatement Program
SARTA	Butte Silver Bow Superfund Advisory and Redevelopment Trust Authority
Site	Silver Bow Creek/Butte Area Superfund Site
TI	technical impracticability
U.S.C.	U.S. Code
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children

## 1.0 INTRODUCTION

### 1.1 Overview and Background

The U.S. Environmental Protection Agency (EPA)—in consultation with the Montana Department of Environmental Quality (DEQ)—conducted a technical impracticability (TI) evaluation (EPA 2018a) of the Butte Priority Soils Operable Unit (BPSOU) of the Silver Bow Creek/Butte Area Superfund Site (the Site) to determine the likelihood of meeting remedial goals and applicable or relevant and appropriate requirement (ARAR) standards for surface water. EPA also conducted new studies examining the current conditions in BPSOU surface water. Based partially on these studies, EPA, in consultation with Montana DEQ, chose to modify the existing 2006 BPSOU Record of Decision (EPA 2006) as it is amended by a 2011 BPSOU Explanation of Significant Differences (ESD) (EPA 2011). These two documents are hereinafter referred to as the 2006/2011 BPSOU Record of Decision.

The proposed modification included two major components:

- Expand removals of mine waste, install additional stormwater best management practices (BMPs), install additional contaminated groundwater capture within BPSOU, and reroute part of Silver Bow Creek in the Butte Reduction Works area.
- Waive two Montana DEQ-7 standards as an initial matter and provide a post-construction determination process to waive others only if noncompliance is demonstrated.

Details of the proposed modification are based on evaluation of data obtained since the 2006/2011 Record of Decision, State of Montana input, and the community's desire to increase the amount of mine waste removals in the Silver Bow Creek area to allow for future land uses.

EPA released the *Proposed Plan to Amend the 2006/2011 Record of Decision, Butte Priority Soils Operable Unit* (EPA 2019d) on April 11, 2019. The plan described proposed changes to the *Record of Decision, Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site* (EPA 2006) as amended by the 2011 ESD for the BPSOU.

A record of decision amendment is required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at 40 Code of Federal Regulation (CFR) 300.430(f)(3)(F) when fundamental changes to an approved record of decision are made by EPA. EPA prepared a proposed plan and has accepted, evaluated, and responded to public comment as required by the NCP. EPA and

Montana DEQ considered all comments summarized in this document as the decision for amending the BPSOU remedy was made.

In addition, a proposed consent decree has been developed that provides additional details about most of the remedial activities described in the 2020 Record of Decision Amendment. An amended Unilateral Administrative Order also will be issued, which will implement the residential metals abatement portion and the medical monitoring study requirements of the 2020 BPSOU Record of Decision Amendment. For consistency with the consent decree, use of the acronym “BPSOU ROD” in the EPA responses to comments will refer to the end product of the amendment process—the 2006 BPSOU Record of Decision as amended by the 2011 Explanation of Significant Differences and the 2020 BPSOU Record of Decision Amendment. In all other instances, EPA will refer to either the 2006/2011 BPSOU Record of Decision or the 2020 BPSOU Record of Decision Amendment. Commenters tend to use ROD for any record of decision.

This responsiveness summary provides a summary of the public comments submitted to the EPA regarding the proposed plan. EPA’s responses to those comments are also provided. The responsiveness summary is organized as follows:

- Section 1 – Introduction
- Section 2 – Public Comments and Responses
- Section 3 – References Cited

EPA has worked closely with community members and other stakeholders throughout the Superfund process at the BPSOU and the Silver Bow Creek/Butte Area site at large. That cooperation continued into the amendment process. Community participation played an essential role in the development of the proposed plan and the 2020 Record of Decision Amendment and is described in more detail below.

## **1.2 Community Involvement Activities**

EPA’s outreach goal is to educate the community about the work being done at the BPSOU and collaborate with stakeholders on how to successfully engage the public. Extensive work has been done within the BPSOU, in conjunction with Montana DEQ, Butte Silver Bow County, Atlantic Richfield Company (Atlantic Richfield [also AR or ARCO in comments]), Citizens Technical Environmental Committee (CTEC), and the Butte Silver Bow Superfund Advisory and Redevelopment Trust Authority (SARTA), as well as interested individual members of the public.

### 1.2.1 Prior to Proposed Plan

EPA used public information sessions, fact sheets, websites, one-on-one discussions, and participation in community events as ways to share information about the Site with the broader community. Furthermore, EPA has provided financial support to CTEC since 1984 via a technical assistance grant, which allows a community group to contract their own technical advisor to interpret and explain technical reports, site conditions, and EPA's proposed cleanup proposals and decisions.

EPA made significant community outreach efforts leading up to the release of the proposed plan to get community input and to prepare people to participate in the public comment period. These efforts included producing and disseminating information such as fact sheets; maintaining the information repository at the Montana Tech Library where the public can review documents associated with the BPSOU; maintaining current information on EPA's BPSOU website; supporting CTEC; sustaining strong partnerships with Montana DEQ, the Butte-Silver Bow County officials, and the Butte-Silver Bow Public Health Department to maximize community outreach efforts; and attending and presenting at public forums and meetings.

Additionally, EPA takes environmental justice seriously and has worked to understand environmental justice concerns in the BPSOU by using existing tools (such as EPA's Environmental Justice Screen tool and Community-Focused Exposure and Risk Screening tool), applying the six principles of environmental justice that are outlined in Executive Order 12898 (Environmental Justice: Guidance Under the National Environmental Policy Act), and working with appropriate community groups. EPA will continue to work with interested parties to make sure that future outreach efforts reach historically underrepresented communities.

Specific outreach activities conducted prior to the release of the proposed plan included:

- January 26, 2018 – At a press conference in Butte, EPA's Region 8 Administrator announced a conceptual settlement framework for completing the BPSOU remedial actions.
- April 2018 – The United States and Atlantic Richfield obtained a modification of the federal district court's confidentiality order,

allowing consent decree parties to share information about the further cleanup plans for the BPSOU.

- May 30, 2018 – EPA publicly released a detailed *Further Remedial Elements Scope of Work* (EPA 2018b), describing planned future work, specifically the floodplain waste removal actions planned for the Butte Reduction Works and Blacktail Creek areas (including the Blacktail Berms), additional contaminated groundwater controls, removal of waste and contaminated soils within the Diggings East and Northside Tailings area and construction of lined retention/detention basins in those areas, construction of a lined retention/detention basin in the East Buffalo Gulch drainage, construction of a stormwater control feature in Grove Gulch, construction of other stormwater control features in other parts of Butte, and plans for evaluating and capping, where appropriate, insufficiently reclaimed and unreclaimed mine waste areas. Fact sheets were provided to explain various parts of the conceptual settlement framework and a public comment period was announced.
- May 30 and June 12, 2018 – Two public meetings were held in Butte at the Montana Tech Library auditorium and attended by representatives of EPA, Montana DEQ, Butte Silver Bow County, and Atlantic Richfield. The meetings were held to further explain the *Further Remedial Elements Scope of Work* (EPA 2018b) and to answer questions about the plans.
- June 26, 2018 – Butte-Silver Bow staff presented a summary of the BPSOU conceptual agreement to members of SARTA. The presentation included a summary of Butte-Silver Bow’s guiding framework and included a high-level summary of the conceptual agreement and detailed presentations of individual work plans made available to the public.
- July 11–12, 2018 – An information booth was staffed during the Folk Festival where presentation materials available from the May/June public meetings were displayed.
- August 7, 2018 – Two community design workshops were held by Atlantic Richfield at the Butte Brewing conference room in Butte. This was the first in the series that engaged the community in a design charette to develop a vision for the Silver Bow and Blacktail Creek corridor from Casey Street west through the Butte Reduction works.

Representatives of EPA, Montana DEQ, and Butte-Silver Bow were present, as were members of the community.

- August 30, 2018 – The second set of the community design workshops was held by Atlantic Richfield. Outcomes of the August 7, 2018 workshops were presented, and further feedback was solicited to refine concepts for end land use. Representatives of EPA, Montana DEQ, and Butte-Silver Bow were present, as were members of the public.
- September 25, 2018 – Butte-Silver Bow staff presented to SARTA an overview of the community design workshop process for the remediation in the vicinity of Silver Bow Creek and Blacktail Creek. The members requested updates on the schedule for the consent decree to determine how SARTA would assist in soliciting public input and providing recommendations to the Council of Commissioners. SARTA staff began scheduling technical updates, particularly details pertaining to the Parrot Tailings and other remedial work in Butte. A water subcommittee was established to begin to understand the water-related issues integral to well-informed recommendations. This included a tour of existing stormwater infrastructure.
- October 23, 2018 –SARTA hosted the first in a series of Superfund technical seminars with a presentation by the Montana Natural Resource Damage Program to summarize and discuss the Parrot Tailings Waste Removal project, including project goals and a description of how the groundwater saturated mine wastes are being removed. A thorough overview of BPSOU stormwater challenges was provided based on information shared during a tour provided by Butte-Silver Bow.
- November 1, 2018 – The final community design workshop was held by Atlantic Richfield and presented the outcome of the two-part design charette workshops. Presentations were made of end land use concepts for the corridor suggested by participants. Representatives of EPA, Montana DEQ, and Butte-Silver Bow were present, as were members of the community.
- November 27, 2018 – SARTA hosted the second in its series of Superfund technical seminars to inform the public about the foundations of Superfund operations in Butte and technical



components of forthcoming plans and documents associated with the record of decision process and consent decree. Butte-Silver Bow Superfund staff provided an overview of the county's operations program and proposed a schedule for forthcoming presentations in the early part of 2019.

- January 8, 2019 – SARTA hosted a presentation by Atlantic Richfield to discuss Atlantic Richfield's day-to-day operations and technical management of the BPSOU.
- April 9, 2019 – SARTA hosted a presentation by EPA and Montana DEQ entitled, "A Day in the Life," describing their roles and responsibilities to the BPSOU and how those responsibilities dovetail with other operable units at the site. The presentation discussed EPA and Montana DEQ's relationships with their counterparts at Butte Silver Bow and AR and the collaborative approach. SARTA members asked questions pertaining to BPSOU, West Side Soils Operable Unit, and Mine Flooding Operable Unit.

### **1.2.2 After Issuing Proposed Plan**

Specific public engagement activities and other activities were conducted just prior to and after the April 11, 2019 release of EPA's proposed plan to amend the 2006/2011 BPSOU Record of Decision. The NCP requires a 30-day comment period. EPA initially announced a 60-day public comment period and subsequently extended it to 90 days at the request of the public (April 11 to July 11, 2019). All key supporting documents, including a fact sheet prepared by EPA to distill the proposed plan down into two pages, were posted on EPA's BPSOU website. Hard copies of the proposed plan and electronic copies of the complete administrative record were made available at the Montana Tech library and on EPA's Silver Bow Creek/Butte Area website.

The public comment period was announced in the *Montana Standard* and *Butte Weekly* and on EPA's website. Additionally, EPA began notifying specific groups (e.g., CTEC, Restore Our Creek Coalition, SARTA) before issuing the proposed plan.

During the public comment period, EPA held two public meetings. The meetings were advertised days ahead of time in the *Montana Standard* and the *Butte Weekly*. They were held on April 23 and May 23, 2019 at the Montana Tech Auditorium, which is handicapped accessible and within the BPSOU. A formal presentation of the plan was given at each

meeting, followed by a question and answer period and an informal open house where the public could discuss the plan directly with EPA staff and ask questions one-on-one. At both meetings, opportunities were provided for both written and transcribed oral comments on the proposed plan to be taken for the record. Transcripts of the recorded public comments are in the administrative record for the BPSOU record of decision amendment.

Specific outreach activities conducted upon and following the release of the proposed plan included:

- April 11, 2019 – EPA released a proposed plan for amending the 2006/2011 BPSOU Record of Decision and placed the administrative record for the proposed action in the Montana Tech Library and on EPA’s Silver Bow Creek/Butte Area website. EPA published a notification of the availability of the proposed plan and administrative record in the *Montana Standard* and the *Butte Weekly* newspapers and distributed a fact sheet summarizing the proposed plan.
- April 23, 2019 – EPA held the first of two public meetings on the proposed plan at which EPA and Montana DEQ answered questions and took formal public comment.
- May 20, 2019 – Atlantic Richfield and Butte Silver Bow County shared their joint end land use plan describing amenities planned for the area above the confluence of Silver Bow Creek with Blacktail Creek. This plan is the result of the community visioning sessions and design workshops held in summer 2018. The State of Montana also shared its plan for devoting some money from the consent decree proceeds, which are not needed to meet consent decree obligations into an interest-bearing trust, to be used by the community to design and/or construct a lined creek in the Silver Bow Creek area above its confluence with Blacktail Creek. Such funds would be used as a match for other funds secured by the project proponent, if land, water, access, infrastructure, and other issues are resolved at the time a proposed project is presented. The plan concepts were discussed at a meeting attended by Restore our Creek Coalition representatives and other community members on October 31, 2018 at the Butte-Silver Bow Public Archives.
- May 23, 2019 – EPA held the second of two public meetings on the proposed plan.

- May 30, 2019 – Butte-Silver Bow hosted a listening session at the Butte archives to summarize EPA’s proposed plan.
- September 2019 – EPA awarded CTEC an amended grant award to provide for CTEC’s evaluation of end land use possibilities in the area above Silver Bow Creek’s confluence with Blacktail Creek to Texas Avenue, including the possible construction of a lined, meandering creek in this area.
- October 22, 2019 – Butte-Silver Bow provided SARTA an update on the consent decree, noting consensus was reached, generally outlining the document’s structure and elements, reiterating the presently available public information, and describing a proposed public education process prior to bringing the document to the Council of Commissioners for their consideration.

EPA’s efforts to provide opportunities for public participation have met and exceeded the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the NCP. The input EPA received from the public and other stakeholders throughout the Superfund process was instrumental in developing the proposed plan and the 2020 BPSOU Record of Decision Amendment. The ongoing involvement of the community and other stakeholders will remain an important part of the cleanup as it moves forward.

### **1.3 Overview of Comments Received**

A total of 101 individual comment submissions were received. Comments were received by regular mail (letters), email, and as recorded by a stenographer at both public meetings. The submission from Restore Our Creek Coalition included an attachment of a petition with over 1,000 signatures. That petition is acknowledged here and included in the public record, but no attempt was made to verify the signatures nor were the signatories treated as separate commenters.

Each submission was given a sequential individual comment identification (ID) number. For each ID number assigned, basic identification information (i.e., date received, commenter name, comment method [e.g., email, letter, transcript], title, or opening sentence) was tracked. A master spreadsheet tracked assigned ID numbers for the comments made in each submission (e.g., 51.1, 51.2, 51.3).

Names and addresses of individual commenters were recorded and tracked but are not available to the public owing to EPA’s Privacy Policy and commitment to protecting personally identifiable information. Redacted versions of individual

comments are entered into the administrative record supporting the 2020 Record of Decision Amendment. Names of businesses, organizations, and government entities submitting comments are (in alphabetical order):

- Alliance for the Wild Rockies
- Atlantic Richfield Company
- Butte-Silver Bow Chief and Council
- Clark Fork Coalition (referred to as CFC by some commenters)
- CTEC
- Greeley Neighborhood Committee
- Habitat for Humanity
- Restore Our Creek Coalition
- Montana Fish, Wildlife and Parks
- Trout Unlimited

The top 10 general comment categories addressed in Section 2 are shown below:

1. Against many aspects of the modification (35 commenters)
2. Supports the proposed modification (24 commenters)
3. Questions or suggestions related to waste removal (19 commenters)
4. Questions or suggestions related to the health studies (19 commenters)
5. Questions or suggestions about the legal status of Silver Bow Creek (16 commenters)
6. Comments or suggestions about the expansion of the Residential Metals Abatement Program (RMAP) (16 commenters)
7. Technical comments on text or figures relevant to the amendment (12 commenters)
8. Questions or suggestions about community involvement (12 commenters)
9. Against the TI waiver (11 commenters)

10. Supports the TI waiver, has questions about the TI waiver, or has questions about action levels (10 commenters each)

Comments are responded to by the specific topic raised in the individual comments and are not grouped by these categories.

**1.4 Protocol for Addressing Comments**

EPA responded only to the portion of the comment that was specific to the changes described in the proposed plan. Comments (or portions of multi-comment submissions) were sorted by topic so that multiple comments could be answered with a single response to avoid repetition. For brevity, introductory or background material that was not relevant to the specifics of the proposed plan was extracted from the comment summary.

**2.0 PUBLIC COMMENTS AND RESPONSES**

The public comments, organized by topic, are presented below along with EPA’s response. Topics are presented alphabetically as shown in Table 1.

**Table 1. List of Topics for Addressing Public Comment and Section Number**

2.1 Action Levels	2.19 Operable Unit Management
2.2 Adaptive Management	2.20 Proposed Modification of the 2006/2011 Record of Decision
2.3 Air Quality	2.21 Reclamation
2.4 Allocation Agreement	2.22 Regulatory Process
2.5 BPSOU Expansion	2.23 Remedy Effectiveness
2.6 Bull Trout Impacts	2.24 Risk Issues
2.7 Community Involvement	2.25 RMAP Expansion
2.8 Condemnation of Private Property	2.26 Silver Bow Creek Legal Status
2.9 Controlled Groundwater Area Boundary	2.27 Silver Bow Creek above the Confluence Channel Replacement
2.10 Cost in Remedial Decision-Making	2.28 Stormwater Issues
2.11 Economic Development	2.29 Stormwater Retention/Detention Basins
2.12 End Land Use Plan and the Consent Decree	2.30 Source Erosion to Surface Water
2.13 Environmental Justice	2.31 Subdrain
2.14 Flooding	2.32 Surface Water Management Plan
2.15 Funding	2.33 Technical Text and Figure Changes for the 2020 Record of Decision Amendment

2.16 Groundwater	2.34 TI Waiver
2.17 Health Studies	2.35 Waste Removal
2.18 Impacts to Butte-Silver Bow Compliance	2.36 Water Quality District

## 2.1 Action Levels

### 2.1.1 Comment Summary

Ten comments were received regarding the action level for lead in Butte soils of 1,200 parts per million (ppm). Commenters thought it was too high—higher than the action levels for lead in other parts of the country and for the Anaconda Smelter Site—and that it impacted human health and economic development in Butte.

- **Comment 7.14.** “18. Lead Level Allowed in Butte is much too high at 1200 ppm. The rest of the nation, and even in Anaconda the standard is 400 ppm. Environmental Justice demands you reduce the standard on the Butte Hill. Why is 1200 ppm “good enough for Butte? Moreover, the latest Health Risk data sheet from EPA regarding Lead Risk does not mention immune-compromised people, the elderly, nursing and pregnant women. The genetic makeup of people who may be harmed by Lead when others are not is just as important to Butte as it is to the rest of the nation. Getting loans for new housing in Butte is also at a great disadvantage when EPA allows more Lead than the Federal Housing Agencies do. EPA must lower the allowed Lead in Butte to 400 ppm and require cleanup accordingly.”
- **Comment 13.3.** “The recent lead action level established in Anaconda in 2013, after a decade of requests by the community, set 400 ppm as the correct action level. This clears Anaconda for full-on development activities in regard to housing. An identical level should be chosen for residential areas, including inside houses, for remediation efforts in the residential areas in Butte. If the 400-ppm level can be allowed for residential areas of the BPSOU, it will be possible for Butte to engage in the clean up without reservation or concern, as the residential levels will meet requirements for maximum HUD lead levels. However, if the action level remains at 1200 ppm for lead, which is 800 ppm higher than HUD maximums, Butte’s cleanup will always be in doubt, and consumers and residents will continue to have concerns about the safety of Butte’s residential areas for families with children. Also, this reduction would recognize the need to protect human health, by

avoiding the unknowns of the pollutant mix regularly sampled in Butte residences, given evidence that these pollutants may act in synergistic fashion to provide additional health threats.”

- **Comment 56.5** “And, finally, we probably need to take another look at the protectiveness of the action levels, are they really still protective of human health and the environment.”
- **Comment 57.2.** “We are concerned that the action level for residential areas will do several really harmful things to Butte. The first one is this process has been going on so long that confidence in the cleanup has been deeply shaken over time. And so you're up against -- you have this incredible accomplishment. So many people here have accomplished so much for this community through this cleanup. It's just been almost miraculous. But all of that amazing work is going to go to waste if there's no trust in your final number, there's no trust in your action level as far as lead level for children. If you leave a lead level of 1,200 parts per million, which is three times the HUD maximum for housing that has children in it, you are dooming the town to have no confidence for newcomers coming, and this kind of thing, because why can't you even meet basic HUD standards.”
- **Comment 68.1.** “I agree completely with Barbara Miller about the lead action levels. We should not be the worst place in the nation for lead, in terms of the levels that we're willing to accept. Our action level is going to be a lot worse than Anaconda's, for God's sake.”
- **Comment 74.9.** “9. Lead attainment levels. Having Butte’s attainment level at 1200 ppm instead of the national level of 400 ppm (which is what they have in Anaconda) treats Butte people as second class citizens. In addition, allowing levels greatly above the level required by federal housing agencies can have a detrimental effect on the marketability of housing in Butte. We here in Butte have enough obstacles to adequate economic growth without having a federal environmental agency allowing a standard that under cuts our ability to fully utilize programs of other federal agencies that make financing housing affordable.”
- **Comment 75.1.** “I am writing to request that the levels of lead allowed in the soil in Butte Montana be reduced. As someone who grew up in Butte, I would like the future of Butte available for the

following generations. Also, the continued cleanup of Silver Bow Creek is needed to again provide a future for Butte.”

- **Comment 81.1.** “Today, CLEJ is still campaigning for the kids of Butte. Its Chair, Mary Kay Craig is absolutely correct in pointing to the abysmal lead levels allowed in Butte’s soils. She is right to say that this community’s lead soil levels are much higher than the levels required in other EPA projects. So, I support her drive to finally get a realistic and environmentally just lower lead level for Butte.”
- **Comment 82.3.** “In addition, it is my understanding that the amount of lead allowed in the soils in Butte is way too high, far more than the rest of the USA, even higher than the levels allowed in Anaconda. Therefore, Butte lead standards should be reduced so Butte is on a level playing field with other mine waste impacted communities.”
- **Comment 91.11.** “7. Why were the lead levels in Butte, which are significantly above those of any other Montana city, not reviewed during this proposed update to the ROD? Is this high threshold really necessary? Why are these high levels considered protective of human health in Butte, but not in other mining communities?”

### 2.1.2 EPA Response

The combination of the RMAP and the comparatively low bioavailability of lead within BPSOU support the use of a 1,200 milligram per kilogram (mg/kg) lead cleanup level as a protective remedy.

The soil lead level of 400 mg/kg is a screening level developed by EPA to identify properties where additional investigation may be necessary as part of a risk assessment. This screening level is based on default exposure lead bioavailability assumptions. Bioavailability describes the amount of chemical that is actually absorbed into the body when an exposure medium, such as soil, is ingested. EPA’s default bioavailability assumption is that 60% of the lead in area soil would be bioavailable if ingested. However, actual bioavailability can be highly variable and depends upon site-specific factors, such as the form of lead that is present and environmental conditions in the soil.

Because of this, EPA’s risk assessment guidance recommends performing site-specific bioavailability studies. The BPSOU is unique in that EPA has performed multiple studies, including both laboratory studies and animal studies, to evaluate the site-specific bioavailability of lead in soil.



These studies, which are described in more detail in the 2006/2011 BPSOU Record of Decision, show that soil lead bioavailability in Butte is about 3 times lower than the default assumption. Because lead in Butte soils is less biologically available (coupled with the effectiveness of the RMAP) the site-specific soil lead action level for Butte can be set about three times higher than the default lead screening level of 400 mg/kg and can be as protective as the default level at generic sites. The reason EPA has adopted the default soil lead screening level of 400 mg/kg at other Superfund sites is that those sites do not have the benefit of site-specific information on bioavailability to deviate from the default assumption.

U.S. Department of Housing and Urban Development (HUD) guidelines also adopted the default soil lead screening level of 400 mg/kg as one of its soil lead hazard levels. However, HUD guidelines identify different soil lead hazard levels depending upon the soil location. HUD identifies a level of 400 mg/kg specifically for application to bare soils in play areas and a level of 1,200 mg/kg for application to bare soils in the rest of the yard (40 CFR § 745.65(c)). Thus, the yard-wide HUD level is consistent with the soil lead action level selected for Butte.

EPA will work directly with HUD and other stakeholders to verify that loans or other forms of assistance in Butte are not hindered by the lead action level in Butte. If there are specific incidences where such assistance is hindered, residents should contact Butte Silver Bow County government and the EPA remedial project manager for assistance in solving the problem. Medical monitoring studies find that rates of elevated blood lead levels in Butte children have declined dramatically over the study period. While we surmise that the RMAP has contributed to these declines, we cannot verify or quantify the magnitude of impact.

The BPSOU residential lead action level is based on EPA's human health risk assessment and specifically on the Integrated Exposure Uptake Biokinetic Model (referred to as the IEUBK Model) exercise, which was part of the risk assessment. See the 2006 BPSOU Record of Decision at Part 2, Section 7 for a detailed explanation of EPA's human health risk assessment efforts for the BPSOU. EPA has reviewed this action level several times since the original record of decision and continues to believe that the IEUBK Model was correctly implemented. The model used site-specific data and indicated a lower bioavailability for lead in Butte. Additional protections for human health through the RMAP plan have been implemented in Butte and Walkerville. The lower bioavailability of lead, combined with a robust RMAP plan, supports the conclusion that a

1,200 ppm action level is fully protective of human health in Butte and Walkerville. The RMAP plan, which implements the program to meet the action level for lead as well as action levels for arsenic and mercury, is a unique plan that addresses not only lead in soils or indoor dust from mining sources but also other lead sources in a given residential area, such as lead paint or lead in water pipes. According to blood lead level data collected by the Butte Silver Bow County Health Department, there are dramatically lowered blood lead levels in children in Butte. EPA also requires a medical monitoring study to be conducted by the settling defendants every 5 years to systematically review human health biomonitoring data from Butte and Walkerville to verify that human health is protected from unacceptable risks at the BPSOU.

The soil lead action level is only one component of the RMAP for Butte. Medical monitoring and community education are also important components of the RMAP and allow the program to address the various sources of contamination that may be hazardous to human health, including lead from site sources and from non-site sources, such as lead plumbing and lead-based paint. The results of the 2014 Butte-Silver Bow health study demonstrate this multicomponent program and other factors have been effective in dramatically reducing blood lead levels in Butte children. Indeed, the 2014 health study showed blood lead levels in Butte are now comparable to reference levels nationwide. The positive results of the health study also support the conclusion that no changes to the soil lead action level are necessary. The Butte Silver Bow Health Department is in the process of summarizing the health study data collected since 2013, and a new health study report is expected to be released later this year. EPA will review the information in this health study to inform decisions on whether modifications are needed for the RMAP in the future.

The 2020 Record of Decision Amendment expands the RMAP plan to areas outside of Butte but within Silver Bow County if residents in those areas request it. EPA will implement the RMAP expansion by unilateral administrative order similar to the current RMAP action. This will further protect human health in the area.

If EPA determines in the future that soil action levels for arsenic, lead, or mercury must be lowered, based on information it receives from the future health studies or other sources, EPA's enforcement mechanisms for implementing remedial actions allow for EPA to take additional action under a unilateral administrative order or a consent decree to lower action

levels and require that further cleanup actions are taken to protect human health. See Section 122(f)(6) of CERCLA, 42 U.S. Code [U.S.C.] § 9622(f)(6).

## **2.2 Adaptive Management**

### **2.2.1 Comment Summary**

One comment was received encouraging the use of adaptive management while implementing the future cleanup actions required by the amended Record of Decision. The commenter requests a “reopener clause” in the proposed consent decree to allow modifications to be made in the future.

- **Comment 12.2.** ‘I see no mention of adaptive management in the proposed plan. What happens if some aspect of the plan is not working or if significant changes in the future affect the planned remediation? The proposed plan confidently states that the “modified remedy will achieve the remedial action objectives established for the BPSOU” (at pg 19). While I agree that the objectives are proper, there is no guarantee that the objectives will be achieved. Adaptive management is the on-going process of evaluating whether objectives have been met and adjusting management and treatment strategies in response. The proposal at hand does a poor job of outlining the needs for adaptive management and course correction, particularly where current scientific understanding of the contamination is limited or absent. In the absence of an adaptive management plan, the consent decree should include a reopener clause. The clause would allow the agreement to be modified in the future and allow the EPA to require or release additional funds to address any contaminants that were not manifest or could not reasonably have been documented scientifically from any information in the possession of or reasonably available to the EPA or any PRP on the effective date of this amendment or any contaminants documented before the effective date that persist or worsen, preventing a full recovery.’

### **2.2.2 EPA Response**

The CERCLA statute requires any CERCLA consent decree to include reopeners if new information or new conditions are discovered at a Superfund site. The proposed BPSOU consent decree includes these reopeners. Additionally, the proposed consent decree allows EPA, in consultation with Montana DEQ, to take certain additional work, as outlined in Section 1.3 of the proposed scope of work and Section IX of the consent decree, should the work required under the proposed consent

decreed not result in the expected result. Any BPSOU consent decree also will provide for these reserved rights. If the expanded remedy work required under the record of decision amendment is implemented pursuant to a unilateral administrative order, EPA reserves all of its rights to require any kind of additional work authorized under CERCLA to achieve ARAR compliance and the protection of human health and the environment.

In addition, current EPA policy encourages adaptive management when EPA is overseeing or performing remedial design and remedial action. EPA's remedial project manager for the BPSOU site will use adaptive management techniques to verify the efficient and effective implementation of the final BPSOU remedy.

## **2.3 Air Quality**

### **2.3.1 Comment Summary**

Three comments were received regarding the need for additional air quality monitoring.

- **Comment 21.2.** "It is the position of GNCDC, Inc. that the amended BPSOU ROD should include provisions for ongoing monitoring in the BPSOU area of PM-10 and TSP, accompanied by speciation for ALL the heavy metal contaminants and arsenic considered to be hazardous to human health. Otherwise, an exposure route for toxicity will be completely ignored, and there will be no control of re-contamination to the remediated site. We have been told that the Greely Area Plan area will be considered for inclusion in the West Side Soils Operable Unit (WSSOU). This would serve to correct the error of failing to include the flood plain in the Greely Neighborhood area as part of BPSOU. Again, ongoing monitoring for PM-10 and TSP with speciation in the BPSOU area should be a part of that BPSOU ROD if human health and the prevention of re-contamination of the BPSOU area is really a concern.

"Monitoring. To prevent the exposure to airborne metals, determined to be hazardous to human health by the American Medical Association from impacting human health in the Butte Silver Bow City-County area, with funds provided by the Responsible Parties, (Portion of funding to be as determined by agreement to degree of contaminant contribution from historic mining, active mining and natural surface geology.), Butte-Silver Bow (B-SB), with guidance from EPA and Montana Department of Environmental Quality (DEQ)

will perform the following ongoing monitoring of Airborne Metal Laden Dust every year during the months of: April, May, June, July, August, September with monitoring equipment located at the Greeley Monitoring Station and at least one location in each of the B-SB Council of Commissioner Districts within and outside the EPA's BPSOU. Air quality monitoring to be as follows: PM2.5 for particulate, PM10 for particulate, TSP for particulate, TSP and PM10 speciation, and speciation study of TSP and PM10 for heavy metals

“Control. Appropriate obtainable Local PM10 and TSP Airborne Metals Standard will be established. When monitoring detects excessive airborne contamination in any area appropriate mitigation and/or remediation actions will be taken to prevent further human health risks and/or contamination of previously remediated and/or restored sites in the BP SOU area.”

- **Comment 60.2.** “So what we would ask for is that during --there's supposed to be, like, a nine to 12-year shakedown period for the proposed remedy -- that additional air quality monitoring also be conducted that looks at both the total suspended particulate and PM-10 and that speciates the metal concentration for that expanded list of anolytes just to quantify that, you know, the remedy is working and it's leaving Butte with a diminished long-term health risk.”
- **Comment 96.9.** “May 20, 2019 Attn: Butte-Silver Bow Chief Executive Officer Butte-Silver Bow Council Of Commissioners, and Members There Of Butte-Silver Bow Superfund Coordinator and Members B-SB Superfund Division, 155 West Granite Street, Butte, Montana 59701 Ref: Proposed Amendment to the U.S. Environmental Protection Agency's (EPA) Butte Priority Soils Operable Unit (BPSOU) 2006/2011 Record of Decision Sub: Request for this Butte-Silver Bow City-County Government to submit a letter requesting an Airborne Dust Monitoring and Control Program Amendment be added to the EPA’s Proposed Plan to Amend the 2006/2011 Record of Decision

“In That: Neither the current EPA Butte Priority Soils Operable Unit 2006/2011 Record of Decision nor the EPA’s Proposed Plan to Amend the BPSOU 2006/2011 Record of Decision contain a provision for an ongoing Airborne Dust Monitoring and Control Program that would ensure that the proper clean up of the BPSOU site has been completed to protect human health, and to ensure that proper

monitoring and control of airborne dust is carried out so that the citizens of Butte and the outside world will be assured, beyond a reasonable doubt, that the BPSOU Superfund site has been properly remediated and restored and not re-contaminated, and that Butte is a healthy place in which to live and work. Therefore: On behalf of the GNCDC Inc., I hereby request that this Butte-Silver Bow City-County Government draft a letter and submit it to the EPA, before the June 11, 2019 Comment deadline, requesting that an Airborne Dust Monitoring and Control Program Amendment be added to the EPA's Proposed Plan to Amend the 2006/2011 Record of Decision, and authorize the B-SB Chief Executive and B-SB Council Chairman to sign said letter for and on behalf of the Butte-Silver Bow City-County Government. Respectfully submitted for your consideration and action, For And On Behalf Of The Greeley Neighborhood Community Development Corporation, Inc. R. Edward Banderob, President  
Attached: - GNCDCInc. - Comment - Proposed Plan to Amend the 2006/2011 Record of Decision - Proposed Amendment to the Document - Monitoring and Control of Airborne Metal Laden Hazardous To Human Health Dust. Ref: Proposed Plan to Amend the 2006/2011 Record of Decision U.S. Environmental Protection Agency's (EPA) Butte Priority Soils Operable Unit.

“Sub: Proposed Amendment to the Document

## Monitoring and Control of Airborne Metal Laden, Hazardous To Human Health, Dust

##.1 Monitoring

To prevent the exposure to airborne metals, determined to be hazardous to human health by the American Medical Association from impacting human health in the Butte Silver Bow City-County area, with funds provided by the Responsible Parties, (Portion of funding to be as determined by agreement to degree of contaminant contribution from historic mining, active mining and natural surface geology.), Butte-Silver Bow (B-SB), with guidance from EPA and Montana Department of Environmental Quality (DEQ) will perform the following ongoing monitoring of Airborne Metal Laden Dust every year during the months of; April, May, June, July, August, September with monitoring equipment located at the Greeley Monitoring Station and at least one location in each of the B-SB Council of Commissioner Districts within and outside the EPA's BPSOU.

“Air quality monitoring to be as follows: PM2.5 for particulate, PM10 for particulate, TSP for particulate, TSP and PM10 speciation, Speciation study of TSP and PM10 for heavy metals.

“##.2 Control

Appropriate obtainable Local PM10 and TSP Airborne Metals Standard will be established. When monitoring detects excessive airborne contamination in any area appropriate mitigation and/or remediation actions will be taken to prevent further human health risks and/or contamination of previously remediated and/or restored sites in the BPSOU area.”

### **2.3.2 EPA Response**

The Butte-Silver Bow County Health Department and Montana DEQ Air Quality Division have an ongoing air quality monitoring program for the Butte-Silver Bow Air Quality District. Particulate monitoring is conducted at the air quality station located next to the Greeley School and includes:

- Continuous monitoring for PM 2.5 particulate concentrations using a Met One model 1020 Beta Attenuation Monitor (BAM-1020).
- Continuous monitoring for PM 10 particulate concentrations using a Met One model 1020 Beta Attenuation Monitor (BAM-1020).
- Episodic monitoring for PM 2.5 using three filter-based particulate samplers (BGI Model PQ-200, Met One SASS sampler, URG sampler). These samplers collect particulate matter on filters over 24-hour periods. The filters are then analyzed gravimetrically to determine the average airborne PM2.5 concentration during the sample period. The filters are analyzed by a laboratory for selected contaminants of concern. The episodic sampling is performed every 6 days, concurrent with EPA’s guidance.
- The air station includes a meteorological tower that measures wind speed, wind direction, and temperature.

The filters from the SASS and URG samplers are regularly analyzed for concentrations of arsenic, cadmium, copper, lead, and zinc. In addition to the metal concentrations analyses, chemical speciation analyses will be completed from November 1, 2019 through February 28, 2020. Speciation analysis data will be used to conduct chemical mass balance modeling.

Additional air quality monitoring in Butte is being conducted by Montana Resources, LLP, which has contracted with Bison Engineering to conduct an ambient air quality study. The study consists of collecting and analyzing total suspended particulate and PM 10. Bison engineering is performing the following monitoring:

- Episodic monitoring for PM10 using a second BGI PQ-200 sampler. The samplers will collect a 24-hour filter sample every 6 days on the EPA national one in 6-day sampling schedule. The sampler's particulate filters will be chemically analyzed for metal concentrations of arsenic, cadmium, copper, lead, and zinc.
- Total suspended particulate monitoring is being completed using a Met One E-Sampler continuous monitor that provides hourly concentration data. The particulate filter will be analyzed for metal concentrations of arsenic, cadmium, copper, lead, and zinc.

Montana Resources, LLP's ambient air quality study started March 4, 2019 and will be completed in an estimated 1 year. The location of the monitors is on top of the Greeley School air monitoring station.

Montana Resources, LLP has agreed to use the data generated by the monitoring program in the following ways:

- To provide data upon which the Montana DEQ and Butte-Silver Bow can base environmental decisions with respect to concerns expressed by Greeley School area residents
- To produce monthly and quarterly data summaries
- To provide data to requesting organizations or agencies

The additional data from the Montana Resources, LLP monitoring program, along with the data from the ongoing Montana DEQ monitoring program, will provide Montana DEQ and Butte-Silver Bow Health Department information to complete a comprehensive assessment of the air quality in the Butte-Silver Bow Air Quality District.

## **2.4 Allocation Agreement**

### **2.4.1 Comment Summary**

One comment was received regarding the allocation agreement.

- **Comment 96.10.** “7) Amendments to the Allocation Agreement. Although not directly related to the Proposed Plan, Butte-Silver Bow



will note for the record in these comments that amendments to the Allocation Agreement with Atlantic Richfield Co. will be necessary. To that end, Atlantic Richfield and Butte-Silver Bow have agreed to negotiate the Allocation Agreement after the consent decree is lodged. The additional work and projects outlined in the Proposed Plan are extensive and will have a direct impact on current operation and maintenance obligations, the RMAP program, and institutional control management obligations. Amendments to the Allocation Agreement will ensure that all costs associated with current and future obligations are covered, and no taxpayer/ratepayer funds are used to meet these obligations.”

#### **2.4.2 EPA Response**

The comment is noted, and EPA encourages Butte Silver Bow County to verify that adequate funding is provided to the county for implementation of portions of the BPSOU remedy.

### **2.5 BPSOU Expansion**

#### **2.5.1 Comment Summary**

Two comments were received regarding BPSOU surface boundary, how it relates to the Greeley neighborhood, and the impacts of the nearby Montana Resources, LLP active mine on this community and elsewhere in Butte.

- **Comment 21.1.** “The Greeley Neighborhood Community Development Corporation, Inc, (GNCDC, Inc.) is a citizen’s community action group made up of residents who live in the Greeley Area Plan residential area immediately south of the active mine site operated by Montana Resources, LLC. The BPSOU boundary abuts the western boundary of the GNCDC, Inc. active area. Ironically, the BPSOU remedy is affected by stormwater originating from the Greeley area. Even though the neighborhood is in the Silver Bow Creek flood plain area, it is not included as a part of the BPSOU. The Greeley Neighborhood is impacted by the current mining operation. For over a decade, the residents of the Greeley Neighborhood have tried to raise the attention of the regulatory agencies to the dust problem in the area. Finally, the residents took samples themselves of the piles of gray dust and had them analyzed. The bore a striking resemblance to the ore being mined across the street. But the Greeley Neighborhood isn’t the only place where metal-laden dust has been found. A recent investigation found arsenic and metals in dust 2 miles

south of the Greeley area (ref). This study also presented evidence that Butte residents within and outside the BPSOU area showed biochemical responses to chronic metal exposure. There are over two square miles of barren mine waste directly north of the Berkeley Pit. This area also includes the Mine Waste Repository, the site where contaminated solids in the BPSOU are repositied to prevent exposure (EPA, 2006). However, this area is not capped and is liable to be entrained as dust and distributed over the valley, exposing the residents to contamination from metals, and re-contaminating remediated BPSOU sites.”

- **Comment 44.1** “I’ve got a simple comment to make. It’s probably 30 years late. At one of your previous presentations, you indicated that the Priority Soils covered the floodplain of Silver Bow Creek. When I looked at a map that showed the floodplain of Silver Bow Creek, it included an area east of Texas Avenue. Therefore, my comment is we need to redraw the line on Priority Soils.”

### 2.5.2 EPA Response

Water quality and the associated remedy in the BPSOU is affected by input from all areas upgradient of Blacktail Creek and Silver Bow Creek from its confluence with Blacktail Creek, including the Greeley Neighborhood. Understanding the upstream impacts and their effect on water quality is a critical piece of information needed to evaluate remedial options for surface water within BPSOU. EPA used data from these upgradient areas to evaluate and develop the final remedial components for the BPSOU, which are reflected in the expanded remedy described in the 2020 BPSOU Record of Decision Amendment.

The question of dust generation from the Montana Resources active mine and from historical mine waste sources and/or the BPSOU mining waste repository and its possible impacts on the Greeley Neighborhood and all of Butte and the surrounding area is an important one. Dust generation is not solely a Superfund issue because, as noted, the Greeley Neighborhood is impacted by the current mining operation across the Continental Drive and the Superfund program does not regulate the active mine (Montana DEQ’s Hard Rock Mining Bureau regulates the active mine through a state permit issued by Montana DEQ). Air sampling has been and is being performed in Butte (see Section 2.3 Air Quality), and a new, more expansive study to consider dust generation from active mine operations and the barren ground around the Berkeley Pit is being implemented as

described in Section 2.3. EPA and Montana DEQ are working cooperatively on this study.

The BPSOU boundary was originally drawn to encompass historical mining operations that impacted soils, groundwater, and surface water on the Butte Hill and in the Timber Butte area based on data EPA collected in the mid-1980s. It was not drawn to encompass the complete floodplain of Silver Bow Creek. The floodplain referenced in the presentation, to which the commenter refers, did not coincide with the BPSOU boundary.

EPA has begun the remedial investigation for the final operable unit of the Silver Bow Creek/Butte Area site—the West Side Soils Operable Unit. Historical mine waste impacts in the Greeley neighborhood and other areas in and around the BPSOU and the Butte Mine Flooding Operable Unit will be evaluated as part of those efforts. In addition, the expanded RMAP required under the 2020 BPSOU Record of Decision Amendment will provide the opportunity for residential property owners in the Greeley neighborhood and elsewhere in Butte to have those properties evaluated for arsenic, lead, and mercury contamination and remediated if necessary.

## **2.6 Bull Trout Impacts**

### **2.6.1 Comment Summary**

One comment was received regarding the Endangered Species Act and bull trout. The commenter requests that EPA conduct an environmental impact statement pursuant to the National Environmental Policy Act. The commenter alleges that the proposed amendment will affect bull trout and water quality in violation of the Endangered Species Act, the National Environmental Policy Act, the Clean Water Act, and the Administrative Procedures Act. The commenter also states that EPA must consult with the U.S. Fish and Wildlife Service (FWS) regarding the BPSOU cleanup.

- **Comment 28.1.** “Please accept these comments on the Butte Hill cleanup from me on behalf of the Alliance for the Wild Rockies. Please analyze the impact to bull trout critical habitat if they are diverting water from Silver Lake, a lake that feeds a bull trout spawning stream, Warm Springs Creek. Warm Springs Creek is also bull trout critical habitat.
  - How will this impact the quality and quantity of water in Warm Springs. Please formally consult with FWS on the impacts of this project on bull trout and bull trout critical habitat. With climate

change there are changes in peak flows from changes to precipitation patterns. (For example, near Butte there are more rain events in the fall resulting in flooding/peak flows that can scour out beds since bull trout spawn in the fall) How will this impact bull trout? Springs Creek?

- How will this impact temperature in warm springs creek? (Is this an adfluvial population or resident?)
- How will this affect temperature, sediment, native fish, bull trout critical habitat in the Clark Fork River?”

*The commenter then presents a lengthy excerpt from a newspaper article, which describes the general decline of bull trout in the Clark Fork River area.*

- “Please prepare an EIS that addresses the analytical and scientific issues identified above and formally consult with the U.S. FWS on the impact of the project on bull trout and bull trout critical habitat.
- Please see the attached comments by Christopher A. Frissell, Ph.D on the 2014 Draft Recovery Plan. He said the recovery plan for bull trout for bull trout implies (and in a backhanded way specifies) that the USFWS assumes there is flexibility to make management choices deliberately allowing some core area populations of bull trout to go into decline or extinction, on the expectation others will appear from scratch, or disperse from severely depressed relict populations elsewhere in the Recovery Unit to arise in new locations. However, this Draft Plan, the previous listing and recovery planning record, and the published literature present virtually no evidence to substantiate that new populations of bull trout have established in contemporary times, either at the Core Area scale or the next smaller scale of breeding populations. In this regard bull trout are the biological polar opposite of vagile species like wolves, which are demonstrated to be amenable to reintroduction and are proficient colonizers of new territory at the regional scale. On the other hand, we do have evidence that even small, so- called “relict” bull trout populations can rapidly reestablish migratory life histories or expand extant spawning areas when changing habitat conditions allow it. But we do not know that they can establish new populations in previously

unoccupied streams or watersheds under contemporary prevailing conditions. Hence from a scientific perspective, existing populations of bull trout, no matter how small and farflung, must be viewed as the sole seed sources for future recovery.”

### **2.6.2 EPA Response**

The commenter asserts that the expanded remedy selected in the 2020 BPSOU Record of Decision Amendment requires the diversion of Silver Lake Water into the BPSOU. It does not. Butte Silver Bow County is considering expanded use of its water rights from Silver Lake in Butte by allowing the additional diversion of Silver Lake Water into Butte as part of its municipal functions for Butte and to improve Butte area fisheries. However, this is an independent undertaking by the county to facilitate its end land use planning for areas of Butte and is not required by EPA, the BPSOU remedy, or the Mine Flooding Operable Unit remedy nor would it be caused by the selected action. As EPA has no role with regard to the county’s consideration of a diversion of its Silver Lake water rights, no analysis of the impacts of such a diversion are required of EPA for the record of decision amendment. Any concerns regarding the potential diversion of the county’s Silver Lake water rights on bull trout should be raised with the county.

To address the commenter’s assertions concerning alleged violations of various laws other than CERCLA, it is important to understand CERCLA’s requirements for addressing other environmental laws. Under the CERCLA law provisions governing this issue, EPA must comply only with the substantive standards, requirements, criteria, or limitations promulgated under federal environmental or state environmental or siting laws if those substantive standards, requirements, criteria, or limitations are legally applicable or relevant and appropriate. Such substantive standards, requirements, criteria or limitations are known as ARARs. See section 121(d) of CERCLA, 42 U.S.C. § 9621(d) and 40 CFR §§ 300.405(g) and 300.430(e). Because section 121(e) of CERCLA, 42 U.S.C. § 9621(e) exempts on-site CERCLA actions from permit requirements, only substantive provisions of ARARs must be complied with. See *CERCLA Compliance with Other Laws Manual: Interim Final* (EPA 1988) and *CERCLA Compliance with Other Laws Manual: Part II. Clean Air Act and Other Environmental Statutes and State Requirements* (EPA 1989).

CERCLA also provides for the waiver of ARARs under certain circumstances. See section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4) and 40 CFR § 300.430(f)(1)(ii)(c).

ARARs for the BPSOU were identified in Appendix A of the 2006/2011 BPSOU Record of Decision. Substantive provisions of the Endangered Species Act and certain applicable or relevant and appropriate provisions of the federal Clean Water Act and the Montana Water Quality Act are identified as ARARs in Appendix A of the 2006 BPSOU Record of Decision. The 2020 BPSOU Record of Decision Amendment complies with the substantive provisions identified under the Endangered Species Act, the Clean Water Act, and the Montana Water Quality Act or appropriately waives those provisions in the case of in-stream Montana Water Quality Act water quality standards because of the technical impracticability from an engineering perspective of complying with those standards. See Section 121(d)(4)(C) of CERCLA, 42 U.S.C. § 9621(d)(4)(C), 40 CFR § 300.430(f)(1)(ii)(c)(3), and Section 4 of the 2020 BPSOU Record of Decision Amendment.

In compliance with Endangered Species Act, EPA developed a biological assessment for the Silver Bow Creek/Butte Area remediation efforts, including the BPSOU remediation, and submitted the assessment to the FWS. The Silver Bow Creek/Butte Area biological assessment, dated January 2018, is in the administrative record for the 2020 BPSOU Record of Decision Amendment. As for the Canada lynx and the grizzly bear, the Silver Bow Creek/Butte Area biological assessment concluded that the ongoing and planned response actions at the Site, including the BPSOU remedial actions addressed in the 2020 BPSOU Record of Decision Amendment, may affect, but are not likely to adversely affect either terrestrial species. It also found that the actions had no effect on any designated critical habitat for the Canada lynx or grizzly bear as no critical habitat has been designated for either species within the Silver Bow Creek/Butte Area site action area.

For bull trout, the Silver Bow Creek/Butte Area biological assessment examined potential effects for all of the ongoing Silver Bow Creek/Butte Area operable unit remediation actions, including the ongoing BPSOU remedial action that includes the potential expanded components contained in the 2020 BPSOU Record of Decision Amendment. For BPSOU, the 2018 Silver Bow Creek/Butte Area biological assessment noted that a fish barrier downstream from the BPSOU in Durant Canyon prevents the migration of bull trout into Silver Bow Creek in and near the

BPSOU. The fish barrier, installed independently from the Superfund remedial program, was funded by the State of Montana's Natural Resource Damage Program at the request of the Montana Department of Fish, Wildlife and Parks to protect pure strains of cutthroat trout in upstream areas of German Gulch. The biological assessment also noted that bull trout are not currently found within Silver Bow Creek and Silver Bow Creek is not within the designated critical habitat for bull trout. Therefore, the expanded remedy described in the 2020 BPSOU Record of Decision Amendment will not adversely affect or otherwise harm bull trout, and no take permit is required under the Endangered Species Act.

The 2018 Silver Bow Creek/Butte Area biological assessment contains analysis on potential effects from the downstream Warm Springs Ponds Operable Unit and its discharge into the Clark Fork River, and FWS has asked for additional information and analysis in a revised Silver Bow Creek/Butte Area biological assessment relative to the Warm Springs Ponds operable units. See the February 3, 2020 EPA memorandum on ESA substantive compliance and EPA's December 17, 2019 email response, which are included in the administrative record for this record of decision amendment. EPA is currently revising the Silver Bow Creek/Butte Area biological assessment in response to those comments, but the revisions will not alter the analysis regarding Endangered Species Act substantive compliance relative to BPSOU ongoing and future response actions.

The substantive provisions of the Clean Water Act and the Montana Water Quality Act are complied with in accordance with the CERCLA provisions cited above. A point source discharge into Silver Bow Creek from the Butte Treatment Lagoons, which treat contaminated groundwater prior to discharge, must comply with applicable, end-of-pipe discharge standards promulgated under the Montana Water Quality Act and otherwise comply with substantive Clean Water Act and Montana Water Quality Act ARARs identified in the 2006/2011 BPSOU Record of Decision, Attachment A. Stormwater controls required under the BPSOU ROD are consistent with and in compliance with substantive Montana Water Quality Act requirements for stormwater controls for urban areas promulgated by Montana DEQ and identified in the 2006/2011 BPSOU Record of Decision. The extensive cleanup actions described in the BPSOU ROD are expected to result in compliance with in-stream Montana Water Quality Act chronic and acute standards except for in-stream acute standards for copper and zinc. These standards are

appropriately waived pursuant to Section 121(d)(4)(C) of CERCLA, 42 U.S.C. § 9621(d)(4)(C) and 40 CFR § 300.430(f)(1)(ii)(c)(3) as technically impracticable.

An environmental impact statement under National Environmental Policy Act is not required for CERCLA response decision documents as the CERCLA response action selection process is the functional equivalent of the National Environmental Policy Act process and permits are not required for CERCLA actions pursuant to section 121(e) of CERCLA, 42 U.S.C. § 9621(e). See Oil, Chem. & Atomic Workers Int'l Union v. U.S. Dep't of Energy, 62 F. Supp. 2d 1, 5 (D.D.C. 1999), aff'd, 214 F.3d 1379 (D.C. Cir. 2000), Schalk v. Reilly, 900 F.2d 1091 (7th Cir. 1990) and Ala. ex rel Siegelman v. EPA, 911 F.2d 499, 505 (11th Cir. 1990) (all holding that a CERCLA response decision could not be challenged under National Environmental Policy Act both for functional equivalency reasons and because CERCLA section 113(h) prevented such challenges at the time a response decision is made).

The commenter states that EPA did not comply with the Administrative Procedures Act in the issuance of the 2020 BPSOU Record of Decision Amendment. However, the commenter does not explain how this alleged noncompliance occurred. EPA believes it is in compliance with any applicable portion of the Administrative Procedures Act for the 2020 BPSOU Record of Decision Amendment because notice of the availability of the proposed plan was made on EPA's Silver Bow Creek/Butte Area website and in a major newspaper of general circulation, the public was given a 90-day comment period to comment on the proposed plan, oral comments taken at two hearings conducted for the proposed plan were transcribed, and all significant comments are responded to in this responsiveness summary attached to the 2020 BPSOU Record of Decision Amendment in accordance with CERCLA and 40 CFR § 300.430(f)(3)(1).

The response to the commenter's assertion that the BPSOU remedy should comply with state water quality standards is addressed in the response to comments found in Section 2.34 of this responsiveness summary. EPA acknowledges the commenter's inclusion of a comment letter to FWS, which is critical of the FWS recovery plan for bull trout. EPA has no legal authority to alter or change that plan, and any concerns regarding the FWS bull trout recovery plan should be directed to FWS.



## 2.7 Community Involvement

### 2.7.1 Appreciative of Outreach

#### 2.7.1.1 Comment Summary

Three comments were received that expressed appreciation for the community outreach provided by EPA at the BPSOU.

- **Comment 8.1.** “I attended the first public hearing in the current BPSOU public comment cycle but decided not to attend the second one; instead, I’ve spent my time composing some comments for the record regarding the proposed plan. Superfund’s decision criteria refer to these opportunities for public input as “modifying criteria” that presumably help EPA and its negotiating partners to gain “community acceptance” for their proposed plans. Yet after more than 30 years of these EPA-sponsored events, many in the community have become numb to the significance of the pending decisions, or angry about the outcomes. With few exceptions, these public hearings strike me more as opportunities for individuals to grandstand than for offering insights that are likely to be used to modify the proposed plan. For those who do show up, some make broad based statements of approval or condemnation, while others make specific “modifying” recommendations, in the spirit of the nature of the specific Superfund criteria afforded to these events. Our comments, criticism, and praise, all only have the power--at best--to persuade the negotiating parties to “modify” their proposed plan to help ensure community acceptance. Comments that recommend that the parties throw out their entire plan and start over simply don’t fit the nature of this forum; such commenters may passionately believe what they say, but the occasion asks us for ideas about “modifying” the plan as proposed, not rejecting it entirely. My first comment is a hope that these mandated public comment events could be designed to more effectively gauge the full range of community knowledge and concern about the issue at hand. As it is, they come across as more perfunctory ceremonial affairs rather than honest efforts to engage the wider community in the process. For my part in the following comment, I will commend the plan for some of its specific features that hold much promise for fulfilling Superfund’s mandate and Butte’s hopes for a Superfund-free future; but I will also suggest some shortcomings in the plan that I hope can be “modified” as it is finalized and codified in a new ROD and eventually in the consent decree among the negotiating parties.

- The most significant positive feature of the current plan is the process that gave birth to it. In more than 30 years of observing and participating in these Superfund decision processes for operable units from the Berkeley Pit to the Warm Springs Ponds, I've never seen such robust engagement with different elements of the community, nor have I ever seen the community's clear wishes have such a profound effect on major modifications to the ROD. EPA staff as well as the others at the negotiating table (DEQ, BP/AR, BSB) are to be commended: they have listened to us.
  - In listening to us, the plan changed from one that would have left wastes in place along Silver Bow Creek, to one that committed to remove all such wastes.
  - In listening to us, the planners came to understand that the cleanup of the Upper Silver Bow Creek corridor had to be developed as an aesthetically pleasing public space—a riparian park.
  - In listening to us, the planners came to acknowledge that the proposed use of the creek corridor as the primary location for treating stormwater runoff from the Butte hill would NOT “preclude the restoration of Silver Bow Creek” as a meandering stream.
  - Public health concerns related to Superfund issues remain confusing and contentious, but the Health Study Working Group that is required every five years to review the protectiveness of various aspects of the remedy has become more open and proactive—again, in large part due to the “modifying” input from concerned members of the community.”
- **Comment 22.12.** “7.1 CTEC is appreciative of both EPA and ARCO’s increased attention to involving the Butte community in Superfund decisions. The community listening sessions, involvement by national and regional EPA administrators, and coordination of the Proposed Plan with community amenities proposed in the consent decree Remedial Elements is a new level of community involvement in Superfund decision planning. This is a significant improvement over the level of community involvement in the 2006 Record of Decision and we believe will lead to greater community acceptance of the remedy.”

- **Comment 25.2.** “Trout Unlimited appreciates EPA’s increased community engagement emphasis in developing this plan and the opportunity to comment on it. TU supports continued community engagement in finalizing the Consent Decree negotiations and implementation of the Proposed Plan and offers the following additional comments: [addressed by topic in the document].”

#### **2.7.1.2 EPA Response**

The positive comments regarding EPA’s community outreach at the BPSOU are appreciated and noted for the record.

### **2.7.2 Other**

#### **2.7.2.1 Comment Summary**

Twelve comments were received that raised issues or made requests regarding community involvement at the BPSOU. Issues included a perception that EPA did not heed public comment or that meetings were not well advertised. There were concerns that the comment review and response process was moving too quickly and a request was made for public opportunity to review the draft responsiveness summary report. There was a request for public education on protecting health and on effectiveness of remediation. Finally, there was a request that the 2020 BPSOU Record of Decision Amendment will include language to ensure the final design plans and drawings are made available for public review and that EPA consider the input of the Greeley Neighborhood Development Corporation and of Habitat for Humanity.

- **Comment 2.10b.** “Sadly, every ingredient that was necessary to implement a responsible cleanup for the Butte Priority Soils Superfund Area has been articulated many times over to the EPA by myself and other concerned citizens over the past several years. For whatever reason, the EPA has totally ignored this input. Public input means nothing to the EPA! They only have public meetings to satisfy the legal requirement of having the meetings.”
- **Comment 20.3.** “I would also request that, in the interest of reaching the very best solution that everyone can accept and understand, the comment period be extended to allow the public comment engine to reach full steam before being shut down. There is plenty left to be said by the citizens. Two public comment meetings is simply not enough.”
- **Comment 27.1** “All; Good day hope all is well. I am very happy to see Mr. Wardell has extended the public comment period to July 11,

2019. I think this makes sense with many other issues coming forward at this time. The Supreme Court wishing to hear the residents of Opportunity, (our neighbors) case and concerns. The treatment plant discussion in progress. There are other interests that can be addressed. Many of us still want our Creek and there may be further litigation on that issue. Thank you, Mr. Wardell for allowing Butte people to think a bit more about short term solutions to long term issues.”

- **Comment 34.1** “Thank you for extending the comment period. In many ways, the proposed changes are positive. I have two comments [Addressed by topic elsewhere in the document].”
- **Comment 51.1.** “I’m a native Butte person. And I’m looking around the room here, and I know almost everyone here. But most of the reason that I know everyone here is that most of the people here have involved themselves in Superfund in some way or another. So many of you are people who are stakeholders. And then there are others who are involved in volunteer Superfund groups. And it’s lovely to see people who have not been involved coming forward to speak. My concern is that most of the people aren’t here. Now, if I was going to put on a meeting I know how I’d do it. I’d make an awful lot of phone calls. I’d put out some literature. I’d make sure that I had every newspaper with an ad for something so big as it is for here in Butte. And I’m pretty disappointed with this turnout. And I’m very disappointed with the people who put it on because they have not made the effort that is required to get the people in Butte involved.”
- **Comment 58.7.** [Follow-on comment from a commenter after everyone had 5 minutes] “Yeah. I want to just share just a couple, just, I know people get tired and are ready to go home. I understand that, as well. But just for clarification, so people know what. I submitted written comments to the EPA, and I wrote a letter that took me a long time to write. It took me a few days to write it. And I had some serious concerns, as you all know from listening to me tonight. I have some serious concerns about what’s going on. And I’m concerned for my community. But what happened in the process is that I received a tan letter back from the EPA to my letter that was a one-page summary that just said, "Thank you very much." It does not address one single comment that I made or one single question that I addressed, not one. Not one did you guys address, not one. And you gave a copy of an editorial that Doug Benevento had done way back when. And that was your cursory response to my comments. And just so the people know

here, I've been involved in this for a long, long time. And sometimes I say I know too much and I wish I didn't. I wish I didn't know too much about the EPA. I wish I didn't know as much about you guys as I do. But here's what happens with your comments. Here's what happens with your comments that were made tonight. Here's what happens to your comments that you submit in writing. Here's what happens to them. I've been down the road. I've played the game. Here's what happens. Those comments go to the EPA, to these folks up here tonight, not to our community that's responsive. They go to the EPA. And what the EPA does is they submit those comments to the judge. That's what they do. The judge doesn't hear what he needs to hear. I have written Judge Haddon a letter after some legal disputes that we're involved in. And, basically, what Judge Haddon did to me is he sent me back a letter saying, "Don't write to me. Don't write to me. I don't want to know what Fritz Daily has to say. I don't care what he has to say." That's basically what he said."

- **Comment 68.2b.** "Compliments to the EPA for pushing this thing out into the open, for pushing the CD participants with the threat of moving on a UAO so that they had to get to the table and do something. Compliments to the EPA for doing that. You broke the log jam. Now things are moving. And maybe, maybe, a little too fast, I think, August 15 CD, comment period. And I appreciate Doug Benevento saying we're going to get this done by a given date, because that has forced action. But it's pretty scary because some of these things we're looking at right now we're acquiescing to or being asked to acquiesce to. I don't think it's quite been played out adequately yet. So but thank you to the EPA for driving this process forward. I worry that now we're rushing. Thank God we got it started and thank God we've gotten to where we have. Good for you on all that stuff. But we need, for example, the resources dedicated to its conceptual engineering design and feasibility study. We need, I think, to take a serious look, given what the reminders we have from Judge Newman and from Fritz and from the reality from Sister Mary Jo, who made the point quite well, that between Texas Avenue and Montana Street our creek was changed by ARCO. Do we have the right because of that to ask that maybe it be changed back to something a little better than what we're being told right now? I think so."
- **Comment 70.2b.** "You can see there's a lot of concerned citizens here that are fairly well informed. They should really have known what

was going on. Now, one could argue that that was Butte-Silver Bow's job to do that, but -- frankly, because they were one of the principal parties. But they didn't particularly do a good job of informing the public of what was going on. And that should -- that should never have happened. So that's one flaw from the start. I don't know that that necessarily speaks to the ROD strongly right now. But thirty years is a long time, and we haven't had many chances to stand up and comment on what's going on. One, we didn't know what was going on. And now that we do have a better idea of what's going on, we have two meetings on the ROD, and we have a short informal question and answer. And I know there were some people in the audience who looked like they were ready to ask a question informally and didn't get that chance. We moved in a short period of time, before seven o'clock. This meeting started at six. About half of it was taken up by Nikia's comments. So there was maybe less than a half an hour for informal discussion. That's another flaw in the process. And now we're into the formal comment, and we're limited to five minutes. Thirty years, thirty years of pent up concern about this community and really no time to talk about it. Now, we can either go longer or we can have multiple sessions. There are ways around this. But I find it doesn't give me much confidence in the process when it plays out along those lines.

So, the timelines for public comment, all that, are spelled out under federal rulemaking. But what's not spelled out and what's not a requirement is the signed consent decree by mid-August. And I think if you just look at the process, where the end of the comment period will be June 11, to go from realistically incorporating what you're hearing tonight and what you've heard over the last few months, including very important legal distinctions that the State of Montana needs to consider, to go from all that in the course of two months doesn't give me a lot of faith that we're going to be heard. And the comments I wanted to make and what would be wise of you all to consider is that sometimes when you're locked into a room for years and years and years -- and I know this. I have bargained with some of the biggest corporations on earth on behalf of labor. And I know two things. One is those that set the timelines set and control negotiations. And so if you set a hard timeline of August 10 or August 15 that we're going to have this signed you're driving a false timeline on those negotiations. So that's the first thing I know.”

- **Comment 73.1.** “I have an unconventional concern. I'm an herbalist and a food therapist. And that is what I can do in a very small way to take responsibility for my own health living in Butte and my own soil living in Butte. That there might be some research done, made available to the Butte public on plants that we can grow that might be able to be discarded because they're able to uptake and catch heavy metals and clean my own soil. And these might be -- in Anaconda, at the Farmer's Market, I think there was a flyer up that said, "Please, anybody growing vegetables in Anaconda bring them in for heavy metals testing." Any gardener in Butte can have their food tested to see if, in fact, it's uptaking heavy metals. Also, make available to the public any research done on foods that can help eliminate heavy metals from the body. I have a protocol from an herbalist is Hot Springs, Montana, simple foods, cilantro for Mercury, chelators that help eliminate heavy metals from the body. Foods that can be grown here. Apples, onions, garlic, broccoli, kale, collards, brussels sprouts. These things can be done on an individual basis so that citizens can actually take responsibility for the effects of living here. Please consider these things that we can do for ourselves.”
- **Comment 74.8.** “Again, I look forward to your responses to each of these comments. In addition, at a recent meeting with EPA I suggested that EPA produce to the public the written responses to all comments at least 2 weeks before the issuing of the ROD itself. It would be beneficial for the community and the agency to absorb the responses before the ROD is formally submitted in the event that EPA makes a grievous error in its response to comments. The flexibility would be beneficial. Unless the EPA is specifically precluded by law from putting out the response document first, it should do so.”
- **Comment 91.9.** “8. Information on the effectiveness of the clean-up of Silver Bow Creek has not been regularly provided to the public. Will monitoring and dissemination of information improve in the future and how?”
- **Comment 96.2.** “For Butte-Silver Bow, it has been refreshing to participate in eleven-year long collaborative effort to reach consensus. The staff from all parties – the EPA, the State of Montana, Atlantic Richfield, Butte-Silver Bow, and interested citizens through advocacy groups – have worked together to produce a sound, experience- and science-based Proposed Plan for ongoing work and forthcoming projects. The anticipated outcome of this effort is an effective,

sustainable cleanup solution mindful of long-term monitoring and management responsibilities.

“6) Conceptual Plans Translated into Remedial Designs/Implementation. The conceptual plans presented in the Proposed Plan and supporting documents released in May 2018 constitute significant work projects to be completed in the next 5-6 years. Although these conceptual plans are fairly descriptive and explanatory, questions about specific design details have been deferred to the Remedial Design phase that will follow lodging a Consent Decree. For example, final design decisions will be made on tailings and removal depths and quantities, how and where ground water controls will be installed, sediment basin sizes and depths, among others. Butte-Silver Bow would ask for assurance that the final Proposed Plan and CD will include language to ensure the final design plans and drawings are made available for public review.

“8) Public Input/Attachments. Butte-Silver Bow has received public input from individual citizens and advocacy groups related to the Proposed Plan. Attached are documents related to that input, and should be considered as part of the record in Butte-Silver Bow’s comments, as follows: a) Greeley Neighborhood Community Development Corporation Inc. – May 20, 2019, Memorandum Requesting Airborne Dust Monitoring and Control Program Amendment be added to the EPA’s Proposed Plan. b) Habitat for Humanity of Southwest Montana – May 23, 2019, EPA Proposed Plan public comment regarding consistency of action levels between federal agencies such as Environmental Protection Agency and Housing and Urban Development.”

#### **2.7.2.2 EPA Response**

EPA takes public involvement seriously, including the public involvement process associated with a proposed plan for a record of decision amendment. After the proposed plan was released, EPA held two public meetings, 1 month apart, which is twice what is required by CERCLA. The meetings were advertised in advance in the *Butte Weekly* and the *Montana Standard*. Interviews were given to local media about the scope of the proposed plan and reasons why the amendment was necessary. A fact sheet prepared for the proposed plan was mentioned in the advertisements along with the website where the fact sheet and proposed plan could be viewed or downloaded. Copies of the fact sheet



and proposed plan were also distributed at the public meeting. The website, fact sheet, and proposed plan all listed the meeting information. Other stakeholders, like the technical grant recipient for this site, CTEC, also provided information about the proposed plan and the upcoming meeting.

Everyone who wanted to comment had the opportunity to do so. As is often the case at public meetings, there was a per person time limit (5 minutes in this case) to speak, allowing anyone who wanted to do so a chance to speak. After all commenters had their initial 5 minutes, commenters were allowed to continue their thought if they felt the need. Several people did.

In addition to oral comments recorded by the stenographer at the public meetings, those interested in providing public comment could do so in writing via email or standard mail throughout the 90-day period. No constraints were placed on the length or number of comment submissions.

The time allotted for the public comment process varies from site to site, depending on the number of staff assigned and the deadlines provided. EPA initially provided a 60-day public comment period on the proposed plan and then extended that by another 30 days at the request of the public and in compliance with the NCP.

Public comments were compiled, read, categorized, and evaluated by EPA technical and legal staff in Montana to determine if modifications to the proposed plan for record of decision amendment were warranted. They were also reviewed by EPA regional staff and were provided to the Montana DEQ. Not all of the requested changes can or should be made, but that does not mean that the comments are not taken seriously.

Additionally, public communication and coordination started well before the proposed plan was released. For example, in May of 2018, EPA released a remedial elements conceptual scope of work, that was, in part, a fairly detailed narrative description of concepts proposed in the proposed plan for a record of decision amendment. EPA held two public meetings that presented this plan and provided several fact sheets as part of that process to explain specific parts of the Remedial Elements Conceptual Scope of Work. Additionally, many end land use meetings were conducted by EPA, Butte Silver Bow, Montana DEQ, and Atlantic Richfield to provide plans for the end land use of the corridor area, which are connected to some remedial actions required in the record of decision

amendment. These meetings and plans were efforts by EPA, Butte Silver Bow, Montana DEQ, and Atlantic Richfield to address the community vision for end land use developed during the county's visioning sessions in 2018 and 2019. Finally, EPA awarded a grant to CTEC, the Technical Assistance Committee recipient for this site, to evaluate community-desired end land use for the corridor area and its compatibility with the remedial elements in this same area.

EPA will verify that draft design plans and drawings are made available to the public and will commit to a transparent process for the remedial design that will follow the issuance of any enforcement mechanism for implementation of the amended record of decision . The comments offered by the Greeley Neighborhood Community Development Corporation and Habitat for Humanity of Southwest Montana are addressed in this document under other, specific topic areas.

## **2.8 Condemnation of Private Property**

### **2.8.1 Comment Summary**

One commenter stated that the residences and businesses within large areas of the BPSOU should be voluntarily purchased by Atlantic Richfield, and the areas should be excavated and redeveloped, as this would be more cost-effective than cleaning up residential properties at each home. The commenter suggests the Alice Pit could be used as a repository for the excavated material.

- **Comment 53.6.** “I want to speak for my generation and the future of Butte and demand a study to determine the most effective solution to the origin of many of the metals that are contributing to the minerals and metals that are causing both human and aquatic environments to exceed federal and state levels. And that's the area described. It doesn't take much of an engineering degree to suggest that the most cost-effective solution to truly clean up the Butte Hill and prevent surface erosion and exposure to metals and minerals in any form, especially to humans and aquatic species, is to negotiate with all property owners in the area described and acquire property through purchase with eminent domain, completely demolish the area described and use the same material to fill the Alice Pit. Once the area is entirely demolished and all curbs, gutters, sidewalks, streets, buildable lots, parks and playgrounds, the initial stage of the project would be covered at a cost of cleanup and remediation. However, the long-term would provide commercial and residential real estate with new, modern utilities and

infrastructure. This in and of itself could potentially provide funding or reduce the loss of cleanup costs by ARCO, EPA and responsible parties.

“So, just to close, like I said at the last meeting, I think it was the problem with the engineers doing a crappy and lazy job and that created the technical impracticability. And, by that, I mean, they went the easy route. They went, "What's going to be the easiest thing to clean up?" You know, all the areas where no one's living around. The creek beds and the stream beds and the area behind the dam, they didn't interrupt anybody.

“And to reiterate on the park and the playground, like I said, I think it's technically a practical joke and a deceptive ploy to engage the community in a long-term plan. Again, for a project that has an established boundary and an area that will have little to no impact on any home or business or building or real estate. And the real issues and the real problem areas, again, by this map, are areas that are surrounded by real estate, dwellings, homes, buildings. You know, most of which would probably benefit from, rather than an attic cleanup or a yard cleanup –

“You know, I look at the bids for some of these things. You know, this is no joke. I mean, I follow the bid package, and there will be \$17,000 to clean up a yard. And I look at the house, and I'm, like, I wouldn't pay 25,000 for the house and they're giving \$17,000 to clean up the dirt. I mean, where is the intelligence and the business savvy and economic sense? It doesn't make any sense. So, I think it might be worthy of ARCO to look at it from -- again, it's not their responsibility. I'm aware of that. But maybe they will consider, as part of this process, stepping in and acting as a redeveloper or a developer into an area. You know it can be done. The Anaconda Company did it 50, 60, 70 years ago. They bought everybody out and they turned it into the pit. You know, we can buy everybody out and turn it into a great place to live.”

### **2.8.2 EPA Response**

Residential yards have been and will continue to be remediated, using the RMAP plan such that human health is protected. Condemning properties and excavating large areas within Butte would not be cost-effective or necessary. The Alice Pit has been partially filled in and remediated

through capping and revegetation as part of EPA’s prior response actions at the BPSOU.

## **2.9 Controlled Groundwater Area Boundary**

### **2.9.1 Comment Summary**

One commenter stated that the Controlled Groundwater Area boundary used by Butte Silver Bow County should be revised to reflect current data.

- **Comment 15.5.** “As a side note, I would strongly consider revising the TI GW boundary to match current GW conditions and also that of the local Controlled Groundwater Area boundary, employed by BSB. This will avoid confusion and inconsistencies when future GW data is collected near the boundary.”

### **2.9.2 EPA Response**

EPA is working with the responsible parties to evaluate the existing BPSOU groundwater technical impracticability boundary. Two documents—a technical memorandum titled *BPSOU Point of Compliance Well Evaluation* (Atlantic Richfield 2019a) and EPA response dated October 22, 2019 (EPA 2019c)—have been added to the administrative record supporting the 2020 BPSOU Record of Decision Amendment, and they discuss appropriate points of compliance for monitoring groundwater within the BPSOU.

## **2.10 Cost in Remedial Decision-Making**

### **2.10.1 Comment Summary**

Two commenters asserted that costs should not be considered when EPA and Montana DEQ consider remedial decisions under the Superfund program.

- **Comment 41.6.** “And, you know, it's disturbing to me that what's happening now with the removal of the county shops -- and this should affect the commissioners here tonight. With the removal of the county shops and the removal of the Parrot Tailings, what's happened now is cost has become the main criteria. Now we're determining everything based on cost. When we removed the Milltown Dam, it wasn't based on cost. When we decided to restore Silver Bow Creek and clean Silver Bow Creek from the interstate to Warm Springs Ponds, which, by the way, cost \$151 million to do, and it was only estimated to cost 34 to \$41 million, cost wasn't the item. But now costs that we're in Butte, it's the item. We're doing everything in Butte on the cheap. That's wrong. That's wrong. That's the way it is. It's wrong.”

- **Comment 52.4.** “And, finally, quit talking about money. Because look in this room. The value of this room in the people is way more than any money we're talking about. Forget the money number and think about the lives you're affecting and the people whose lives have been lost because the economy of this town has been destroyed for the last 35 years that you've done very little to nothing. Our economy in this community has shrunk because of the lack of your response to the cleanup of this community, be it the State, be it Butte-Silver Bow, the EPA, ARCO. I don't know who's to blame. Is all I'm saying is take a look at how bad our town is. Take a look at the economy of this community that you have failed. Quit talking about money. Let's talk about the lives and the livelihood that are owed to the people that created the wealth for this state in the city of Butte. Thank you.”

### 2.10.2 EPA Response

EPA is required to consider costs and whether the selected remedy is cost-effective pursuant to the CERCLA law and its implementing regulations found in the NCP. See 40 CFR § 300.430(e)(9)(iii)(G).

## 2.11 Economic Development

### 2.11.1 Comment Summary

Four comments were received that stressed a need for economic development in Butte and its connection to the Superfund cleanup activities. Site delisting was cited as an important goal.

- **Comment 16.2.** “Finally, there is discussion of economic redevelopment as part of Superfund, yet the redevelopment efforts for Butte have been scattered and lack focus, direction, purpose. Is there a methodology for ensuing revitalization of neighborhoods within this BPSOU boundary? Blight is rampant within the BPSOU and other than cleaning yards and attics and developing parks, there has been very little done to address redevelopment in an economic sense. Perhaps there has been redevelopment work done, but it isn't immediately obvious.”
- **Comment 31.7.** “5. Economic Difficulties. Up to this point in 2019, cleanup activities have wholly focused on locating, testing and removing metals, minerals, carcinogens, and contaminants primarily from Silver Bow Creek, the Clark Fork River and areas on the Butte Hill, Smelter Hill in Anaconda, and Opportunity. There has been no effort to restore the economy of Southwest Montana or identify that

the superfund designation and remaining exposed mining waste have contributed to a negative public perception of Butte by outsiders and those who are considering relocating or growing their business. The cleanup cannot be considered to be complete until there have been efforts with measurable impact to provide opportunities for growth and redevelopment to replace economic possibilities that have been lost since the mines have closed and the waste has been established. IT IS TIME TO PROVIDE PLANS AND OPPORTUNITIES FOR GROWTH AND REDEVELOPMENT OF BUTTE. IF LONG TERM PLANS AND EFFORTS OCCUR ALONGSIDE, OR AS A RESULT OF CLEANUP, THEY NEED TO BE GIVEN PRIORITY CONSIDERATION AND WEIGHT.”

- **Comment 53.5.** “Demanding a restored creek, park and playground is a practical joke and simply putting the cart before the horse. If this town isn't cleaned up and restored, there's not going to be any citizens willing to continue to live here or relocate to use the newly created areas, which would contribute to a loss of tax base that would be necessary to maintain the pie-in-the-sky park area.”
- **Comment 65.9.** “So, I'm going to speak more to the economic development side that you can unanimously see in the community as a concern. But I believe that the finalization of the ROD amendment and Consent Decree are critical parts of the process of delisting us from the Superfund and DL site. Delisting is important to the economic outlook of Butte. If you ask anyone outside of Butte why they won't move to Butte, it has to do with the synonym of Butte and the Superfund site. And I've heard a lot of comments about we've drug this out but then we're asking you to drag it out. And that doesn't make a ton of sense to me. So I'm not sure which stand -- which foot we're standing on as a community, to get it done or to drag it out. But let's see. So, like I said, delisting is important. We should be pressing towards building a local economy that can sustain the inevitable closure of the Montana Resources current mining operations. The reality is we will always be The Mining City but we will not be a mining city within the next three decades due to ore reserves. Removing the synonym of Butte and Superfund is a critical part of a good economic strategy for Butte to grow and to sustain. And, I assure you, all of our economic developers agree with me. They won't speak, though. They can't.”

### 2.11.2 EPA Response

EPA places a high priority on working with communities regarding the reuse of Superfund sites after cleanup occurs. This is as an integral part of the Superfund cleanup program's current focus. Hundreds of communities have reclaimed formerly contaminated Superfund sites for protective and productive uses. In Butte, EPA has worked with local stakeholders, including government and industry, to be mindful of cleanup impacts on current and future land use in the community. EPA's approach has been to work with Butte residents on ideas, coordinate redevelopment with cleanup wherever possible (e.g., the construction of the Copper Mountain Recreation Complex on top of the waste repository located there), and assist the community to evaluate end land use possibilities in areas addressed by Superfund cleanups after the cleanup occurs. EPA has also required the responsible parties to address historic preservation issues and comply with the regional historic preservation plan through mitigation measures when listed or eligible historical resources are affected by the Superfund cleanup (e.g., Atlantic Richfield's financial contributions to the Butte visitor's center). Public and private cooperation makes it possible to transfer properties owned by Atlantic Richfield and mining companies to local government for potential redevelopment.

Additionally, EPA's Brownfields initiative encourages redevelopment of industrial areas that were once blighted by contamination. Since 2001, EPA has worked to obtain Brownfields money specifically for future development of the Butte Area Superfund Site. EPA awarded a \$100,000 grant to Butte-Silver Bow County for geophysical work to determine structural integrity of vacant properties in uptown and central Butte. EPA awarded a \$30,000 grant to develop a film on the history of the Butte area and the role Superfund has played in its redevelopment. Currently, there are ongoing Brownfields projects in Butte.

EPA has also worked to require the creation of the Butte Hill Trail, a walking trail developed from an abandoned railroad bed, as an example of new beneficial use. New public development and use of reclaimed sources areas include Granite Mountain Memorial, the Copper Mountain Recreation Complex, the Missoula Street Complex, and the Knob Hill Park and Trail. Private development in these areas includes the Chamber of Commerce facility, storage units facilities, Aware, Inc., and the Tullamore subdivision. EPA also coordinated with many partners in

facilitating the East Side redevelopment project, which includes Butte Central High School gym and the Belmont Mine Yard.

Several mine yards have also been redeveloped. At the Anselmo Mine Yard, a joint effort between state and local government redeveloped the historical mine yard for the public (tours and other activities). The Kelley Mine Yard was redeveloped into offices for Atlantic Richfield. The Steward Mine Yard is slated for redevelopment by Butte-Silver Bow County. More recently, the Lexington Mine Yard is an area that Butte Silver Bow has transformed into a historical feature for the community. Additionally, the Original Mine Yard is used for public events like concerts and movie night. Montana Tech now uses the Syndicate Pit as a training ground for students of underground mining. Butte Silver Bow has received Resource Indemnity Trust grant funds from the State of Montana to address other important issues on the Butte Hill, including underground subsidence and the restoration of historical head frames.

Recently, EPA worked with community members, Atlantic Richfield, and Butte Silver Bow County to develop an end land use plan for the corridor from the confluence of Silver Bow Creek and Blacktail Creek to Texas Avenue. The end land use addendum with voluntary commitments was released to the public on May 17, 2019 and will be made part of the proposed BPSOU consent decree lodged with the court if approval of that document is obtained. the State of Montana agreed to set aside a portion of the consent decree money it will receive, if a Consent Decree is approved, for used for the design and/or construction of a lined creek in the corridor area, if there are funds left over after implementation of the Blacktail Creek remedial work described in the Consent Decree. Such funds would be used as a match for other funds secured by the project proponent, if land, water, access, infrastructure, and other issues are resolved at the time a proposed project is presented. EPA also funded a Technical Assistance Committee grant request to allow CTEC, in cooperation with the Restore Our Creek Coalition, to evaluate the end land use of this corridor area to verify the remedial elements constructed are compatible with a future lined creek channel. Future community development work like this that is consistent with the expanded remedy described in the 2020 Record of Decision Amendment and remedial elements will provide for an end land use plan that will contribute to the economic development of Butte.

EPA agrees that delisting (i.e., removal from EPA's CERCLA National Priorities List) portions of the Silver Bow Creek/Butte Area site is an



important part of economic development in Butte. One goal of EPA and Montana DEQ as we oversee and implement the Superfund work described in the BPSOU ROD is to complete the construction of all remedial actions described in an efficient and timely manner so that the long-term protection of human health and the environment is assured and portions of the BPSOU can be delisted (i.e., removed from EPA's CERCLA National Priorities List) as soon as possible.

## **2.12 End Land Use Plan and the Consent Decree**

### **2.12.1 Comment Summary**

One commenter believed that Atlantic Richfield should be held to account for their end land use plan as the company did not implement prior end land use plans for the corridor where Silver Bow Creek above its confluence with Blacktail Creek is located.

- **Comment 66.1b.** “The one thing that the plans promised, and there was one document that was a paper presented in Billings touting the wonderfulness of the plan and how it was carried out and the results, has about aesthetics, the wonderful aesthetics that would be created. And there would be grasses planted, and trees would be planted, and it would look wonderful. And I ask every one of you, tomorrow, to drive by Texas Avenue and look to the right and look to the left and follow it on down and continue looking to the right and to the left. And if you think that's aesthetically pleasing, excuse me. It is not. They were supposed to have planted several different varieties of wonderful trees. And there's a list in here. And I will have a set of these out there for anybody who's interested. Beautiful trees. There are none. There are a few pine trees, evergreens, or whatever they are, that are struggling to survive.

“We are in a city where people care about their yards and their homes, and they keep them up throughout the whole summer, and it's a wonderful city to drive around and just look at those yards. You don't want to drive around what they call the metro storm drain area because there are no aesthetics. And it's something that needs to be addressed. And do I have doubts? Well, I hope that's always going to be green and it's always going to have trees growing and it's going to be wonderfully aesthetical for people to gather in and to enjoy. I hope that's going to be true. But if there are not plans to carry through on the promises that are made, it won't happen. It won't happen and so, we, the citizens of this community, we have rights. And one of those

rights is to live in an environment that's safe, that's pleasant, that's aesthetically wonderful, and that is taken care of, and we have no health concerns from the environment. We have that right. And we need to fight for that right if necessary. And, yes, looks good on paper, but so did the other plan, 2003. And I can assure you those trees and grasses, they're not there. I've gone out and taken pictures of the area and the riprap.”

### **2.12.2 EPA Response**

EPA agrees that an end land use plan is important. If the proposed consent decree is agreed to and lodged with the federal district court, it will contain certain attachments. The end land use plan and its voluntary commitments will be added as an addendum to one of those attachments.

## **2.13 Environmental Justice**

### **2.13.1 Comment Summary**

Four comments were received that spoke to a need to address environmental justice issues in Butte. The specific issues raised (the RMAP, outreach to environmental justice communities, and the scope of health studies) are addressed under separate responses for those topics.

- **Comment 4.8.** “The proposed plan needs a dedicated portion to environmental justice as there is a large environmental justice population in the BPSOU and EPA has a commitment to promote environmental justices in all of its activities. There is also an environmental justice community in the expanded RMAP area.”
- **Comment 7.10.** “A. Environmental Justice. The Proposed Plan Amendment for BPSOU does not address Environmental Justice even though it is required to do so. The Butte Hill is shown in red on the EPA Environmental Justice Screen, meaning it has some of the highest poverty in the nation. Fully 18.9% of Butte-Silver Bow County people live below the Federal Poverty Line (2017). The most vulnerable, children in grades 1 through 4, have a poverty rate of 27.2 here. Butte has an urban Indian population whose poverty rate is not much better than nationally where it surpasses Blacks percentage-wise.”
- **Comment 40.5a.** “Another thing that's important is that with the expanded boundaries for the BPSOU we're incorporating more, you know, environmental justice communities that exist in Butte. And I've always been an advocate of asking the agency to come up with a

concrete action plan to address environmental justice communities within the overall Butte community.”

- **Comment 56.4a.** “Another question is that the environmental justice differential effects need to be considered. By that, I mean that a level of exposure that may not be harmful to the non-poor may be very harmful to the poor because of compromised immune system, lack of access to health care, living in substandard housing. And the differential effects on low income citizens needs to be considered. Butte has a large number of low-income citizens living within the BPSOU. That needs to be considered. Also, the cumulative and synergistic effects of exposure to contaminants of concern needs to be considered.”

### 2.13.2 EPA Response

EPA is directed by Executive Order 12898 to identify and address environmental justice concerns for minority and low-income populations to the maximum extent feasible. Additionally, EPA’s Environmental Justice 2020 Action Agenda is meant to “promote the integration of environmental justice across our nation’s larger environmental enterprise.” EPA takes environmental justice concerns seriously both nationally and at the BPSOU and recognizes that its relationships with community groups and individuals are vital in addressing environmental justice concerns.

Although the proposed plan did not have a specific section for environmental justice, EPA Region 8’s environmental justice program is focused on achieving equal environmental protection so no segment of the population, regardless of race, ethnicity, culture, or income, bears an undue burden of environmental pollution and to ensure that the benefits of environmental protection are shared by everyone. Region 8’s Environmental Justice team works toward advancing environmental justice by focusing on making a difference in environmental justice communities through connecting with, supporting, building the capacity of, and leveraging resources of both internal and external partners.

Over the years, EPA has engaged multiple stakeholders within BPSOU to identify and work toward resolving environmental justice concerns and questions. Recently, EPA worked with Dr. John Ray to draft a pamphlet entitled *Be Contaminant Smart*. This pamphlet provides visual BMPs that residents can follow to reduce exposure to contaminants within the BPSOU. In the future, the EPA remedial team will coordinate with the

Region 8 Environmental Justice team to verify information about and opportunities for residential cleanup are clearly communicated and available to the lower income community in Butte.

## **2.14 Flooding**

### **2.14.1 Comment Summary**

One comment referred to potential flooding caused by the addition of water to Silver Bow Creek by the proposed remedy modification.

- **Comment 10.1.** “As a recent arrival to Butte and a person who works in conservation and environmental science, I am curious about the impact on base flow in Silver Bow Creek. At 5 million gallons per day, that is a potential increase of 10-15%. Could this impact flooding downstream? Could this impact flooding in Anaconda?”

### **2.14.2 EPA Response**

The discharge referred to by the commenter relates to the addition of 5 million gallons per day of treated water to Silver Bow Creek from the next door operable unit—the Mine Flooding Operable Unit. Although this discharge, which just began occurring as part of a pilot project that is part of the remedy for the Mine Flooding Operable Unit, is not a part of the BPSOU remedy or the 2020 BPSOU Record of Decision Amendment, EPA will address the comment directly here.

A flow of 5 million gallons per day is approximately 7.7 cubic feet per second (cfs). The U.S. Geological Survey uses cfs to describe flow rates. Base flow in Silver Bow Creek can be approximated by the mean monthly flow in late summer/early fall. Base flow is 19 cfs at Butte and 54 cfs near Anaconda over the historical gaging record. The addition of the 5 million gallons per day of treated water from the Mine Flooding remedy translates to increase in baseflow of approximately 41% at Butte and approximately 14% near Anaconda.

Flooding happens when water spills out of a stream channel onto the adjacent floodplain, thereby inundating low-lying areas. This type of occurrence happens every 1.5 to 2 years, which is called the bankfull discharge. According to the U.S. Geological Survey (<https://pubs.er.usgs.gov/publication/sir20155019C>), the 1.5-year flood at Butte is 163 cfs, whereas the same flood near Anaconda is 319 cfs. Consequently, the proposed discharge will increase the bankfull discharge by 4.7 and 2.4%, respectively. The relative increase in flood height will be 0.05 feet (0.6 inches) at Butte and 0.02 feet (0.24 inches) near

Anaconda and will diminish for larger flood events ([https://waterwatch.usgs.gov/?id=ww\\_toolkit](https://waterwatch.usgs.gov/?id=ww_toolkit)). As such, the Mine Flooding Operable Unit discharge has relatively little influence on flooding at either location.

## 2.15 Funding

### 2.15.1 Comment Summary

Five comments were received regarding funding commitments and sources for different aspects of the cleanup and end land use plans for the BPSOU. One set of comments stated that funding for the ongoing Parrot Tailings Waste Removal Project, currently being implemented by the State of Montana, through the Natural Resource Damage Program and using its natural resource damage authorities, should be considered Superfund remedial work, and the 2020 BPSOU Record of Decision Amendment and subsequent enforcement mechanism should require Atlantic Richfield to pay for that work by reimbursement to the State of Montana. The second set of comments addressed a commitment made by the State of Montana in the *Further Remedial Elements Scope of Work, End Land Use Additions* document (Atlantic Richfield 2019b) that was released to the public. In that document, the State of Montana stated it would set aside some money from proceeds obtained in any BPSOU settlement in an interest-bearing account for use by the community, in the future, for design or construction of a lined creek in the corridor area. The comments stated that the amount the state would place in that account should be specifically stated at the time the amendment is released.

- **Comment 2.2.** “#1 It is a travesty Arco/BP has been taken “off the hook” for the cleanup and restoration of the Parrott Tailing area and for Silver Bow Creek and its Corridor from Texas Avenue to Casey Street. It is unconscionable that the State is now using Natural Resource Damage Settlement dollars to remove the Parrott Tailing. It is essential however, that these tailings be removed in order to have a proper cleanup of the Creek and to prevent further contamination to the recently cleaned Silver Bow Creek from Butte to the Warm Springs Ponds. ... #3---The removal of certain contaminated tailings east of the County Shops and around the Silver Lake Pipeline---The EPA Arco/BP have refused to accept the removal of contaminated tailings located east of the County Shops in Butte known to Butte residents as Flintstone Park and south of the Silver lake Pipeline located adjacent to Silver Bow Creek where the Drain is located. Arco/BP and the EPA have threatened the State and Local

Government if the removal of these tailings has a negative effect on the Drain.”

- **Comment 7.9** “G. Funding. 13. An interest-bearing account for future Silver Bow Creek Restoration end land use should state a specific minimum amount of dollars and it should receive public comments before the ROD Amendment or CD are finalized. It should not be tied to “leftovers” from other remedy work. 14. State NRD funds loaned for Removal of Parrot Tailings are expected to be returned to the State by the PRP, Atlantic Richfield, because this was Remedy work, not Restoration work. AR erred, insisting toxicity of these tailings was low and unimportant, despite hydrogeologic data to the contrary. Please note within the ROD Amendment that the State of Montana wants these loaned dollars returned so they can rightfully be used restoring Silver Bow Creek.”
- **Comment 68.10.** “So, when Restore Our Creek was formed, remember what their mission -- what our mission statement was. And I wasn't there at the beginning. I joined them after the fact. Remove the tailings, restore the creek. And then maybe some amenities to go with it. Okay. Remove the tailings, restore the creek. The tailings are substantially being removed. Thank you for that. Not deep enough. We ought to be looking at that. Not deep enough, but wide enough. All of you should be looking at how deep they are going. We've looked -- we have seen what happened when they had the digging in the Parrot Tailings. And remember all the assurances of the Parrot Tailings. Well, you know, those aren't all that bad, so we really don't have to dig them out either. We didn't have to dig the tailings out because the agreement was made between the local government and ARCO and EPA that we didn't have to dig the tailings out of the Parrot Tailings. The governor took the bull by the horns and made it happen. Not deep enough, but wide enough. All of you should be looking at how deep are they going. And, by the way, a waste of precious money. He has had to use limited restoration money that could help restore the Butte Hill. He's had to use that to take out the Parrot Tailings instead of it being done under remedy. But now that we dig into it, we find it was much worse than everyone thought.”
- **Comment 74.4.** “4. Set aside funds to help “seed capitalize” a future restored Silver Bow Creek are a near meaningless phantom. No fixed number or specific amount of funds is pledged to this effort.

Allocation of an unnamed amount to the state and asserting that the “leftovers” could provide seed capital is hollow on its face and also not likely to succeed given previous records related to previous “leftovers” purportedly going to the first mile of Silver Bow Creek. The large amount of leftovers from the Streamside Tailings effort were to be available to be allocated to the first mile. But when it was all done, the large (\$40-50 million) leftovers were first claimed by Montana DEQ for its “future needs” in managing the streamside effort and only a small amount was then available for other uses. Asking the people of Butte to accept a similar approach here is not engendering good feelings. The very same DEQ is now to be trusted to provide “leftovers” to help start a new Silver Bow Creek. HA! A good faith approach to this by ARCO/BP would be to provide monies to DEQ for all the purposes they need, but to guarantee a minimum level of leftovers (say \$1 million) that will be seed capital for Silver Bow Creek no matter what. That is a real commitment, not a charade.”

- **Comment 100.7.** “6. Interest-bearing Account. In the End Land Use commitments, the interest-bearing account articulated to be used for Silver Bow Creek Restoration in the future should be a commitment of a specific minimum level of funding and be made available for public review and comment prior to finalization of either the ROD amendments or the CD publication and not be made subject to "remaining money" after other remedial actions are completed.

“7. Use of Remedy Money or Restoration Money. Since this ROD is primarily about the remedy aspects of Superfund on the Butte Hill, ROCC wants to go on record opposing and requesting a reversal of the decision to require use of restoration funds for the cleanup of the Parrot Tailings. Earlier refusals to allocate remedy money for what is now clearly a remedy action in the removal of the Parrot Tailings necessitated the Governor's decision to use limited restoration funds to initiate the removal. The Upper Clark Fork Natural Resource Damage Advisory Council recommended use of restoration funds at the time but asserted that the funds should be used in the near term until remedy funds were allocated for the purpose and requested that the NRD restoration funds allocation be considered a loan to the project. ROCC supports that position and requests that repayment of NRD costs related to the Parrot Tailings removal be part of the remedy obligation of BP/ARCO under these proceedings.”

### 2.15.2 EPA Response

As to the first comment, in 2016, the State of Montana, through the Natural Resource Damage Program and under the direction of the Governor, began implementation of the Parrot Tailings Waste Removal Project to remove the Parrot mine wastes using natural resource damage (NRD) authority. The state implemented this project in accordance with the current Butte Area One restoration plan, which it promulgated pursuant to the CERCLA NRD regulations, which included public comment and response. The state is using its NRD funds, obtained in other settlements with Atlantic Richfield that would otherwise be spent on other restoration actions, for this action. EPA has cooperated with the State of Montana in its implementation of the Parrot Tailings Waste Removal Project by, among other things, agreeing to release to the Upper Clark Fork River Basin Restoration Fund certain state funds obtained under a consent decree known as the Streamside Tailings Operable Unit Consent Decree, because EPA agreed with the state that the funds obtained under that consent decree were no longer needed to complete the remedy for the Streamside Tailings Operable Unit, and the consent decree provided that any unneeded funds would revert back to the Natural Resource Damage Program. Sufficient funds remain in the Streamside Tailings account to address the long-term operations and maintenance of the Streamside Tailings remedy. The state decided to use the released Streamside Tailings Operable Unit funds and other NRD funds on the Parrot Tailings Waste Removal Project. EPA will continue to cooperate and coordinate with Montana DEQ during the Blacktail Creek work to avoid unnecessary delays and increases in cost.

EPA does not believe that the removal of the Parrot Tailings should be part of the remedy selected for the BPSOU and did not include requirements for that removal as part of the BPSOU Record of Decision Amendment. EPA's rationale for this decision is contained in the 2006 Record of Decision, which stated to "reduce the loading of metals to groundwater in the area overlying the Parrot Tailings, infiltration barriers shall be considered during the design phase and implemented if determined to be appropriate by EPA, in consultation with the State." EPA found that the ubiquitous sources of contamination to the BPSOU alluvial aquifer meant that removal of specific sources of contamination, such as accessible portions of the Parrot Tailings, would not result in the cleanup of the alluvial aquifer groundwater to required levels (i.e., groundwater standards). Instead, EPA determined that the remedy should focus on the collection and treatment of contaminated alluvial



groundwater to significantly reduce contaminant loads from the groundwater to surface water and/or sediments in Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek, which are the surface water bodies within the BPSOU that are subject to state and federal water quality standards. EPA believes that data gathered since implementation of the groundwater collection and treatment system as part of the 2006 remedy has shown that the system has significantly reduced contaminant loads into Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek.

Despite this success, EPA and the state have determined that contaminated groundwater is reaching and impacting both creeks. The amended remedy will require collection and treatment of contaminated groundwater in some additional areas to further limit contaminant loading, and EPA and the state agree that this additional collection of contaminated groundwater is necessary under the remedy. The Record of Decision Amendment and the proposed consent decree documents reflect this determination.

The Montana Natural Resource Damage Program's September 17, 2019 *Response to Public Comments on Final Restoration Plan Amendments for Funding the Parrot Tailings Waste Removal Project* (NRD 2019) document contains the state's response to similar comments regarding using NRD funds for the Parrot Tailings Waste Removal Project. (This document has been made part of the administrative record for the 2020 BPSOU Record of Decision Amendment.) The state, using CERCLA and Comprehensive Environmental Cleanup and Responsibility Act natural resource damage authorities, has determined that it is appropriate to remove the accessible Parrot Tailings waste (including wastes unsaturated by groundwater and wastes saturated by groundwater) and construct an evapotranspiration cover system over inaccessible wastes not saturated in groundwater in order to reduce a significant source of contamination to groundwater.

EPA has worked cooperatively with the State of Montana to assist it in obtaining \$20.5 million as part of the proposed BPSOU consent decree settlement. The state, through the Montana DEQ, is required to use this money to implement the Blacktail Creek Riparian Actions – that is the removal of floodplain and sediment contamination in the Blacktail Creek area within the BPSOU. Any funds remaining from the settlement payment after implementation of the Blacktail Creek work by Montana DEQ, which, as noted in the state's response above, will then be made

available to reimburse, in part, the money transfers addressed in the *Trustee's Modification to Plan Amendments Based on Public Comment, and approval of Plan Amendments as Modified* Office of the Governor of the State of Montana, September 20, 2019, document. (This document has been made part of the administrative record for the 2020 BPSOU Record of Decision Amendment.)

Regarding the comment requesting the State of Montana to set aside a specific amount of money in an interest-bearing account for use by the community of Butte for a lined creek in the area of Silver Bow Creek above its confluence with Blacktail Creek. This is a state issue that is outside the scope of the BPSOU Record of Decision Amendment. The State of Montana may address it separately if it chooses.

Regarding the comment that recent data concerning the contaminated groundwater in the Parrot Tailings area indicate significant new information than that reflected in EPA's prior remediation documents, EPA understands that, since 2017, the state has been collecting additional groundwater data as part of the Parrot Tailings Waste Removal Project area and downgradient as far as Blacktail Creek and the Silver Bow Creek confluence area. EPA will evaluate all available data, including the state's data, as part of the remedial design for the enhancements to the BPSOU groundwater collection and treatment system.

The effectiveness of all aspects of the remedy will be evaluated through the CERCLA-required 5-year review process. When issues affecting the protectiveness of the remedy are identified in a 5-year review, these issues are monitored and tracked for resolution. This process gives EPA further authority and leverage in enforcing and/or potentially modifying the remedy.

## **2.16 Groundwater**

### **2.16.1 Comment Summary**

Seven comments were received that raised issues concerning the interaction between contaminated groundwater and surface water. Two of the comments were supportive of changes to the contaminated groundwater interception and treatment portion of the BPSOU remedy described in the proposed plan. One supportive commenter recommended long-term monitoring of surface water to ensure continued protection of surface water within BPSOU from contaminated groundwater discharge. Another commenter noted that the existing BPSOU groundwater interception system treats large amounts of contaminated groundwater

already and the amendment should not state or imply that this is not the case. One commenter noted that there is insufficient groundwater collection provided by the BPSOU Subdrain<sup>1</sup>.

- **Comment 2.3.** “#2---The Reverse French Drain installed at the base of the Creek to capture contaminated groundwater flowing to the Creek. There is a significant difference between effectiveness of the Drain between the State Natural Resource Damage Program and the EPA and the Atlantic Richfield/British Petroleum Company. The State of Montana is adamant that the drain does not capture the lower area groundwater as believed by the EPA and Arco/BP.”
- **Comment 22.6.** “3.1 CTEC appreciates that the Proposed Plan addresses the risk that contaminated groundwater poses to Blacktail and Silver Bow Creek. EPA’s report, Groundwater and Surface Water Interaction Butte Priority Soils Operable Unit, December 2017, made clear that CTEC’s concerns regarding the continued impact of contaminated groundwater on surface water are supported by site data. Specifically, the data showed groundwater contaminants are being attenuated and accumulating in the stream hyporheic zone and are subject to periodic or episodic release to surface water. CTEC considers it a major step forward that EPA recognizes this threat and that the Proposed Plan provides additional groundwater control, capture, and treatment to address this.”
- **Comment 25.6.** “Groundwater Control. Trout Unlimited supports improvements to groundwater capture and treatment systems along Blacktail and Silver Bow Creeks to reduce the impacts of contaminated groundwater to surface water quality. In addition, a long-term strategy should be implemented to monitor groundwater contaminant concentrations and transport to ensure that the proposed remedy is effective over time.”
- **Comment 31.5a.** “3. Groundwater Contamination. The problem with current and past groundwater contamination is that the cleanup activities have focused on large, locally concentrated areas of contaminated groundwater, such as the Parrot Tailings and (unrelated,

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<sup>1</sup> The BPSOU Subdrain is the gravel-packed piping and pumping system installed in the lower part of Silver Bow Creek above its confluence with Blacktail Creek.

Montana Pole Treatment Plant), where testing has been able to clearly identify significant sources of elevated metals and minerals or other known carcinogens and the boundaries of those underground plumes. The cleanup has not acknowledged sources, such as the Alice pit, that are actively contributing to elevated levels of metals and minerals in the groundwater, or groundwater that is causing metals and minerals to move freely rather than be contained by a cap.”

- **Comment 49.2.** “I don't know how we can talk about streams that aren't connected to groundwater. That's not a stream. That's not a stream if it's not connected to the groundwater. And it's probably a remedy that fits the law somehow, but when we -- when we try to isolate, we don't do it very well. And I think that in looking and thinking about the stream -- and I heard one of you say we have to isolate the stream from this terrible groundwater. I think that's the wrong approach, because it just puts -- kicks it down the road. You know, that -- that groundwater issue is still going to be there long after we're all gone. So why don't we just put the stream there, let it interact with the groundwater. The pollutants that enter from the groundwater are going to enter very, very slowly. We know that. They're not going to come in there all in a big rush and probably won't exceed the standards that you're trying to protect. I just think that somehow there's a disconnect in that part of the whole ROD thinking.”
- **Comment 52.3.** “I think the French drain is a lie. There needs to be more research done. Listen to the people involved. It doesn't work. It's proven. Get a bucket of water and take a look yourself. It doesn't work. You're lying to yourselves and you're lying to this community. The stakeholders in this are not you people, because you get to go home when this is done. We, the people that have fought for this, we have been the enemy. We have been treated very poorly by the State of Montana when we were suing the State. Comments made about us in the capital, the three of us, because we were doing the job of the State, were not very complimentary. We weren't the enemy. We're the people that will live here and remain here.”
- **Comment 98.10.** “Additional Control of Groundwater Discharges to Surface Water. The Proposed Plan includes additional capture and treatment of groundwater in areas adjacent to Blacktail Creek and through the BRW and Slag Canyon area, which will be treated at BTL to meet surface water standards and released to SBC. AR comments

that surface water RAOs are met today at baseflow conditions, and groundwater capture cannot be mandated under remedy beyond that which is required to meet RAOs. With the existing groundwater system in place (as upgraded by AR), there have been drastic reductions of metals loading to SBC. Specifically, during normal flow conditions, when EPA applies chronic standards for comparison, a 96% reduction in yearly median copper concentrations (measured as total recoverable) and dissolved copper concentrations in SBC was achieved between 1993 and 2016; today, federal dissolved standards for contaminants of concern (metals and arsenic) are consistently met, and DEQ-7 standards, measured as the total recoverable fraction, are often met. For example, 2014 monitoring results demonstrated a 97% compliance ratio (equating to one sampling event above DEQ-7 standards every 3 years) during baseflow conditions that meets EPA's RAOs set forth in the 2006 ROD. Thus, the existing BPSOU Subdrain system controls ground water discharges to surface water to the extent necessary for the overall surface water remedy to meet RAOs. Nevertheless, as part of a final CD, AR supports and will agree to a defined and limited expansion of the BPSOU Subdrain system to capture contaminated groundwater beyond that necessary to meet RAOs.

Page 4, Column 2, Bullet 3. "The Proposed Plan states that remedial activities performed to date have included, among other things, "[o]ngoing collection and treatment of some groundwater." The reference to "some groundwater" suggests that most impacted groundwater within BPSOU is not collected and treated by AR, which is misleading. The existing BPSOU Subdrain system captures significant amounts of impacted groundwater (e.g., at least 97% of the metals load in the upper SBC Drainage Basin groundwater), which, as noted above, has resulted in drastic reductions in metals loading to SBC. See Comment No. II.B. AR requests that EPA revise this text; at a minimum, the word "some" should be deleted."

#### **2.16.2 EPA Response**

EPA appreciates and acknowledges comments from CTEC and Trout Unlimited that the proposed plan provides welcome additional contaminated groundwater control, capture, and treatment.

The 2006/2011 BPSOU Record of Decision required the upgrade of existing BPSOU groundwater capture and treatment systems and also

contained a contingency for the implementation of additional contaminated groundwater capture if shown to be necessary. EPA's 2018 *BPSOU Groundwater and Surface Water Interaction Report* (EPA 2018c) and various State of Montana data collection and analysis reports, which are part of the administrative record for this 2020 BPSOU Record of Decision Amendment, demonstrated continued discharge of contaminated groundwater to surface water in areas within BPSOU, possibly resulting in additional contaminated sediments and surface water quality impacts within those water bodies during both baseflow and high flow conditions. EPA exercised the contingency provided in the 2006/2011 BPSOU Record of Decision and is now requiring the settling defendants to capture additional contaminated groundwater in any areas within the BPSOU where it is unacceptably impacting sediments or impacting surface water quality at the two compliance points. Sediment and surface water performance monitoring is described in the BPSOU Surface Water Management Plan (EPA 2019b), and surface water compliance monitoring is described in the BPSOU Surface Water Compliance Determination Plan (EPA 2019a), both of which are attached to the proposed consent decree. EPA is also requiring substantial mine waste and contaminated sediment removal in the Butte Reduction Works and Blacktail Creek area. If the proposed consent decree is entered, Montana DEQ will perform the actual waste removal construction at the Blacktail Creek area to remove the contaminated sediments, tailings, wastes, and impacted soils from the Blacktail Creek and confluence areas, using funds provided by Atlantic Richfield. EPA expects that the combination of these waste removals and contaminated groundwater capture actions will result in the long-term protection of surface water quality and sediments within BPSOU.

EPA agrees that the proper implementation of these additional efforts will prevent or mitigate the migration of contaminated groundwater into the stream hyporheic zone and prevent in-stream sediment contamination and release into Blacktail Creek and Silver Bow Creek below Blacktail Creek's confluence with Silver Bow Creek.

During remedial design, the issue of the interaction of groundwater with reconstructed surface water floodplains will be carefully examined. The goal will be to protect surface water quality and sediments by preventing contaminated groundwater that is not captured by the expanded groundwater interception system from discharging into the creeks. Isolation can occur by building the new stream channel at a higher

elevation than the groundwater (which was done previously in the Lower Area One reconstructed stream), either with or without a liner, to contain the stream water. Without a liner, surface water will infiltrate from the elevated creek bed into groundwater. With a liner, the surface water is contained within the stream through the lined portion of the elevated channel. Elevation of the stream channel and installation with a stream liner are often combined to prevent increases in groundwater volumes and changes to the local groundwater flow regime that may occur in response to increasing the supply of water to the groundwater system. All of these issues will be carefully examined during remedial design of the further remedial elements required in the 2020 BPSOU Record of Decision Amendment.

Use of liners to isolate reconstructed streams within the Butte Reduction Works will be examined during remedial design. EPA agrees that this should be done in as limited a manner as possible, if at all. However, allowing contaminated groundwater to flow into a reconstructed portion of these water bodies would not meet the goal of protecting surface water or sediment quality. Contaminated groundwater will be collected and treated before it would enter a creek either through extension of the hydraulic control channel or at the Butte Treatment Lagoons collection ponds or additional groundwater controls.

In the Silver Bow Creek area above the confluence with Blacktail Creek, community efforts to construct a creek in this area after implementation of the remedy will require use of a liner to protect groundwater from increasing the amounts of contaminated groundwater that need to be kept from discharging to the creeks or changes to the groundwater flow regime. The requirement for a liner separates the surface water from the groundwater, thereby reducing potential impacts to either medium. This is because the groundwater in this area will remain contaminated, despite the additional removal actions undertaken under the expanded remedy or other removals using natural resource damage authority. Constructing a stream that would allow this contamination to infiltrate into the corridor and then enter the downstream surface water bodies would be contrary to the goal of establishing surface water within Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek that meets water quality standards and contains sediments which are below sediment performance criteria, which are described in the amendment, i.e., meeting surface water quality standards within Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek. EPA has worked with

Restore Our Creek Coalition and other community members regarding this issue and will continue to work with them as end land use plans for the corridor area are established in the future.

Long-term groundwater and surface water monitoring will be conducted in accordance with the agency-approved groundwater monitoring plans developed by the responsible parties. These required plans will be updated, reviewed, and approved annually by EPA in consultation with Montana DEQ.

EPA disagrees with the request to remove the word “some” from the description of groundwater collection to date (Comment 98.18). “Some” does not necessarily imply a small quantity. “Some” means simply “not all.” EPA acknowledges that the existing BPSOU groundwater interception and treatment system, which consists of the hydraulic control channel in the Lower Area One area and the BPSOU Subdrain, captures and treats significant quantities of contaminated groundwater. This has resulted in greatly improved surface water quality in Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek.

## **2.17 Health Studies**

Nineteen comments were received regarding the health studies. Most comments received were related to expanding the medical monitoring study to include more than blood lead monitoring of children, including evaluating other contaminants of concern (e.g., arsenic) and older age groups and clarifying the specific components, objectives, and interpretation of the health studies specified in the proposed plan. Responses to comments were prepared with substantial input from Butte Silver Bow County and are presented individually after each comment.

- **Comment 4.4.** “While the focus of the current Health Study is clearly articulated to be an analysis of blood lead levels in children, there is also, as we can see from the above statement from the Final Residential Metals Abatement Program Plan, a mandate for, eventually, a more encompassing and expanded health study. When will provisions and a proposed plan for a more comprehensive health study, as articulated in the Final Residential Metals Abatement Program Plan, be formulated and announced? The Proposed Plan for BPSOU needs to include such a provision.

“To the extent allowable and to the extent possible, the Health Study should also:



1. Consider the health effects of exposure to other contaminants of concern in Butte in addition to lead. The focus needs to be expanded beyond lead levels in children. For example, as mandated, it is now time to look comprehensively at arsenic exposure in Butte and the health effects of this arsenic exposure. Why is lead still the driver of the health study, particularly given that the lead found in Butte has relatively low bioavailability while the arsenic found in Butte has high bioavailability? There is an articulated mandate to investigate arsenic exposure and the health effects of arsenic exposure in Butte. Why hasn't this been done? When will it be done? Lead data may be the so called "low hanging fruit" but that does not eliminate the need to systematically investigate arsenic which is more bio-available than is lead in Butte.
2. (This comment is addressed under Action Levels, section 2.252.2.2)
3. The current health study needs to firm up what we will consider beyond lead and how we will do it.
4. The assumption cannot be made, as it is now, that if you cleanup lead you cleanup the other COCs.
5. Age groups in addition to children need to be investigated.
6. Diseases related to the COCs other than cancer need to be investigated.
7. The differential effects of exposure to the COCs on Butte's environmental justice community of low-income citizens needs to be investigated. In general, the current health study has not given sufficient consideration to environmental justice concerns in Butte.
8. The synergistic and cumulative effects of exposure to the COCs need to be considered.
9. The purpose of the health study needs to be clarified.
10. There needs to be developed a long term plan for future health studies.
11. Air quality issues related to waste depositories needs to be investigated.
12. The concept medical monitoring needs to be clarified.

"Of course, given limitations of data and data gathering as well as methodological limitations for analysis, definitive answers to some of

the questions posed above may be difficult. So, the next question becomes what could be done that is not now being done in terms of remediation activities? Are we missing anything that could be done to protect human health from exposure to the toxics of concern?”

**EPA Response.** The 5-year medical monitoring study process currently allows for a robust look into the health of Butte-Silver Bow residents. While the current medical monitoring study process, by design, prompts study into elevated blood lead levels of children—lead being the primary contaminant of concern—the study process also enables investigation into other areas. For example, the most recent study process enabled the Montana Department of Public Health and Human Services to conduct a non-Superfund investigation into cancer rates in Butte-Silver Bow. Additionally, the Butte-Silver Bow Health Department routinely engages in other non-Superfund studies. An example is an in-depth community health needs assessment conducted every 3 years, focusing on more than 100 broad health measures.

The 5-year medical monitoring study process remains focused on elevated lead because elevated lead is more prevalent in Butte than elevated arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. The RMAP plan has also been amended to prioritize any residential area where children are found to have blood lead levels above 5 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ), which is the current Centers for Disease Control and Prevention’s reference level (and this too is a rarity). Any arsenic and mercury biomonitoring data obtained moving forward will be used in future health studies. Currently, a proactive approach to biomonitoring is conducted on behalf of all children in the BPSOU. Moving forward, biomonitoring will be available to all BPSOU residents, including adults, upon request.

In further regard to potential diseases related to contaminants of concern, the Butte-Silver Bow Health Department has in recent years asked the Agency for Toxic Substances and Disease Registry (ATSDR) to look into neurological disease rates in Butte-Silver Bow. ATSDR has declined, saying there is no indication of elevated rates in Butte. According to ATSDR, there is no national database of neurological disease rates to develop comparative data. ATSDR has

also been asked to conduct a health study in Butte in regard to arsenic exposure; ATSDR declined, saying there is no indication of problematic exposure in Butte. In fact, ATSDR indicated that the levels of arsenic in soils in Butte are much lower than in Anaconda, a city that was subject to a recent ATSDR exposure investigation. The conclusion of the recent Anaconda investigation was that levels of blood lead and urinary arsenic measured in Anaconda residents are comparable to the rest of the U.S. population, as reported in the National Health and Nutrition Examination Survey database. Therefore, ATSDR concluded that a population-based investigation in Butte regarding arsenic exposures would not produce results that would be meaningful. EPA will continue to work with ATSDR and the Butte Silver Bow County Health Department to assess health concerns within Butte where warranted.

In regard to outreach to populations facing barriers to health, such as the barrier of low income, a full-time clinical environmental health employee of the Butte Silver Bow County Health Department will conduct outreach to such populations to provide education about contaminants and various protective practices, such as safe gardening techniques. This employee will also work within the Butte Silver Bow County Health Department's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program, which serves low-income populations and populations with other barriers to health. Under this employee's leadership, biomonitoring in the WIC program will continue and follow-up testing for suspect elevated blood lead levels will be conducted on-site. Further follow-up will also occur with area pediatricians and other healthcare providers. Moving forward, the RMAP will continue to request access to all BPSOU properties to conduct environmental assessments and will conduct environmental assessments upon request outside of the operable unit.

- **Comment 5.5.** "I would like to see a periodic reevaluation of what kinds of data should be collected for the regular 5-year health studies in the community. We should be actively collecting data from young and old alike about other health problems potentially stemming from exposure to heavy metals. The science in this area is evolving and the community studies could provide valuable data that could be of use worldwide, not just in Butte or similar U.S. Superfund sites."

**EPA Response.** The 5-year medical monitoring study process remains focused on elevated lead because elevated lead is more prevalent in Butte than elevated arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. Going forward, any arsenic and mercury biomonitoring data obtained will be used in future health studies. The 5-year medical monitoring study will continue to be responsive to evolving science and evidence.

- **Comment 7.12.** “16. Mental Health while living amid contaminants: I’ve since heard a speaker tell of negative consequences to mental health of people who grow up living in contaminated areas. Our godchild took her own life at age 15. Butte has one of the highest suicide rates in the state, which is one of the highest in the nation. Has EPA investigated how pollution affects the mental health of people who live among contaminants? Please address this.”

**EPA Response.** The community health needs assessments conducted routinely by the Butte-Silver Bow Health Department survey 400 county residents by landline and cellular telephone. Another 300 “key informants” are asked their opinions about reigning health issues in the county. Concerns related to mental health (e.g., how people feel mentally, whether they have access to mental health providers) are addressed. The results of these studies are published every 3 years.

- **Comment 7.15.** “19. School Children and Blood Lead Levels: The last time I checked, there was no testing of children in school settings to determine if any have high blood lead. Please work with the Butte Silver Bow Health Department to implement this so that the few children who may fall through the cracks are, instead tested.”

**EPA Response.** The Butte-Silver Bow Health Department’s clinical environmental health employee will conduct outreach to Butte schools to educate about the RMAP, the availability of blood lead sampling, and the risks associated with lead exposure. Because of Health Insurance Portability and Accountability Act of 1996 (known as HIPAA) concerns, testing within school settings could be problematic, but referrals to the Butte-Silver Bow Health Department, including through its CONNECT referral system, could occur on an individual or group basis.

- **Comment 7.18.** “22. Butte’s Health Study is again not thorough. In public comment meetings, I have asked for more contaminants to be included and for more types of people to be included. Not just Lead, but Arsenic, Mercury and Cadmium and Crystalline Silica. It is endemic to Butte soils, and was named a IA carcinogen by the International Agency on Research on Cancer in 1996. Because health effects from exposure to Butte’s Contaminants of Concern often do not show up until later in life, a more comprehensive study is in order, one that includes the elderly where disease effects from at least Lead are known. I have had two major cancers, ovarian and bladder, so have an obligation to help bring to light factors that may be involved. I believe Butte needs a robust health study with ongoing monitoring. I must say that it will also be very helpful toward getting a good health study if the negotiating parties would help to stop the defensiveness and discounting of the work of highly qualified independent researchers who have done studies of Butte health issues.”

**EPA Response.** EPA understands the community is interested in expanding future health studies to include other chemicals and age groups. As stated in the BPSOU ROD, lead, arsenic, and mercury were identified as the human health contaminants of concern for the Site. The site risk assessments evaluated other contaminants of concern, such as cadmium, and did not find these to be important contributors to human health risks. Thus, inclusion of other contaminants, beyond lead, arsenic, and mercury, in the RMAP medical monitoring study is beyond the scope of the Superfund remedy. RMAP data collected through May 2013 suggest that elevated lead is more prevalent in Butte than elevated arsenic and mercury. For example, 89% of all properties that exceeded a yard soil action level were due to lead alone. For homes where an indoor dust action level was exceeded, including in attics or basements, 44% were due to lead alone whereas less than 1% was due to arsenic alone. In all of the RMAP soil and dust samples, there were only two properties with yard soils exceeding the mercury action level and six with indoor dust exceeding the action level. All of those properties also had lead exceedances. Arsenic and mercury biomonitoring have been offered under the RMAP since 2010 but only when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. Because the environmental concentrations were seldom high enough to offer such testing, there are no comparable arsenic and mercury biomonitoring data. EPA will continue to work

with the Butte Silver Bow County Board of Health, ATSDR, and the Montana Department of Public Health and Human Services to find resources for the evaluation of broader human health concerns such as those described by the commenter.

- **Comment 8.7.** “As Dr. Seth Cornell argued in the April 11 public hearing, the mandate for the Health Study Working Group needs to be strengthened, not diluted, as the current version of the plan seems to suggest. This group provides a venue both for ongoing public involvement and agency investigations of public health concerns that has relevance to past, ongoing, and proposed remedial activities. It’s at the heart of Superfund’s mission (“protect human health and the environment”). Take more care to get this right: be more attentive to assuring the community that you’ve got their back, and that this program will be around not merely as a once-every-five-years bureaucratic requirement, but as an active resource. Using risk assessments as a basis for remedial guidelines is only acceptable if it’s matched by ongoing surveys of actual health concerns in the community.”

**EPA Response.** The City and County of Butte-Silver Bow and Atlantic Richfield, as settling defendants, will strengthen and better define the Medical Monitoring Study Working Group, which advises and informs the medical monitoring study process. One idea is to clarify what is required under Superfund authority, which is a 5-year medical monitoring study, and what can be accomplished using a larger Community Health Working Group through the Butte Silver Bow County Health Department, which can look at broader issues as needed and as funding is available. Once the Superfund medical monitoring study is issued to the public, work on the next study will begin, with a focus on the daily activity of biomonitoring and routine check-in on monitoring and outreach efforts. This check-in should verify that gaps in collection of biomonitoring data are eliminated. Butte-Silver Bow, specifically its health department, will be responsible for determining the Community Health Working Group’s membership and facilitating working group meetings, with insight and input from selected members of the public. The Community Health Working Group meetings may focus on mining-related environmental contaminant data when produced (e.g., medical monitoring studies). However, the Community Health Working Group meetings and communications can also be a forum for

discussion on other health studies being carried on outside of the Superfund process, including the routine community health needs assessments conducted by the health department.

- **Comment 9.3.** “The city of Butte, being known for its super fund cleanup, hampers new business as well as concerns for human safety for the entire community. Why would business and children entering adulthood and the work force, want to stay if not living in a clean, healthy environment. There should be monitoring and studies of all health concerns, not just the lead levels in our children.”

**EPA Response.** In addition to the 5-year medical monitoring study, other non-Superfund health studies and investigations are routinely conducted, including community health needs assessments conducted by the Butte-Silver Bow Health Department every 3 years. These assessments, conducted with a scientific margin of error, gauge human health in Butte via more than 100 broad health measures. EPA will work with the Butte-Silver Bow Health Department to provide accurate information concerning Butte’s public health status, which is anticipated to demonstrate that Butte is a safe and healthy place to live and work.

- **Comment 12.3.** “The proposed plan makes a modification intended to “better describe the mandate for future health studies” because the 2006/2011 ROD does not “specifically describe their exact nature” (at pg 19). However, the language included in item number 11 of the list of non-significant or minor modifications to the existing remedy does little to better describe the health studies mandate. In fact, the language makes it entirely unclear as to who will perform the health studies, how the health studies will be funded, what the studies will cover, what and how the data will be collected, and how the public will be able to access the results. This modification is lacking and needs work in order to achieve the desired results and assure the people of Butte that our health will indeed be studied to ensure the remedial objectives are being fulfilled. As I understand it, Atlantic Richfield has agreed to fund and conduct these periodic studies and has agreed to place the human health study language into the Residential Metals Abatement Program (RMAP) plan. However, the proposed plan at hand lacks any reference to those agreements. Instead, the modification in number 11 states that Butte Silver Bow will “evaluate” the studies without explaining who will execute the

studies, the nature of the studies, and how they will be funded. I can only assume that the reference to the Medical Monitoring Working Group is an effort to acknowledge the health study process, yet it leaves more questions than answers. I strongly recommend a reference to this other agreement and a better explanation of the health studies' contents, funding structure, and continued existence.”

**EPA Response.** As settling defendants, Butte-Silver Bow and Atlantic Richfield are mandated by EPA to conduct the medical monitoring study every 5 years for the next 25 years. With funding from Atlantic Richfield through the Allocation Agreement, the studies will be conducted with the assistance of retained consultants who assist the working group in reviewing biomonitoring data and explaining findings to the lay public. These data will continue to be collected from pediatric clients within the health department’s WIC program and from other pediatric and adult populations who request testing at the health department. The 5-year medical monitoring health study process will remain focused on elevated lead because elevated lead is more prevalent in Butte than other contaminants, including arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. Any arsenic and mercury biomonitoring data obtained moving forward will be used in future health studies. EPA’s unilateral administrative order, which requires this type of medical monitoring study, will include more detail on what is required, and the revised and expanded RMAP plan that will be required under the unilateral administrative order will further define the scope of this required study. As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 16.1** “Is there opportunity for the health studies to incorporate research about co-occurring metals rather than simply looking at lead blood levels only? In the literature, there is a developing body of knowledge that points to toxicity and human health risks being amplified by exposure to multiple metals at one time. In addition, there should be some studies that examine the mental health effects of living with 'Superfund status'. Is there distress caused by living within a known contamination zone? Do Butte



citizens understand the nature of the contamination and their true health risks?”

**EPA Response.** The 5-year medical monitoring study process will remain focused on elevated lead because elevated lead is more prevalent in Butte than other contaminants, including arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. Any arsenic and mercury biomonitoring data obtained moving forward will be used in future health studies. The community health needs assessments conducted routinely by the Butte-Silver Bow Health Department survey 400 county residents by landline and cellular telephone and another 300 other “key informants” are asked their opinions about reigning health issues in the county. Concerns related to mental health (e.g., how people feel mentally, whether they have access to mental health providers) are addressed. The results of these studies are published every 3 years. Along with RMAP outreach personnel, the health department’s clinical environmental health employee will perform outreach to the community, including neighborhoods with particular barriers to health, to educate about lead and other contaminants and the opportunity the RMAP represents for residential testing.

- **Comment 22.11a.** “6.5 The ROD amendment should specifically require future health studies to include the components identified in the 2010 RMAP Plan. The decision document must specifically ensure that the on-going health study process continues. 2010 RMAP Plan requirements are as follows: Identifying chemicals that the residents may have been exposed to; Compiling and interpreting toxicology information on those chemicals; Routes of exposure; Compiling and interpreting the morbidity and mortality statistics as an epidemiology study; Compiling and interpreting health studies; and Compiling and interpreting influencing factors (environmental or cultural) for mortality rates. The public health studies will also include review of the latest epidemiological literature to determine if there are any newly established links between the contaminants of concern and specific diseases. Data gathered through the Residential Metals Abatement Program's (RMAP) routine activities and the results of previous health studies will be utilized to determine the content of

future health studies and potential improvements to RMAP routine activities.

**EPA Response.** The 2010 RMAP plan and its enhancements in the draft 2016 plan will continue to be a guide for studies moving forward. This includes the Superfund Medical Monitoring Working Group identifying residential exposures (consistent with human health contaminants of concern); compiling and interpreting related toxicology information; discussing and addressing routes of exposure; compiling and interpreting morbidity/mortality statistics; discussing various non-Superfund health studies, such as routine community health needs assessments; and discussing influencing factors for mortality rates. The Superfund Medical Monitoring Study Working Group and its retained consultants will also continue to collect and discuss the latest epidemiological literature for newly determined links between contaminants of concern and disease. Past studies will continue to inform future studies. As noted above, EPA's unilateral administrative order, which will require this type of study, will include more detail on what is required, and the revised and expanded RMAP plan that will be required under the unilateral administrative order will further define the scope of this required study. As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 22.11b** “6.6 CTEC supports the proposal to formalize involvement of the Medical Monitoring Working Group in future health studies. The Medical Monitoring Working Group allows local citizen involvement, including local health and toxicological experts, in the health study process. Public health concerns related to Superfund issues remain confusing and contentious. Incorporating local citizen experts in this process can help to lessen public concerns and perceptions that Superfund has not resulted in Butte being a safe place to live. It will also empower Butte citizens to police their own community health, providing a system of checks and balances for agency or responsible party decisions. The amended ROD should be clear that the Medical Monitoring Working Group is an active resource which will provide a continuity of attention to community concerns, not simply a once-every-five-years bureaucratic requirement.”

**EPA Response.** The City and County of Butte-Silver Bow and Atlantic Richfield, as settling defendants, will strengthen and better define the Medical Monitoring Study Working Group. This working group advises and informs the medical monitoring study process. One idea is to clarify what is required under Superfund authority, which is a 5-year medical monitoring study, and what can be accomplished using a larger Community Health Working Group through the Butte Silver Bow County Health Department. The larger working group can look at broader issues as needed and as funding is available. Butte-Silver Bow, specifically its health department, will be responsible for determining the Community Health Working Group’s membership and facilitating working group meetings, with insight and input from selected members of the public. The Community Health Working Group meetings should focus on other mining-related environmental contaminant data when produced. However, the Community Health Working Group meetings and communications can also be a forum for discussion on other health studies being carried on outside of the Superfund process, including the routine community health needs assessments conducted by the health department.

- **Comment 22.11c** “6.7 Authority for health study direction should reside with Butte-Silver Bow Health Department with concurrence from the Board of Health. It needs to be clear in the ROD amendment that contractors working on future health studies are working on behalf of the Medical Monitoring Working Group. Both the Health Department and the Board of Health should have an officially defined oversight role.

**EPA Response.** Authority for direction of the medical monitoring studies required under Superfund will reside with the settling defendants, Atlantic Richfield and Butte-Silver Bow—specifically, the Butte-Silver Bow Health Department—with governing guidance from its Board of Health. Future contractors involved in future medical monitoring study processes will work on behalf of the settling defendants with oversight by EPA and Montana DEQ.

- **Comment 22.11d** “6.8 Future health studies should address all site contaminants of concern if future toxicological information or epidemiology suggests they are toxic. The site contaminants aluminum, cadmium, copper, iron, silver, and zinc are not currently identified as contaminants of concern (COCs) for solid media.

Toxicological information available when the solid media COC list was decided may not have supported the potential human toxicity of these other site contaminants at concentrations apparent in Butte. Future information could reverse this finding and show these contaminants to be toxic to human health alone or in combination with other site contaminants. The amended ROD should ensure that future health studies will address potential exposures to these other metals if new information suggests they are toxic.”

**EPA Response.** As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed. The consent decree also preserves EPA and Montana DEQ’s ability to require additional work at the BPSOU if future information or conditions indicate human health concerns caused by contaminants of concern are warranted, such as information developed similar to what the commenter notes may occur.

- **Comment 40.6.** “And I think attention also needs to be paid to the effect of these contaminants of concern on environmental justice community in Butte. By that, I mean, for low income citizens. An exposure level that might be safe for people who are wealthier, who have better access to health care, perhaps better diets, an exposure level that might not affect those people may be very detrimental to low income citizens who don't have access to health care, who don't have adequate diets, who live in substandard housing. And so one-size-fits-all approach just doesn't work in every case. And I think the health study needs to specifically address that issue.

“Another thing I would like to comment on is the health study gets some kind of mention in this proposed plan. Currently, every five years EPA has mandated a study focused on lead levels in children to ascertain whether or not the RMAP program is being effective. And I think that's important. But I think it's important, too, to try within the limitations of Superfund law to consider the overall question, "Has Superfund been effective in protecting the public health in Butte?" And in order to do that we're going to have to look at more than lead levels in children. We're going to have to look at the effect of other contaminants of concern, such as mercury and cadmium on public health, other age groups than children. We're going to have to look at diseases other than cancer that can be related to these contaminants of

concern. We should look at the synergistic effect of exposure to these different contaminants, as well as the cumulative effect.”

**EPA Response.** In regard to outreach to populations facing barriers to health, such as the barrier of low income, a full-time clinical environmental health employee of the health department will conduct outreach to such populations to educate about contaminants and various protective practices, such as safe gardening techniques. This employee will also work within the health department’s WIC program, which serves low-income populations and populations with other barriers to health. Under this employee’s leadership, biomonitoring in the WIC program will continue, and follow-up testing for suspect elevated blood lead levels will be conducted on-site. Further follow-up will also occur with area pediatricians and other healthcare providers. Along with RMAP outreach personnel, the health department’s clinical environmental health employee will perform outreach to the entire community, including those neighborhoods with particular barriers to health, to educate about lead and other contaminants and the opportunity the RMAP represents for residential testing.

- **Comment 45.2.** “I want to bring up a point that Dr. Ray had mentioned. He said that something in this proposed amendment needs to be discussed, the health study. Well, everything else is speculation. So we talk about risks, we talk about exposure. The bottom line is how is the community doing, what's the health of the community. That's the bottom line. And the only way we determine that is through health studies. There's a mandate in the RMAP program that says that we need to have a health study every five years. And right now there's a health study going on, and it's, basically, looking at lead blood levels in children. That's the same thing that we did in 2014 and the same thing we're doing in 2019. Many community members came forward and said, "Hey, this isn't enough. Blood lead levels in children is not enough to help us out about the health of the community." You need to expand the study. You need to expand the scope. In fact, you don't need to expand the scope. You just need to adhere to what the mandate is for the health study. Now, tucked away on the last page of this proposed amendment, on Page 19, proposed minor changes, it says, "Better describe the mandate for future health studies." Better describe the mandate for future health studies. It says, "The 2006/2011 ROD requires future human health studies on a periodic basis but does not

specifically describe their exact nature." According to this document, they do not specifically describe their exact nature.

"Well, in fact, it does. It very clearly describes what the health study should include. And I encourage you to look at the RMAP document that spells out exactly what the health studies should include. It says, "The health studies will include" -- this is verbatim -- "Identifying chemicals that the residents may have been exposed to; Compiling and interpreting toxicology information on those chemicals; Routes of exposure; Compiling and interpreting health studies; Compiling and interpreting influencing factors (environmental or cultural) for mortality rates. "The public health studies will also include review of the latest epidemiological literature to determine if there are any newly established links between the contaminants of concern and specific diseases. "Data gathered through the RMAP routine activities and the results of previous health studies will be utilized to determine the content of future health studies and potential improvements to RMAP routine activities." It very specifically says what these health studies are supposed to do.

"They're trying to sneak through. They say they're going to better clarify these health study. Let me tell you how they can better clarify the health studies. It says Butte-Silver Bow County. So it's putting the onus on the county here. It says -- there's nothing about bringing control to the community's health studies. "Butte-Silver Bow County, in coordination with the Medical Monitoring Working Group, will periodically evaluate medical monitoring, data approaches and data compiled under the medical monitoring program every five years for a period of 30 years."

"I don't know what that means. I'm a physician in the community. I have no idea what this means. I don't know how that clarifies the future health studies. They're trying to get one over on us here. Everything else is speculation about how the cleanup is doing. We need to know about the health of the community. And we need to do it here in the mandate, the original mandate. It says exactly what these health studies should do. I think the, you know, this supposed minor change, this changes the scope of the remedy.

"This is everything right here. The health study is everything. It changes the scope. It is not a minor change. It's changing the scope of the remedy. And I certainly hope when you go home you review the

documents on Page 19 of this 22-page document. And look at it and talk to your friends and get them to come out to this meeting. If nobody -- if people don't show up, this is going to just slide through. There will no longer be a health study. We will never know if remediation has been effective. We have to show up. You've got to read up, you've got to stand up and you've got to show up. Because, if not, we're going to get, someone said, a crappy remedy. So that's all I have. I hope this room is full come May 23.”

**EPA Response.** In addition to the Superfund health studies processes, numerous other studies on the health of Butte-Silver Bow residents are routinely carried out, including community health needs assessments that are conducted every 3 years, with more than 100 broad health measures. The Butte-Silver Bow Health Department collaborates with Butte’s nonprofit acute care hospital, St. James Healthcare, in carrying out these 3-year studies looking at Butte’s health through more than 100 broad health measures. The Butte-Silver Bow Health Department pays for its portion of the 3-year studies through the health initiatives account of the Redevelopment Trust. The 2010 RMAP plan and its draft 2016 update will continue to be a guide for health studies moving forward. This includes the working group identifying residential exposures; compiling and interpreting related toxicology information; discussing and addressing routes of exposure; compiling and interpreting morbidity/mortality statistics; discussing various non-Superfund health studies, such as the routine community health needs assessments; and discussing influencing factors for mortality rates. The working group and its retained consultants will also continue to collect and discuss the latest epidemiological literature for newly determined links between contaminants of concern and disease. Past health studies will continue to inform future health studies.

The entire health studies budget will be moved to the oversight of the Butte-Silver Bow Health Department. The 2010 RMAP plan describes the chemicals and contaminants of concerns that are of interest in the community and therefore studied; the draft 2016 RMAP plan provides new enhancements and data approaches. The 5-year medical monitoring studies were never intended to look at the entirety of contaminants of concern in the BPSOU; the studies were intended to look at contaminants linked to the RMAP—lead, arsenic and mercury. The medical monitoring studies have one chief mandate—

to look at whether the RMAP is effective. As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 56.3.** “I want to say a little bit about the health study, and the basis for my comments on the health study is not just what's in the proposed plan, but also what is in the work plan for the RMAP program that calls upon going beyond simply looking at lead levels in children and doing biomonitoring studies, but does call for looking at the health effects of all the contaminants of concern in the Butte area. To that end, I would ask that, one, we need to move beyond looking at just lead levels in children and look at other contaminants of concern. Arsenic, for example, needs to be thoroughly analyzed. The effects of the contaminants of concern on the population other than children needs to be considered. Secondly, there is a call to review data to see what new developments they are and epidemiology in terms of the toxic effects of the contaminants of concern. But what is not spelled out is, "Okay, we'll do these reviews," but how will these reviews actually impact the cleanup, what efficacy will these reviews have. They are not just, hopefully, academic exercises but have some efficacy that needs to be spelled out. Next, look at other diseases other than cancer. The focus is on cancer, which is certainly important, but the contaminants of concern in Butte can create other health effects other than cancer.”

**EPA Response.** While the current medical monitoring study process by design prompts study into elevated blood lead levels of children, lead being the primary contaminant of concern, the study process also enables investigation into other areas. For example, the most recent study process led to an independent non-Superfund investigation, conducted by the Montana Department of Public Health and Human Services, into cancer rates in Butte-Silver Bow. Additionally, the Butte-Silver Bow Health Department routinely engages in other non-Superfund studies. An example is an in-depth community health needs assessment conducted every 3 years, focusing on more than 100 broad health measures. The 5-year medical monitoring study process remains focused on elevated lead because elevated lead is more prevalent in Butte than elevated arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust



are high enough to warrant such testing, which is a rarity. Any arsenic and mercury biomonitoring data obtained moving forward will be used in future health studies. Currently, a proactive approach to biomonitoring is being conducted on behalf of all children in the BPSOU, but moving forward, biomonitoring will be available to all BPSOU residents upon request. In further regard to potential diseases related to contaminants of concern, the Butte-Silver Bow Health Department has in recent years asked the ATSDR to look into neurological disease rates in Butte-Silver Bow. ATSDR has declined, saying there is no indication of elevated rates in Butte. Also, according to ATSDR, there is no national database of neurological disease rates to develop comparative data. ATSDR was asked to conduct a health study in Butte regarding arsenic exposure; ATSDR declined, saying there is no indication of problematic exposure in Butte. In fact, ATSDR indicated that the levels of arsenic in soils in Butte are much lower than in Anaconda, a city that was subject to a recent ATSDR exposure investigation. The conclusion of that investigation was that levels of blood lead and urinary arsenic measured in Anaconda residents are comparable to the rest of the U.S. population as reported in the National Health and Nutrition Examination Survey database. Therefore, ATSDR has concluded that a population-based investigation in Butte would not produce results that would be meaningful. As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 64.4.** “Butte's health study is, again, not thorough. Mary Kay has asked for more than lead to be included. That is mercury, cadmium, arsenic, and their synergism with each other and with others, crystalline silica. It was named such in about 1996 by the International Agency of Research on Cancer, but EPA has chosen, for whatever reasoning, not to include it in risk studies for Butte. And so my wife, who has had both ovarian cancer, 1996, bladder cancer in 2017, perhaps the most vulnerable people of Butte because she was born and raised in Butte. Her mother died of bladder cancer. She believes Butte deserves a robust health study and ongoing monitoring. EPA can make that happen. Butte-Silver Bow can desist in its denigration of the independent health studies done by credible Ph.Ds over the years.”

**EPA Response.** The 2010 RMAP plan and its draft 2016 update include the contaminants of concern that were identified as the primary risk drivers in the 2006/2011 BPSOU Record of Decision. The draft 2016 RMAP plan provides new enhancements and data approaches. The 5-year medical monitoring studies were never intended to look at the entirety of chemicals of potential concern in the BPSOU; the studies were intended to look at contaminants identified in the human health risk assessments—lead, arsenic, and mercury. The medical monitoring studies have one chief mandate—to look at whether the RMAP is effective. As noted above, EPA will also work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 78.2.** “Regarding health issues.... There clearly needs to be targeted on-going monitoring particularly in the folks representing the 40 to 80 year old cohort groups.”

**EPA Response.** Data will continue to be collected from pediatric clients within the health department’s WIC program and from other pediatric and adult populations who request testing at the health department, including aging and aged residents. The 5-year medical monitoring study process will remain focused on elevated lead because elevated lead is more prevalent in Butte than other contaminants, including arsenic and mercury. Since 2010, however, arsenic and mercury biomonitoring have been offered under the RMAP when environmental sample concentrations in soil or dust are high enough to warrant such testing, which is a rarity. Any arsenic and mercury biomonitoring data obtained moving forward will be used in future health studies.

- **Comment 80.4.** “I support the Health Study work and believe that the details will be worked out that will quantify and qualify the impact of the current situation and the success of the ongoing actions that will in the end improve public health and safety.”

**EPA Response.** Thank you.

- **Comment 96.5.** “2) Health Studies. The Proposed Plan should include clarity and direction for health studies, particularly regarding Minor Modification No. 11, which states:

“11. Better describe the mandate for future health studies. The 2006/2011 ROD requires future human health studies on a periodic basis but does not specifically describe their exact nature. The modification specifies:

- BSB County, in coordination with the Medical Monitoring Working Group, will periodically evaluate medical monitoring (i.e., biomonitoring) data approaches and data compiled under the medical monitoring program every five years for a period of 30 years. The first of these studies was completed and approved by EPA in 2014. Five additional periodic evaluations will be conducted over the next 25 years.
- Reports documenting these periodic evaluations will respect the personal privacy of the participants and will be available to the public, EPA, DEQ, and responsible parties for the BPSOU.
- All stakeholder parties will continue to facilitate, participate, and contribute with the Medical Monitoring Working Group. Butte-Silver Bow very much appreciates the inclusion of Minor Modification #11, and therein, EPA’s acknowledgement that the original Record of Decision did not specifically require human health studies. With this modification, EPA can now include the requirement specifically in the Amended Record of Decision. In response, Butte-Silver Bow acknowledges that the RMAP workplan is a fluid document and will continue to be revised as new information emerges.

“Butte-Silver Bow further understands that the language about “in coordination with the Medical Monitoring Working Group” is deliberate, due to the diverse expertise of the working group stakeholders. The language provides community health applications that EPA does not always have the authority to require. Butte-Silver Bow understands and appreciates the fact that the stated approach would allow each health study to evaluate health impacts beyond lead, arsenic, and mercury exposure and the medical monitoring associated with the RMAP program. The language in the Proposed Plan must be revised to provide better clarity and direction. Minor Modification No. 11 says that Butte-Silver Bow, in coordination with the Medical Monitoring Working Group, will periodically evaluate medical monitoring (i.e., biomonitoring) approaches and data compiled under the

medical monitoring program every five years. This language needs to be clear, defining Butte-Silver Bow's role and the role of the Medical Monitoring Working Group. "All stakeholder parties" also needs to be defined. Butte-Silver Bow believes there is confusion about who the "stakeholders" are in the current Health Study process, and who is responsible for public engagement, participation and process facilitation."

**EPA Response.** The 2010 RMAP plan and its draft 2016 update will guide the medical monitoring study process moving forward. As noted above, EPA's unilateral administrative order, which will require this type of study, will include more detail on what is required. The revised and expanded RMAP plan that will be required under the unilateral administrative order will further define the scope of this required study. As needed, EPA will work with ATSDR, Butte-Silver Bow Health Department, and Atlantic Richfield to conduct broader public health evaluations through the health department.

- **Comment 97.2.** "The Board of Health agrees with the health studies comments provided by Butte-Silver Bow, in that the proposed plan should include clarity and direction for the studies, given that the responsible parties, including Butte-Silver Bow and Atlantic Richfield, are responsible for carrying out the studies. Regarding that perceived need for enhanced clarity and direction, the Board of Health asks: What data have already been gathered? How are the data collected, coordinated, disseminated, and archived? How are the data turned into useable, actionable knowledge, and by whom?"

"The Board of Health does believe that health study processes should be designed as ongoing and begin shortly after the end of each five-year study cycle, not two to three years following each study. The Board of Health also strongly recommends that the medical monitoring working group process be open to the public with a robust public involvement component. Also, regarding the working group, the Board of Health seeks tighter definition – what exactly is the working group? Who are its stakeholders? Who serves on the group? To whom does it report? What does it actually do? Are there bylaws? And, again, are the workings of the group a public process? The Board of Health also believes that the health studies need to be more carefully branded, so that they are not confused with various other health studies, such as the community health needs assessments that

are conducted every three years by the Butte-Silver Bow Health Department and the local non-profit hospital.

“Since Butte-Silver Bow is a responsible party and partner in carrying out the studies, the board believes that the Butte-Silver Bow Health Department should be more strongly sanctioned to assist in steering the study process. For example, the proposed plan says that Butte-Silver Bow, in coordination with the working group, will periodically evaluate medical monitoring (i.e., biomonitoring) approaches and data compiled under the medical monitoring program, every five years. This language needs to be clear, defining Butte-Silver Bow’s role, and the Health Department’s role, and the role of the working group. Because the Board of Health is requesting a stronger role for the Health Department, and due to the department’s relative lack of resources, sufficient funding must be made available to the department for this effort and other health-related Superfund efforts.

“Along with Butte-Silver Bow as a whole, the Board of Health appreciates the inclusion of Minor Modification No. 11 and EPA’s acknowledgement that the original Record of Decision did not specifically require human health studies. With this modification, EPA can now include the requirement specifically in the Amended Record of Decision. The Board of Health acknowledges that the Residential Metals Abatement Program work plan is a fluid document and will continue to be revised as new information emerges. The Board of Health agrees that new and updated evidence needs to be incorporated as science advances.

“The Board of Health further understands that the language in the modification about “in coordination with the Medical Monitoring Working Group” is deliberate, due to the potential diverse expertise of the working group stakeholders. The language provides community health applications that EPA does not always have the authority to require. The Board of Health understands and appreciates the fact that the stated approach would allow each health study to evaluate health impacts beyond lead, arsenic, and mercury exposure and the medical monitoring associated with the RMAP program. The Butte-Silver Bow Board of Health thanks you for your time and attention related to these comments.”

**EPA Response.** The responsible parties—Butte-Silver Bow and Atlantic Richfield—are responsible for conducting the Superfund-

required medical monitoring studies. The responsible parties with EPA and Montana DEQ oversight will verify that there is clarity surrounding past study data and how those data inform current and future studies; how data have been and are collected, coordinated, disseminated, and archived; and how those data are leveraged into useful action. Once each medical monitoring study is published, work on the next study will proceed. The settling defendants will more tightly define what the Superfund Medical Monitoring Study Working Group is—who serves on this committee, how public input and insight are solicited and received, and how other elements central to the group are defined. Moving forward, the Butte-Silver Bow Health Department will be, along with Atlantic Richfield, sanctioned to steer the medical monitoring study process. Along with the county's health officer and RMAP personnel, other health department personnel, including a new clinical environmental health employee, will work to coordinate efforts under both the Superfund and health department processes. As noted above, EPA's unilateral administrative order, which will require this type of study and will include more detail on what is required, and the revised and expanded RMAP plan that will be required under the unilateral administrative order will further define the scope of this required Superfund study. As also noted above, EPA will also work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

- **Comment 98.35.** “U. Page 19, Modification 11. The Proposed Plan provides a more-detailed description of the periodic health studies to be conducted under the 2006/2011 ROD, which specifies:
  - BSB County, in coordination with the Medical Monitoring Working Group, will periodically evaluate medical monitoring (i.e., biomonitoring) data approaches and data compiled under the medical monitoring program every five years for a period of 30 years. The first of these studies was completed and approved by EPA in 2014. Five additional periodic evaluations will be conducted over the next 25 years.
  - Reports documenting these periodic evaluations will respect the personal privacy of the participants and will be available to the public, EPA, DEQ, and responsible parties for the BPSOU.

- All stakeholder parties will continue to facilitate, participate, and contribute with the Medical Monitoring Working Group.” AR supports the clarifications to the timing, reporting and stakeholder involvement requirements of the health studies component of RMAP provided in the Proposed Plan.

“AR disagrees with public comments that seek to expand the medical monitoring purposes of the present health studies program as such an expansion would be beyond the scope of EPA’s CERCLA authority. As presented in the RMAP plan, the purpose of these studies must be clarified to provide for periodic evaluation of medical monitoring (i.e., biomonitoring) data, and not to describe public health studies or to conduct basic research into the impact of metals on human health.

“AR also requests that the Amended ROD clarify the purposes for conducting these periodic evaluations:

1. Because the state of the science related to collection and interpretation of biomonitoring data continues to evolve, it is appropriate to periodically evaluate the medical monitoring approaches used in RMAP to ensure that the biomonitoring data can and should be considered in assessment of the extent to which potentially harmful exposure to sources of lead, arsenic, and mercury contamination from historic mining in the community have been mitigated by the Amended ROD remedy.

2. Examination of the complete biomonitoring database every five years can provide valuable information with regard to exposure trends over time and in comparison to reference populations over the same time periods. Information and analysis supporting both purposes can inform potential improvements to RMAP routine activities as needed to ensure the Program’s continued effectiveness and efficiency. For example, while RMAP has focused on arsenic, lead, and mercury, lead has proven to be the primary metal for which abatement actions are completed, and is the only metal routinely included in biomonitoring. Thus, periodic evaluations going forward under the Amended ROD should focus on lead. Similarly, future periodic evaluations should continue to focus on affected and sensitive populations as described in the RMAP plan.”

**EPA Response.** The medical monitoring component of the RMAP is primarily focused on lead as this was the primary risk driver identified in the human health risk assessments for the BPSOU site. The population of key concern for lead exposures is children; thus, by monitoring blood lead levels in children, the RMAP is focusing both on the primary contaminant of interest and on the key population of interest. Monitoring blood lead levels provides a direct and stable measure of total lead exposures across all potential contamination sources, including those that are site-related (e.g., soil, dust, air) and those that are not site-related (e.g., water, food, paint). In addition, because blood lead levels are commonly measured in children nationwide, it is possible to make comparisons between blood lead levels for children in Butte and children outside of Butte to inform decisions about the efficacy of the remedial action.

The RMAP and its medical monitoring study is focused on monitoring and evaluating the effectiveness of the Superfund remedial action. ATSDR can work with state and local health departments to conduct site-related public health assessments to better address general public health concerns regarding community health and disease rates for Butte if needed. As noted above, EPA will work with ATSDR and the Butte-Silver Bow Health Department to conduct broader public health evaluations through the health department as needed.

EPA understands the community is interested in expanding future health studies to include other chemicals and age groups. As stated in the 2006/2011 BPSOU Record of Decision, lead, arsenic, and mercury were identified as the contaminants of concern for the BPSOU. The site risk assessments evaluated other metals, such as cadmium, and did not find these to be important contributors to human health risks. Thus, inclusion of other contaminants, beyond lead, arsenic, and mercury, in the RMAP medical monitoring study is beyond the scope of the Superfund remedy. As noted in the 2014 Butte Silver Bow public health study, since 2010, arsenic and mercury biomonitoring have been available under the RMAP when soil and dust concentrations are sufficiently elevated to warrant testing. However, environmental concentrations were seldom high enough to offer such testing, and remedial actions have rarely been prompted due to arsenic and/or mercury alone.

In October 2019, ATSDR released *Health Consultation for the Exposure Investigation (EI) of Blood Lead and Urine Arsenic Levels*



for the Anaconda Smelter Site. The exposure investigation concluded that urinary arsenic levels for residents of Anaconda participating in the study are comparable to the U.S. population. Soil concentrations of arsenic in Anaconda are much higher than in Butte. Thus, because urinary arsenic levels are not elevated in Anaconda, this suggests urinary arsenic monitoring in Butte would likely show similar (or even lower) results as compared to Anaconda.

Nevertheless, EPA will consider the community feedback represented in this comment and weigh the potential merits of expanding the health studies program for the contaminants of concern identified in the BPSOU ROD with the stakeholder group that directs the periodic health studies.

EPA agrees that additional clarity is needed to better define the scope, objectives, roles and responsibilities, and interpretation of the future health studies. EPA also looks forward to continued discussion with the community, local health department, and project stakeholders on this topic. Specific details on future health studies will be documented in the 2020 BPSOU Record of Decision Amendment and will be further defined in a revised RMAP work plan that will be developed under the authority of the existing unilateral administrative order.

## **2.18 Impacts to Butte-Silver Bow Compliance**

### **2.18.1 Comment Summary**

One comment addresses Clean Water Act compliance impacts to current and future municipal wastewater collection, treatment operations, and discharge permit compliance and the impacts historical mining waste may have on those municipal functions. The comment was provided by Butte-Silver Bow County.

- **Comment 96.6.** “Of equal importance to Butte-Silver Bow is the alignment of the CERCLA-driven provisions under a BPSOU Consent Decree related to water quality on Silver Bow Creek with the Clean Water Act-driven regulations related to water quality on Silver Bow Creek and the Upper Clark Fork Basin. Butte-Silver Bow cannot be obligated (as a Superfund PRP/Settling Defendant) to perform under CERCLA without assurances that it will not create untenable obligations under the Clean Water Act, for example, long-term compliance with our municipal wastewater discharge permit, Total Maximum Daily Limits (TMDLs), and Municipal Separate Storm Sewer Systems (MS4) permit coordination. In particular, it is clear

that Butte-Silver Bow’s municipal wastewater treatment plant plays a significant role in the overall collection and treatment of storm water (e.g. inflow and infiltration), and by extension, the metals removal challenges on Silver Bow Creek. The Agencies and settling defendants are all in agreement that a clean creek is the end goal, but beyond its recent \$34 million plant upgrade, Butte ratepayers cannot be expected to absorb any additional costs to address metals removal (e.g. tertiary metals treatment on its WWTP, expedited replacement of sanitary collection system, etc.), or be forced to demand unreasonable pretreatment requirements on potential users of the wastewater system. Thus, the Proposed Plan and CD must consider potential impacts to current and future municipal wastewater collection, treatment operations and discharge permit compliance.”

### **2.18.2 EPA Response**

EPA has encouraged dialogue between Atlantic Richfield and Butte Silver Bow County regarding impacts from historical mining waste on the municipal wastewater treatment system. EPA has also coordinated with Montana DEQ on the unique interaction between the CERCLA stormwater requirements defined in the expanded remedy reflected in the 2020 Record of Decision Amendment and the county’s current state stormwater permit. These efforts have resulted in the necessary actions to address the county’s concerns in EPA’s view.

## **2.19 Operable Unit Management**

### **2.19.1 Comment Summary**

Two comments were received regarding the management of the BPSOU and the larger Silver Bow Creek/Butte Area site, urging EPA to consider the other operable units within the Silver Bow Creek/Butte Area site and coordinate cleanup actions as a whole.

- **Comment 8.9.** “The proposed plan, the upcoming ROD, and the CD that follows constitute major achievements for all of the negotiating parties, all of whom have finally engaged in a serious give and take to come to this point. But, as complex as this process has been, it’s only part of a larger, more complex NPL site. Like all other Operable Units for the Silver Bow Creek / Butte Area NPL site, the plan for BPSOU suffers from its isolation from the other parts of the overall site: aside from the mandated five-year reviews, the Superfund process for this NPL site is fragmented across different OUs and there’s virtually no comprehensive overview provided that acknowledges the

interconnectedness of all the OUs. This shortcoming requires management oversight and communication strategies that so far have not been developed or implemented. This is relevant not merely to BPSOU, but to the whole site, and it's a shortcoming that needs to change.”

- **Comment 96.8.** “4) Coordination between Operable Units: Priority Soils and Mine Flooding. There needs to be greater recognition that Horseshoe Bend Effluent (via the Mine Flooding Operable Unit) will eventually be part of the mix in terms of water quality and metals compliance on Silver Bow Creek, as well as potential beneficial uses of that water for the community. Another beneficial input to Silver Bow Creek could be flow from the Silver Lake water system. Butte-Silver Bow has already taken steps (through formal change proceedings with DNRC) to allow the use of its existing water rights to augment flow in the area as part of a holistic solution that includes both Silver Bow Creek and WWTP discharge compliance. The Priority Soils Proposed Plan and Consent Decree needs to better address the need for coordination between and among final decisions between with Mine Flooding.”

#### **2.19.2 EPA Response**

EPA and Montana DEQ are carefully evaluating the treated water discharge from the Butte Mine Flooding Operable Unit into Silver Bow Creek and are aware of ways it may affect water quality and performance standard compliance in BPSOU. Whatever enforcement mechanism that EPA uses to implement the BPSOU ROD will include requirements for plans to evaluate water quality compliance that will take into account scenarios with and without additional discharge from Butte Mine Flooding. Operable Unit. However, the BPSOU remedy has to be protective without relying on discharge from Butte Mine Flooding, which may be intermittent until the eventual closure of active mining, which could be decades in the future.

EPA will review all Butte Mine Flooding remedial design plans and verify coordination between the two operable unit remedies. Many of those plans currently account for coordination with the downstream operable units within the Silver Bow Creek/Butte Area site through evaluation of scaling, temperature, volume, and water quality, to name a few of the factors that EPA requires be evaluated.

Additionally, EPA and Montana DEQ also work internally to verify coordination and consistency among all of the Silver Bow Creek/Butte Area operable unit response actions. The same EPA remedial project manager and state project officer for EPA and Montana DEQ, respectively, work on Butte Mine Flooding, BPSOU, West Side Soils Operable Unit, and Rocker Timber and Framing Treatment Plant Operable Unit. EPA sponsors an annual day-long event put on by the U.S. Geological Survey that presents data from a sitewide perspective (the U.S. Geological Survey collects surface water data throughout the collective Clark Fork Basin Superfund sites, using funding provided by EPA). The event is open to the public and tracks overall sitewide progress.

## **2.20 Proposed Modification of the 2006/2011 Record of Decision**

### **2.20.1 For Proposed Modification**

#### **2.20.1.1 Comment Summary**

Twenty-four comments were received that expressed support for the changes as described in the proposed plan.

- **Comment 3.1.** “I spent the better part of my twenties promoting Butte. I think getting the remediation wrapped up in Butte would be a massive benefit to the town and community. Butte is ready to push forward and rise up from its past. I think because remediation is a slow process it's hard for people to see the impact that has already been made on Butte. As a photographer I see that change year over year. I've seen elk in environments that used to be wastelands. I've seen the Butte hill covered in grass whereas 10 years ago, it was bare. Slowly, but surely each year Butte is getting greener. I think this project could be the finishing touch that Butte needs to finally move forward, contributing to the future that the people of this amazing town deserve.”
- **Comment 4.1.** “In general, the proposed plan is a positive Superfund development for Butte. The Proposed Plan, along with the previously announced conceptual agreement, goes beyond what can strictly be mandated under Superfund. The section announcing the expansion of the RMAP program is a particularly positive development.”
- **Comment 5.1.** “After many years of negotiations between the potentially responsible parties and considerable public input at many stages of the process, I believe the proposed plan indeed meets most of the goals of protecting the environment and assuring the best cleanup possible of the Butte Hill and upper Silver Bow Creek area.”

... I believe that while this cleanup and many restoration "extras" that will come as part of the final work plan will not satisfy every resident, this is indeed the best solution that will produce the best outcomes for the community at large and leave a legacy that we can be proud of."

- **Comment 7.2.** "There are two overarching concerns I have about cleanup plans that are not adequately articulated in this amendment:

First, the low-income people living in substandard old rental housing on the Butte Hill: Please use your legal power to assure your Environmental Justice obligations to these vulnerable people are fulfilled by giving them the ability to request Residential Metals Abatement Program inspection and, where needed, cleanup of their yards and attics without having to go through the reluctant landlords or owners. The Butte Hill comes up in red on your Environmental Justice screen. You have the responsibility to assure the poor in Butte get the same quality cleanup as others throughout the city.

Second, Butte's future people: Please make certain that, when mining ends in Butte 30 to 50 years from now, Silver Bow Creek is once again connected to its original East Ridge headwaters sources, as a natural meandering stream. Future Butte residents must not have to endure a dead or impaired creek, and thus stagnant economy, as my generation did.

This is a one-time deal: your decisions today will affect the environmental and subsequent economic opportunities of Butte people in perpetuity. Please make them the focus of the best cleanup you can obtain. My comments are categorized for your convenience. These are personal BPSOU concerns that remain after my 28 years of either employment or volunteer advocacy on Superfund issues in Butte -- with the Clark Fork Coalition, Citizens Technical Environmental Committee, Citizens for Labor and Environmental Justice, and Restore Our Creek Coalition, the latter two organization I helped found."

- **Comment 8.2.** "The proposed plan includes a number of compromises that many people are unhappy about—the high-flow waiver of Montana's water-quality standards, and the removal of an option for active water treatment facilities, just to name two. But compromises were to be expected in a negotiated settlement. However, even if we accept certain compromises, I'm convinced that

some features of this plan will fail to win widespread community acceptance unless the plan—and subsequent decision documents—addresses several problems in the plan as published. ... The proposed plan to modify the BPSOU ROD is not perfect. It doesn't include everything that I would have called for if I were emperor. But if it's carried out successfully, and if the proposed modifications that emerge from the community during this public comment period are incorporated to some degree, I'm convinced that it will leave Butte a healthier, cleaner, more livable, and more attractive place to residents and visitors alike. I look forward to seeing the plan implemented, the cleanup and restoration work completed, and the city made a better place for all of us.”

- **Comment 12.1.** “Like thousands of Butte kids, I vividly remember bathing in brown water. I remember large barren swaths of fenced-off, oddly colored land. Superfund investment has dramatically transformed the environment of Butte over the last few decades, and the agreement at hand will further improve the environment of Butte and the quality of life of its residents. I support the proposed plan and look forward to its implementation. The proposed plan would amend the 2006/2011 record of decision to, among other things, increase removals of near-stream mine waste, construct storm water collection basins, expand groundwater capture areas and reroute part of Silver Bow Creek. I am proud of the local activists that have shaped the process in recent years. I am even more proud of the civil servants of our community who have worked tirelessly to bring this agreement to a positive conclusion for the prosperous future of our town. I have the following specific questions and recommendations: [addressed in various section of this document]. ... In conclusion, the proposed plan describes a laudable vision for cleanup of Silver Bow Creek and the Butte Area Superfund Site, and fulfilling its vision will take smart planning, sustained investment in science, and coordinated monitoring and adaptive management. The proposed agreement, if approved, presents a once-in-a-lifetime opportunity to put Butte on a path to long-term environmental and economic prosperity. I look forward to seeing it become a reality”
- **Comment 15.1.** “I wanted to voice my support for the Proposed Plan for the Amendment for the BPSOU ROD. As being an active part in collecting and analyzing data, evaluating alternatives for over 20 years at BPSOU on behalf of Atlantic Richfield, I'm a past resident of Butte,

and have family and great friends still living in this wonderful area...I still own property in Butte, so I do feel I have a vested interest in how the BPSOU remedy plays out.”

- **Comment 17.1.** “After reading the proposed plan to amend the 2006/2011 ROD; having lived and worked in Butte most of my life, and seeing the impacts of the remediation thus far. I feel very confidently that the proposed decisions, as they apply to the capture of contaminants, are in line with a strong reduction in the impact of mine waste within the BPSOU area. I have seen an increase in water fowl, aquatic life and fauna in the areas remediated to date. Mining has impacted Butte and its residents in so many ways, both good and bad. But without the mining there is no doubt that I would never have lived in this beautiful area. The conversation, and continual cleanup of our superfund site will likely last for many years, but I do see that what has transpired has been for the good of the area and those who call Butte “home”. The addition of the “pleasant and public accessible” catch basins will both enhance and continue to renew our town, and without doubt serve to be a pleasing byline in the many travelers’ stories of their visit to the “Richest Hill on Earth”. I appreciate the efforts of those who continue to work side by side in the difficult task of decision and execution of the plans to renew and refresh this community. Thank you for your time and attention to this matter.”
- **Comment 18.2.** “I have had the unique opportunity of having witnessed huge tracts of lands transformed from moonscape into recreational areas. To be able to walk from the trailhead from Wyoming Street past the MT. Con and through the Foreman’s Park all the way up to the hallowed ground of the Granite Mountain/Speculator Mine Memorial is something in the mid 90’s that I never could have dreamed of. Today I walk this trail almost daily with my wife. To be able to ride our bikes from Butte to Rocker and on to Ramsey was again something I never could have imagined. Today we do this as often as possible on weekends. The bridges you have built. The tunnels and paved trails. The reclamation. The carefully placed storm water pathways and so much more. All of these elements have only increased my love of place. The many levels of planning and work has not gone unnoticed by me and I am very appreciative of the great effort behind them all. I have seen conceptual videos and architectural renderings of your proposed remedy and I

stand in amazement and filled with great excitement for the future. I support your vision. A vision shared by many through public input. I want to thank you all for everything you have done to make Butte a far far better place to live, raise children, recreate and for giving me so much pride and hope for this great place I call home.”

- **Comment 22.1.** “The Citizens Technical Environmental Committee (CTEC) prepared these comments on EPA’s April 2019 Proposed Plan to Amend the 2006/2011 Record of Decision Butte Priority Soils Operable Unit (Proposed Plan). CTEC recognizes that the Proposed Plan is a significant decision point for Butte Priority Soils (BPSOU) because it is the basis for the Consent Decree which will determine the details, performance standards, and legal responsibility for the final cleanup of Butte’s urban core. CTEC is pleased that the settling parties have made good progress towards an agreement and that a final CD is within reach. The following comments [addressed in various sections of this document] describe our opinion of the Proposed Plan and what additional factors we believe need to be addressed in the final amended Record of Decision.”
- **Comment 25.1.** “Trout Unlimited offers the following comments on EPA’s April 2019 Proposed Plan on behalf of our nearly 2,000 members in the Clark Fork Basin. Trout Unlimited is actively engaged with a variety of partners to conserve, protect and restore the Clark Fork River and its fishery. The long-term health of the Clark Fork River and the success of restoration downstream depends on an effective remedy in Butte. The Proposed Plan offers a significant step forward towards effective cleanup on Butte Hill and protection of water quality in the Silver Bow Creek headwaters.”
- **Comment 26.1.** “I write on behalf of my role as a citizen of Butte – Silver Bow County, after my review of the Environmental Protection Agency’s (EPA’s) proposed plan for the Record of Decision (ROD) amendment for Butte Priority Soils Operable Unit in Butte, Montana. I will keep my comments brief. I find the material and plans outlined in the proposed changes to be scientifically credible, feasible, and appropriate for the conditions of concern. I trust that the EPA, along with the related responsible parties, will stay up to date on the environmental conditions and related remediation, particularly as they pertain to the advancement of knowledge, science and/or technology and/or additional discoveries that are currently unforeseen.”



- **Comment 30.2.** “Overall, I am in favor of the plan as proposed. I look forward to a state of the art storm water treatment with the amenities as put forth in the proposed plan. There are some exceptions, however, as noted below: [addressed in various sections of this document].”
- **Comment 32.1.** “I am writing this letter today to support the Butte Priority Soils Operable Unit Proposed Plan. After hearing a presentation from Butte Silver Bow County officials, I am convinced this plan is the best solution for our community and it must be approved as soon as possible. Our community deserves this work and we shouldn’t have to wait any longer. The plan is thorough, thoughtful, and helps this area get de-listed from Superfund, which we need desperately. I am pleased to see the proposed plan prioritize public health and our environment, hand in hand. Butte has struggled to grow and as someone in local advertising, our Superfund listing and history has been a burden on me and my company to grow here as well. Economic development is vital and approving this plan with all parties working together will help our community begin to prosper like others in our state. Expanding the RMAP program will serve the community well. We have promoted this at our station and I’ve seen excellent results from their work. The end land use proposals will be enjoyed by the people of Butte and visitors for years to come. Thank you for your support of Butte and be aware that we are excited to see the progress continue with this plan!”
- **Comment 37.2.** “FWP is supportive of all proposed ROD amendments that would further eliminate or improve control of contaminants reaching surface waters. This is of fundamental importance to the health of the biological community in Silver Bow and Blacktail creeks. We do request that EPA coordinate with FWP during instream waste removals or channel relocations that could lead to direct fish mortality (primarily through stream dewatering). Through coordination it may be possible for FWP to assist with a fish rescue in affected reaches. In the event that FWP is unable to assist, we strongly recommend that EPA or its cooperators perform a fish rescue to the best of their ability. Fish captured in such an effort should be placed above or below the affected reach in an expedient manner.”
- **Comment 40.1.** “The focus of my comments this evening is on this proposed remediation plan. I don't want to get into restoration or what

could be added to this plan later on. I say this deliberately because one of the things that, maybe by teaching public administration and public policy, is that agencies are limited in what they can do by the law. And very often an agency may like to do something, may consider something beneficial, but they simply cannot do it under existing statutes or existing policy. I know a very competent environmental attorney with the State of Montana told me once that anything EPA does we have to consider it as being eventually justifiable if it's challenged in court. And that can limit what an agency can do. And so, perhaps, somewhat surprisingly, I have to say that I'm very supportive, or generally supportive, of this proposed plan.

“And so, it's not perfect. It can be improved. Later on, we will need to address the issue of things like Restore Our Creek and see how that can be entered into this plan. But, as the common saying goes, that the perfect cannot be the enemy of the good, I think if you compare this proposed plan to where we were ten years ago, we have made some significant progress. In short, then, you know, I know there are limitations to what the proposed plan is going to do. But I think if you compare where it will take us -- and there's a lot, yet, to be done; namely, a consent decree. And one thing I think I want to address some may find offensive. We should really hope that we get the consent decree. Because I can tell you, based on my reading of the law, based on my investigation of other sites, there is a lot in the consensual agreement, there is a lot in the consent decree that the EPA could not order on its own, that if we had to go to a unilateral administrative order, a lot of the amenities, a lot of the cleanup that we are going to get if we get this consent decree would not be available. That's not a threat. Nobody's been threatened that if you don't agree to the consent decree we're going to take this away. It's a statement of fact, that there are limits in law to what EPA can order, and there's a lot more in that consent decree than EPA can order. Just as the RMAP program, which is a nationally recognized lead abatement program, addresses lead paint. Lead paint is not part of mine waste; yet, ARCO agreed that it would be included. If EPA had had to order something like this under a unilateral order, that probably would not have been in it. But, I think, looking at the proposed plan amendments as written, that it does represent substantial progress, the consensual agreement represents, you know, substantial progress. There are things in that that ARCO, for example, would not, under

Superfund law, be required to do. And while it's not perfect, I think it does represent an advance over where we've been.”

- **Comment 54.2.** “My personal opinion is I stood here in this room 15 years ago and railed against the EPA for their proposed plan at the time. And I did that because I was innately familiar with the data that the original proposed plan was based on. And I thought it was a joke. Today, I feel differently. I'm not here to rail against this proposed plan. I've looked at every major document that's come out of the Superfund process in the last 15 years. Some of them I've felt worse about, but I noticed a change in the EPA's language and position in recent years. The first time I saw it I was really surprised. I reread the page a few times because I was, like, "Wow, they're actually, they're actually on the same page as we are." I'm not sure if they had come to our conclusion or we had come to a joint conclusion. But it marked a significant change in EPA's stance towards Butte as far as I was concerned.

“I know a lot of people are focused on the creek, Upper Silver Bow Creek, and whether it will be restored to a flowing meandering channel. And I am in no way here to disparage that dream. I think it's a good idea. But when I look at the proposed plan, although I do realize that is absent, I see a lot of good things in it. In fact, I see just about everything that we were fighting for 15 years ago in this proposed plan. In addition to that, I see solutions for problems that have been identified in the last 15 years. A lot of hard work has gone into studying the Superfund in Butte since the original proposed plan. At this stage I'm surprised we even had a proposed plan and ROD when we did, because we really didn't know half the story. Both the State and EPA and ARCO have spent a lot of time and money studying this site since then, and that information was critical to identifying further problems. So I guess that's -- when I look at the proposed plan, I see a plan that I think Butte should be happy with.

“But I would like to, also, talk about groundwater because I'm a hydrogeologist, and I was part of the "Parrot Wars" you might say. And I was on the State side of the Parrot Wars. But the way that EPA addressed the Parrot plume in the first place is they said, "Even if you remove everything you can, it's going to take a long time for this aquifer to clean up." And I can't disagree with that as a hydrogeologist. But they went on to say -- first of all, they said, "We're going to waive that groundwater in the alluvial aquifer." That stand -- those standards

are waived, too. But they said, "If groundwater is affecting Silver Bow Creek we'll do something about it." And we're at that point now. And not only are we at that point, we understand a couple of locations where groundwater is specifically affecting the stream. And those are now being addressed under this proposed plan. ... So I guess that's -- I'm pretty much a proponent and very pleased of this proposed plan. Thank you."

- **Comment 56.1.** "I, too, am well pleased with the proposed plan with this caveat. No legislative enactment, no law, no program conducted by the government can go beyond what is mandated by law. There are things that people might like to see happen, that people think ought to happen, but it has to conform -- conform to the parameters of the law. And, given that, I think that the proposed plan, actually through mutual consent, goes far beyond what EPA could order the principal, the potentially responsible parties, to do. And for that, ARCO, for example, has gone the extra mile in a number of the provisions in this proposed plan. But my point is that you have to consider what can be ordered and what can't be ordered by EPA. ... And, anyway, those are the specific concerns I'd like addressed. But, generally, I'm supportive of the program because I think it goes far beyond what could be ordered under the law."
- **Comment 65.8.** "I also encourage the public to listen to those scientists and engineers. A lot of us are quiet in the room. A lot of us have ties to these organizations and we can't get up here and comment. I can. I don't have any ties. But there are people in this room that will talk. I understand. I will encourage the public to listen to those folks. They're subject matter experts, and they've devoted their lives and career to the successful cleanup of this community. I would ask the public not to fall victim to what I consider to be factually incorrect claims that we're getting screwed as a community. Streams used to run red and orange here. Copper concentrations are two orders of magnitude above where they are today. Parts per billion is what we're discussing now and getting the -- to put that to layman's terms, that is two teaspoons and 2.1 million gallons of water that we're discussing, just to make it clear."

I want to thank DEQ, EPA, ARCO BP, their contractors and consultants who have gotten us this far. I know it goes thanklessly sometimes. And you sit in cubes and think for hours and try to figure things out. But your work is appreciated. We thank you for getting

Butte where we are. And, lastly, in the spirit of proper negotiations etiquette, that our community and our coalitions offer concession in the negotiation. I don't see that we've moved very much. And I see a lot of offers and offers and offers and, really, no movement on our part. I think we should accept the plan as offered with the comments that were all submitted tonight, and proper address to everything that was submitted, and make sure that we move forward as a community. e today, which is copper concentration is 100 times less than pre-CERCLA, which I can't factually say we have not had progress in Butte.”

- **Comment 80.1.** “I am honored to contribute my personal support for the Butte-Silver Bow 2019 BPSOU ROD Amendment. Until becoming a B-SB Commissioner in 2017, I was not actively involved in the Superfund Activities that are critical to the long-term health and safety of the current citizens and the future generations of B-SB residents. I’m a lifelong resident of Butte (Born 1952), the son of parents who also were lifelong residents. As a youth, I grew up in the Emerson School area and the “Diggins” was one of our play areas for bike riding and digging underground clubhouses. We were always warned by our parents to avoid going anywhere near “Copper Creek”, an industrial drainage ditch, now known as “Silver Bow Creek above its confluence with Blacktail Creek”. I did catch fish in Blacktail Creek during the same timeframe.
  - I support EPAs proposed modification of the surface water remedy.
  - I believe that during the design and operation phases, the remedies will be tuned and improved to water quality of the surface water.
  - I support all of the “Minor Modifications”. Particularly the additional points of compliance which will further define the current and ongoing change in the COCs.
  - I believe the tuning of the Health Study to better define and track the health of B-SB residents. I believe the action Lead levels need to be matched to other Federal agencies to allow our monitoring to match those needed by other Federal agencies to allow funding of projects in B-SB.

I am not enough of a Pollyanna to believe that the actions to be taken will fix this issue immediately but see it as a major step

toward addressing the problem that can be improved and modified incrementally to finally achieve a resolution for current and future generations. I thank all of the folks, Agencies & PRPs, for their hard work and diligence in reaching this amendment to the ROD.”

- **Comment 91.11.** “All said, I appreciate what has been proposed in the Plan and believe it will enhance livability in Butte. I am cautiously supportive but believe more specifics should be made available to the public before the final Plan is adopted. The Community has been patient and engaged, and deserves a thorough clean-up.”
- **Comment 96.3.** “Regarding the integration of the remedy with restoration work and end land use components, BSB appreciates the cooperation of all parties to design and produce a first-class outcome as well. The remedy work alone calls for improvements to the existing vegetative caps and addressing unreclaimed areas on the Butte Hill. In addition, maximum tailings removals (out of groundwater’s way), state-of-the-art storm water retention facilities, total reconstruction of the last section of Blacktail Creek (by the Visitor’s Center) to its confluence with Silver Bow Creek, and then past the confluence, reconstruction of a meandering stream (where the BSB asphalt plant sits today) and relocation of Silver Bow Creek from between the slag canyon walls to connect with the remediated and reconstructed Silver Bow Creek to the west (see conceptual design graphic). Added to all this work is the State’s critical project to remove the Parrot Tailings and restore the east end of the corridor for beneficial uses. Butte-Silver Bow, as a partner in developing the workplans, fully supports those projects outlined in the Proposed Plan, and in addition, how all this work has been designed to blend into 120 acres of attractive, useful, public open spaces and recreation opportunities throughout the Silver Bow Creek corridor. The project plans are designed with an eye to the future, when identifiable water sources become available as a headwater to source Silver Bow Creek from Texas Avenue/Civic Center to the confluence with Blacktail Creek. The comprehensive proposal will build on Butte’s track record of getting quality end land uses as a result of environmental cleanup and restoration projects, for example, the Silver Bow Creek Greenway, the Visitor Center/Chamber Offices, Granite Mtn. Memorial, Blacktail Creek Trail, Big Butte Open Space, Copper Mtn. Complex, BA&P Trail, MT Con/Foreman’s Park, Original Mine, Thompson Park upgrades, Skyline Park, Miners Field, and much more. The Silver Bow Creek

corridor will be first-rate and impressive community asset. Although Butte-Silver Bow supports the Proposed Plan, it offers the following specific comments to ensure the Proposed Plan is responsive to the public's concerns, interests, and desires pertaining to public health, the environment, and Butte-Silver Bow's municipal obligations related to remedial work [addressed in various sections of this document].”

- **97.1 Comment.** “The Butte-Silver Bow Board of Health wishes to provide comments on the proposed plan to amend the 2006/2011 Record of Decision for the Butte Priority Soils Operable Unit. The board is supportive of the proposed plan.”
- **Comment 98.2.** “OPENING STATEMENT IN SUPPORT OF PROPOSED PLAN Atlantic Richfield Company (AR) supports the Proposed Plan to Amend the 2006 Record of Decision (2006 ROD) and its 2011 Explanation of Significant Differences (2011 ESD) for the Butte Priority Soils Operable Unit (BPSOU) of the Silver Bow Creek/Butte Area Superfund Site (Proposed Plan). The Proposed Plan was issued by the U.S. Environmental Protection Agency (EPA) on April 11, 2019, for public review and comment. As an initial matter, AR would like to thank EPA for the work it has put into overseeing implementation of significant elements of the remedial work at the BPSOU to date. AR commends EPA's efforts over the past thirteen years to carefully evaluate site conditions and data regarding the performance of the existing remedy components, and to consider input from AR and other stakeholders to identify necessary modifications and improvements to the 2006 ROD. The Proposed Plan will improve remedy effectiveness and permanence and will further protect community health and the Butte environment going forward. This evaluation required EPA and other stakeholders to analyze complex technical and regulatory issues associated with this unique site, which was a challenging and difficult endeavor. The Proposed Plan builds and improves upon the response actions that have been implemented at the BPSOU over a period of 30 years. These previous remedial actions, which are described and documented in the 2006 ROD and the 2011 ESD, have significantly improved human health and the environment in Butte. The data and experience gained during these previous actions has now been used by EPA and other stakeholders to develop final remediation plans for surface water and other environmental media at the BPSOU. AR believes that the

modifications identified in the Proposed Plan—coupled with the extensive work done to date—will result in a final cleanup for the BPSOU that will remain protective of human health and the environment in the future.

AR’s support for the Proposed Plan is conditioned upon its ability to reach agreement with other parties—i.e., EPA, the State of Montana (State), AR, Butte-Silver Bow (BSB) County, and potentially other responsible parties—in a final Consent Decree (CD) that would implement the actions identified in the Proposed Plan. In addition to the work described in the plan, the CD would include certain restoration actions coordinated with the remedy that would be performed by the State; proposed end-land-use commitments by the CD parties; releases of liability, covenants not to sue, and reservations of rights for and by all CD parties; and agreement upon the criteria and methods for assessing remedy performance. Under a final CD that is acceptable to all parties, AR would commit to fund and carry out certain activities described in the Proposed Plan that EPA could not unilaterally order AR to perform under CERCLA, the National Contingency Plan (NCP) and other applicable laws, including: rerouting part of Silver Bow Creek (SBC) out of Slag Canyon and into a newly constructed channel that is not in contact with contaminant sources at the Butte Reduction Works (BRW); construction of large-scale systems to control and treat stormwater runoff from the City of Butte, and associated excavation of both mining and municipal waste in the stormwater basin area; significant expansion of waste removals in the SBC and Blacktail Creek corridors; and other actions to improve water quality in and habitat surrounding Silver Bow and Blacktail Creeks, among other things.”

#### **2.20.1.2 EPA Response**

The comments supporting the changes to the remedy as described in the proposed plan are acknowledged by EPA and noted for the record.

### **2.20.2 Against Proposed Modification**

#### **2.20.2.1 Comment Summary**

Six subcomments were received as part of larger comment submissions (three from one commenter) that were against the modification of the remedy itself and not a specific portion of the modification as described in the proposed plan. Those comments are shown below. Comments that



opposed specific portions of the proposed plan are addressed elsewhere in this document by topic.

- **Comment 2.1.** “The proposed decision on Butte Priority Soils Operable Unit by the Butte Silver Bow Local Government, the EPA, the State of Montana and ARCO is a bad decision! Not restoring Butte’s portion of Silver Bow Crick to a quality creek where children can fish and play is unconscionable and an irresponsible decision! The decision is the final decision for the Butte Superfund area and it along with the Berkeley Pit and Montana Pole decisions will have forever-negative environmental, economic and social consequences for Butte Montana! Lowering the discharge standards to the Creek is even more unbelievable! 2.11. Everyone knows, including the EPA the State and Arco/BP, using good science that is now available because of research by the Butte Natural Resource Council that was not available prior to the 2006 Record of Decision, what needs to be accomplished to have a responsible cleanup under Superfund law. We deserve a solution that requires a cleanup and restoration that is protective of human health and the environment and the Montana Constitution that protects waters of the State--- No more deals, no more band aids! Two basic premises were used in making this unsatisfactory and what I call incompetent decision on the cleanup of Silver Bow Creek at its headwaters. #1 it was based on the fact that Silver Bow Creek flowing through Butte was sewer, and #2 it was based on the fact that it was technically impracticable to responsibly clean and restore the Creek and its corridor and to leave contaminated “waste in place”. Both of these premises have now been proven to be totally false and inaccurate! ”
- **Comment 36.3.** “You have the ability to do what is "right" and make decisions that you would expect and demand if you lived in Butte. Please re-consider and DO THE RIGHT THING WITH A TIMELY, COMPLETE CLEANUP and RESTORATION OF BUTTE and ANACONDA.”
- **Comment 41.2.** “For the record, just let me say that the Proposed Record of Decision Amendment on Butte Priority Soils is a bad decision. The agreement, in principle, was a bad decision. And the 2006 Record of Decision was a bad decision. They were all based on totally false and inaccurate information. And, again, the new amendment is still faced with that inaccurate and incomplete information. I can say for myself, without hesitation, that, once again,

the Butte-Silver Bow local government who -- I have great respect for the people within the government. And I like to say that because I know they're good people and trying to make some right decisions. But I believe they're headed down the wrong path on this particular one. And including the EPA and the State of Montana. They've totally failed our community. That's what they've done on this decision and on their last decisions. And they've done that by not providing a quality cleanup and restoration that the people of Butte deserve and we need and we're entitled to under Superfund law, State law and the Montana constitution.”

- **Comment 48.1.** “I'm a Butte native, 64 years. I was born and raised in McQueen. A number of you people probably don't even know where McQueen was because now it's buried under tons of ore. But I just want to come up and say "ditto" to what Fritz Daily has said. We deserve better and we deserve the best. Because we started this thing, and it's now ending here, but it should have began here 20 years ago. It should never have started down in Missoula. But it should have started here, where the mining began, and the cleanup should have worked from here and flowed down. And, Sister Mary Jo, you're correct, Butte-Silver Bow Creek is what we should have.”
- **Comment 58.2.** “I offered testimony back on April 23, the last public hearing, and I've also submitted written testimony to my strong opposition to the Proposed Record of Decision Amendment by the EPA, the State of Montana, the Butte-Silver Bow local government, and British Petroleum/ARCO. I'm going to reiterate a few things I said at the last meeting because I realized that there are people here tonight that weren't here when I had my opportunity last time. For the record, just let me say that this proposed decision on the amendment on Butte Priority Soils, it's a bad decision. The agreement in principle was a bad decision. And the 2006 Record of Amendment, the Record of Decision, was also a bad decision.”
- **Comment 66.1.** “Thank you, Patricia. I understand that's going; is that correct? Thank you. So, they're working with us on that whole area. Now, what we need to do is truly find a way to bring the water back. And we say, "Is there water? Yes, there is." The polishing plant is going to do what to the pit water? We hope it's going to clean it. And we hope that water is going to be put down. We hope that water will be put into the stream so that it will flow down on through. Because what they did to the metro storm drain was from the north side of the

Continental Drive and was to go all the way down to the Blacktail confluence. That's what we need in the restoration and the remediation.”

#### **2.20.2.2 EPA Response**

The comments received against the changes to the 2006/2011 BPSOU Record of Decision as described in the proposed plan are acknowledged by EPA and noted for the record. Comments specific to different aspects of the proposed amendments are responded to in the specific comment responses found elsewhere in this document.

### **2.21 Reclamation**

#### **2.21.1 Comment Summary**

Five comments were received regarding reclamation and revegetation of capped mine waste within the BPSOU. One comment from CTEC included an attachment with a detailed proposal regarding vegetation standards. One commenter also asked if EPA would continue to look for sources of contamination into BPSOU surface water bodies after implementing the expanded remedy described in the 2020 BPSOU Record of Decision Amendment.

- **Comment 19.1.** “Question: Has EPA ever revised performance criteria upward to a more stringent standard? I was around when EPA came to town. Believe it or not, its main focus was washing and rinsing shovels for fear residuum would cross-contaminate samples and mine waste with 1,000 ppm Cu and 70 ppm Pb might record as 1,020 ppm Cu and 75 ppm Pb. Quality control was front and center. Come to find out, EPA had no idea what to do with the data no matter the level of elevated metals, so it left mine waste in town (!!!) and covered it with grass. Not the minimum 18” of cover stipulated, but according to my measurement of numerous fields about 12 inches and ARCO’s consultant (different sample set) 13 inches. So much for EPA oversight consisting of applying a ruler.

“Waste-in-place is a “solution” no self-respecting community would entertain for one minute. Butte-Silver Bow has always been willing to trade its birthright for a pot of porridge. You wonder why Missoula got Milltown remedy and Anaconda got a golf course underlain by contamination? Self-respect. ARCO was used to beaten-down folks in Butte-Anaconda who would grasp at crumbs (could we please have another ballfield?) when they ran into a community with self-respect and vision (Missoula). Suddenly, money was no object, although

ARCO initially contended that mucking it up would just make a bigger mess. (What followed botched waste-in-place? Instead of tackling the core problem, ARCO-BSB spent lavishly for an evaluation procedure, BRES, a unitless scorecard based more on guesswork than measurement. Nonprofessionals did the scoring for the most part. BSB was supposed to perform maintenance, so that too was botched. What happened? The crummy covers degraded, but the best that could be hoped for was life support in the form of perpetual maintenance. I naively thought revegetation as part of remedy was supposed to be self-sustaining and self-repairing. But let's keep sight of the real issue: is leaving toxic mine waste in uptown Butte a good idea? No, but it's easy.)

“Minimally effective procedures (parading as solutions) are institutionalized by granting variances to standards as in the Anaconda Uplands and now BPSOU. EPA found a procedure to recalibrate its failures. The unrelenting focus must be on outcomes. Waste-in-place has bad outcomes even if perfectly executed. Don't fiddle with ancillary procedures. Remove the waste, that's the proper solution, or at least cover and vegetate it properly. Outcomes must be stipulated, not just procedures. The answer to failure is not to declare that it didn't really matter anyway.”

- **Comment 22.9.** “5.1. The remedy should adhere to Montana's reclamation standards, which are rooted in the belief that reclamation using local native vegetation, including woody species, would provide the most robust and self-sustaining ground cover. The 2006 ROD specified the following relevant and appropriate requirements:

ARM 17.24.711 (Relevant and Appropriate) requires that a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the area of land to be affected shall be established. ARM 17.24.717 (Relevant and Appropriate) relates to the planting of trees and other woody species if necessary, as provided in 82-4-233, MCA, to establish a diverse, effective, and permanent vegetative cover of the same seasonal variety native to the affected area and capable of self-regeneration and plant succession at least equal to the natural vegetation of the area. However, reclamation in Butte has not followed those requirements until recently. CTEC requests that the parties to the Consent Decree, or EPA in the event of an Order, seriously consider a proposal to use Montana Tech's Restoration Ecology program as an integral part of ongoing remedy and the Butte

Reclamation Evaluation System program. Please refer to our full proposal, Attachment B.”

- **Comment 42.1.** “I have a landscaping business in Butte and have had for 20 years, so I've paid attention to these meetings on and off. I don't want to take a side, but I do have a lot to -- not a lot to say, but I could easily have these conversations one on one with some folks in the room. It's a little different speaking in front of everyone. But the main comment is you guys all, probably 90 percent of the people in here, have gray hair. When this all started you were probably around my age. And that's important. Because here's what I see, as a small business owner, if I do a crappy job for a customer, the customer fires me and withholds payment. The standards of the past cleanup have been crappy. At the start of the presentation you have stated there has been a lot of work done since 1987, there's been a lot of work done. The work hasn't been good work. There hasn't been a good job done. It's been a bad job for 30 years. And that's only what I've witnessed for 20 years of being in the landscape business, watching my competitors, who continue to get the contracts, two years later everything they've done is either dead or eroded away. So, to be clear, there's been a lot of work done, but it hasn't been good, it's not good work.”
- **Comment 68.3.** “I agree with Mr. O'Neill about the insufficiency of the reclamation on the Hill. It needs to be looked at very seriously.”
- **Comment 91.5.** “1. There has been limited discussion of project cost and no detail on how restoration features will be financed, and perhaps more important, maintained. 4. There is limited detail on which mine caps will receive attention and what the work will entail. Of greater concern, the EPA has publicly stated it does not know the source of contaminants entering the Creeks. How certain is EPA that the larger contributors of contaminants have been identified? Will the EPA continue to search for sources of the high metal load in the Creeks after the passive pond system is developed? 5. The negotiating parties admit there is only an average of 12" of topsoil on most reclaimed areas, which is far less than other reclaimed mine sites in our area. Additionally, many sites are too steep to slow runoff and establish dense vegetative caps. The caps need more growth medium, re-contoured slopes, and a wider array of native plants for remediation to be considered successful. Will additional funding be available to

make improvements to mine caps or other sources beyond those identified in the Plan?”

### **2.21.2 EPA Response**

The remedy described in the 2006/2011 BPSOU Record of Decision specified that contaminated solid media within BPSOU (i.e., mine waste piles or tailings areas) shall be addressed through a combination of source removal, capping, and land reclamation and revegetation. Since the late 1980s and before the 2006/2011 BPSOU Record of Decision was issued, certain mine wastes within the BPSOU have been capped and revegetated—many under EPA’s CERCLA removal authority. Before deciding if these past response actions would be compatible with the final remedy, EPA evaluated whether the past response actions were consistent with the 2006/2011 BPSOU Record of Decision cleanup objectives and the ARARs. That assessment is found in the BPSOU response action summary document, issued by EPA in 2003. The assessment concluded that all but three of the areas capped as part of the past removal actions complied with ARARs and were consistent with the cleanup objectives established for the final remedy. (The three areas have been subsequently addressed.) The 2003 response action summary document has been added to the administrative record for the 2020 Record of Decision Amendment.

Since the 2006/2011 BPSOU Record of Decision, all reclaimed areas, including capped mine waste, are routinely evaluated and must achieve the performance standards described by EPA in the Butte Reclamation Evaluation System (BRES), which is attached to the 2006 BPSOU Record of Decision as Appendix E. BRES provides for a systematic evaluation of cap stability, vegetation conditions, and other reclamation standards for the reclaimed areas. BRES is presently being updated, as part of the remedial design process, to incorporate new mapping techniques developed since its original preparation. This system is a site-specific tool to evaluate the stability, integrity, and degree of human and environmental protectiveness afforded by EPA-sanctioned response actions or other past reclamation actions initiated on lands impacted by historical mining within the BPSOU. The information obtained from the evaluations is used to develop corrective action work plans, if necessary, to verify that completed response actions both past and future are effective, well maintained, meeting established performance standards, and protective of human health and the environment. The BRES evaluations are being conducted by Butte Silver Bow and funded by Atlantic Richfield pursuant to the CERCLA section 106 unilateral administrative order implementing

the BPSOU remedy. The BRES evaluations will continue to be conducted and funded in this way under a proposed BPSOU consent decree if that document is entered by the federal district court.

EPA agrees with and supports the commenter's assertions that reclamation using local native vegetation and woody species is preferable for the vegetation of capped wastes and other reclaimed areas. EPA will encourage the participation of Montana Tech's Restoration Ecology Program personnel and written materials to improve vegetation conditions at reclaimed sites on the Butte Hill under the BRES system. After consulting with reclamation specialists, EPA approved seed mixes for use in Superfund BPSOU revegetation efforts that are native to Butte and have the best chance of achieving growth and cap stability.

Furthermore, the BRES program, and its implementation and effectiveness, will be evaluated through the CERCLA-required 5-year review process. When issues affecting the protectiveness of the remedy are identified in a 5-year review, these issues are monitored and tracked for resolution. This process gives EPA further authority and leverage in enforcing and/or potentially modifying the remedy.

EPA acknowledges that certain reclaimed sites on the Butte Hill still have substandard vegetation coverage or unsightly appearance, but, critically, the caps are still performing their primary function of separating the wastes from the environment. The BRES evaluations performed by Butte Silver Bow will evaluate site cover conditions, erosion conditions, site edge conditions, and the presence of exposed waste, barren areas, and existing vegetation. BRES evaluations are conducted by Butte Silver Bow on an ongoing basis, and the current Butte Silver Bow evaluation team is responsive when cap integrity has been compromised. Poor vegetation conditions at sites are being identified, and actions are being taken to improve these conditions through vegetation/reclamation improvement plans. In addition, several additional insufficiently reclaimed or under reclaimed sites are specifically described in Attachment C to the statement of work attached to the BPSOU consent decree. These will be evaluated and capped and revegetated appropriately in accordance with the terms of that statement of work attachment. Finally, some sites (usually some of the earliest that were reclaimed under non-Superfund authority) will have to be evaluated under the solid media management plan. Potentially, reclamation will have to occur again.

Regarding the comment about additional sources, the Superfund program has identified major sources to surface water within the BPSOU. Many of those sources have been addressed previously under prior Superfund actions, and the expanded BPSOU ROD provides for addressing remaining sources. EPA always has the ability and authority under CERCLA to require additional actions if other sources of historical mine waste contamination to Silver Bow Creek below the confluence with Blacktail Creek or Blacktail Creek surface water are found in the future.

## **2.22 Regulatory Process**

### **2.22.1 Comment Summary**

Atlantic Richfield commented on EPA's characterization of changes to the remedy, the administrative record supporting the proposed plan, the community's desire for tailings removal, and the authority of EPA to require certain items under Superfund.

- **Comment 98.12.** "C. "Fundamental" Changes to the Remedy. The 2019 Proposed Plan categorizes the proposed remedy changes into three categories—(1) modifications related to the TI waiver for certain surface water quality standards and adoption of replacement standards are "fundamental" changes; (2) modifications that would expand the existing surface water remedy through additional in-stream removals, storm water BMPs, groundwater capture and treatment, and rerouting portions of SBC are "significant" changes; and (3) 13 additional modifications are "non-significant" or "minor" changes, such changes to the BPSOU boundary, the RMAP, and surface water compliance points and assessment, among other things. See, e.g., Proposed Plan at 7-9, 16-19, & Ex. 4. As EPA recognizes in the Proposed Plan, only those changes that are "fundamental" in nature (i.e., the TI waiver) require a formal ROD amendment in accordance with the requirements of CERCLA and the NCP, including seeking and responding to public comments and evaluation of the changes under the nine remedy-selection criteria identified in the NCP. See 2019 Proposed Plan at 9 & Ex. 5; see also 40 C.F.R. § 300.430(e). "Significant" changes require an ESD only, while "nonsignificant" or "minor" changes can be informally documented in the site file. For ESDs and minor modifications, EPA is not required to seek or meaningfully respond to public comments or apply the NCP evaluation criteria. AR agrees the TI waivers are a category.



“AR agrees the TI waivers are a category of remedy modification that are “fundamental” ROD changes. However, AR disagrees with EPA’s characterization of the remaining changes to the remedy, both “significant” and “minor” in nature. Dividing the proposed remedy modifications into three separate categories—thereby avoiding application of important NCP requirements to most of the proposed changes—is inconsistent with EPA guidance and established practice. Specifically, EPA Guidance indicates that remedy modifications proposed together should be considered collectively and characterized as fundamental, significant, or minor based on their collective impact. See EPA OSWER 9200.1-23P, Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Documents, § 7.2 (July 1999) (ROD Guidance). The collective impacts of the changes identified in the 2019 Proposed Plan—in terms of scope, performance, and cost—amount to a “fundamental” change to the ROD. See 40 CFR § 300.435(c)(2); ROD Guidance, § 7.2 (requiring EPA to evaluate “scope, performance, and cost” in characterizing changes to a remedy). In other words, the combination of all of the remedy modifications identified in the Proposed Plan should be characterized, evaluated, and adopted as a “fundamental” change in accordance with NCP requirements applicable to ROD amendments. This includes meaningfully responding to comments on all proposed changes; evaluating all changes under the NCP criteria; and adopting all changes as part of the Amended ROD.

“A. Page 2, Column 1 & Page 22 (Documents). The Proposed Plan identifies five documents as “contributing to th[e] proposed modification” of the 2006 ROD / 2011 ESD, and eight documents as “[k]ey documents used to prepare this proposed plan.” AR also obtained a list of the remainder of the administrative record for the Proposed Plan from the Montana Tech Library, which consists of only 63 documents. AR has identified additional documents it requests EPA add to the administrative record, some of which should be considered “key” documents “contributing to the modification” of the ROD. Those documents are identified on Exhibit B attached hereto.

“J. Page 8, First Paragraph & Page 11, Text Row 3, Column 4. The Proposed Plan states at Page 8: Remedy modifications are based on “the community’s desire to increase the amount of mine waste removals in the upper Silver Bow Creek area to allow for future land uses.” The Proposed Plan states at Page 11: “Remov[al] of buried

tailings in upper Silver Bow Creek at Diggings East and Northside Tailings to accommodate new basins” is “in response to public comment.” Remedy modifications are evaluated using the nine NCP criteria. See 40 C.F.R. § 400.340(e)(9)(iii). Remedy selection is not driven by community desires or input, but an overall evaluation of remedial alternatives based on all of the NCP criteria. AR understands that community desires and input were given meaningful weight in selecting the remedy modifications identified in the Proposed Plan, which AR generally supports as part of negotiated CD that is acceptable to all parties. However, if a final CD is not reached, EPA’s apparent heavy reliance on community desires and input as criteria for selecting certain remedy modifications would be arbitrary and inconsistent with the requirements of the NCP.

“L. Page 11, Text Row 2, Text Column 3, Bullet 3. The Proposed Plan states: “Revegetate and provide a public area for possible recreational use—a continuous link between remedies upstream (Blacktail Creek and upper Silver Bow Creek) and downstream (through Lower Area One).” AR comments that construction of a “continuous link” to areas downstream of Lower Area One described in this bullet are not remedial actions that EPA can require under CERCLA, and such actions have not been assessed in accordance with CERCLA and the NCP. AR acknowledges that these and other end-land-use actions may be included by agreement of the parties in a CD settlement to implement the remedy in the Proposed Plan, along with proposed end land uses. However, these voluntary agreements and commitments are not remedial actions under CERCLA, and therefore should not be described as remedies, if they are described at all in the Amended ROD.”

### **2.22.2 EPA Response**

While EPA appreciates the concerns raised in the comment, the structure of the proposed plan and categorization of changes were intended to assist the community in assessing the various proposed changes to the 2006/2011 BPSOU Record of Decision and has been completed. The 2020 BPSOU Record of Decision Amendment reflects the assessment of all changes in accordance with the nine criteria required under the NCP requirements. All proposed changes, no matter how categorized, were subject to public comment as part of the proposed plan, and all significant comments have been responded to in accordance with the NCP regulations. No part of the NCP requirements was avoided. EPA intended

the proposed plan to be a transparent, comprehensive list of the changes being made to the 2006/2011 BPSOU Record of Decision for the public.

The key documents identified in the proposed plan were prepared using information from many supporting documents. Atlantic Richfield states that additional documents should be added to the administrative record but does not state why. It is not necessary to include all documents developed during the implementation of the 2006/2011 BPSOU Record of Decision in the administrative record supporting the proposed plan for the 2020 BPSOU Record of Decision Amendment. EPA believes the existing administrative record, as supplemented by certain documents added as part of its consideration of public comment on the proposed plan, is sufficient and in compliance with all legal requirements.

EPA disagrees that community desires are not included in the evaluation of remedial alternatives. Community acceptance is one of the nine NCP criteria that EPA is required to evaluate when it selects a remedial action or modifies an existing one through a record of decision amendment. EPA has considered community acceptance. The 2006/2011 BPSOU Record of Decision did not require removal of the tailings and other mine waste in upper Silver Bow Creek for the purposes of remediating groundwater. However, removal of whatever material is necessary to allow capacity for stormwater detention ponds is wholly consistent with the remedy for the stormwater portion of the remedy, and it helps to address the community's desire for additional waste removal.

EPA agrees that the voluntary agreements and commitments toward the end land uses that may be implemented through dialogue between responsible parties, the State of Montana, and community members are not remedial actions under CERCLA, and that specifics about these measures do not need to be included in the 2020 BPSOU Record of Decision Amendment. EPA appreciates the efforts of Atlantic Richfield and the State of Montana to engage in this dialogue and to develop the voluntary agreement and commitments in the end land use plan that was released to the public in May 2019. A modified version of this document is attached as an addendum to Attachment C to the statement of work, which is an appendix to the consent decree.

## **2.23 Remedy Effectiveness**

### **2.23.1 Comment Summary**

One comment was received that stated the need for assurances given that, if the proposed remedy does not perform as expected, there are ways to adjust or take different actions.

- **Comment 71.2.** “The other thing I want to bring up is many of the meetings I've been to I've heard the words "hope anticipate, expect." I don't hear "We're going to guarantee that this is going to take care of these problems." So, with that in mind, I want to know what Plan B is. If the guarantee doesn't happen, how are we going to know that solutions will be resolved and corrected so that it comes out in our advantage?”

### **2.23.2 EPA Response**

The effectiveness of all aspects of the remedy will be evaluated through the CERCLA-required 5-year review process. When issues affecting the protectiveness of the remedy are identified in a 5-year review, these issues are monitored and tracked for resolution. This process gives EPA further authority and leverage in enforcing and/or potentially modifying the remedy. EPA’s remedies are required by the CERCLA law to be reviewed every 5 years to determine if the remedy is being implemented as described in any decision document such as this BPSOU Record of Decision Amendment and is protective of human health and the environment. See section 121(c) of CERCLA, 42 U.S.C. Section 9621(c). Also, the proposed consent decree, or any other CERCLA enforcement mechanism that implements a modified remedy, allows EPA to take further action at a given site, if necessary, based on new information or unknown conditions or other factors. See section 122(f)(6) of CERCLA, 42 U.S.C. Section 9622(f)(6). The additional work that can be directly required under the proposed consent decree is outlined in Section 1.3 of the proposed scope of work and Section IX of the proposed consent decree. EPA will carefully monitor the remedy as it is being implemented and after it is implemented to verify that it does what it is intended to do and will take further action if necessary to protect human health and the environment

## **2.24 Risk Issues**

### **2.24.1 Comment Summary**

Four comments were received regarding human health risk assessment issues. Some are repetitive as they were received in writing and in oral

comment at one or both public meetings. There was concern about the exposure term “occasionally,” synergistic effects of contaminants, elevated disease rates in Butte, and long-term monitoring for human health.

- **Comment 7.11.** “15. Occasional Exposure: The word, “occasionally,” is used often in legal documents from EPA, with regard to health risk evaluations. No-where have I found an EPA definition of the word, For the sake of transparency, please define the word in the context of children playing among mine wastes more often than a one-day dose. The first few pages of my college Toxicology tome deals with frequency/response and cumulative dose curves. Please provide better terminology to characterize the hypothetical 6-year-old used in your risk data sheet who was considered safe after a “short term one-day pulse” of exposure to sediment and stormwater in your proposed plan. Some years ago, I wrote to EPA asking whether our godchild, now dead, was safe playing in the Northside Tailings area next to her home, and the response was the child was safe to play there “occasionally.”

“20. Stormwater Ponds and Recirculating Stormwaters proposed for the Silver Bow Creek corridor are dangerous to the health of children. The plan calls for ponds that will ebb and flow with the amount of rain. This will leave deposits of Lead and the other contaminants on the soils between the high and low water areas at the edge of the ponds. Children love to splash and play in water. Signage directing them to stay away will not be effective. “Occasional” use by children is not defined. The hypothetical 6-year-old girl used in the Health Risk on this topic requires a redo with far fewer assumptions and estimates. The Lead and Arsenic standards should be set for Residential. This issue definitely requires community education -- or attractive wrought iron fencing around the ponds.”

“21. Birds, Animals more important than Humans? EPA Health Risk Data also discusses risk to pets and wildlife. For some nesting birds, you say long-term monitoring will be done with evaluation whether or not they are being harmed, and steps to mitigate if needed. Why not give humans that benefit, as well? With the highest allowable amount of Lead in the nation here in Butte, I suggest you provide long-term monitoring of small humans who come into contact with the proposed stormwater ponds.

“23. Synergism of Contaminants has barely been studied by EPA’s sister agency, ATSDR, the Agency for Toxic Substances and Disease Registry. I have asked about synergism of the Butte Contaminants of Concern in public comments over the past 25 years. Lately I have heard an AR contractor say these have been studied. Where is that information and why not brought forward? Likely because only one, possibly two interactions have been studied. Casserett and Doull’s “Toxicology,” 8th edition, contains more information on how metals interact with one another to cause disease than does any Butte area Superfund document. In a letter I wrote to EPA in 2005, I mentioned I’d encouraged initiating studies to determine adverse synergism for many years. Even then, an epidemiologist at the BSB Council of Commissioners said this had been done. Web research showed only one of the four human health COCs had been studied. Misleading information keeps citizens from being able to comment effectively. I provided EPA with a copy of my Undergraduate Research Paper of 1997 (CDC death rate figures 1972-1994) which showed the upper Clark Fork watershed had four times national death rates for Multiple Sclerosis and Lou Gehrig’s (ALS). A reasonable person would expect this watershed anomaly could be related to mine waste contaminants that move downgradient; i.e., synergistic effects of combinations of lead, arsenic, mercury and cadmium.”

- **Comment 59.3.** “First, the word "occasionally." I wrote to EPA asking about the word "occasionally" some years back, when I had a Godchild who was playing on the Northside Tailings continually. The reply I got said that occasional use of this -- of that area for play would not be harmful to the child. That child is dead now. So sometimes I have to wonder about mental health of people living in Butte. I've heard a speaker talk about that. And I'm wondering if EPA has ever looked into what happens when people live within a contaminated area, how does it affect them, do they take their own life. And that's about as bad as it could get, I guess. The word "occasionally" is often used in legal documents from EPA, usually with regard to health and risk -- health risk evaluations. Nowhere have I found a definition of the word "occasionally" in EPA documents. For the sake of transparency, will you please define the word. Early on Page 9 of my 20-year-old toxicology class textbook, it deals with the frequency/response and cumulative dose curves. Please provide scientific terminology to characterize the hypothetical six-year-old used in your risk data sheet who was considered safe when he or she

had a, quote, short-term, one-day pulse of exposure to sediment and storm water in your proposed plan. And define "occasionally" in the context of children playing among mine wastes more often than one-day dose. In the latest health risk data sheet from EPA, which I just referred to above, regarding lead, a risk of lead poisoning, there is no mention of the vulnerable or immune-compromised humans. My old toxicology tome considered this important, dealing on Page 18 with the genetic makeup of individuals who may come into harm when -- We're doing five minutes? I didn't know that. That's what you get when we're showing up a little late. What have I got left? The word "occasionally" is often used in legal documents from EPA, usually with regard to health and risk -- health risk evaluations. Nowhere have I found a definition of the word "occasionally" in EPA documents. For the sake of transparency, will you please define the word. Early on Page 9 of my 20-year-old toxicology class textbook, it deals with the frequency/response and cumulative dose curves. Please provide scientific terminology to characterize the hypothetical six-year-old used in your risk data sheet who was considered safe when he or she had a, quote, short-term, one-day pulse of exposure to sediment and storm water in your proposed plan. And define "occasionally" in the context of children playing among mine wastes more often than one-day dose. In the latest health risk data sheet from EPA, which I just referred to above, regarding lead, a risk of lead poisoning, there is no mention of the vulnerable or immune-compromised humans."

- **Comment 60.1.** "And I'm speaking tonight on behalf of the Greeley Neighborhood Community Development Corporation, Inc. And it's our concern that the ROD is overlooking a potential human health concern; namely, the chronic ingestion of metals and airborne particulates. The same particulate that can be suspended in the streams can also be entrained in the air under the right atmospheric conditions. And people can inhale that particulate and ingest the metals by swallowing their phlegm. Recent work in a published peer-reviewed scientific journal found that the residents in Butte had elevated metal loading indicative of chronic exposure. While the BPSOU risk assessment investigations included extensive air quality monitoring and concentrated on arsenic, a recent study suggests that a more comprehensive list of elements, including arsenic, aluminum, copper, cadmium, manganese, molybdenum and uranium should be considered to quantify human health risks fully. This is because a chronic metal burden can interact with genetic predispositions to

cause a number of conditions, such as neurodegenerative disorders, as well as cancer. And it has been well-known, according to the CDC, that Butte has had elevated cancer and neurodegenerative disease rates prior to the beginning of the BPSOU cleanup. But it's in dispute that the disease rate is declining in proportion to the remedy according to another recently published study.”

- **Comment 64.2.** “I share an address with Mary Kay. I want to continue on with her statement. She and I met over 20 years ago on this very issue, and at that time it was shutting off the pumps in the Berkeley Pit and letting the water go up. I remember that was my, as a state and local government teacher, that was my introduction to how local government really worked. I just want to pick up where Mary Kay left off. She's asking you to define how often the children, such as her Godchildren, would have to play in and around the storm water and the soils that we've caught in the ebb and flow of the ponds. Your health risk data sheet discusses risks to pets and wildlife. In the cases of nesting birds, you state that long-term monitoring will be done and EPA will evaluate whether they are being harmed and take steps to mitigate them if needed. I ask you that you also provide long-term monitoring of humans that come into contact with the proposed storm water ponds. Why not give humans that benefit, as well? Why not, given that EPA has established the highest allowable amount of lead in the nation for the Butte standard. Synergy of contaminants has barely been studied by EPA's sister agency, ATSDR, Agency for Toxic Substances and Disease Registry. Mary Kay has brought that topic forward in public comments for the last 25 years. And, these days, public meetings on health have Atlantic Richfield and other contractors saying synergy of Butte contaminants are being studied. Really? About two of them have been. Casserett and Doull's Toxicology tome, 8th Edition, has more information on how metals interact with one another than does any Butte area Superfund document. She would be happy to purchase a copy of that book for EPA epidemiologists.”

#### 2.24.2 EPA Response

**Occasional exposure:** The expression “occasional” exposure is a simplified term that is used to convey an exposure scenario that is not continuous in nature. Residential exposure scenarios are often referred to as continuous exposures because risk estimates assume an exposure frequency of 350 days per year, whereas shorter term exposures, such as



recreational or trespassing scenarios, are or can be referred to as occasional exposures. Information on the assumptions used in EPA's recent stormwater basin risk evaluation, including the specific exposure values used to estimate short-term risks, were presented in a detailed technical memorandum prepared in April 2019, which is part of the administrative record for the 2020 BPSOU Record of Decision Amendment. Stormwater basins are engineered structures used to protect the environment and are not meant for recreation. Thus, the stormwater evaluation focuses on infrequent exposures of limited duration.

The 1994 baseline risk assessment for lead and the 2003 Walkerville residential site final human health risk assessment also provide the detailed exposure frequency and duration assumptions that support the chronic risk estimates, which are more continuous in nature and the primary basis of the 2006/2011 BPSOU Record of Decision. The stormwater basin risk evaluation technical memorandum and the site human health risk assessment documents are available in the administrative record for the amendment if additional details are desired on specific exposure input parameters and assumptions.

**Synergistic effects:** Between-chemical interaction is an important uncertainty in the risk characterization process. While the toxicological literature is clear that between-chemical interactions can occur, there is less information on how and why these interactions occur and whether these interactions are important for the purposes of quantitative risk evaluations. In some cases, one chemical may have no interaction with another chemical, but in other cases, the effects of one chemical on another may cause responses that are approximately additive, greater than additive (synergistic), or less than additive (antagonistic). In most cases, available toxicity data are insufficient to define what type of interaction is expected or the magnitude of the effect.

Human health risk assessments used at Superfund sites assume effects are additive for noncarcinogens that act on the same target tissue and for carcinogens (all target tissues). Although synergistic (and antagonistic) chemical interactions are not quantitatively evaluated in the BPSOU risk assessments, to the extent important interactions are occurring, these would be accounted for in the results of any community health studies. It is for this reason that the RMAP includes a medical monitoring component. It is also why the medical monitoring study results are considered to provide the most robust metric of actual risks in the community.

**Elevated disease rates in Butte:** The RMAP is focused on monitoring and evaluating the effectiveness of the Superfund remedial action. The mission of the ATSDR is to prevent exposure and adverse human health effects and diminished quality of life associated with exposure to hazardous substances from waste sites, unplanned releases, and other sources of pollution present in the environment. To date, five ATSDR studies of disease prevalence have been conducted in Butte. An ecological study of skin cancer was published in 1992, which was followed by three surveillance studies of cancer mortality and/or incidence in 2002, 2012, and 2018. The fifth study was an ecological study that examined mortality rates of a broad range of diseases. None of these studies included individual level exposure data or occupational history, and all are surveillance or ecological studies that are hypothesis-generating studies primarily used to suggest future studies that should be done. None of these studies can be linked to causes of observed, elevated incidence or mortality. Hypothesis-generating studies that have been conducted so far do not support concerns about elevated cancer rates in Butte. Rates of diseases other than cancer are difficult to study because there are no registries that reliably document incidence. The community health needs assessments have provided the most useful source of information on prevalence of major disease categories. The findings of these assessments have been reviewed and will be included in current or future health studies. ATSDR may work with state and local health departments to conduct additional site-related public health assessments to better address general public health concerns regarding community mental health, fetal health and exposure, and cancer incidence rates for Butte if warranted.

**Long-term human health monitoring:** EPA agrees long-term monitoring of both ecological and human receptor populations is an important component of the remedy. The stormwater basin risk evaluation included an evaluation of potential exposures for wildlife and pets and noted that future evaluations would assess the effectiveness of these basins in improving water quality and potential future exposures for local wildlife residing within the stormwater basins. Although future evaluations of human receptor populations are not discussed as part of the stormwater basin technical memorandum, the RMAP includes long-term monitoring of human receptor populations in Butte. Such monitoring efforts would account for potential exposures from all site-related sources, including the stormwater basins.

## 2.25 RMAP Expansion

### 2.25.1 Supports Modification

#### 2.25.1.1 Comment Summary

Four comments were received in favor of the RMAP expansion as described in the proposed plan.

- **Comment 4.6.** “The RMAP expansion in the proposed plan is praiseworthy. RMAP is a nationally recognized lead cleanup program and goes far beyond what could be ordered under Superfund.”
- **Comment 8.6.** “The plan expands the widely praised RMAP program to encompass most of Silver Bow County—providing opportunities for residents outside of Butte proper to benefit from the program’s resources to protect their families from heavy-metal exposures.”
- **Comment 9.4.** “Thank you for all the areas that have been already done and plan to get done. The RMAP for the entire county is a great change expanding it’s impact helping create a safe environment. Thank you for your time on issues with such grave consequences for Butte families, Butte community, and the State of Montana. I’m leaving you with the knowledge that cooperation by those controlling the dollars and decisions, those with restoration knowledge, government decision makers, and you, the EPA can make it happen. Your efforts are greatly appreciated.”
- **Comment 55.5.** “The last thing I'd like to talk about was a total surprise to me, and that was the expanded program for yard and home cleanup. And expanding it, that's the second time it will be expanded. The first time was in 2011, when the EPA issued a unilateral administrative order. And they said, "We're going to take care of attics across a broad expanse of Butte." And this time they're saying, "We'll do the whole residential metals abatement program." Most of the county, almost the entire county. That's -- that's a big expansion.”

#### 2.25.1.2 EPA Response

The comments in support of the RMAP expansion as described in the proposed plan are noted. After the public comment period closed, Atlantic Richfield requested that the RMAP expansion and the health studies be addressed outside of the consent decree. EPA and Montana DEQ agreed to implementing this aspect of the amended record of decision through the existing CERCLA BPSOU unilateral administrative order. This approach will allow the expanded RMAP plan and the structure of the 5-year

medical monitoring study and other public health study efforts to be developed outside of the confidential consent decree process and with public input as draft documents are submitted by the unilateral administrative order respondents. The expanded RMAP will cover the area that is part of the West Side Soils Operable Unit, where EPA has begun conducting a CERCLA remedial investigation gathering information to determine who the appropriate potentially responsible parties are for this area. Atlantic Richfield disputes that it is the primary responsible party and liable for all mining activities that generated remnant mine wastes in the Westside Soils Operable Unit. EPA's investigation of Westside Soils Operable Unit liability issues is not complete, and Atlantic Richfield has ongoing concerns regarding conducting remedial work on private property. Thus, implementing the expanded RMAP and the health studies under the existing unilateral administrative order will allow for this work to continue uninterrupted while the liability issues are further addressed

## **2.25.2 Other**

### **2.25.2.1 Comment Summary**

Sixteen comments were received that provided suggestions or requests for the planned RMAP expansion. Topics were wide-ranging and included testing in attics; renter requests for RMAP testing; inclusion of schools, vacant lots, parks, and other non-residential properties; retaining walls, curbs, and gutters; public education outreach to acquaint people with the RMAP; verifications from EPA in the final consent decree to allow changes if lead regulations change; consideration of a "level of concern" for urinary arsenic; exclusion of some industrial areas; and modifications to the schedule.

- **Comment 4.7.** "Given that, under the proposed plan, the homeowner or property owner will have to initiate contact with RMAP in order to get their property assessed and, if warranted, cleaned up, an aggressive and comprehensive public education program will be necessary. While not necessarily needing to be made an official part of the proposed plan, an addendum should be added to the proposed plan that details this education plan or, at least, provides the parameter of this public education plan. Does EPA acknowledge that the arsenic in the attics in the expanded RMAP area emanates either from past smelting activities in Butte or from the Anaconda smelter and is therefore under the remediation purview of Superfund."

- **Comment 7.13.** “17. No RMAP for the Poor? A recent full-color, two-page Atlantic Richfield ad, titled TO THE BUTTE COMMUNITY, stated “under the proposed plan RMAP would become available to thousands of additional residents at their request.” Does that mean renters in substandard housing can simply ask and have their attics and yards evaluated? In fairness to the low-income people living in the old rental housing on the Butte Hill, please require changes to the RMAP program so that these folks are allowed to request that their homes be checked for excess arsenic and lead without going through the landlord/owner. For those yards or homes that do require remediation, EJ demands you not allow owners to escape that cleanup. If a local ordinance is required to make this happen, I will happily help with it.”
- **Comment 13.2b.** “There is widespread consensus among experts that there is no safe exposure level for lead. RMAP needs a greater funding level throughout this project lifetime to ensure that it can succeed with a program that can keep public confidence and is provably effective. In this regard, we also urge that the RMAP program be technically updated in terms of protocols and procedures due to the need to provide a lead-safe environment for Butte residents. Please ensure that Butte’s clean-up embraces the possibility of a clean, healthy future, rather than the evidence that Butte is being left with its citizens and children at risk, clearly and obviously exceeding national standards for lead levels.”
- **Comment 22.11.** “6.2. EPA must be ready to take enforcement action to force access to the Residential Metals Abatement Program (RMAP) for rental residences where landlords refuse RMAP service and child occupants have elevated blood lead levels. CTEC is concerned that the failure of some landlords to engage the RMAP program presents an unacceptable risk to child occupants. To date, RMAP testing and remediation has been limited to those landowners who agree to the service. The nexus between low income renters and substandard rental housing which is more likely to be contaminated by past mining impacts and lead paint presents a pressing environmental justice concern that cannot continue to be ignored. The amended ROD should address this loophole and ensure that renters are not exposed to contaminants.

“6.3. The proposed expansion of the RMAP Program boundary to encompass rural residents to the north, south, and west, including

Rocker is a good idea. The RMAP Program provides one of the most significant protections of human health provided by Superfund in Butte. Mining and smelting impacts do not obey Superfund Operable Unit borders. The proposed change is needed to afford the same level of protection to residents outside of Butte proper to benefit from RMAP's resources to protect their families from heavy-metal exposures.

“6.4. The ROD amendment should be clear regarding which program has responsibility for remediation of schools, vacant lots, parks, and other non-residential properties. It is CTEC's understanding that RMAP has taken responsibility for remediation of some of these non-residential properties; but clarity is lacking in an EPA decision document regarding responsibility for non-residential properties. A gray area currently exists between those larger properties covered by BRES and residential properties covered by RMAP. The amended ROD should ensure that both residential and nonresidential properties where children may be exposed to contaminants are prioritized for remediation.”

- **Comment 24.1.** “There is a need for a program that helps address deteriorating retaining walls, curbs and gutters associated with residential properties in the BPSOU. The program could be similar to Sidewalk Replacement Program that Butte-Silver Bow has in place. A fund would be included in the RMAP. Residential property owners could get a loan for a period of time to replace deteriorating retaining walls, curbs and/or gutters. This program would protect reclaimed properties from re-contamination from storm water run-on. It would protect uncontaminated properties from the possibility of being contaminated from storm water run-on. I believe the PRPs would benefit from this program as a protection of remedy. The funds to run the program could only be used in the BPSOU, on residential properties and the property owners would repay the amount of money they borrow from the fund in a reasonable amount of time. I believe the side walk program is 7 years. This type of program would ensure that the proposed remedy will continue to protect human health for the long term.”
- **Comment 31.6.** “4. Residential Metals Abatement Program. It is my conclusion that the Modifications to the ROD with regards to the Residential Metals Abatement Program are due to a lack of proper planning and execution of past cleanup activities by engineers and

contractors. Cleanup activities planned, presented, and executed by licensed engineers and engineering firms\* were haphazard, and without regard to sources of both groundwater and surface water metals and minerals that test outside of acceptable levels.

“These are two very distinguishable problems with the Residential Metals Abatement Programs.

1. First, the establishment of the program legally acknowledges, with testing as proof, that elevated levels of metals and minerals occur inside of private homes, commercial buildings, and developed real estate and their exterior yards and gardens. Any intelligent person can comprehend that the Butte Hill was the primary area containing active mining and residential homes, where miners and peoples engaged in mining activity carried mud and dirt into homes and buildings on a daily basis. These are also the immediate areas where wind carried and deposited minerals and metals in dust form into open doors, windows, and yards for nearly 100 years. The action to establish the RMAP program alone is an acceptance and acknowledgement of responsibility.
  2. The second problem with the RMAP program is the proposed expansion of the area where homes can be tested, now an area to include the entire county. It has been stated by the EPA and ARCO that by expanding this area, they are diffusing liability over the long term by proposing an alternative that has very little to no correlation with the actual source of the problem. The source and location is the Butte Hill, not Wise River. Expanding the area redirects the attention, liability, and responsibility away from areas that contain actual mine waste and attempts to dissipate responsibility for the past activities.”
- **Comment 40.4.** “In terms of expanding the RMAP program, since it's going to be voluntary in the sense that people have to contact the agency to get their property cleaned up in the area outside of the original BPSOU boundary, I would urge the agency to incorporate into their proposed plan an aggressive public education outreach to acquaint people with this RMAP program, how to contact it, what it can do, what it cannot do, so that people avail themselves of this. So I think it needs an aggressive public outreach program. I don't see that specified in this document.”

- **Comment 42.3.** “The residential metals abatement program, I think, is another crappy job where we're taking homes that probably need to be knocked down, that you could get a small group of men and push over, and we're cleaning them up. Just as a comparable, a billion dollars has been spent cleaning this up. Apparently, according to the paper. I don't know where that number comes from. But you could knock down all the houses, and you could build 7,142 \$140,000 homes for a billion dollars. Anyways, that's all I have to say.”
- **Comment 53.12.** “The areas where there's problems and there are going to continue to be a problem for 100 years -- I mean, they set up this RMAP money for, like, 99 years originally. It might be down to, like, 91 or 90 years. I mean, these areas need to be cleaned up. These houses aren't even going to last 90 years. You might as well just give the whole city to Washington and let him tear down the whole Uptown Butte, because that's probably just as good as what they're doing, which is nothing.”
- **Comment 56.4.** “I want to say a couple of things about the RMAP expansion. I, too, support that. The RMAP is a nationally recognized lead abatement program that goes far beyond what Superfund can order. Looking at lead paint, for example, that paint is not a toxic waste from mining. In the expansion of this RMAP program, I would call for specific consideration of, again, how are we going to involve the environmental justice community and how are we going to publicize this program for all citizens.”
- **Comment 57.3.** “And so that -- that particular thing within the RMAP expansion is very important for us to see that you would adopt the same action level for Anaconda, which is 400 parts per million lead. And that's a great place to start with your cleanup, because you will build confidence and you will build health. But if you leave action levels at 1,200 parts per million, what is bound to them -- I have done much sampling in my career. We've had to. A building that we own Uptown had 17,000 parts per million lead and arsenic because of a fan pumping smelter dust into the fourth floor. That was one of our first EPA cleanups. Because EPA came and cleaned up the hallways in that floor, but not the residences. You know, the RMAP program doesn't have enough funding, it isn't large enough and it isn't comprehensive enough. It's a miracle for what it is, but it doesn't go to where you have to be to get confidence. This town deserves to grow. It deserves to have what all the towns around it have, as far as the confidence and



health of the people. And so it's very important to us that you strongly consider the open working document of the RMAP program, to drop it to 400 parts per million for both Butte and Anaconda, otherwise it's going to be hard to continue to build new housing here. Thank you.”

- **Comment 64.3.** “In a recent copy of the Montana Standard, Atlantic Richfield placed a full color two-page ad entitled: "To the Butte Community." In it they state, quote, under the proposed plan RMAP would become available to thousands of additional residents at their request. Does that mean that renters in substandard housing in Butte can simply ask and have their attics and yards evaluated? That is something that has been argued for in the 18-month long Lead Levels Advisory Committee meetings in the mid-1990s. Please, will EPA use their often-mentioned ability to force landlords to have the places they live in evaluated.”
- **Comment 81.2.** “And, very importantly, “that people living in rental housing on the Butte Hill must be allowed to have their homes checked to see if there is too much lead or arsenic in the attic or yard soil.” I’ve heard her speak at many County Commission meetings about the crime of leaving renters at the mercy of their landlords. Unless their landlord requests the tests for lead in the soil, no tests are done! She still is demanding “environmental justice for the poor in Butte.”
- **Comment 82.4.** “Furthermore, as it now stands, only property owners are allowed to request that their rental housing be tested to determine if lead or arsenic in the rental home or in the yard soil exceeds safe levels. This needs to be corrected so that the people impacted (those that live in the rental housing) are authorized to make the request. Failure to address this aspect of the plan could potentially expose EPA as condoning discrimination against the low income individuals that reside in these rental units.”
- **Comment 96.4.** “1) Residential Metals Abatement Program (RMAP). The Proposed Plan calls for the expansion of the RMAP to address residential properties well beyond the current boundary of the Priority Soils Operable Unit (Minor Modifications #2, #8, #9, #10). Butte-Silver Bow fully supports this expansion, as well as the continuation of triple-depth sampling, which will increase the number of yards eligible for abatement. Coupled with the expansion, Butte-Silver Bow supports the proposed modifications to the schedule of yards and attics

to be sampled and abated per year, as well as proposed changes to address challenges with property owner participation and addressing commercial buildings under the attic abatement portion of the Program. As a corollary to the changes outlined in the Proposed Plan, Butte-Silver Bow would ask for verifications from EPA in the final Consent Decree a) to ensure the RMAP will operate in concert with any regulatory changes in the relationship between Elevated Blood Level guidance and removal action levels, both for soils and indoor dust; and b) if bio-monitoring for arsenic is required, that a “level of concern” for urinary arsenic is defined.”

- **Comment 98.6.** “RMAP Expansion. Under the Proposed Plan, the established Multi-Pathway Residential Metals Abatement Program (RMAP) will be expanded outside of the BPSOU to assess and abate pathways of residential exposure to metals in the greater Butte community. The RMAP has evolved from what was once known as the Multi-pathway program, a program of medical monitoring and residential assessment and abatement that was initiated in the 1990s. The current RMAP requires investigation and, where action levels are exceeded, remediation of arsenic, lead, and mercury contamination at all residential properties within the BPSOU. Within an expanded geographic area, the current program offers sampling and abatement of residential attics. The RMAP investigates all sources of metals of concern that may contribute to human health risk, not just those that are related to historic mine waste sources.

“The success and importance of the RMAP is evident in recent medical monitoring data analysis performed in Butte, which considered nearly 3,000 blood lead level records collected from Butte children from 2003 to 2010. In short, that study determined that blood lead levels in Butte children have dropped dramatically since 2003 (average levels for 2010 of 1.6 µg/dL were less than half of the levels for 2003 of 3.5 µg/dL) as a result of the RMAP, and therefore concluded that the program has been effective in identifying and mitigating potentially harmful exposures to sources of lead, arsenic and mercury in the Butte community and recommended that the program continue. See Butte Priority Soils Operable Unit, Public Health Study—Phase 1, at ii-iv, 78-80 (2014). AR agrees that the program, which BSB County operates with funding from AR, has been successful and remains a key element of the holistic BPSOU remedy.

“The Proposed Plan identified two modifications to the RMAP: (1) expand the boundary of the RMAP program to include rural residential areas outside the BPSOU to the north, south, and west of Butte on a test-by-request basis, Proposed Plan at 16 & fig. 4 (Modification No. 2); and (2) modify the RMAP sampling and remediation targets, id. at 19 (Modification No. 8). As an element of a final CD acceptable to all parties, AR supports expansion of the RMAP to make the program available to residential owners and occupants outside the BPSOU on a test-by-request basis. Because the expanded RMAP area, as described in the Proposed Plan and depicted on Figure 4, includes three industrial facilities where residential development is not anticipated or currently permitted, AR requests that such areas be excluded from the geographic scope of the expanded program. A map showing the three requested exclusions is attached as Exhibit A to these comments.

“In addition, the southwestern boundary of the expanded RMAP area proposed by EPA in the Proposed Plan (the portion in T2N R11W, T2N R10W and T2N R9W) shown in Figure 4 to the Proposed Plan extends outside the boundary of BSB’s Excavation Control District. See BSB Municipal Code, Ch. 8.28 (Excavations and Dirt Moving). AR therefore requests that EPA replace Figure 4 of the Proposed Plan with the figure attached as Exhibit A and describe such exclusions and boundary revision as part of this remedy modification.

“AR also generally supports modification of the existing RMAP targets and deadlines identified in the 2011 ESD. Specifically, AR comments that the existing timelines identified in the 2011 ESD should be removed because they are unrealistic and unachievable as the RMAP expands to cover thousands of additional homes and yards. The RMAP work schedule should be replaced with a more realistic, technically feasible level of effort approach with pace of sampling and remediation targets. Because RMAP is a voluntary program that removes all sources of lead from homes that qualify for remediation, including lead paint and other lead sources that are exempt from CERCLA, the proposed expansion of the RMAP will require AR and BSB support and concurrence. AR is willing to fund the proposed RMAP expansion as part of an agreement to implement the Proposed Plan that is incorporated into a final CD among AR, BSB, EPA and the State. The RMAP program is structured to prioritize assessment and remedial measures for those most at risk in the community. This

approach, coupled with revised “level of effort” requirements, will ensure that the community is protected in a manner that goes above and beyond the requirements of CERCLA, without the arbitrary and unachievable deadlines set out in the ESD. AR also requests that EPA remove the requirement for mercury monitoring under the RMAP program, for the reasons described in the specific comments below. See Comment No. III.T.

“T. Page 19, Modification 8. In addition to modifying RMAP target numbers, EPA should remove the requirement in Section 12.3.1.1 of the ROD for mercury monitoring under the RMAP program. Mercury monitoring to date within the RMAP area has shown that elevated levels are limited to a small area and appear to be related to re-use of mercury-impacted timbers in older housing. EPA agreed to remove the requirement to analyze mercury in soil samples as part of the 2010 RMAP Plan revisions based on 10 years of results showing no exceedances of the 147 mg/kg mercury cleanup criteria. Given there is now 17 years of attic dust monitoring results showing no exceedances of the mercury cleanup criteria (with the vast majority of the results being non-detect) it is appropriate to similarly remove the requirement to monitor mercury in attic dust and the medical monitoring program. BSB County is in the process of compiling all of the historic mercury monitoring results and will provide this data summary to the EPA and MDEQ as part of the 2019 revision of the RMAP Plan.”

#### **2.25.2.2 EPA Response**

The RMAP is a critical component of the remedy selected in the 2006/2011 BPSOU Record of Decision and its expansion through this 2020 BPSOU Record of Decision Amendment and an associated unilateral administrative order will provide further public health protection in Butte and Silver Bow County. The RMAP is implemented by Butte-Silver Bow County staff and uses a prioritized approach to address affected and sensitive populations, such as those persons determined to have elevated blood lead results, young children, and pregnant or nursing mothers. In addition, the program requires that all residential properties within the BPSOU must be sampled, assessed, and abated within a reasonable time frame if action levels for arsenic, lead, and mercury are exceeded. This includes the cleanup of attic dust in accessible attic spaces.

In 2011, the attic portion of the RMAP was expanded to include areas south and west of the BPSOU boundary. The 2019 proposed plan expands the RMAP boundary farther to include rural residential development outside of the BPSOU and additional properties within the BPSOU, such as schools, parks, vacant residential lots, and businesses with residential apartments. The proposed boundary for the expanded RMAP is adjusted to encompass the extent of Butte Silver Bow's Excavation Control District. See Figure A-2 of the 2020 BPSOU Record of Decision Amendment. The proposed boundary also was adjusted in the final RMAP plan to exclude non-residential areas (other than parks, schools, and other areas where children recreate, as well as businesses that have residential units within them) and include the extent of Butte Silver Bow County's Excavation Control District. EPA believes that the intensity of historic mining activity generally diminishes with distance away from the BPSOU boundary (the Berkeley Pit and present-day active mining areas excepted); therefore, the likelihood of mining-related action level exceedances is reduced in areas outside of the BPSOU surface boundary. Properties outside the BPSOU boundary but within the RMAP expansion area will be sampled by request as opposed to the systematic sampling for properties within the BPSOU.

The RMAP is designed to mitigate exposure to sources of lead, arsenic, and mercury to residents of the BPSOU and expanded area from contamination that may originate from both mining-related (waste rock, tailings, aerial emissions) and non-mining-related sources (lead-based paint and lead solder). As designated responsible parties, both Butte Silver Bow County and Atlantic Richfield implement the RMAP, with EPA and Montana DEQ oversight. In practical terms, Butte Silver Bow County implements the RMAP with county personnel via funding from Atlantic Richfield. Both parties are committed to diligently executing the RMAP over the long term with adequate funding. EPA and Montana DEQ are responsible for RMAP oversight, review, and approval of sampling plans and site-specific remediation plans. The latest sampling plan contains sampling procedures for residential yard soils, earthen basements, attic dust, and drinking water. The plan specifies use of portable x-ray fluorescence technology to test paint for lead content, special vacuums to collect indoor dust samples, and a mercury vapor analyzer to check the air. Butte Silver Bow County technical personnel are trained in the proper use of field equipment and follow standard operating procedures included in the sampling plan.

No modifications to the RMAP soil action levels or biomonitoring approach are proposed at this time. Biomonitoring will continue to focus on blood lead biomonitoring, with increased tracking and follow-up for individuals with elevated blood lead levels. As appropriate, increased outreach to local pediatricians and clinics will be used to augment the available blood lead data. Two prior arsenic biomonitoring studies conducted in Butte and a recent study in Anaconda have not found any evidence of elevated arsenic exposure due to arsenic in soil; therefore, another arsenic exposure study in Butte is not likely to yield useful information. Even so, arsenic and mercury biomonitoring will continue to be available under the expanded RMAP when soil and dust concentrations are sufficiently elevated to warrant testing.

Community awareness, education, and medical monitoring are also critical components of the RMAP, and these actions are required in the amended record of decision. The RMAP uses community awareness and education in conjunction with medical monitoring to target affected and sensitive individuals and prioritizes sampling and remediation in locations where these people live. Awareness and outreach components include distribution of educational materials, periodic mailings, information on the Butte Silver Bow County website, information provided at public meetings, and using local media outlets. Outreach also relies on the medical community, particularly pediatricians and the WIC program to inform the public about risk, health monitoring, and other RMAP activities. Community outreach also includes participation in community health fairs and family fairs. Additional outreach and education described in the comments will be incorporated into a revised RMAP plan.

The 2006/2011 BPSOU Record of Decision specify that all properties within the BPSOU must be sampled. Prior to conducting any sampling or cleanup activities at a property, access must be obtained from the property owner. Obtaining access to all properties will be necessary, and EPA understands there are property owners reluctant to participate. Butte Silver Bow County is making a good faith effort to get all property owners to participate in the RMAP, using all means (i.e., mail, email, phone calls, and knocking on doors) to gain access. After several attempts, if Butte Silver Bow County cannot obtain access, properties will be referred to EPA and Montana DEQ for further action, including direct contact of the landowner by the agencies and the possibility of the filing of a notice with the landowner's property records indicating that the property has not been sampled or remediated. See the *BPSOU Institutional Controls*

*Implementation and Assurance Plan*, which is Appendix E to the proposed consent decree.

Once action level exceedances are determined through sampling, cleanup at a property will be implemented by Butte Silver Bow County or local contractors. The removal will be discussed with the property owner, any concerns will be considered, and a yard-specific plan will be developed and approved by the property owner and EPA in consultation with Montana DEQ. Contaminated soils in yards are typically removed to a depth of 12 inches and replaced with clean soil. Based on owner input, sod is placed over the replacement soils in yards, or seed is placed in open spaces. Driveways are typically replaced with gravel. Once the removal and restoration are satisfactorily completed, the property owner is responsible for maintaining their property in accordance with the BPSOU institutional controls program. Should post-removal issues arise, such as waste being exposed or recontamination occurring from stormwater run-on, Butte-Silver Bow County should be contacted to assess the situation for further action. Additionally, residential property owners should adhere to Butte Silver Bow County's Excavation and Dirt Moving Ordinance developed as an institutional control. However, at any time during this process, EPA and Montana DEQ are available for consultation should questions or problems arise.

The proposed consent decree clearly provides EPA and Montana DEQ the authority to lower the action levels for lead, arsenic, and mercury if the Superfund human health risk evaluations or other information indicate lower levels are needed for the protection of human health. EPA and/or Montana DEQ can require the implementation of a plan, including the lower levels, pursuant to authorities reserved by the proposed consent decree provisions.

EPA's proposed plan for an amendment to the 2006/2011 BPSOU Record of Decision proposes to expand the existing RMAP plan—the remedial design plan that implements the residential cleanup requirements of the record of decision—to residential areas outside of the BPSOU boundary upon request of any residential landowner. The expansion proposal received support from the public during the proposed plan public comment period. EPA, using its authority under the existing unilateral administrative order, has directed Atlantic Richfield and Butte Silver Bow to develop an expanded RMAP plan, which is currently in development. Atlantic Richfield has supported and funded Butte Silver Bow County's RMAP within the BPSOU area since its inception. The potentially

responsible parties have agreed to implement the expanded RMAP, once it is approved by EPA and after interaction with the public, as draft plans are developed and commented on under the existing BPSOU unilateral administrative order while the liability issues are discussed. It is possible that after CERCLA and other liability issues are resolved, the RMAP may be placed under the consent decree. Until that time, the existing RMAP is being implemented under the unilateral administrative order, and Atlantic Richfield and Butte Silver Bow County will implement the expanded RMAP under the unilateral administrative order.

Under the existing unilateral administrative order, Atlantic Richfield and Butte-Silver Bow will be required to submit a modified RMAP plan in draft. EPA agrees that this plan must address schools, parks, and other areas where children recreate as well as businesses that contain residential units. As suggested by one commenter, EPA will urge Atlantic Richfield and Butte-Silver Bow to include provisions for the maintenance of retaining walls. As EPA develops the revised RMAP plan with input from the community, it will consider the use of a urinary arsenic level of concern as part of the revised program.

## **2.26 Silver Bow Creek Legal Status**

### **2.26.1 Comment Summary**

Sixteen comments referenced Judge Neuman's ruling and/or the legal status of Silver Bow Creek.

- **Comment 2.7.** "The new proposal has eliminated Silver Bow Creek and the Silver Bow Creek Corridor from Texas Avenue to Casey Street as part of Butte Priority Soils. How crazy is this? Judge Newman wrote in the Silver Bow Creek Headwaters Coalition successful lawsuit against the State of Montana---"This litigation seeks to ensure that the State of Montana and its agencies follow the law." "In this case the Plaintiffs stand in the shoes of government. They are seeking as a private attorney general to force the State to act appropriately with respect to the State's waters held in trust for the public." Article IX Section 3 of the Montana Constitution States---"All waters within the boundaries of the State are the property of the State, held in trust, for the use of its people." Do the "rule of law" and the "Montana Constitution" mean nothing to the Environmental Protection Agency, State of Montana, Local government and the Atlantic Richfield/British Petroleum Company? I write this opposition letter to the proposed Record of Decision Amendment on



Butte Priority Soils knowing it is an effort in futility. Knowing the Environmental Anti-Protection Agency has absolutely no intension of making any changes to the proposed document and only requests input to satisfy the legal requirement to do so and appease Judge Hadden. However, I do so because I want the children of Butte and Montana to know when they are paying to rectify this mess in the years to come, that some folks in the community did in fact care!”

- **Comment 7.3.** “I. SILVER BOW CREEK CORRIDOR. A Origin. East Ridge creeks, including Silver Bow Creek are legally the origin of Silver Bow Creek through town even though the water is cut off for use by Montana Resources mining. Thus, the present, accessible portion of Silver Bow Creek begins below the mine at Texas Avenue, and are waters of the State of Montana, according to Judge Brad Newman in Silver Bow Creek Coalition vs. the State of Montana. I supported that lawsuit and am pleased to be able to cite its success, thanks to Fritz Daily, Sister Mary Jo McDonald and Ron Davis.”
- **Comment 8.3.** “Although the plan, following Judge Newman’s verdict, promises no longer to make any reference to Metro Storm Drain, or MSD, and says it will refer to that channel henceforth as Silver Bow Creek, the plan also acknowledges a willingness to include space for a future “meandering waterway” alongside the stormwater retention/detention ponds. Clearly, the community is expecting that “meandering waterway” to BE Silver Bow Creek. This raises the obvious question: which “waterway” is Silver Bow Creek? This is perhaps the most serious shortcoming of the plan, as I see it. Judge Newman’s verdict restoring the upper reach of Silver Bow Creek to its status as a water of the state is established law, but it is not reflected in the plan, and in conversations with the negotiating parties, it’s clear that they don’t accept that this reach of the waterway IS a water-of-the-state—with all the statutory protections implied by that designation. This is a hugely contentious issue and I assume that the failure to clarify this issue is by design, not by accident—ignore it and hope that it goes away. I don’t think it will go away without some attempt to confront the ambiguities of the situation.”
- **Comment 9.2.** “The standards of clean-up for Silver Bow Creek should be to a healthy standards, supporting fish and a safe play area for our children. The Creek, as ruled by Judge Newman, should start at Texas Ave. What a vision to see this creek again flowing clean

water used for family and community outings. I am sure that everyone in the Clark Fork Basin, downstream from Butte, have the same concerns.”

- **Comment 12.4.** “I also wish to address a rising sentiment that the ruling in *Silver Bow Creek Headwaters Coalition v. Montana*, DV-10-431 (Oct. 16, 2015) somehow mandates the creation of a free flowing stream. On the contrary, the order describes Silver Bow Creek as a “watercourse” and describes a watercourse as “flowing with regularity from year to year, although the channel may be dry for the major portion of each year.” Order Granting Summary Judgement at 14. The order explains the constancy of the creek’s name throughout history, but at no point does the outcome of the case mandate that a free flowing creek must be created as part of the Superfund remedy. To do so would have been far beyond the scope of the case. In fact, the order overtly qualifies that “the strict question presented involves the name of the stream.” *Id.* at 17, emphasis in original. The judgment enforcing the order is similarly narrowed to the issue of name, not the past or future existence of the creek.”
- **Comment 33.1.** “Silver Bow Creek, Yankee Doodle Creek, and Blacktail Creek formed the headwaters for the Clarks Fork River prior to the historic mining that left us with Butte as we know it today. The consent decree to finalize cleanup plans for the Butte Hill should include a natural waterway, Silver Bow Creek, to carry cleaned Berkley Pit water from the water treatment plant to Silver Bow Creek. This waterway, as pointed out by former District Judge Brad Newman, at the Environmental Protection Agency’s second and final public hearing at the Montana Tech library auditorium on May 24, is Silver Bow Creek not the “Metro Storm Drain” or the “MSD channel.” Mr. Newman said this was his decision in August 2015 on the lawsuit that Silver Bow Creek Headwaters Coalition brought against the Department of Environmental Quality over the name of the drainage ditch that runs from Texas Avenue to George Street at the confluence with Blacktail Creek. The decision was not appealed, the decisions stands and must be observed in the consent decree.

“The basic questions that need to be answered, given the previous legal decision, are where the creek begins, where it ends, and what should the flow be from the source to the confluence with Blacktail Creek. A fully restored, meandering, free flowing creek as requested

by the Silver Bow Creek Headwaters Coalition and Restore Our Creek Coalition is not unreasonable. The proposed plan and the final consent decree should include a restored, meandering creek that consists of treated Berkley Pit water that can be released into Blacktail Creek to form the headwaters of the Clarks Fork River as it was prior to historic and present-day mining.”

- **Comment 47.2.** “And so I'm not for a footprint for a creek. I'm saying we need to have the creek restored. The judgment said, by Judge Newman, it is Silver Bow Creek, it needs to continue to be Silver Bow Creek. And, Folks, we should be proud that it's the headwaters of the Columbia River. I'm not proud that it's a waste storm area. We should have a creek that we can say, "Here's where the Columbia River begins." And it follows all the way down through the corridor. We keep ignoring the fact that it's up on the headwaters. So we're going to do Milltown Dam, \$150 million. What a wonderful job you all did. But Butte was the beginning of the lawsuit for that money. Butte was the beginning. It was done for Butte, but everybody else is getting it. We have bought land for elk because they didn't know how to find their own habitat. Well, I beg to differ. I think the elk are doing very well finding habitat.”
- **Comment 52.1.** “I'm a Butte boy, born and raised. Grew up right in the Greeley area, just above the area that's being cleaned up. Spent a lot of time of my life in tennis shoes running through "Shit Creek," as it was called, and crossing the pipes so we wouldn't fall into the water and have to go home and have our clothes burned by our parents. I sit and look at what's being done here. And as a member of the Silver Bow Creek Coalition with Sister Mary Jo and Fritz, I recall Judge Newman's comments that it's sad that three citizens have to do the work of the State of Montana and our government to force that the constitution of our state is followed to give us a healthy environment and clean waterways. Silver Bow Creek is a waterway of the state, designated way back in the early 1900s. But, yet, this plan does not include Silver Bow Creek. I, myself, growing up here, fished in Silver Bow Creek. We didn't know then that you couldn't eat them. It probably explains a lot about us. But the idea that you're going to start Silver Bow Creek, basically, at the Butte Chamber of Commerce and then you're going to have this meandering stream, I kind of -- your first slide showed this beautiful creek with people walking by it. I

think it was taken in Missoula because it sure wasn't Butte. We need to have that creek. It has to be in there.”

- **Comment 58.3.** “For the record, Silver Bow Creek from Texas Avenue to Montana Street is a creek and a watercourse and not a sewer. It's not a storm drain. It's not a water feature. It's a creek, as determined by Judge Brad Newman in the Silver Bow Creek Headwaters Coalition lawsuit against the State of Montana, which I remind you was a successful venture for myself, Sister Mary Jo McDonald and Ron Davis. And, yes, we can have a creek flowing through this town. No matter what these people say, yes, we can. And we can have a creek that's attached to the groundwater, as well. As Judge Newman wrote in his -- in our successful lawsuit, Silver Bow Creek is a creek. That's what it is. Well, just so you know, what you're doing is wrong.

“But I can tell you something hear tonight that, to me, was really, really important. And it was Judge Newman. Judge Newman is a quality guy, a quality guy, who lives in this community. And what he said tonight made more sense than all of us combined made. Judge Newman told you what I said, but this came from Judge Newman. It doesn't come from Fritz Daily. It came from Judge Newman. Judge Newman told the State of Montana whether you like it or whether you don't like it that Silver Bow Creek is a creek. It's a creek. As I said in my comments, it's not a sewer, it's not a storm drain, it's not a water feature, it's a creek. That's what it is. That's what Judge Newman just told you. And in my comments I was going to tell you the same thing Judge Newman did. The State of Montana had the opportunity to go to the Supreme Court or go wherever and appeal Judge Newman's decision. But, you know what, they didn't do that. And you know why they didn't do that? Because they were afraid to. That's why they didn't go to -- that's why they didn't do that. And, you know, I get frustrated. You can see that. And I get angry. Damn right I get angry. And I'm angry with you guys. I'm angry with you guys because of my community. I love this community. I've lived here all my life. This is a great community. What you guys are doing is wrong. It is wrong. But you could do what's right. You could do what's right. Do you have the power, do you have the power to make sure that we have a creek running through this community? Damn rights you do. Damn rights you do. If you want to do it, if you want to do it, you have that power, you have that authority.”

- **Comment 62.1.** “I'm a resident of the historic Butte Hill and a citizen of Silver Bow County. In my former professional life, I was a district judge elected by the people of Butte to apply the laws of Montana in various litigation matters. I came here today to receive information. I appreciate the written materials that you folks have provided to us. I appreciate the presentation that we heard today. I hadn't prepared any comments, so I apologize if my comments here now are a little bit disjointed. But the information that I received has at least raised one or two questions in my mind.

“I was the presiding judge in the case brought by the Restore Our Creek Coalition. The interested parties to the consent decree that we're talking about in this case include the parties to that litigation, State of Montana, Montana DEQ. In that case, after hearing significant legal argument, after receiving significant evidence, the Court ruled that the area of Silver Bow Creek that had been referred to for years and years by various governmental agencies as the "Metro Storm Drain" was not a storm drain. It was Silver Bow Creek, both in name and in legal status. Silver Bow Creek is a natural watercourse. The fact that man diverted water from Silver Bow Creek for years did not change the legal status of Silver Bow Creek. Professor Ray is absolutely right, EPA cannot command action beyond what is allowed and required by law. But, by the same token, we cannot ignore what is in law. The State of Montana was a party to the case before me. The State of Montana vigorously defended the case brought by the Creek Coalition. The State of Montana spent considerable money and considerable effort in presenting their side of the case. The State of Montana, Montana DEQ, is bound by the decision in that case. They were parties to that case. They had a right of appeal. They did not appeal. That decision is legal precedent. That decision binds the State of Montana, it binds Montana DEQ, to recognize Silver Bow Creek as a natural watercourse. And so when I hear about a proposal that talks about recycling water, that doesn't sound like a free-flowing natural watercourse. I think that that consent decree with that proposal is inconsistent with the law that establishes that Silver Bow Creek is a natural watercourse. I'm going to confine my comments to that particular issue.

“I think there's much good in the proposal that we're, once again, learning about here today. But my questions are specifically directed to the parties that are bound by the decision to recognize Silver Bow

Creek as a natural watercourse, the State of Montana, Montana DEQ, Butte Silver Bow County, our government. Can they enter into a consent decree? Can they agree to a solution that ignores the law of Montana? Silver Bow Creek is a natural watercourse. The decision that I made that was not appealed by the State, that the State acquiesced in, is based on valid legal precedent, statutes, case law, the Mitchell Slough case, for example. Despite man-made alterations, when we're talking about a natural watercourse, it's not just in name only. Silver Bow Creek has legal status that must be observed by the interested parties to this consent decree.”

- **Comment 63.4.** “Because when you're talking about a creek, a creek needs headwaters. And I've heard it said to the good folks that have been fighting for Restore our Creek that there's no water source. Well, there is a water source, and it's the exact same water source that fuels pretty much any natural creek. If you start hiking at the bottom of a creek in any drainage around Butte, Montana, you will end up at a mountain lake. And that mountain lake started one of two ways, and a lot of times is a combination of two things, groundwater and storm water. And when you're getting up into where the Parrot Tailings are now, you're getting up into an area that could well be the headwaters. If it was considered, which it has not been to this point, if it was considered as part of the remedy, that could be the headwaters of a meandering creek through town. Because, really, all it is storm water that creates a lot of the creeks. It's just millennia's worth of snow melt. And, you know, you don't have to have a storm water basin there that's full immediately. But, in time, with that considered as part of the solution, that might be the headwaters of the creek that people are looking at. So I couldn't agree more with Judge Newman that that is a creek. And when that major area has not even been considered in this, I think we're leaving a lot on the table. Certainly, if I was modeling possible remedies, that would be one that I would include in my model. And I strongly encourage all the parties to not rush into a consent decree until we're going to change the standards, change the law that we currently have to enforce, until every last option has been exhausted. And that one has not.”
- **Comment 65.4.** “And then the other -- the last comment that I would like to add is just I understand the legal definition of the creek. I agree that where the creek lies historically there is a legal premises to still continue to call it a creek. There isn't current headwaters. And that --

that is a problem. There is no source of water to put into the creek. And the biggest problem primarily is water rights issues. The sources that are available are spoken for until mining operations completely subside in Butte.”

- **Comment 68.5.** “I agree with Fritz about the responsibility of ARCO for the creek from Casey Street to Texas. Because, remember, just what Sister pointed out, they modified it. You know, you own it after you modify it. And, by the way, you almost own it now anyway. But you own it, and so you own it to be made better. And technical reasons notwithstanding about technical Superfund stuff, I agree with Fritz that it's a responsibility of ARCO to deal with that area. And I agree with Judge Newman completely on that issue, that that is a creek and the whole creek is part of this problem area. And if we can dance around this thing and say, "Well, this is -- this is the BPSOU, and that was part of the other group and that was part of this group, and we've already had a settlement on this and that, and we settled something with the City, and so on." It isn't good enough. Those excuses are not good enough to not have us have a proper solution, as Sister has talked about. To reemphasize, the City land along the Civic Center needs to be modified. These are the drawings that you're advancing to the public. They show a dead end of land, green land, green identified land for a creek from Texas Avenue just to where it ends behind the Civic Center. It doesn't go to Harrison Avenue. It needs to get fixed. ARCO land. Great job by ARCO in opening up that corridor for us down in through the Northside Tailings and Diggings East. That little bit of land that you own, ARCO, that ARCO owns, immediately to the east of that little Baker peninsula of private land, should be designated as part of that corridor. In the event that we can acquire that Baker land in the future, we can be able to have that area as part of the flowing area of the creek in the future, if we so desire.”
- **Comment 74.5.** “5. The current Silver Bow Creek flow has been significantly altered in a negative way by previous actions of the EPA and ARCO/BP. Those alterations are accepted as a fait accompli by the ROD and that should not be the case. The Silver Bow Creek channel should be returned to its original use. It should not be dedicated solely to storm water movement. The ineffective French Drain should be removed and the plan from 2006 to modify the straight channel into a meandering creek should be restored and done no matter what the cost. Judge Newman in his decision firmly stated

that the channel was always Silver Bow Creek and that it is a waterway of the state. Attendant to being a waterway of the state are certain rights. It should not be a captive to ARCO's commitment to lowest cost storm water treatment. If the storm water was to go the Berkeley Pit, then this channel could be returned to the kind of creek it was before mining, and even made better . That should be the goal. (By the way, ARCO took on the full risk when it first did the French Drain because it was a choice they made that was not a mutual choice with the EPA and thus they took the risk that it could fail or not achieve optimum performance. While it may take a lot to restore the channel, I believe the "Auction Barn Rule" applies here: "If you break it, you own it." ARCO, as a result of their previous actions and the actions of its predecessor ACM – remember retroactive liability in the Superfund law - has broken Silver Bow Creek and bears the full responsibility to its remediation and restoration."

- **Comment 80.6.** "I disagree with the characterization of the name "Silver Bow Creek" to the current location of the creek as defined by the lawsuit defining the creek as such. Since this reach is now defined as an "ephemeral creek" which is only fed by stormwater events, it is not what I consider a waterway of the State of Montana. I understand the decision has been made through the lawsuit, but don't agree with the decision as it is not what I consider a natural year-long creek as it is below its confluence with Blacktail Creek."
- **Comment 98.13.** "D. Regulatory Status of Upper Silver Bow Creek (formerly Metro Storm Drain). The Proposed Plan refers to the historic SBC channel / SBC stormwater channel as "upper Silver Bow Creek," rather than "MSD" or "Metro Storm Drain" as the agency did in the 2006 ROD and 2011 ESD. See, e.g., Proposed Plan at 19 (Minor Modification No. 13). This change in terminology is predicated on the 2015 State of Montana court decision issued in Silver Bow Creek Headwaters Coalition v. State of Montana, DV-10-431 (August 17, 2015). In this decision, the court held that the legal name of the then described Metro Storm Drain (i.e., the constructed storm water channel between Texas Avenue in Butte and the confluence of Blacktail and Silver Bow Creeks) is "Silver Bow Creek," because the former SBC channel had not been renamed in accordance with the State's 1911 watercourse name change statute. AR anticipates that members of the public will cite this 2015 decision in comments that support their belief that the former SBC channel is a "water of the



State” subject to Montana water quality standards and claim that the former creek channel should be restored in order to achieve such standards. Any such comments are unfounded, as they conflict with the Montana Water Quality Standards (WQ Standards) and the ROD, as well as the court’s 2015 decision. For these reasons, which are further described below, AR requests that EPA clarify in response to any such public comments that the change in terminology applied to the former “Metro Storm Drain” does not have any regulatory impact on the channel, including that it does not establish that State surface water quality standards apply to the channel or mandate that this historic stretch of SBC be restored as part of the BPSOU remedy.

“First, State law explicitly excludes the upper SBC stormwater channel (above the confluence of Blacktail Creek and the stormwater channel) from regulation under the WQ Standards. The WQ Standards classifying the Clark Fork Columbia River drainage—which includes Silver Bow and Blacktail Creeks (class “B-1” waters)—explicitly state that “[t]he concentrator tailings pond and Silver Bow Creek drainage from this pond downstream to Blacktail Creek and the tailings ponds at Warm Springs have no classification.” ARM 17.30.607(1)(a)(iii) (emphasis added). This exclusion was codified into State law for the entirety of the SBC stormwater channel, to ensure that the constructed channel located in the area of the historic creek bed is not a “state water” that is required to meet State WQ Standards. This stormwater channel was excluded from the requirement to meet surface water standards partly because, for many decades, government and industry dedicated the channel to the efficient transport of a mixture of municipal wastes and mine water from Butte to the Warm Springs Ponds for treatment, and partly to support diversion and use of the SBC headwaters streams (the upper portions of Silver Bow Creek, Dixie Creek and Yankee Doodle Creek) for mining operations that began in the 1950’s when the Berkeley Pit opened, and that continue today with on-going mining in the Continental Pit. Without a natural headwaters to provide a source of surface water, the former SBC channel from Texas Avenue downstream to the confluence with Blacktail Creek no longer functions as a natural creek, and CERCLA does not give EPA the authority to require AR to supply another source of surface water to re-create or restore a creek in this location. See CERCLA, 42 USC § 9607(f)(1) (claims to restore natural resources must be brought by

natural resource trustees; EPA is not a natural resource trustee for BPSOU).<sup>4</sup>

“Second, the 2006 ROD does not require remediation within the storm water channel to restore the beneficial use of any water resources that still exist in this unclassified stretch, as the WQ Standards were not identified as an ARAR for this area. See ROD, App. A (identifying the WQ Standards, ARM 17.30.607(1)(a)(iii), as an “applicable” state requirement for Sliver Bow Creek (mainstem) and Blacktail Creek, but not the MSD/historic SBC channel); *id.* at 8-5 (“The Metro Storm Drain (historic Silver Bow Creek channel) . . . has no regulatory classification.”). Thus, the ROD also establishes that the historic SBC channel is not a state water that must comply with the WQ Standards. Finally, the 2015 court decision itself undermines the assertion that waters in the former SBC channel must meet WQ Standards. The court’s holding decided only that the legal name of the “contested stretch” is “Silver Bow Creek,” not “Metro Storm Drain,” because “there has never been any formal procedure to change the name [under the 1911 statute].” *Opinion* at 1-2, 23-26. The court did not hold that this stretch of SBC was subject to the WQ Standards, and, in fact, the court’s opinion states that issues related to cleanup obligations or standards in SBC “are of little significance to the issue at hand.” *Id.* at 33. AR is aware that Judge Newman, who wrote the 2015 decision, offered a different interpretation of his 2015 ruling in his public comments at the May 23, 2019 public meeting on the Proposed Plan (as well as other public forums). However, the judge’s comments are not part of the ruling and are not law. The 2015 decision does not hold that upper SBC is a state water that is subject to and must comply with state WQ Standards.”

### **2.26.2 EPA Response**

In 2015, a state district court found that the official geographic name for the drainage above the confluence of Silver Bow Creek and Blacktail Creek under Montana law is Silver Bow Creek. See *Silver Bow Creek Headwaters Coalition v. State of Montana* DV-10-431. Prior to the ruling, EPA and other federal, state, and local authorities had referred to the drainage as the Metro Storm Drain because it gathered and conveyed stormwater. The perennial water flow that composed Silver Bow Creek before mining activity is now intercepted by the Yankee Doodle Tailings Dam, the Berkeley Pit, and Montana Resources, LLP’s permitted active mine area. The court ruled that the use of the term “Metro Storm Drain” as opposed to “Silver Bow Creek” did not follow the geographic naming statutes that governed official names of geographic areas in Montana. Because

the court issued its ruling, EPA and Montana DEQ have described the area in question as Silver Bow Creek above the confluence with Blacktail Creek or upper Silver Bow Creek in Superfund documents. The court's ruling, however, did not determine that the drainage in question was subject to state water quality standards. The district court's decision was narrow and limited to the proper name for the drainage, which the court stated was the only issue raised in the plaintiff's complaint in the matter. As the court's decision states, issues related to the cleanup obligations or water quality standards in this area "are of little significance to the issue at hand." Therefore, the court's ruling does not require a replacement creek be constructed in the area above the confluence of Silver Bow Creek and Blacktail Creek.

The relevant and current Montana DEQ regulation concerning this stretch of Silver Bow Creek is found at Administrative Rules of the State of Montana (or ARM) Section 17.30.607(1)(a)(iii), which states that "the concentrator pond and Silver Bow Creek drainage from this pond downstream to Blacktail Creek . . . have no classification." The same regulation prescribes water quality standards for Silver Bow Creek downstream from its confluence with Blacktail Creek. EPA's Superfund remediation authority is partially dependent on the applications of state water quality standards to specific surface water areas and therefore is constrained such that EPA cannot require the settling defendants to replace Silver Bow Creek above the confluence where the channel is now being used to convey contaminated stormwater.

While EPA has determined that it does not have the authority to require responsible parties to replace the Silver Bow Creek channel above the confluence with another channel for recreational use under Superfund remediation authority, it has taken several important actions to improve the area above the confluence. First, EPA has worked with the community to obtain voluntary commitments from Atlantic Richfield for end land use development in this area that will include park-like features for use by the community. The State of Montana also agreed to set aside in an interest-bearing account some money obtained in the proposed consent decree that is not used for implementation of the Blacktail Creek area remedial work for use by the community for the design and construction of a lined creek. Such funds would be used as a match for other funds secured by the project proponent if land, water, access, infrastructure, and other issues are resolved at the time a proposed project is presented. The agencies believe the end land use plan will include an area that could support a new lined creek should construction funding and water become available. The creek would have to be lined to prevent the infiltration of surface water in the creek through the streambed and underlying remaining contaminated soils into groundwater and impacting Atlantic Richfield's groundwater remedy. Second, EPA awarded a grant to the Silver Bow Creek/Butte Area Technical Assistance Group to review how such a creek could be constructed in conjunction with the proposed

remedy. Finally, the state has agreed to set aside funds from a proposed consent decree that could contribute to the development of a lined creek in this area.

## **2.27 Silver Bow Creek above the Confluence Channel Replacement**

### **2.27.1 Supports Proposed Plan**

#### **2.27.1.1 Comment Summary**

Five comments were received in support of the remediation of Silver Bow Creek below its confluence with Blacktail Creek as described in the proposed plan. Two of these commenters raised issues regarding request for a meandering creek in the area of Silver Bow Creek above its confluence with Blacktail Creek.

- **Comment 18.3.** “Sadly however, I am disappointed with a small but vocal faction of our community. I fear they could spoil the end results that you have proposed with their constant negativity and their lack of appreciation for all of your work done in the past, the present and into the future. I am not an engineer or a scientist but I understand why Butte is called The Richest Hill. The need for a synthetic creek; as a few fellow citizens persistently demand, seems to me to be of little to no importance relative to the more pressing need to capture and to treat the storm water run off from this-Richest Hill-laden by naturally occurring heavy metals.”
- **Comment 22.8.** “4.3 CTEC is pleased that the ROD Amendment will remove the option for flow augmentation to attain water quality standards. The ROD allowed “In-stream flow augmentation as appropriate. Flow augmentation will not be considered until the major remedial components described in this ROD are designed and implemented.” Removing that option puts additional emphasis on using remedy to meet standards rather than using dilution. It also encourages the agencies to require additional remedy at the end of the 9-year compliance determination period. Additionally, CTEC has always assumed that Silver Lake water would have been considered for augmentation. That would have been a misuse of a critical water source that must be used for our current industries and industrial growth for Butte in the future.”
- **Comment 29.3.** “Expanded Waste Removal/Rerouting of Silver Bow Creek. Soil-bound contamination poses the largest, long-term threat to groundwater and surface-water quality in Upper Silver Bow Creek. As such, the CFC supports additional waste removals at the Diggings East, Northside Tailings, Blacktail Creek and the Butte Reduction

Works areas along with the plan to expand groundwater capture areas west and south of the BPSOU Subdrain. In addition, the CFC fully supports the plan to reroute the channel of Upper Silver Bow Creek out of the Slag Wall Canyon and remove additional wastes from this area. The proposed modifications to the ROD will help facilitate a more comprehensive cleanup of Upper Silver Bow Creek. In the not so distant future, Silver Bow Creek will likely be reconnected to the upper Clark Fork River directly. With millions of dollars already invested in restoration and remediation actions downstream of Butte, it is imperative that water quality is maintained at the headwaters. Upper Silver Bow Creek Flow Restoration.

“The CFC is aware of significant efforts to advocate for a free-flowing, meandering stream in the upper reaches of Silver Bow Creek above the confluence of Blacktail Creek. The CFC takes no position on the aesthetic remedy ultimately implemented by the ROD, other than to reiterate its support for stormwater retention controls outlined in the proposed amendments to effectively manage the significant negative impacts posed by runoff during storm events. The CFC supports efforts that will improve water quality in Butte and provide benefits to aquatic ecosystems downstream. As such, CFC supports the current proposal’s removal of artificial flow augmentation in order to help achieve water quality standards or desired aesthetic flows. CFC agrees with CTEC’s comment that removal of artificial flow augmentation properly “puts additional emphasis on using remedy to achieve standards rather than using dilution.” Improvements in water quality should be achieved through restoration and remediation, not through dilution or the use of trans-basin diversions. The Upper Clark Fork River already faces significant negative impacts from low flows and high temperatures created by seasonal dewatering of key tributary streams. Rather than see these impacts exacerbated by trans-basin diversions, CFC would like see future emphasis placed on proven, effective methods aimed at restoring and protecting water quality to key tributaries, including Silver Bow Creek.”

- **Comment 65.11.** “I do believe, if I'm not mistaken, that there was money that is being set aside in an interest bearing account for the future feasibility study of the creek corridor and construction. Is that correct? Okay. So that should -- that should be very much on the record. When the water source becomes available during the subsidence of all of the mining operations, and Silver Lake is open

and you can get to the Yankee Doodle and to the other headwaters, when those are not under ownership of water right, the money's going to be in an interest bearing account for those feasibility studies to be done and for the construction of the site. And I agree with some people we might want to know now, but there is some barriers that make it questionable if that's a good use of the taxpayer's dollars when there's no water to put in the creek. And that's just factual. You can't put groundwater in it. That doesn't work. The groundwater's contaminated. There's a reason the storm drain's there. So thank you guys. And, endly, I want to really legitimately thank ROCC, the Clark Fork Coalition. None of this where we are at, none of these amenities, would exist without your work. And so I'm not here to argue with you. I'm here to compliment you and to say that at some point in the future I think a concession is necessary, and I think it should be necessary now.”

- **Comment 98.14.** “E. Community Requests to Restore Upper Silver Bow Creek. Similar to the previous comment, AR anticipates that some public comments will suggest that EPA, the State, BSB County, and AR have dismissed and/or failed to adequately consider community requests and desires relating to restoration of SBC, particularly those presented by the Restore Our Creek Coalition (ROCC). In 2016, ROCC presented the community with their vision for the creek corridor. ROCC’s plan outlined three main tenets: remove tailings from the Silver Bow Creek corridor, build a park, and partially restore the wetland and riparian areas by constructing a creek channel that is lined to separate and “protect the restored creek and wetlands from potential recontamination by groundwater,” and by adding riparian vegetation and trails to the creek corridor. See ROCC Vision at pp. 80, 84, 86, 92.

“EPA, the State, BSB County, and AR have individually and collectively met with ROCC members many times since 2016 to listen to their concerns and desires and discuss ways to incorporate ROCC’s ideas into the proposed remedy. If the remedy modifications identified in the Proposed Plan and the related land-use plans (which would become part of a final CD) are adopted, several of the items ROCC envisioned will happen. As described in the Proposed Plan, buried tailings would be removed from the majority of the creek corridor. And if the associated end-land-use plans are adopted as part of a final CD, large areas of barren land would be transformed into areas planted

with native vegetation, interconnected with new and expanded green space adjacent to the riparian corridor formed by Blacktail and Silver Bow Creeks. Although the BMPs that manage and convey storm water from Butte Hill are not a creek, the proposed remedy would configure the stormwater basins to look like a series of landscaped wetlands that will be an attractive community amenity while meeting the primary objective of improving water quality, if operated in the manner proposed by AR. Further recreational benefits would be provided by a fishing pond, and significant portions of Blacktail and Silver Bow Creeks would be remediated and reconstructed. AR also comments that it (as well as the other CD parties) understands and appreciates ROCC's desire to create a segment of Silver Bow Creek that would begin at Texas Avenue and continue down to the confluence with Blacktail Creek. However, there are practical and technical limits to what can be achieved in this area. Where a creek once existed, a mine has been developed and a city has grown. There are multiple landowners, buildings, streets, pipelines, utilities and other infrastructure, including the storm water system required as part of the remedy, throughout this area. Further, there are no headwaters to provide a source of water for a restored, natural creek. It is not feasible to use the remedy to return this area to the condition it was in 150 years ago, before mining began and before a city was built on top of it.

“If land is identified and acquired and infrastructure could be moved, a lined stream compatible with and not impairing or impeding the function of the remedy, could be constructed by others, potentially beginning at Casey Street. Any stream in this area would have to be lined to keep metals in groundwater out of it, and to allow the necessary groundwater capture-and treatment system to function effectively to protect Blacktail and Silver Bow Creeks. The concept of a lined creek is not part of the Proposed Plan as it would not be done for remediation purposes, but the remedy design includes an area that is set aside for the potential construction of this project, if the State of Montana and the community want to provide funds for this purpose and to operate, repair and maintain such a feature as a community amenity. AR understands that EPA is considering funding a technical assistance grant for a conceptual feasibility study for a lined creek in the SBC corridor, which would be overseen by CTEC, in coordination with ROCC and other community members. If this occurs, this EPA grant would satisfy another of ROCC's requests.

The community of Butte is very important to AR, and we are part of the community. AR acquired The Anaconda Company in 1977 and merged with it in 1981, and AR’s employees and contractors have been working and living in Butte and surrounding communities with their families since that time. The company is dedicated to working alongside EPA, BSB County, and the State to implement a final environmental remediation and clean-up plan that will protect human health and the environment, while providing additional benefits to the Butte community.”

### **2.27.1.2 EPA Response**

Support for the remediation of Silver Bow Creek below its confluence with Blacktail Creek as described in the proposed plan is noted, including additional contaminated groundwater capture in these areas and the addition of significant stormwater controls to protect surface water quality in this body of water and Blacktail Creek. EPA notes Atlantic Richfield’s extensive work with Restore our Creek Coalition and other community groups to develop and voluntarily commit to the implementation of a robust end land use plan for Silver Bow Creek above its confluence with the Blacktail Creek area.

As for the stormwater control features required by the BPSOU Record of Decision Amendment, the amended Record of Decision requires the implementation of large stormwater detention/retention stormwater control basins in the SBC-Above the Confluence area. Two areas with mine wastes—the Diggings East and the Northside Tailings—will be excavated from the ground surface to the high water table elevation within the most recent three year period and the stormwater basins will be installed in those areas. Any tailings, waste or contaminated soils excavated will be transported to and disposed in a repository. The basins will be lined to prevent infiltration of stormwater to groundwater. These remedy components are necessary to address the environmental threats from mine waste-contaminated stormwater that runs off Butte Hill during storm events into Blacktail Creek and Silver Bow Creek below the confluence. These threats were identified as unacceptable environmental risks in the ecological risk assessment prepared for the BPSOU site. The basins will hold significant volumes of contaminated stormwater during and after storm events, allowing contaminants to settle out before the stormwater is released to Silver Bow Creek.



As noted above, Atlantic Richfield's end land use plans to be implemented voluntarily by the settling defendants will include park-like features in the area around these basins in accordance with community plans for the use of this area. The end land use features will be fully compatible with the stormwater control basins.

## **2.27.2 Against Proposed Plan**

### **2.27.2.1 Comment Summary**

Thirty-five comments were received that were against a proposed plan that did not include a replacement or reconstruction of the Silver Bow Creek above its confluence with Blacktail Creek because the existing channel will be utilized for moving contaminated stormwater to the stormwater treatment basins. Most of the commenters want a meandering creek from Texas Avenue to where it joins with Blacktail Creek as it historically existed. Some commenters thought that a meandering creek in the entire corridor from Texas Avenue was not possible owing to private land ownership but that treated water from the Butte Mine Flooding Operable Unit could be discharged farther downhill near the Stokes property and that flow could be a water source for a new creek channel that would enter Blacktail Creek. Commenters also requested that the 2020 BPSOU Record of Decision Amendment include language that is supportive of the Restore Our Creek Coalition's vision for a new creek channel. Several people requested that a feasibility study on creek construction be conducted.

- **Comment 6.1.** "As a decades long resident raising my family in Butte, thank you for the efforts in finally cleaning up the Silver Bow creek corridor in Butte. It has been a long time coming but the people of Butte deserve a naturally flowing, actual creek like the one that was there before mining devastation. I strongly oppose the plan to create a lined "water feature" because this is NOT restoration and not an acceptable replacement for the headwaters of Silver Bow creek. While I appreciate the boardwalks, recreational buildings, park features, amphitheatre, and fish ponds, I feel these are a diversion from the fact that the EPA is not willing to restore our creek. I'd rather see a natural creek than all the other man made features for the sake of our environment. The people of Butte have suffered endless pollution and harmful man made environmental damage long enough, please restore Silver Bow creek to it's pre-settlement condition!"

- **Comment 7.4.** “B. Missing Piece of Creek. The BPSOU ROD Amendment does not address the portion of the creek from Texas Avenue to the Civic Center and Harrison Avenue. Please explain in the Responsiveness Summary what is planned for that area and how citizens might comment on those plans. E. Obstacles to a clean lined meandering creek. ... 11. The ROD Amendment indicates a clean lined creek may flow west of Harrison Avenue. There are both physical infrastructure and legal process (land ownership) impediments to be overcome for this to become reality. To prove to the people of Butte that the Proposed Plan Amendment does not preclude even this type of creek, EPA must require a feasibility design be completed and included in the forthcoming Consent Decree.”
  
- **Comment 8.4.** “I ask that the plan be modified to acknowledge not merely that the name of the existing channel is properly Silver Bow Creek, but that the plan explains to the residents of Butte what that means in terms of their expectations to see the creek restored. If it’s not a “real” creek, what is it? To address the ambiguities of this situation, I propose that, as an alternative, the lined channel that has been discussed be designated as a “temporary or provisional channel” of Silver Bow Creek that is designed to carry at least 2-3 cfs of clean water in a meandering path alongside the constructed stormwater wetlands. This would serve to implement bullet #2 on page 5 of the proposed plan (Remedial Objectives...), “Return surface water to a quality that supports its beneficial uses.” This connects stream restoration directly to the stated remedial objective. It starts us on a decades-long path to genuine long-term restoration, and provides legitimate cover to account for two channels of Silver Bow Creek (as was most likely the case when beavers, not bureaucrats, were managing the creek).”
  
- **Comment 20.2.** “For the record, while council authorized the executive branch’s request to submit their comments, I do not wholly agree with the comments and I believe there are several commissioners who feel the same. The folks in my district have voiced their opinions to me and as their elected representative, I must support them. They (and I) desire a full cleanup and restoration of the entirety of Silver Bow Creek beginning at Texas Ave. It is beyond me why the negotiating parties are resistant to what seems like a pretty simple “ask” in relation to a project with such a massive scope. Public opinion supporting the cleanup and restoration of Silver Bow Creek

has been very apparent over the years. It cannot and should not be ignored.”

- **Comment 22.7.** “4.1 The Proposed Plan should require a Feasibility Study to evaluate integration of the proposed stormwater controls and groundwater remedy with a restored Upper Silver Bow Creek. The Butte community has been clear in their goal to see a restored meandering Upper Silver Bow Creek. The proposed stormwater control system appears to many citizens to be a continuation of using the creek as the “Metro Storm Drain” under a different name. The community deserves to understand how the proposed remedy can be integrated with the restoration of Upper Silver Bow Creek. The proposed stormwater system appears to leave little room for the eventual restoration of an important state waterway.”
  
- **Comment 30.3.** “Restoring Silver Bow Creek as a flowing stream from Texas Avenue to the confluence at Blacktail Creek. The EPA has stated repeatedly that they cannot require the creek be restored as it is not remedy. As a protector of the health and “the environment”, it seems logical that we have sustained a lost environmental resource due to mining activity, i.e., a flowing Silver Bow Creek through the center of town. Before open pit mining began in the Berkley pit, the creek was flowing. After the pit began operations, the creek was severed and no water from it flowed through town again. As one definition of remedy is “to restore to the natural or proper condition; put right”, it seems that restoring the creek to its natural condition through town is in fact “remedy”. Thus, RESTORING THE CREEK LANGUAGE SHOULD BE INCLUDED IN THE ROD AMENDMENT. Also, statements by EPA officials have said that “the proposed plan would not preclude a creek in the corridor”. As a result, language needs to be included in the ROD amendment to assure that in fact a flowing creek in the corridor can be designed and accomplished in conjunction with all the other plans for the area.”
  
- **Comment 33.2.** “To bring Silver Bow Creek at the north end of Texas Avenue, below the water treatment plant is probably not feasible or reasonable given all of the private land between the north end of Texas Avenue and George Street. This would require the purchase of private properties, take a long time to acquire the private properties, and cost a lot of money that would be better spent on the new Silver Bow Creek corridor through Butte as envisioned by Restore Our Creek Coalition. The water treatment plant will be up and running this summer and

full-time treatment of Berkley Pit water will begin within 4 years. Water for Silver Bow Creek could originate from the Water Treatment Plant just east of Continental Drive. This water could then be piped to the vacant land west of Stokes Market. From there it should be a meandering, free flowing creek that enters Blacktail Creek upstream of the KOA campground. It is not unreasonable to think this cannot be done.

“Five million gallons of water equates to a flow of approximately 8 cubic feet per second (CFS). This would be considered base flow and would not vary throughout the year as a natural stream would do during spring runoffs and rain events. Eight CFS flow would be similar to the summer flows of Blacktail Creek. It is not unreasonable to think a meandering, free flowing Silver Bow Creek the size of Blacktail Creek in the summer could not begin on the vacant land west of Stokes and enter Blacktail Creek upstream of the KOA campground. This natural free flowing stream could provide the proposed park amenities Restore Our Creek has advocated for throughout their meetings with the EPA. The five million gallons of treated Berkley Pit water will meet Department of Environmental Quality water quality standards before being released into Blacktail Creek. Five million gallons (8 CFS) of treated water would also exceed the combined flows of Yankee Doodle Creek and Silver Bow Creek (estimated at a little more than 1 CFS) above the Yankee Doodle Tailings Impoundment.

“A feasibility study as requested by the Restore Our Creek Coalition (May 21, Montana Standard) would help provide answers to some of the questions Restore Our Creek has raised recently as well as some of the questions the public has raised at recent public meetings. Where the water comes from is simple. Five million gallons of treated Berkley Pit water needs to get from the Berkley Pit to Blacktail Creek within four years. How it gets there does not have to be complicated. The State of Montana and local environmental contractors have been removing streamside tailings, designing, and constructing streams downstream from Butte for over 20 year as part of the Clarks Fork River cleanup. Designing a meandering, free flowing creek that begins just west of Stokes Market and enters Blacktail Creek upstream of the KOA campground can provide a conduit for treated water from the Berkley Pit to Blacktail Creek, many of the amenities Restore Our

Creek has been advocating for, and the clean healthy environment the citizens of Butte and future generations deserve.”

- **Comment 34.3.** “2. It would be really great to make it possible for Silver Bow Creek to be restored into a flowing creek. At the very least, the plan should include a thorough evaluation of the possibilities to reestablish a creek.”
  
- **Comment 38.4.** “Water features in the Silver Bow Creek corridor are absolutely useless and truly an insult to the citizens of Butte. I have circled the features that an ARCO employee drew on the map showing the features on either side of the Silver Bow Creek channel. They are ditches that will have 1 cfs of water flowing back and forth. With evaporation there would be the need to add municipal water to keep them at 1 cfs of water. A waste of city water and a feature that most people will see them for what they are -Disney Land water feature that will not enhance the corridor and as there is not connection of the two features a meandering creek it will not make. Save the money and do a real creek from Texas Ave to the confluence. The State employee drew in the water feature behind the Civic Center. A ditch with 1 cfs of water in it that will need to have water added to keep it flowing does not a creek make. I feel that such a water feature is an insult to the citizens of Butte who have waited 30 years for a proper cleanup - one that is truly ascetically pleasing and truly can be enjoyed by all. After all this is the center of our city. People in Butte spend a great deal of time taking care of their yards. So too should the reclaimed areas need to be such that all will be proud to spend time enjoying. Butte should not be ashamed of the cleanup that is to occur throughout the city and it should be a thorough cleanup with Silver Bow Creek restored and all the tailings removed from the Northside tailings, Diggings East tailings, the Butte Reductions works contamination removed and the Blacktail Berm remediated and restored. The corridor from Texas Avenue to the confluence needs to be totally restore and remediated so that it is a proper channel for Silver Bow Creek.

“Water will be more abundant now that the pit must be drawn down a possible 150'. So obviously for the next 10 years there will be an over abundant source of water. ARCO plans to release this water at Casey Street flowing into a pipe that will carry it to the confluence and release it there. (It is questionable as to whether the pipe will be able

to service the 30 million gallons expected to be released from the polishing plant and the treatment plants.”

- **Comment 39.1.** “These material enclosed are from the documents that were published results of what ARCO did to the Silver Bow Creek Bed. They obviously decided to reconstruct the bed and prepare it to receive the effluent water from the Horseshoe Bend treatment plant to allow the water to flow through to the confluence. Obviously ARCO found the water that was needed to have the necessary flow for Silver Bow Creek. They projected a flow of 7 MGD or 10.8 cfs or 4,900 gallons per minute of water for the channel. ARCO also promised wonderful aesthetics surrounding the reconstructed channel. The reconstruction did not work as they projected so they abandoned the project. ARCO needs to redo the project so that Silver Bow Creek flows from Casey Avenue to the confluence as they had planned to do with the reconstructed channel they created. It's time for the EPA to call ARCO to accountability for the redo of Silver Bow Creek. Obviously they found the water in 2003 -2005 for their project. ARCO did this under remediation and hence tells all if you touch it you own it. Well ARCO owns it so they need to touch it and create Silver Bow Creek a free flowing creek throughout the Channel. Easements are already in place where private owners are involved. I have the copies of two and it is possible to get the others at the Court House.”
  
- **Comment 41.3.** “I believe not restoring Butte-Silver Bow Creek to a quality creek where children can play and fish and the adults of the community can enjoy the amenities of the cleanup, as well, I believe that this is a terrible decision. We need to make sure that we have a creek flowing through this community. That's what the people in this community have asked for. That's what the people in this community want. That's what the people in this community deserve. Nothing more, nothing else. And anyone that tells you, and I know there are people in this room that will do this, but anyone who will tell you that you cannot have a creek flowing through Butte is not telling the truth. They're not telling the truth. Because you can have a creek flowing through Butte again. And what's happening now in Butte is that for 100 years now, 100 years of mining, what's happened is we've dewatered the mine. We dewatered the mines to where we're down to 1,000 feet from sea level. That's where we are. Now what's happening is the water's returning. And the water's going to be the same exact amount of water that we had before mining began is going to be there

once again. So, yes, you can have a creek, EPA, yes, you can. And, yes, you should have a creek. And to not have one is wrong. It's just wrong.

“And, you know, there's absolutely no question under Superfund law, State of Montana and Montana constitution who's responsible. The Atlantic Richfield/British Petroleum Company is responsible. That's who's responsible. They're the number one responsible party. The reason they are is because they made the decision. They made the decision to close the smelter. They made the decision to let the mine flood and the Berkeley Pit flood. They made that decision. They made the decision to end mining in Butte. They're the ones who did that. They made that decision. They're responsible. The EPA should take them to task and make sure they do that. I know they're not going to, and then, probably, my effort here tonight is an effort in futility, but I want it recorded. And I'm offended to learn that any agreement in principle that ARCO'S been taken off the hook. And Sister Mary Jo mentioned this just a little bit ago. I'm offended. I'm offended that they've been taken off the hook for the cleanup of Silver Bow Creek from Casey Street back to Texas Avenue. I'm offended by that. I'm more offended by the fact that the EPA is now telling us, "If you don't accept this decision" -- and I feel sorry for the Council of Commissioners. I feel sorry for you guys, actually. Because what they're telling you is if you don't accept this rotten opinion or this rotten decision -- let me rephrase that. "If you don't accept this inferior decision, what we're going to do is give you a worse inferior decision." I know that's not good English, but that's what we're doing.”

- **Comment 46.3.** “Furthermore, when you talk about public input as being a justification for including things in this ROD change, some words, some language, some words that count in this ROD change, ROD amendment, the biggest thing that has been called for by public input is the restoration of the creek. Make no question, no bones about it, removal of the tailings goes hand in glove with restoring the creek. But restoring the creek was the driving force. So, we're kind of ignoring that when we talk about public input, and we shouldn't be doing that. From the get-go when the conceptual, the agreement in principle, came out, discussions about restoring the creek have been held repeatedly, over and over and over again. Assertions have been made by every agency. Martin, you were the first one that said nothing in this will preclude a creek. And from that point forward, at every

meeting, we had words that nothing in this will preclude a creek, nothing will stop a creek from being in there. But when we asked for an effort to prove those words, that they're more than just rhetoric, it hasn't happened. So, what we have is a rhetorical assertion about the creek being restored in this area. And we talk about public input. And the public input has been predominantly about restoring the creek. And, yet, continuing, not one document produced, not one document produced in this entire process, for 15 months, has ever had a restored creek shown in it, including those paid for by ARCO combined with Butte-Silver Bow, hiring the good folks out of Billings to come in here and design something. Just surprised the words "creek" don't appear. The words "creek" don't appear anywhere. Do we feel, do I personally feel, like maybe we're being kidded, we're being misled maybe? All we have is rhetoric. I've been working in the public arena for 50 years. There's got to be more than rhetoric. There's got to be some reality in it. The word has never appeared on a document, in terms of restoring a creek, going through Northside Tailings subject of this document, going through the Diggings East subject to this document. No reference to it. But public input supposedly has called for sediment ponds. A misrepresentation of that public input.

I'd like to address the issue that in the documents on the Major Substantive Change No. 3 and in the -- on Page 11, Table 2, the third item on Table 2, both of those refer to removing the mine waste to construct storm water controls. And then, in both places, in italicized print, it says this is being done in response to public input. I am pleased that the parties are responding to public input. But it's misrepresenting the situation to suggest that public input was about, significantly about, storm water basins. Now, maybe agencies want it and whatnot, but I have been to all the meetings with all the people of Butte, and I haven't heard a great big hue and cry about wanting to have storm water basins. Now, maybe they proved to be required for some reason or another, but they're not being asked for by a groundswell of opinion from the people of Butte. The public input was about the tailings, which happened, among other things, to make room for storm water basins. But they do more than that, so that when a lot of us were out there championing the cause of removing the tailings and restoring the creek, those two went together. And when the agreement in principle was announced and it was said that tailings were now going to be removed, we all applauded that. It was being done because they didn't belong -- they didn't need to stay there,



notwithstanding the contentions of the EPA and ARCO. By the way, the State always argued that they ought to be removed. But, notwithstanding the contention for all those years that they didn't have to be removed, suddenly the decision was made. And it was an enlightened decision, and we appreciate that. I personally appreciate that enlightened decision to remove the tailings. Okay. And it wasn't solely for the purpose of creating storm water basins. Because many of us that appreciate the removal of the tailings aren't that happy about the storm water basins. They may prove to be necessary, but I think it's misrepresenting -- the language misrepresents the circumstances.

“We need to have this creek recognized in the ROD, given that we're recognizing the importance of public input and we're dealing with the geography. So I suggest that the language that's going to be put in on Page 20 -- or Page 11, Table 2, and also on Item No. 4, moving mine waste, under the significant proposed changes, that we add some language in there, and that we add language that says that we will provide space -- maybe I'd rather say "allocate" -- allocate space to allow a future restored creek to run through the Northside Tailings and the Diggings East.”

- **Comment 49.4.** “So I hope that in your ROD that you can recognize that, indeed, the creek would start right there at Texas Avenue, or right there below the pit, because that's where the drainage is. And that's -- it's just kind of commonsense that that's where a stream would start and that's where it was. And we modified it. We modified it. And everybody accepted that. But I think that in the future, if we don't look at integrating at all, it would be a mistake.”
- **Comment 58.2.** “As I stated at the last meeting and wrote in my comments to the EPA, I believe it is totally wrong, it's wrong, that ARCO and British Petroleum Company has been taken off the hook for the cleanup of Silver Bow Creek from Casey Street to Texas Avenue. I believe it's totally wrong that we, as a community, and the Council of Commissioner members who are here tonight are being told, "If you don't accept this inferior cleanup we're going to give you a worse one." How about that? How crazy is that?”
- **Comment 66.1.** “What I brought here today -- I am coming as a member of the Silver Bow Creek Coalition. And we are the ones who worked hard to get the name of Silver Bow Creek restored. And I have brought with me three documents, and they date back to 2003. And it

was when -- And this was not during your time, Loren. You're off the hook. This 2003, when ARCO decided to take the metro storm drain and to redo it, and they changed the shape of the channel. They made a trapezoid out of it, and then they incised the bottom of that channel so that it would -- they call it a free-flowing brooks -- what is that? Help me Norman. Storm brook -- no. Anyway, it's not important. But they did that. And they did it so that the effluent from the Horseshoe Bend Treatment Plant could be released into that and flow down because the assumption was it was good water, it will be fine, but what they discovered is it wasn't fine, it became contaminated. But they did redo that channel that today is Silver Bow Creek. So, if that channel can be redone in 2003, I hunch with all the latest in engineering, etc., etc., that in 2019 it can be reconsidered as a possibility and that we could have a restored creek.

“The one thing that the plans promised, and there was one document that was a paper presented in Billings touting the wonderfulness of the plan and how it was carried out and the results, has about aesthetics, the wonderful aesthetics that would be created. And there would be grasses planted, and trees would be planted, and it would look wonderful. And I ask every one of you, tomorrow, to drive by Texas Avenue and look to the right and look to the left and follow it on down and continue looking to the right and to the left. And if you think that's aesthetically pleasing, excuse me. It is not. They were supposed to have planted several different varieties of wonderful trees. And there's a list in here. And I will have a set of these out there for anybody who's interested. Beautiful trees. There are none. There are a few pine trees, evergreens, or whatever they are, that are struggling to survive. We are in a city where people care about their yards and their homes, and they keep them up throughout the whole summer, and it's a wonderful city to drive around and just look at those yards. You don't want to drive around what they call the metro storm drain area because there are no aesthetics. And it's something that needs to be addressed. And do I have doubts? Well, I hope that's always going to be green and it's always going to have trees growing and it's going to be wonderfully aesthetical for people to gather in and to enjoy. I hope that's going to be true. But if there are not plans to carry through on the promises that are made, it won't happen. It won't happen. And so, we, the citizens of this community, we have rights. And one of those rights is to live in an environment that's safe, that's pleasant, that's aesthetically wonderful, and that is taken care of, and we have no health concerns

from the environment. We have that right. And we need to fight for that right if necessary. And, yes, looks good on paper, but so did the other plan, 2003. And I can assure you those trees and grasses, they're not there. I've gone out and taken pictures of the area and the riprap.”

- **Comment 74.2.** “2. The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek and participant with the Coalition’s public design workshops I would request that the EPA show conclusively that the remedy, tailings removal, points of compliance and land set-aside will not preclude the ability to restore Silver Bow Creek.”
- **Comment 77.2.** “The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek I would request that the EPA demonstrate conclusively that the remedy, tailings removal, points of compliance and land set-aside will not preclude the ability to restore Silver Bow Creek.”
- **Comment 79.3.** “2. Restoration of Silver-Bow Creek in its historic location behind the Civic Center.”
- **Comment 81.3.** “For the past twenty years, Sister Mary Jo McDonald has been also engaged in the good fight to get Butte cleaned up. Today, I wish to join her in demanding that “the cleanup of Silver Bow Creek and its corridor from Texas Avenue to Montana Street and through the slag Canyon westward” be done so as to leave Butte’s children a legacy of fresh water. AS she has expressed it, “A quality creek from Texas Ave. to Montana Street must be the number one goal!” And “No change to the water quality discharge standards should take place until all work has been completed and all tailings removed!” And that “The current remedy of cleaning and restoring the Creek from Texas Ave to Montana Street must be redone by Arco/BP so the Creek can be properly restored!”
- **Comment 82.2.** “The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek I request that the EPA show

conclusively that the remedy, tailings removal, points of compliance and land set-aside will not preclude the ability to restore Silver Bow Creek. The current remedy of cleaning and restoring the Creek from Texas Ave to Montana Street must be redone by Arco/BP so the Creek can be properly restored!”

- **Comment 83.1.** “2. Ultimately a restored Silver Bow Creek should meander from Texas Avenue to a point where it joins with Blacktail Creek. There is likely now and certainly will be sufficient water to support a creek. The best and most cost effective time to plan for the eventuality of a creek is to contour a creek channel at the same time that the tailings are being removed and the storm water basins constructed.”
- **Comment 84.2.** “We should not settle for anything less than a full restoration of Silver Bow Creek. It is not an insurmountable task and very achievable. So why there is such resistance is mind boggling. We must have a free flowing creek from Texas Avenue to Montana Street.”
- **Comment 85.2.** “The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek and participant with the Coalition’s public design workshops I would request that the EPA show conclusively that the remedy, tailings removal, points of compliance and land set-aside will not preclude the ability to restore Silver Bow Creek. I also feel that once the tailings are removed, the elevation of the restored Silver Bow Creek should remain low to help serve as a collection and drainage for the area.”
- **Comment 86.2.** “The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek and participant with the Coalition’s public design workshops I would request that the EPA show conclusively that the remedy, tailings removal, points of compliance and land set-aside will not preclude the ability to restore Silver Bow Creek.”
- **Comment 88.2.** “Silver Bow Creek should be restored to a free-flowing stream with public access to provide much needed open space

in Butte. The remediation should be comparable to the level of restoration already completed on the downstream stretch to Warm Springs Ponds. Please restore our creek!”

- **Comment 89.2.** “I want action taken to remove toxic waste in the groundwater floodplain. We support restoration of the historic creek into a free flowing stream with amenities to enhance the community’s quality of life.”
- **Comment 90.3.** “Again I support the restoration of the crick into a free-flowing stream with improvements that enhance the economic and quality of life in our own community---- Butte America, USA!!”
- **Comment 91.3.** “1. No detail has been provided on what will happen to the section of Silver Bow Creek between Texas Avenue and Casey Street. 2. There is limited detail in the Plan regarding removal of the Blacktail Berm and its end land use. Despite promises made and Community support, the Plan provides limited discussion on how it will support the Community's vision of a restored Creek. "Will not preclude" is not the same as "support".

“4. There has been no response on why the existing creek channel above the french drain cannot serve as the creek the Community has been adamantly requesting. Certainly a compromise could be found.”

- **Comment 92.1.** “To whom it may concern: My desire in this email is to share that I would like the first mile of Silver Bow Creek restored. It’s awesome to hear that the tailings along the route are being removed and that a park and greenway amenities are being constructed along the route. To me restoring the creek would just be part of that process. My prayer is that my voice and the others speaking to this issue would be heard and all diligence would be given to make this project happen to its fullest. Thank you for your time.”
- **Comment 93.1.** “I support the last mile of cleanup for Silverbow creek that should occur and be watered from Texas Ave. bridge to Montana St. This clean up should equal or be better than the lower cleanup as it runs through our City and should include amenities as per concept drawings in the Butte Silverbow courthouse rotunda. All contaminated tailings and waste shall be removed as to not cause problems in our city in the future. Recreational opportunities such as trails, fishing, exercise equipment and an amphitheater should be included. Grasses, trees and bushes should be placed as necessary to

create a pleasing atmosphere. Butte deserves this and no less being of the mine waste cleanup and Silverbow creek as being the headwaters of the Columbia River. As a child, I spent many days at the creek and also the Columbia Gardens. My memories are many and I believe a good resolution is necessary. Thank you.”

- **Comment 94.1.** “I am writing in support of the Restore Our Creek Coalition. I support cleanup of the Silver Bow creek from Texas Avenue to the area near the Chamber of Commerce in Butte Montana. I hope to see that the tailings will be removed along the creek. Also construction of a park and Greenway along the creek will greatly enhance environment within Butte Montana. It will provide opportunities for exercise and recreation, a positive health benefit for the community. Also restoring the streamflow volume will benefit wildlife habitat.”
- **Comment 95.1.** “I am supporting the removal of the contaminated mine/smelter tailings & a restored creek in Butte's historic Silver Bow Creek corridor from Texas Avenue to Montana Street. The cleanup should be equivalent to areas already restored downstream. I want action taken to remove the toxic waste which is leaching into the ground water in the flood -plain. I want our loved ones and children protected from the harmful tailings in this corridor. I support the restoration of our historic creek into a free flowing stream with amenities to improve the community's quality of life and economic vitality. There is too many people dying from cancer from Butte. The children that grew up here are now in their early 60's and MANY have cancer and are dying. Cleanup of the tailings and restoration of the creek must be comparable to the level of remediation/restoration work already completed in the creek's 26-mile stretch down-stream to Warm Springs Ponds.”
- **Comment 99.1.** “I support the removal of contaminated mine/smelter tailings and a restored creek in Butte's historic Silver Bow Creek corridor from texas Avenue to Montana St. The cleanup should be equivalent to areas already restored downstream.”
- **Comment 100.1.** “Thank you for the opportunity for the Restore Our Creek Coalition (ROCC) to provide comments on the proposed amendment to the 2006/2011 Record of Decision and amendment plan for the Butte Priority Soils Operable Unit. The mission of ROCC is to remove the tailings, restore the creek, and create a greenway for

public enjoyment within the Silver Bow Creek Corridor from Texas Avenue to Montana Street. ROCC envisions in its published plan for a Silver Bow Creek Headwaters Park that the upper Silver Bow Creek corridor would be used for a meandering creek and urban riparian environment. The proposed amendment focuses on addressing contaminated storm water concerns by committing most of the acreage in the corridor to storm water retention ponds. However, in response to ROCC's concerns about the future of the Silver Bow Creek Headwaters Park plan, the EPA repeatedly assured ROCC in public meetings that the proposed remedy will not "preclude the restoration of Silver Bow Creek.

“5. Proposed Boundary Changes and Land Set-asides (reserved areas). Publicly shared maps accompanying the proposed amendments identify the area where Silver Bow Creek Restoration should occur to meet ROCC's vision. ROCC requests assurances in the ROD that making this zone a Technical Impracticability Zone - will not preclude the ability to restore Silver Bow Creek. ROCC supports the identified reserved areas for future creek restoration in the Northside Tailings and Diggings East between Casey Street and Kaw Avenue as delineated in the maps accompanying the proposed amendments. Further, shared maps accompanying the amendments (specifically the maps showing end land use from Texas Avenue to Harrison Avenue) need to be amended so as to show a continuous, identified land corridor from Texas Avenue to Harrison Avenue that is dedicated to future use as a corridor in which to locate a Silver Bow Creek restoration.”

- **Comment 101.2.** “The Record of Decision identifies boundary changes and land set-asides that identify the area where Silver Bow Creek Restoration should occur to meet Restore Our Creek’s vision. As a supporter of a restored Silver Bow Creek, I would request that the EPA demonstrate conclusively that the remedy, tailings removal, points of compliance and land set-aside not preclude the ability to restore Silver Bow Creek.”

#### **2.27.2.2 EPA Response**

The lead agency for remedy is the EPA, and the lead agency for natural resource damage restoration (such as the Parrot Tailings Waste Removal Project) is the Natural Resource Damage Program, on behalf of the governor. EPA has been working with the Natural Resource Damage

Program, Montana DEQ, Butte Silver Bow, Atlantic Richfield, and community members and groups such as CTEC and Restore Our Creek Coalition to provide support in achieving the implementation of remedy, restoration, and end land use activities that are consistent with the vision for the Silver Bow Creek corridor above its confluence with Blacktail Creek.

The community has repeatedly voiced its concern that it wanted a replacement creek because the existing channel, Silver Bow Creek above the confluence, is now used for transporting contaminated stormwater to the new basins. However, clean water and contaminated stormwater cannot use the same channel without contaminating both waters. A lined creek may be constructed in this area at a later date, and that would require a liner according to EPA and Atlantic Richfield to limit infiltration to the groundwater to protect the contaminated groundwater remedy.

EPA's remediation authority under the CERCLA law is structured to address the release or threatened release of hazardous substances, pollutants, or contaminants. Requiring the construction of a meandering creek in an area where that does not currently exist is outside of that authority. EPA is addressing the release or threatened release of hazardous substances in this area by requiring the removal of mine wastes in the Northside Tailings and Diggings East waste areas and the construction of stormwater control retention/detention basins in those areas. These remedial activities are necessary to protect Blacktail and Silver Bow Creeks below their confluence from hazardous substance releases that would be harmful to fish and other aquatic life in those surface water bodies.

While EPA has determined that it does not have the CERCLA authority to require the corridor area to include a constructed creek in this area, it has taken several important actions that will ultimately lead to an area above the confluence available for such:

- EPA has worked with the community to obtain voluntary commitments from Atlantic Richfield for end land use development in this area that will include park-like features for use by the community, consistent with the community vision documents for this area. This end land use plan was released in May of 2019 to the public, and a revised version of that plan is included as part of the consent decree attachments. The end land use plan and the necessary remedial components that will be constructed in the corridor will include areas



that could support a lined, meandering creek should construction funding and water for flow become available. (The creek would be lined to prevent the surface water in the creek from infiltrating and impacting Atlantic Richfield's groundwater remedy by altering the local groundwater hydrology and/or mobilizing arsenic and metals from the underlying contaminated soils and further impacting the groundwater.)

- EPA awarded Technical Assistance Grant monies to the Silver Bow Creek/Butte Area recipient, CTEC, to review how such a lined, meandering creek could be constructed in conjunction with the proposed remedy. As the community continues to address the end land use of the corridor area, including the possible location of a lined creek, the many ideas given in these comments about the exact nature of the feature can be further discussed and decided upon.
- The State of Montana has agreed to set aside funds received from the BPSOU consent decree settlement that could earn interest over time and contribute as a match fund to the development of a lined creek in this area if land, water, access, infrastructure, and other issues are resolved.

The *Further Remedial Elements Scope of Work* (EPA 2018b), which is an attachment to the proposed consent decree, provides details about the planned remediation in these areas that will be required under the expanded BPSOU remedy, which is the result of the 2020 BPSOU Record of Decision Amendment. The expanded remedy will require the settling defendants to monitor, improve, and maintain the BPSOU subdrain groundwater capture facility that EPA believes has worked well to date to significantly reduce arsenic and heavy metal contamination in surface water during chronic stream conditions. The expanded remedy will also require the settling defendants to collect additional contaminated groundwater impacting the creeks and/or sediments. It will also maintain a robust groundwater monitoring system between Texas Avenue and Blacktail and Silver Bow Creeks, which is included in the sitewide groundwater monitoring plan. The expanded remedy also requires a diversion structure that will be installed in the upper reaches of Silver Bow Creek above its confluence with Blacktail Creek to divert contaminated stormwater from the channel to the Diggings East stormwater basin. The expanded remedy also requires the removal of mine waste materials in the vicinity of Diggings East and Northside Tailings waste areas to facilitate the installation of the stormwater

retention/detention basins. Atlantic Richfield has committed in its end land use plans, also released in May 2019, to voluntarily install park-like features and extensive vegetation in these areas. The expanded remedy also requires the removal of the contaminated floodplain materials in Blacktail Creek within the BPSOU surface boundary, including the Blacktail berm and the wetlands in this area and the installation of a contaminated groundwater control feature(s) in this area. During the remedial design process, remedial design draft plans will be available to the public as they are developed.

As for the status of Silver Bow Creek above its confluence with Blacktail Creek in terms of state environmental regulation, see the response in Section 2.26, Silver Bow Creek Legal Issues.

## **2.28 Stormwater Issues**

### **2.28.1 Monitoring**

#### **2.28.1.1 Comment Summary**

Four comments were received dealing with monitoring of stormwater discharge. There were suggestions of caged fish studies and requests for additional monitoring locations.

- **Comment 8.8.** “Finally, I don’t see in either the ROD or the proposed plan to modify it, any reality checks for the predictive modeling done for Silver Bow Creek’s viability throughout the drainage. Recent surveys of both aquatic organisms and fish populations downstream from Butte show disappointing rates of recovery of the entire waterway. I’d like to see the plan specifically incorporate FWP and DNRC oversight of the recovery process, including FWP’s “canary in the mine” technique of using caged fish studies (and comparable techniques for benthic invertebrates) during high flow events at various reaches of the stream to test the effects of potential exceedances on actual residents of the creek. Modeling is fine as a beginning, but the plan should engage the same state agencies that monitor the health of other waterways in the state to ensure that everyone’s on the same page about the status of stream recovery.”
- **Comment 22.2.** “1.1 CTEC believes that stormwater surges, passing through the Butte municipal sewage treatment plant and carrying elevated levels of COCs is a largely unrecognized CERCLA issue that should require a specific monitoring program and specific BMPs to address the problems as they become understood. In 2008, a Montana Fish Wildlife and Parks cage fish study correlated a storm event

passing through butte's treatment plant, copper levels exceeding the acute standard by an order of magnitude, and 100% mortality in caged westslope cutthroat (See Attachment A). The current surface water monitoring program is incapable of detecting potentially fish killing events. While the current monitoring program has demonstrated that the upgraded plant has substantially reduced metals discharge to Silver Bow Creek during normal flow conditions, what happens to metals levels during storm events is unknown. CTEC has two recommendations. The Surface Water Monitoring Plan, as attached to the Consent Decree or Order, should include monitoring the outfall of the sewage treatment plant. Monitoring should consist of sequential ISCO sampling that would be calculated to account for residence time in the plant. Additionally, the ISCO sampler at SS-07 should be moved downstream approximately ½ mile to ensure better mixing of Silver Bow Creek and treatment plant effluent. A Hydrolab survey at the current location demonstrates a clear lack of mixing (See Figure 1).”

- **Comment 25.5.** “In addition, Trout Unlimited supports additional monitoring of contaminants at the Butte municipal sewage treatment plant outfall during storm events to determine if additional action is required to protect Silver Bow Creek from this stormwater pathway.”
- **Comment 29.4.** “With respect to monitoring, CFC supports the comments submitted by CTEC that request expanded and/or relocated surface water monitoring stations in order to better understand surges in heavy metal levels during storm events. Ideally, as the understanding of standard Clark Fork Coalition exceedances during storm events is better understood, we can better understand and prevent negative impacts to aquatic life in Silver Bow Creek.”

#### **2.28.1.2 EPA Response**

EPA appreciates these comments and will consider all of the suggestions as more detailed surface water monitoring plans are developed during the remedial design process. The remedial actions addressing stormwater under the expanded remedy will significantly change the way stormwater affects Silver Bow Creek and Blacktail Creek within BPSOU. The settling defendants will be required to collect performance samples to monitor the performance of the remedy components at the western edge of the BPSOU where Silver Bow Creek leaves the operable unit. The locations where the performance samples will be collected will be determined during the

remedial design, but it is anticipated the locations initially will include the Metro treatment plant. Regarding the location of SS-07, see the response to Comment 22.13 at Section 2.33 Technical Text and Figure Changes for the 2020 Record of Decision Amendment.

## **2.28.2 Other**

### **2.28.2.1 Comment Summary with EPA Responses**

Seven comments were received that raised issues with the need for contingent measures to verify the protection of BPSOU surface water from stormwater events if the expanded remedy addressed in the 2020 BPSOU Record of Decision Amendment does not result in the protection of the aquatic environment. Specific comments disagreed with EPA's proposal to eliminate a constructed stormwater treatment plant as a contingency should water quality performance standards identified in the amendment not be met. Many other comments in this category address the appropriateness of the proposed remedial action addressing contaminated stormwater, EPA's authority to require these measures, and the complication resulting from other sources of contaminants of concern other than historic mine waste in an urban environment. Unlike the rest of the document, where it is possible to answer several comments with one response, these more specific comments are answered individually in a series of comments and responses that follow.

- **Comment 22.2.** "1.3 The amended ROD should be clear that contingency measures will be required if the stormwater controls identified in the Proposed Plan do not meet standards, including the proposed waived to standards. The Proposed Plan removes active stormwater treatment as a contingency measure from the ROD, leaving Silver Bow Creek without a guarantee that it will be safe for aquatic life. EPA's November 2018 Draft Surface Water Technical Impracticability Evaluation Butte Priority Soils Operable Unit Silver Bow Creek Butte Area NPL Site Butte (TI Waiver) does not address that it is technically impracticable to treat stormwater using active treatment and we do not believe it is impracticable. It is EPA's charge to protect the environment and we currently have no information providing a reasonable guarantee that the proposed stormwater basins will protect the creek. The amended ROD should be clear that when complete the remedy will meet federal water quality standards. After the compliance standard determination period is complete, protectiveness of the final water quality standards should be demonstrated with caged fish studies."

**EPA Response.** The expanded remedy selected in the 2020 BPSOU Record of Decision Amendment is EPA’s and Montana DEQ’s best effort at selecting and requiring a protective remedy for BPSOU that will meet performance standards identified in the BPSOU ROD. EPA will require extensive monitoring of BPSOU surface water to measure whether the remedy is protected and meets performance standards. EPA enforcement mechanisms, including consent decree provisions, allow EPA to require certain specified additional work to verify protectiveness and performance standard compliance if that is necessary.

As the proposed plan explains, an active stormwater treatment plant contingency, contained in the 2006/2011 BPSOU Record of Decision, is not practicable in Butte. The conclusions of the TI analysis indicate that total recoverable copper and zinc are unlikely to meet acute water quality performance standards (i.e., Circular DEQ-7 standards) during most wet weather flow conditions, regardless of the measures implemented to control the contaminants of concern (including treating storm water at a conventional water treatment plant). As stated in the 2020 Record of Decision Amendment, EPA believes that capture and conventional treatment of storm water would be impracticable owing to severe space limitations within the BPSOU and would not necessarily be more reliable or effective than the storm water basins and other components of the storm water BMP program. The basins will treat storm water by settling of suspended solids, making this contingency unnecessary.

- **Comment 98.3.** “Surface Water Remedy/Storm Water BMPs The Proposed Plan identifies several modifications that would expand the existing surface water remedy at the BPSOU, which AR expects will further improve surface water quality and reduce the magnitude and frequency of exceedances of standards during storm (wet weather) events. A primary element of the modified surface water remedy would be a Fourth and final round of stormwater best management practices (BMPs), involving design and construction of final storm water controls at Buffalo Gulch and Grove Gulch, and new storm water basins (including significant excavations) at Northside Tailings and Diggings East.

“EPA acknowledges this will “be the final round of iterative BMPs called for in the 2006 ROD.” Proposed Plan at 9. AR agrees. These final BMPs will effectively capture and settle heavy metals in melting

snow and storm water, which come from many sources, including historic mine waste sources; exposed rock outcroppings and soils that contain high levels of naturally occurring minerals; and urban sources of metals found in construction materials, consumer products and municipal waste, all of which presently flow into SBC in stormwater. All practicable BMP technologies, including the first three BMP cycles in place, now have been assessed, and AR believes the Fourth and final cycle of BMPs will provide a comprehensive and technically feasible way to safely manage storm water with elevated levels of metals from a combination of natural sources, mining, and urban activity as part of a holistic approach to management of stormwater.

“Although the BMPs and associated excavation work are expected to support further surface water quality improvements, the Butte community will continue to grow, and future urban development may have increased impacts on water quality in Silver Bow and Blacktail Creeks. These impacts in streams within the watershed are not unique to Butte. And there are many sources that may increase metals loading to surface waters in the BPSOU, including the past use of chat and other mineral processing waste by the Montana Department of Transportation to construct Interstate 90; similar past uses of mining and mineral processing waste to construct municipal streets, buildings and infrastructure in BPSOU; metal sources located upstream of the BPSOU boundary that flow into Blacktail and Silver Bow Creeks; active mining operations that impact areas releasing snow melt and storm water run-off to Silver Bow Creek; and use of commercial products containing copper, zinc, and other contaminants of concern, such as brake linings, metal roofing, and other products like copper piping and wires, in areas that release snow melt, storm water run-off, and/or groundwater to Silver Bow Creek. The Proposed Plan does not fully recognize the existence and uncontrolled nature of these metal sources in and around the BPSOU, or their on-going contribution of metal contaminants to surface water that flows through BPSOU. Yet these ubiquitous sources of metals impact surface water quality and the technical feasibility of achieving applicable surface water quality standards. The Amended ROD should acknowledge and describe the impacts of these other metal sources at the BPSOU; explain how the remedy seeks to capture and remove metals from multiple sources in storm water settling basins; and explain how legal and technical limits on EPA’s ability to use CERCLA to control all metal sources may

affect the ability to achieve compliance with in-stream surface water standards.

“As it has in the past, AR maintains that EPA and DEQ cannot lawfully require AR to capture all sources of metals that enter storm water and surface water in the BPSOU, to achieve numeric surface water quality standards in Silver Bow Creek. Some of these sources are exempt from remediation under CERCLA, including naturally occurring minerals (42 USC § 9604(3)(A)) and metal roofs, pipes, and other things that are part of a residential, commercial or community building or structure (42 USC § 9604(3)(B)). Some of these sources are not attributable to AR or its predecessors, including metals in consumer products used by third parties that have no relationship to AR (42 USC § 9607(b)(3)), and metals in non-point sources of storm water. Nonetheless, AR supports comparison of surface water in Silver Bow Creek with surface water quality standards as an appropriate metric for assessing the effectiveness of the surface water remedy and achievement of remedial action objectives (RAOs). AR anticipates that management of stormwater in the manner identified in the Proposed Plan will further improve water quality above and beyond the improvements that have been achieved through past remedial actions implemented since the 1990s, and beyond those which can be required under CERCLA. Accordingly, notwithstanding the limits of EPA’s authority under CERCLA to require AR to control and remediate all sources of metals in the urban environment as part of the BPSOU remedy, AR supports the storm water BMPs and modified surface water compliance assessment methodology in the Proposed Plan as part of a comprehensive approach to reducing all sources of metals in Silver Bow Creek, so long as AR, EPA, the State, BSB, and potentially other parties reach a final CD to implement the Proposed Plan on terms that are acceptable to all parties.”

**EPA Response.** In Section 2.2 of the TI evaluation report (EPA 2018a), EPA provided a description of the “source of contaminants” within the BPSOU. These included non-mining waste sources from urban areas like Butte. However, the majority of contaminants of concern releases within the BPSOU to surface water and groundwater are due to the extensive historical mine waste sources from Butte’s rich mining past.

The 2020 Record of Decision Amendment will include remedial elements that will be implemented to improve water quality in the

receiving stream(s) that are fully within EPA's CERCLA authority. If non-mining sources can be clearly identified and bifurcated from mining sources, then control of those sources is not required. However, where mining sources contribute to degradation of surface water quality, the settling defendants are obligated to address those sources even if combined with non-historical mining-related sources.

Finally, EPA and Montana DEQ will work with the responsible parties, including Atlantic Richfield, to account for upstream or non-historical mine waste sources during monitoring and future evaluations in order to address the issues raised by Atlantic Richfield in this comment. See Attachment A to the statement of work, which is Appendix D of the consent decree.

- **Comment 98.8.** “B. Additional Comments on the Expanded Surface Water Remedy. The surface water remedy components of the Proposed Plan include: significant excavation of mine wastes in upper SBC, Blacktail Creek, and the BRW area; rerouting a portion of SBC away from the Slag Canyon through the BRW area; design and construction of largescale BMPs for storm water control; and additional groundwater control and capture. See Proposed Plan at 9 & 11, tbl. 2. AR will commit to complete these surface water remedial actions as part of a final CD negotiated and agreed to by all parties, and on that basis generally supports these elements of the Proposed Plan. That said, it is AR's position that EPA does not have authority under CERCLA to unilaterally order AR to perform some of these proposed actions because: (1) they have been selected to achieve RAOs based on ARARs that should not apply to the surface water remedy (i.e., in-stream compliance with Montana DEQ-7 numeric surface water standards); (2) are not necessary to achieve the RAOs identified for the remedy; and/or (3) otherwise could not be required by EPA and/or DEQ pursuant to applicable law. Examples of such actions include EPA's additional proposed control of groundwater discharges to surface water and the proposed large-scale Fourth and final round of BMPs, both of which are discussed in this comment.”

**EPA Response.** As noted above, the remedial elements required in the record of decision amendment are necessary to protect human health and the environment within and downstream from the BPSOU and/or to meet performance standards identified in the amendment. These actions are fully within EPA's CERCLA authority. Atlantic Richfield does not give a reason why ARARs described in the 2020



BPSOU Record of Decision Amendment “should not apply to the surface water remedy,” but section 121(d) of CERCLA, 42 U.S.C. § 9621(d) requires CERCLA remedies to achieve compliance with selected ARARs, including state and federal surface water standards. In short, the remedy selected in the 2020 BPSOU Record of Decision Amendment is fully enforceable. EPA looks forward to working with the responsible parties, including Atlantic Richfield, in a responsible and efficient manner to implement the selected remedy through a CERCLA consent decree.

- **Comment 98.9.** “Surface Water Remedy RAOs. Under CERCLA and the NCP, EPA has authority to identify and require remedial action to the extent necessary to meet RAOs for surface water, including actions to control discharges of ground water to surface water to meet surface water objectives. See, e.g., 40 C.F.R. § 300.430(e)(2)(i), (e)(9)(iii); Preamble to the National Oil and Hazardous Substances Pollution Contingency Plan, 53 FR 51394, 51426-27 (Dec. 21, 1988); EPA, Guidance for Conducting RI/FS Under CERCLA, §§ 4.2, 4.3.1.1 (Oct. 1988). The 2006 ROD established compliance with in-stream surface water quality standards as a RAO for the surface water remedy, which the Proposed Plan leaves unchanged (except for the limited up-front waivers). See Proposed Plan at 5. As noted above, AR does not agree that the in-stream surface water quality standards are an applicable, relevant and appropriate standard for a storm and surface water remedy for historic mining waste in the city of Butte, because there are many other sources of metals that affect stormwater quality at the BPSOU, including other point sources and non-point sources all across Butte Hill and the rest of BPSOU, and in an urban watershed in a city of approximately 35,000 people it is impossible to use a remedy for historic mining waste to prevent all of the diverse sources of metals from entering stormwater that flows into surface water streams in BPSOU. For these reasons, compliance with such in-stream standards should not be a RAO for the surface water remedy.”

**EPA Response.** See the responses to comments 98.3 and 98.8 above.

- **Comment 98.11.** “Regulation of Storm Water Discharges at BPSOU. The Proposed Plan describes use of large-scale BMPs to capture storm water from drainages off Butte Hill and to the south of SBC (e.g. Grove Gulch and Uncaptured Surface Flow Areas) that otherwise would reach SBC and impact surface water quality. Design and construction of the BMPs at Diggings East and Northside Tailings

require significant removals of mine waste to accommodate these new basins. The scope of the proposed BMPs that are part of the Fourth and final cycle of the Proposed Plan's strategy for stormwater management at the BPSOU is unprecedented and goes beyond what EPA could unilaterally require AR to perform under its CERCLA remedial authority."

**EPA Response.** Environmental impacts from contaminated stormwater to Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek are significant, and the data clearly show that in-stream ARARs during storm events and at times during baseflow within the creeks of BPSOU are not in compliance with performance standards as a result. As noted above, the actions required in the amended Record of Decision are in response to these conditions and clearly within EPA's CERCLA authority.

- **Comment 98.11a.** "An important element of the surface water/storm water remedy, and a predicate for investment of the resources required to design and construct the Fourth and final cycle of BMPs, is the surface water TI waiver identified in the Proposed Plan. See Proposed Plan at 6-8. As noted in its opening comments, AR agrees the immediate waiver of certain in-stream performance standards and adoption of replacement standards is appropriate and supported by CERCLA, EPA guidance, and the TI evaluation, and therefore fully supports adoption of these changes in the Proposed Plan. Although AR does not agree with all of EPA's conclusions drawn from modeling completed to support the TI waiver, AR fully supports the Proposed Plan process for adoption of replacement standards (based upon post-construction monitoring) as consistent with CERCLA and EPA guidance.

"On the other hand, AR does not agree with EPA's suggestion that a TI waiver is only warranted when a technology is shown to be "impossible to carry out." Proposed Plan at 6. Neither the NCP nor any of EPA's guidance on evaluating "technical impracticability" supports this "impossible to carry out" standard. To the contrary, EPA Guidance makes clear that TI determinations should be based on engineering feasibility, reliability and, where appropriate, cost considerations. See U.S. EPA, Guidance on Evaluating the Technical Impracticability of Ground-Water Restoration, at 9-1 (Sept. 1993); see also NCP Preamble, 55 FR 8748 (Mar. 8, 1990). Use of this language, particularly in quotation marks, is misleading. AR requests that EPA

revise this language and any other discussion of the TI standards to use language from EPA Guidance—e.g., “technically practicable from an engineering perspective,” with reliability and cost considerations taken into account.”

**EPA Response.** EPA used the quoted language in the proposed plan to help explain in laymen’s terms what a TI waiver under the CERCLA law was based on. EPA agrees that under CERCLA law, regulations, and EPA guidance, a TI waiver is based on engineering feasibility, reliability, and where appropriate and to a lesser extent, cost considerations. EPA further agrees that the correct and complete term for a TI waiver is technically practicable from an engineering perspective. EPA acknowledges Atlantic Richfield’s support of the up-front and contingent in-stream surface water ARARs provided for in the 2020 BPSOU Record of Decision Amendment.

- **Comment 98.11b.** “Another proposed change to the storm water remedy is elimination of the contingency in the 2006 ROD to install a conventional treatment plant for chemical treatment of storm water in Butte in the event surface water standards could not be met. See Proposed Plan at 9, 11; see also 2006 ROD at 12-9. The 2006 ROD requirement for conventional treatment of storm water also is unprecedented, and neither EPA nor the State has authority to require AR to implement this type of city-wide treatment of storm water under the federal Clean Water Act or the state counterpart. Moreover, as EPA states in the Proposed Plan, storm water capture and treatment is impractical and would not be more reliable or effective than the proposed Fourth round of BMPs, and therefore this contingency is both unreasonable and unnecessary. See Proposed Plan at 11. For all these reasons, AR supports both the proposed storm water BMPs (as agreed upon and incorporated into a final CD) and the elimination of conventional treatment of stormwater as a contingent remedy element.”

**EPA Response.** See response to comment 22.2, above.

- **Comment 98.11c.** “The federal Clean Water Act does not support enforcement and/or regulation of storm water non-point source discharges and BMPs in the same manner as point source discharges. See, e.g., *Ecological Rights Found. v. Pac. Gas & Elec. Co.*, 713 F.3d 502, 508 (9th Cir. 2013). Under the federal Clean Water Act, EPA generally defers regulation of nonpoint source pollution to states, and

DEQ oversees the Clean Water Act program for management of stormwater discharges to surface water in Montana. The scale and scope of the storm water BMPs described in the Proposed Plan are unprecedented in the State of Montana. AR has not found any other urban area in Montana where DEQ has required storm water BMP basins similar to those described as part of the Proposed Plan. The State does not consistently apply its stormwater program requirements to manage urban stormwater runoff to protect a receiving stream in the manner described in the Proposed Plan. The approach to storm water management in this Proposed Plan is unique to the City of Butte. Although AR believes the proposed storm water basins go above and beyond the scope of remediation that AR can be required to implement to meet state water quality goals, these BMP basins will further mitigate the impact of the many disparate sources of urban stormwater within the City of Butte on state waters, and AR supports these elements of the proposed remedy if they are implemented under a final CD that is negotiated and agreed to by all of the CD parties.

“How the BMP basins are operated will determine the effectiveness of treatment. Under whatever mode of operating parameters that are ultimately adopted, if surface water standards are not met when the Fourth cycle BMPs are in place, during wet weather events or normal flow events, the replacement standards identified in the Proposed Plan will become the performance standards. AR supports this process for further adjustment of in-stream performance standards as part of a final CD to design, construct and operate the proposed storm water BMPs on terms that are negotiated and agreed to by all of the CD parties.”

**EPA Response.** EPA and Montana DEQ disagree that the requirements of the 2020 BPSOU Record of Decision Amendment for control of contaminated stormwater is either unprecedented or outside of CERCLA or Comprehensive Environmental Cleanup and Responsibility Act authority. Data clearly show that noncompliance with in-stream surface water standards within BPSOU is ongoing, and CERCLA requires remedial actions to meet ARARs, including in-stream ARARs selected in the amendment.

EPA agrees with Atlantic Richfield that who operates retention/detention basins after they are constructed will determine the effectiveness of the remedy. That is why EPA believes all parties

should examine and analyze such issues carefully as remedial design is implemented.

The *Surface Water Technical Impracticability Evaluation Report* (EPA 2018b) included and evaluated a list of technical elements that EPA, Montana DEQ, and the responsible parties thought were technically practicable. Owing to the conclusions of the report, a narrow TI waiver for surface water under specific flow regimes and only for specific contaminants of concern is adopted. The up-front TI waiver will apply to the State of Montana DEQ-7 acute aquatic life standard for total recoverable copper and zinc only and only under wet weather conditions.

- **Comment 98.23.** “I. Page 7, Column 1, First Full Bullet. The Proposed Plan states that “[p]otential post-construction waivers” of other Montana DEQ standards (acute performance standards for cadmium, lead, and silver; chronic performance standards for copper and lead; and dissolved acute performance standard for copper and zinc) could be waived and replaced, as necessary, based on post-remediation monitoring and compliance assessment demonstrating the standards are not being met. See also Proposed Plan at Page 7, Column 2; Page 8, Exhibit 4; Page 8, Columns 1 & 2; Page 10, tbl. 1. AR agrees that additional waivers and adoption of corresponding replacement standards, as identified in Table 1 of the Proposed Plan, may be necessary after remedial construction is complete. As discussed above, AR supports agreement upon a surface water compliance assessment methodology to support the adoption of Replacement Standards under the Amended ROD, as part of a final CD to implement the Proposed Plan on terms that are acceptable to all of the CD parties, and that also recognize that surface water is impacted by metal sources that are not related to historic mining and that are beyond the scope of the CERCLA remedy.”

**EPA Response.** EPA acknowledges Atlantic Richfield’s comments and will work with all responsible parties on efforts to monitor and assess in-stream performance standard exceedances if they occur post-remedy construction. EPA also acknowledges Atlantic Richfield’s support for the contingent in-stream surface water waivers described in the 2020 BPSOU Record of Decision Amendment.

## 2.29 Stormwater Retention/Detention Basins

### 2.29.1 Supports Proposed Plan

#### 2.29.1.1 Comment Summary

Eight commenters expressed support for the use of retention/detention basins as a tool in controlling stormwater at the BPSOU.

- **Comment 5.2.** “The series of retention/detention ponds is a particularly good part of the plan--dealing with stormwater and runoff from contamination on the hill is a major concern for Butte. Not only does the plan address these problems using the best science, but it will afford the community with a huge public park area right in the middle of town with many public amenities and recreational opportunities. This is the legacy that one would hope Butte would treasure after the long Superfund process on this area.”
- **Comment 15.3.** “I believe the additional add-ons of several storm water management basins will significantly change the storm water hydrograph in Silver Bow Creek, and will have good success in removing more storm water sediments, and will ultimately complete a fairly exhaustive list of remedies completed on the Butte Hill.”
- **Comment 25.4.** “Storm Water Controls. TU [Trout Unlimited] supports implementation of robust stormwater controls to protect surface water quality in Silver Bow Creek during storm events. Stormwater BMPs for metals support the design and implementation of retention ponds (versus detention structures) to optimize metals removal from stormwater runoff in Butte and be most protective of fish populations downstream.”
- **Comment 29.2.** “Stormwater Retention Ponds/Monitoring. In general, the CFC remains an advocate of the stricter state water quality standards based on total recoverable concentrations in lieu of federal water quality standards. Nonetheless, where, as here, a TI waiver is deemed appropriate for storm water events, CFC supports the use of stormwater controls, such as retention ponds, to capture and minimize runoff contamination. The use of retention ponds has proven effective in removing/minimizing contaminant levels in adjacent drainages (such as Missoula Gulch), and, as proposed, these efforts should be expanded for the remainder of Upper Silver Bow Creek.”
- **Comment 40.2.** “I think that, for example, one thing it does that we've talk about for a long time in this community is provide some kind of

systematic addressing of the storm water runoff issue. It's not perfect. But considering where EPA was 10 years ago, where EPA didn't countenance settling ponds or retention ponds and wanted to rely on other measures that are just not effective, public education, and so forth, I think that that has come a long way.”

- **Comment 55.3.** “So, for the longest time, when I worked for DEQ, storm water was my biggest issue. I was -- it is far exceeding standards and it was the biggest problem for Silver Bow Creek. One thing we did learn about storm water is that the storm water ponds on Missoula Gulch were very effective. As a matter of fact, those ponds will remove up to 95 percent of the total recoverable copper just by holding the water back for a while. It gets released once it's pushed out by maybe the next series of storms. That's a very effective system. And it's passive treatment. It's kind of got some elegance to it really.”
- **Comment 63.2.** “And, just looking at this, kind of taking back on Joe's comments earlier, it seems to me like the preferred and the strategic sort of push in this map that's up on the screen right now is to remove tailings and replace them, which, you know, gets at the groundwater issue, and replace them with catch basins, we have retention, detention, settling, whatever you want to call them, on the surface. And that makes sense to me from a logical point of view because you're getting a two-fer. One, you're limiting a source of groundwater contamination as flow into the creek; and, two, you have available real estate up on top where those tailings used to be that allow you to develop, you know, catch basins.”
- **Comment 65.6.** “I'd like to thank the Clark Fork Coalition, Restore Our Creek, others. I feel like you guys have been heard. I see a lot of concessions on the screen. And I really believe that without your guys' persistence and pushing we wouldn't see a design that we see today. I think we would see a lot more square storm water ponds, like what they're legally required to put in. I believe that the plan is a concession of what the Clark Fork Coalition and ROCC have requested while obtaining the remedial design objectives and obtaining the most effective design to prevent storm water trigger pollutants from reaching the stream. And we heard that from other commentators earlier. This is the most effective remedy storm water ponds.

“The space required to create these ponds and the look-feel-touch components that we're asking for can only be obtained by substantial

excavation of the proposed order on the screen, the removal particularly of the Northside Tailings and Diggings East. I believe it should be made very clear that their removal is not legally required by the ROD, or the Record of Decision. EPA has no grounds to force this as being volunteered to us to accommodate our requests. I am grateful for that. And as there is no legal pathway for anyone to be forcing ARCO to do this, they're doing this in good faith as a concession in this negotiation with our community.”

#### **2.29.1.2 EPA Response**

Support for the retention/detention basins is noted. EPA believes that the basins will play a valuable role in creating a remedy that is protective and sustainable for the long term.

As noted above, the 2020 Record of Decision Amendment requires the implementation of large stormwater detention/retention stormwater control basins in the SBC-Above the Confluence area. Two areas with mine wastes—the Diggings East and the Northside Tailings—will be excavated from the ground surface to the high water table elevation within the most recent three year period and the stormwater basins will be installed in those areas. The basins will be lined to prevent infiltration to groundwater. Any tailings, waste or contaminated soils excavated will be transported to and disposed in a repository. These remedy components are necessary to address the environmental threats from mine waste-contaminated stormwater that runs off Butte Hill during storm events into Blacktail Creek and Silver Bow Creek below the confluence. These threats were identified as unacceptable environmental risks in the ecological risk assessment prepared for the BPSOU. The basins will hold significant volumes of contaminated stormwater during and after storm events, allowing heavy metals and other contaminants to settle out before the stormwater flows to Silver Bow Creek.

As noted above, end land use plans to be implemented by the settling defendants will include park-like features in the area around these basins in accordance with community plans for the use of this area. The end land use features will be fully compatible with the stormwater control basins.

#### **2.29.2 Against Proposed Plan**

##### **2.29.2.1 Comment Summary**

Eight comments were received that were against the concept of adding stormwater retention basins.



- **Comment 2.6.** “#5. Giant retention ponds that I call Zika/mosquito ponds will be installed to deal with storm water run-off from the Butte Hill instead of responsibly cleaning the Hill.”
- **Comment 7.6.** “D Stormwater: The fact that blue Copper water under the Parrot Tailings is able to be piped to Montana Resources for Copper extraction makes one question ARs assertion that stormwater from Warren Avenue and the Greeley area cannot also go to that pond, to the Berkeley Pit, or other destinations where the water could end up in MR’s mining operations. Please respond about viability of diverting via pipes to MR, or to mine shaft/tunnel destinations. Stormwater that does not reach the Silver Bow Creek corridor helps preserve the \$157 million cleanup of the creek below Butte. CERCLA law requires permanent remedy, with the word, “permanent” stated five times in the first three paragraphs of its 1986 SARA edition. Butte people are concerned that ARCO is not willing to send stormwater to the Berkeley Pit, which is a PERMANENT remedy, as opposed to leaving it in the floodplain where it can be re-mobilized. A major storm (the creek has had 100-year floods) could overwhelm retention basins and “permanently” foul the cleaned up Silver Bow Creek below Butte. EPA must not allow cavalier thinking that could result in the restored creek being re-polluted in any way.

“Diversion: For the sake of Future Butte People after mining has ended, require now that stormwater from the Hill be put into pipes for destinations of the Berkeley Pit, or Montana Resources pond (as is done at the Parrot Tailings), or into mine shafts through drilled access; e.g., Anderson Shafts, Ophir shaft, or directly to the Butte-Silver Bow Lagoons. The highest concentrations of Copper reaching the creek emanate from Warren Avenue, Greeley neighborhood, and the Civic Center. Much of that water could be re-routed through pipes to destinations other than the Silver Bow Creek corridor. It is unconscionable to take the “lazy man’s way” in this cleanup by deciding to allow the toxins to mobilize into the creek when diversion could keep them within the Mine Flooding O/U for treatment in perpetuity. Diversion will decrease need for perpetual O&M on corridor ponds and also lessen harm to the costly cleanup below Butte. In addition to minimizing amounts of Copper, Zinc, Lead, Arsenic and Cadmium that now pour into the corridor, diversion will allow the citizens of Butte to actually have space for a nice Headwaters Park in

the center of town because the size of corridor stormwater basins will be smaller than in the Proposed Plan.

“Additional detention/retention basins: To keep fewer toxins from reaching Silver Bow Creek, I have asked about the Anderson Shafts west of entrance to MR where today blue Copper coats rocks and debris. If you do not choose to divert stormwater into the Anderson east camp shafts, please consider creating a stormwater retention basin there, for it would capture metals south of the Belmont, west of MR offices, and east of the EJ public housing community, Silver Bow Homes – from which comes much of the highest Copper presently going to the Silver Bow Creek corridor.

“Greeley area stormwater: CERCLA requires that the very high levels of Copper coming into BPSOU from outside that boundary be remediated as part of BPSOU. Will that be done, and how? EPA has stated it doesn’t know where that Copper is coming from. Please say what Remedial Investigation will be done to determine the cause and to stop this source of pollution from reaching the Silver Bow Creek corridor.”

- **Comment 38.2.** “Butte does not need simply storm water treatment with retention/detention ponds. Imagine Butte folks sitting on benches overlooking the ponds which are lined with a black liner. A simply stunning aesthetical scene!!! Number 4 of sufficient changes states that there will be final storm water controls in "upper" Silver Bow Creek. Final storm water controls (primarily detention ponds) to settle out contaminated suspended sediments from Buffalo Gulch and drainages reporting to Silver Bow Creek for 5-year storm event. "THIS IN RESPONSE TO PUBLIC INPUT." I HAVE ATTENDED MANY MEETINGS AND I HAVE NOT HEARD THE CITIZENS ASKING FOR RETENTION PONDS TO DEAL WITH STORM WATER. IN FACT THAT IS WHAT THE CLEANUP IN THE CORRIDOR FROM CASEY STREET TO THE BUTTE REDUCTION WORKS IS ALL ABOUT!!!! That is not what was requested by the citizens who attended many meetings throughout 3 years. The request was for a complete cleanup that leaves this community with the opportunity to thrive as a site delisted from the Super Fund List. If we are delisted simply because it is time or the cleanup focuses only on Storm Water than Justice has not been served.

“A better solution for the storm water abatement would be to develop a plan to drill into areas on the hill to allow the storm water to flow into the mine tunnels especially since the pit water is going to be drawn down about 100' by ARCO to protect the pit in the event of a major breakdown of the Yankee Doodle Tailings pond. This would allow the storm water to be channeled into the pit as the water in the mines have been doing since ARCO shut off the pumps. (1983?) British Petroleum is one of the largest businesses in the world and one that definitely knows how to drill holes certainly should be able to figure how to drill holes on the hill so that storm water could be directed into the mine tunnels. The underground mines already drain into the pit and so the additional storm water would not cause any issue. We need to have new engineers to relook at the necessary cleanup with new eyes and new technology. Obviously, ARCO had the ability to do that. If the storm water is treated differently by diverting it to the underground mines and allowed to flow into the pit than the area around the confluence could actually become a setting for a park that is truly aesthetically pleasing and enjoyable for all. Time to think out of the box!!!”

- **Comment 41.11.** “And, finally, for me, I'm adamantly opposed to what I call the "Mosquito Zika Pond." We've got to have people working in the federal government and the state government that are smarter than to give us these ponds, these great big ponds, where what we're doing is we're going to clean an area and then we're going to recontaminate it again. Wow. You know.”
- **Comment 47.3.** “We wanted to do all kinds of things with the money that was brought from the suit. NRD money, Folks, Butte. The remainder belongs here. Let's get the cleanup done right so that we're not collecting the storm water from up on the hill and then having to make sure it drops off somewhere in the retention ponds.”
- **Comment 74.6.** “7. I believe that the allocation of so much of the limited space in the Silver Bow Creek corridor to storm water retention ponds is the wrong choice for treating the waste and toxicity that is carried by storm water. The remaining storm water should be routed to the Berkeley Pit (where a lot of storm water is already gathered). When removed from the pit, that storm water, along with any other water being removed from the pit will have to be treated to gold standard. There are a number of ways this collection of storm water and diversion to the pit can be done (such as having a number

of small collection points on the hill and then drilling vertical pipe shafts from those collection ponds so that storm water will flow into the mine tunnels from where it will eventually find its way to the Berkeley Pit for ultimate treatment before being released to Silver Bow Creek). And there are other ways and it should be done.”

- **Comment 81.1.** “Storm water basin, or retention ponds in the basin are not needed. As a member of CLEJ, I agree with Sister May Jo that “Storm water should be captured and returned to the Berkeley Pit for ultimate treatment, or treated on the Hill before it gets to the Creek.”
- **Comment 82.6.** “We do not need storm water basins, aka---retention ponds in the Basin. Storm water should be captured and returned to the Berkeley Pit for ultimate treatment, or treated on the Hill before it gets to the Creek. Drill wells so that storm water will flow into the mine tunnels and be discharged to the Berkeley Pit for treatment.”

#### **2.29.2.2 EPA Response**

EPA disagrees with the comments that the stormwater retention/detention basins are not needed. Stormwater basins are a sustainable approach used throughout the country that mimic natural processes and provide for efficient treatment of stormwater contamination. During implementation of the 2006/2011 BPSOU Record of Decision, three cycles of stormwater BMPs were constructed with the purpose of controlling contaminated stormwater and its discharge into Silver Bow Creek below its confluence with Blacktail Creek. These efforts reduced contaminant concentrations in stormwater but were not sufficient to meet in-stream ARAR standards, and additional work was needed.

Retention/detention basins and other technologies were evaluated, and the basins proved to be efficient in removing contaminants for stormwater. Addressing stormwater in another way would require a complete rebuilding and retrofitting of the remedial infrastructure, with uncertainty that it would be more effective than the stormwater basins.

Diverting stormwater to the underground workings was considered as was drilling or installing pipelines across the Butte Hill. Unfortunately, most of the shafts are too far uphill and therefore cannot be used to divert contaminated stormwater that flows in areas below those shafts. Additionally, use of mine shafts for the diversion of stormwater may cause unpredictable fluctuation of water levels in the underground mine workings, leading to unforeseen mine shaft collapses.

Stormwater channels that divert stormwater from upper Butte Hill to the Berkeley Pit via gravity have already been implemented as part of the prior Superfund efforts to address contaminated stormwater. Thus, the basins in Silver Bow Creek above its confluence with Blacktail Creek are necessary to address stormwater that is too far downhill to route to the Berkeley Pit to the east or to Missoula Gulch in the west.

Alternatives such as those described in the comment also require perpetual operations and maintenance. The BMPs will be managed as long as needed to control stormwater and prevent adverse impacts to surface water. It is anticipated that operation and management of all stormwater BMPs will occur for the foreseeable future.

Stormwater retention/detention basins can be managed in such a way as to reduce the likelihood of mosquitos breeding or can be treated with larvicide; these are common practices. Additionally, Montana does not have mosquitos that carry the Zika virus, according to the Montana Department of Health and Human Services and end land use, features such as recirculating water between the basins will provide for water in the basins that is not stagnant, further reducing the potential for mosquito problems. While the basins will be lined to keep them from discharging to contaminated groundwater, there are technologies that allow for vegetation to be planted above a liner.

Regarding additional detention/retention basins (Comment 7.6), stormwater from the areas described will be collected and routed to the Diggings East stormwater detention/retention basin for treatment and management, thereby minimizing adverse effects to Silver Bow Creek. EPA will consider implementation of the suggested BMP at or near the Anderson Shaft but does not agree that it can be a replacement for the proposed catch basins.

Upgradient source investigations of contaminated stormwater sources are currently being conducted by EPA as part of the West Side Soils Operable Unit remedial investigation/feasibility study and may be addressed under the response actions selected for the operable unit. Even so, stormwater controls within BPSOU are required to protect human health and the environment and to meet in-stream ARARs.

The proposed plan states twice that expanded waste removals in the area to be occupied by basins was in response to public input. This part of the proposed plan was not intended to reference the stormwater basins

themselves but rather the removal of Diggings East and the Northside Tailings. As noted above, these remedial actions are also necessary for protectiveness and are in response to the need to control stormwater as required in the 2006/2011 BPSOU Record of Decision.

### 2.29.3 Other

#### 2.29.3.1 Comment Summary

Four comments were received that had a question or request about the retention/detention basins. The comments addressed effectiveness, impact of recirculation on treatment, storage capacity, impact on future construction of the Silver Bow Creek channel above its confluence with Blacktail Creek, and opportunities to site basins in other areas.

- **Comment 22.3.** “1.2 In contrast to language in the Proposed Plan, CTEC recommends emphasizing the effectiveness of retention rather than detention. The Proposed Plan consistently refers to detention stormwater basins, when in fact the series of three stormwater ponds in Missoula Gulch clearly demonstrate the retention is responsible for removing approximately 95% of total recoverable copper, and that includes removing roughly 60% of the dissolved copper fraction. Clearly there is more to treatment efficiency of these stormwater ponds than settling particles. The efficiency of retention can likely be attributed to a combination of retention time and some biological-chemical component. CTEC recommends that the optimization and operations plan for these ponds recognize those factors. ... 4.2 It needs to be determined if the proposed recirculating water features within the stormwater basins will negatively affect treatment. It appears that widespread community interest in the recirculating water features is lacking. If water recirculation will truly limit the potential for mosquito breeding, this may be reason enough to incorporate a pump-back system into the storm system. However, CTEC is unaware of information describing how the water recirculation may affect chemical conditions and metal precipitation within the ponds. If there is reasonable potential that recirculating the water could lead to lower stormwater treatment efficiency, then the money spent on these features would be better allocated towards the seed money proposed for Restore our Creek’s stream restoration goals.”
- **Comment 91.6.** “3. Is it premature to eliminate contingencies for chemical water treatment of storm water until the effectiveness of the proposed passive treatment solution is known? Will alternatives such

as routing storm water from some under-remediated areas of BPSOU and West Side Soils to the Pit still be considered?”

- **Comment 98.28.** “N. Page 13, Column 2, Bullet 2. The Proposed Plan states: “Ponds would improve surface water quality ... [because] [w]ater storage would significantly reduce the number of times per year that storm water would be released to surface water, resulting in fewer potential exceedances of performance standards.” AR comments that the stormwater basins are not intended to provide water storage, but rather, to temporarily detain stormwater to allow for the settling out of sediments before releasing to the stream. Increased retention will decrease the available capacity of respective stormwater basins to accept flow and volume of the design criteria event. This could lead to additional and unnecessary stormwater discharge to SBC, from both the bypass structure and primary basin outlet, which could reduce overall aquatic health. Further, there are accepted engineering methods available to support basin operations in a manner that achieves both efficient treatment and ensures capacity will be available to capture and treat stormwater from subsequent events. Finally, it is important to balance basin design and operating parameters with site aesthetics and reuse opportunities for the community. Excessive basin sizes and/or retention periods will decrease these opportunities. Therefore, AR comments that it is important to consider site aesthetics and community acceptance when designing the stormwater basins.”
- **Comment 100.4.** “3. Stormwater. ROCC understands that stormwater detention ponds will be designed and sized to accommodate realignment of a restored creek in the reserved areas consistent with EPA's assertions that the remedy will 'not preclude the restoration of Silver Bow Creek.' To the extent that the location of the future restored Silver Bow Creek becomes known during the removal of the tailings and construction of the stormwater ponds, simultaneous contouring of the future Silver Bow Creek channel should occur. Stormwater design and function needs to compliment the park and be safe for the public to engage in activities in or near all waters. ... 8. Concentrations of Copper in Groundwater. Any contamination that may be kept from entering the Silver Bow Creek corridor will have a beneficial effect on the efficacy of the proposed remedy amendments. Opportunities to site stormwater basins in other areas (e.g. Greeley and Warren Avenue) that will enable a restored creek to

be located within the Silver Bow Creek Corridor should be considered; particularly if it provides a larger area be utilized for the creek.”

### **2.29.3.2 EPA Response**

EPA agrees that the stormwater retention/detention basins will not preclude the construction of a new lined creek in the corridor area. EPA, Butte Silver Bow, and Atlantic Richfield have designated certain areas under remedy in support of that vision (see Addendum 1 to Attachment C to Appendix D, the statement of work, which is part of the consent decree). Additionally, EPA has awarded Technical Assistance Group funding to further support the understanding of how the BPSOU remedy will not preclude the vision.

EPA also understands the concerns stated in these comments and will consider these and other factors during the remedial design studies and planning for the basins. The proposed stormwater retention/detention basins are necessary to handle storm flows and to remove contaminated suspended solids (via settling) while ensuring the basins are sized and operated properly to be protective of the creek. A recirculation system would keep the water from becoming stagnant but would not adversely impact the ability of the basins to remove suspended solids.

EPA agrees and expects that the basins will be designed and operated using, “accepted engineering methods available to support basin operations in a manner that achieves both efficient treatment and ensures capacity will be available to capture and treat stormwater from subsequent events” along with balancing “basin design and operating parameters with site aesthetics and reuse opportunities for the community.”

The basins in Silver Bow Creek above its confluence with Blacktail Creek will operate differently than the ones in Missoula Gulch. The Missoula Gulch basins act as retention basins, where water is almost never released and instead infiltrates to groundwater. Due to the groundwater conditions near the outlet of the existing stormwater infrastructure(s), the newly constructed basins will have to be lined to prevent contaminated stormwater from infiltrating and overloading the contaminated groundwater capture system and changing the groundwater flow regime. Thus, they will have to operate in part as detention and in part as retention basins, where after treatment via settling, the stormwater will have to be released to allow capacity for the next storm and water will not be stored indefinitely. Because the stormwater will be held for a short period to



attempt to achieve optimal settling, the stormwater released may enter Silver Bow Creek under chronic, normal flow conditions. This discharged water will have to be monitored and evaluated in design to determine the optimal rate of discharge for variable storm events.

Regarding opportunities to site additional basins (Comment 100.9), the Greeley (Texas) Avenue and Warren Avenue locations are at the top of the Silver Bow Creek corridor. If basins could be built just for these drainages, it would not eliminate the need to construct basins for drainages farther west and downstream in the corridor where additional contaminated stormwater control is needed. Throughout the last 20 plus years, EPA and many other stakeholders have evaluated the challenges of managing stormwater on the hill, including the Texas Avenue area. In fact, several site tours and coordination efforts with the community have been conducted to examine the efficacy of constructing basins on the hill. Based on these findings, EPA has concluded that because of the elevation of the existing infrastructure, gradient of the hill, and lack of space, the optimal location for the basins is at the bottom of the hill where the stormwater can best be managed.

## **2.30 Source Erosion to Surface Water**

### **2.30.1 Comment Summary**

Three comments were received regarding remaining areas in the BPSOU with exposed or partially covered mining waste that is vulnerable to erosion during stormwater events and/or contributes to groundwater contamination.

- **Comment 22.5.** “2.2 There are unreclaimed source areas at the Copper Mountain Recreation Complex associated with the Clark Mill tailings in the Grove Gulch watershed which must be reclaimed. These mill tailings are currently contributing to water quality exceedances in the watershed and present a risk to humans who contact the waste.”
- **Comment 31.4.** “2. Elevated Levels of Metals and Minerals as a result of Surface Water (Storm/Erosion). Today, all areas with exposed or partially covered mining waste have not been properly reclaimed or restored. These are areas that are either un-reclaimed or insufficiently reclaimed and contain clearly visible historic mine waste, in some cases near or bordering areas that until recently, were considered to be reclaimed. I am including an attachment with this record of input, APPENDIX A, which specifies in orange all areas of historic mine

dumps that were known to occur, as well as APPENDIX B, which is the 2019 Google Maps of the same area, and APPENDIX C, which shows an overhead view of the area to allow a person to compare past, historic mining activity and mine waste sites to present, currently active, mining activity and mine waste sites. The greatest accumulation of, mine waste is the area within the generalized 'boundaries' of the named streets of the Butte Hill. Those are Clark Street to the North; Empire Street to the South but in some areas extending to Woolman Street; Alexander Street to the East, and generally Excelsior Ave. to the West. THESE BOUNDARIES SPECIFICALLY POINT TO CURRENT EXPOSED HISTORIC MINE TAILINGS AND DOES NOT FACTOR TAILINGS AND EXPOSED MINE WASTE BY ACTIVE MINING OPERATIONS OF MONTANA RESOURCES. This general area also includes the Alice Pit, an area that was formerly considered to be reclaimed, however it is now known to be a collection source for groundwater contamination.

“In addition to this area containing exposed mine waste, the collective majority of this area does not have sidewalks, curbs, gutters, or any form of modern storm water collection, retention, or diversion. Because there is not any acceptable form of engineered storm water collection, retention. or diversion. this area containing significant majority of historic mine dumps continues to actively contribute to elevated levels of metals and minerals in silver bow creek. As a side note, the map identifies the areas in orange as containing historic mine waste. Any intelligent person looking at the map would notice that the only areas that are not painted in orange include areas that are currently covered by homes, streets, or sidewalks. That is because the areas beneath the homes, streets and sidewalks were either not tested, or was considered "Waste in Place."

“I have personally been into the "Basement" and "Crawlspaces" of these homes as part of my job to install and maintain yard sprinkler systems. I can personally attest that the "Dirt" under some of these homes does not appear to be native soil, but rather disturbed soil, 'mine waste', that was left in place as structures were simply built right over the mine waste. Until recently, asphalt had been considered an adequate cover. However, it is now known that the contaminated areas beneath homes, streets and sidewalks contain a significant majority of historic mine waste, and is contributing to both surface and ground

water contamination. The community, ALL LEVELS OF GOVERNMENT, and ARCO need to find a way to acknowledge and agree that the area needs to be excavated and removed completely. This includes the complete removal of structures, streets, sidewalks, and all the mine waste beneath and around them. The Focus and Clean Up should be redirected at the Butte Hill.”

- **Comment 53.3.** “And you've heard them answer three or four times tonight, "Well, we don't know where the source is." I have a map here from a BNRC meeting back in 2011. And, even from a distance, you can probably see that top area is entirely orange. And that orange area is mine dump sites in Walkerville and Butte townships. So, what I'd like to focus our attention on is an area -- and I'll call general boundaries at the North Clark Street, the South Empire Street, some areas even further, maybe Woolman to the east, Alexander Street, and to the west, generally, Excelsior Avenue. These areas contain evidence of past mining activity, exposed evidence. They have homes that are eligible for RMAP cleanup. And the area, the entire area, could be described as insufficiently reclaimed or unreclaimed. And, even with the maps that they have given outside, it doesn't even so much as touch on any of this orange area that was provided in 2011 at a BNRC meeting. So, I'm going to clarify that I believe the past work of the engineers and planners was crappy and lazy. The source of the exposed surface metal and minerals has been ignored. All areas to date that have been cleaned up have involved very minimal amounts of personal and private property and residential homes. Most of the areas cleaned up to date have been large areas of land occupied by -- and they have not been occupied by personal or commercial dwellings or developed real estate. They have been areas that have been owned or controlled by corporate and government agencies requiring very minimal amounts of negotiation.”

### **2.30.2 EPA Response**

There are currently 600 acres of capped mine waste areas within the BPSOU. These areas were selected for capping based on the exceedance of human health-based concentrations of contaminants of concern in these areas and/or the contribution of these areas to surface water contamination. Under the BRES program required by the 2006/2011 BPSOU Record of Decision and implemented by Butte Silver Bow County in cooperation with the Clark Fork Watershed Education Program, one quarter of all reclaimed areas are evaluated each year on a

revolving basis, and any problems with site capping or revegetation issues for the remedy are addressed. The BRES program provides a framework so that site managers can determine if the cover over the mine waste is intact and vegetation is adequate. If problems are found under the BRES evaluation, they are corrected under work plans approved by EPA. These covers are a barrier between people and the mine waste (preventing exposure by ingestion or dust inhalation) and also prevent rainfall from moving contamination from these areas into surface water through storm events. The BRES program has undergone significant revisions over the years, which has resulted in an improved BRES program that verifies long-term protection of human health and the environment within BPSOU.

Additionally, the 2020 Record of Decision Amendment will require the responsible parties to investigate and reclaim several insufficiently reclaimed or unreclaimed mine waste source areas. See Appendix D to the consent decree, Attachment C for a list of these sites. Furthermore, the development of a solid media management plan will provide a systematic approach for areas that are unknown at this time to be contaminated with historic mine waste but which may be discovered. The approach will include at a minimum an assessment and remediation if necessary.

EPA agrees that areas beneath many of the existing residences and buildings may contain contaminated mining waste. This material cannot be feasibly removed and may be contributing to alluvial groundwater contamination within BPSOU. The many sources of mine waste contamination within BPSOU, due to the extensive mining, milling, and smelting that occurred within Butte over a long period, are why the remedy requires contaminated groundwater to be intercepted, pumped, and treated before it contaminates Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek surface water and in-stream sediments within the BPSOU. As for this commenter's suggestion that Butte Hill be largely excavated, see Section 2.34.5 Technical Impracticability Waiver, Other.

Finally, under the uncaptured surface flow areas remedial elements work plan, areas adjacent to the Clark Mill tailings cap will be assessed and the appropriate BMPs applied.

## 2.31 Subdrain

### 2.31.1 Comment Summary

Two comments were received on the subdrain. One stated that the technology will not work, and the other stated that EPA failed to mention two items as minor modifications relating to the subdrain in the proposed plan.

- **Comment 41.10.** “The French drain, the French drain, as we all know, everyone knows, the State of Montana is adamant that it doesn't work as well as the EPA and ARCO says it does. We need to address that issue. We need to address that issue. It has to be jetted and cleaned six times a year, because it clogs up, with a chemical precipitate. And it - - the rocks that encase the pipe are also being plugged, I'm sure. And, eventually, the drain will have to be removed.”
- **Comment 98.30.** “P. Pages 16 & 19 (Minor Modifications Section). EPA failed to include the following additional “modifications” to the ROD in the Proposed Plan:
  1. A change to the description in Section 12.3.2 of the ROD of when treatment system discharge performance standards are applicable to the BTL to: 1) clarify they are not applicable until after post-final construction shakedown period; and 2) provide flexibility on the five-year shakedown period length referenced in the ROD; and
  2. A change to Section 12.3.2.3 of the ROD requiring use of a tracer dye methodology to monitor flow and loads annually in the SBC storm channel; EPA subsequently approved AR’s use of flow meters for monitoring. AR requests that EPA identify and describe these changes in the Amended ROD.”

### 2.31.2 EPA Response

EPA is confident that the BPSOU subdrain method of capturing contaminated groundwater is proven and has worked and will continue to work at the BPSOU to intercept and collect contaminated groundwater. Based on investigations conducted after installation of the subdrain, additional contaminated groundwater collection is now being required by EPA as the contingency for such actions described in the 2006 BPSOU Record of Decision has been invoked in the 2020 BPSOU Record of Decision Amendment. EPA recognizes that actions described in the proposed plan will change the quantity and quality of influent water to be treated at the Butte Treatment Lagoons. As such, the shakedown period

and applicability of ARARs will be reassessed as part of any enforcement mechanism EPA utilizes to implement the amended remedy. The requirement for the BPSOU subdrain dye tracer monitoring was modified as requested in EPA's 2011 BPSOU ESD.

## 2.32 Surface Water Management Plan

### 2.32.1 Comment Summary

One comment was received, requesting that EPA consider a multiple-lines-of-evidence approach in determining if and when removal of bed sediment is necessary.

- **Comment 98.29.** "O. Page 14, Column 1, Paragraph 2. The Proposed Plan states: "Recontaminated bed sediment would be removed, if necessary, resulting in a notable improvement in long-term effectiveness and permanence." AR comments that it is important that a multiple-lines-of-evidence approach be agreed to for determining if and when it is necessary to remove re-contaminated bed sediment. AR believes such criteria should be defined in the Surface Water Management Plan that is part of the RD/RA Statement of Work to be attached to a final CD. In assessing whether sediment removal (post-remedy construction) is appropriate, EPA must consider a multiple-lines-of-evidence approach that includes:
  - Establishment of sediment re-removal criteria that consider precedent of similar removal actions conducted in the Clark Fork River basin, adopted from those criteria applied at either Streamside Tailings, Mill-Willow Bypass, or Milltown Reservoir;
  - Whether or not the established sediment screening concentrations in reconstructed stream segments are significantly higher than reference concentrations upstream of BPSOU;
  - A weight-of-evidence approach for site-specific assessment of potential hazards associated with any sediment concentrations that exceed established re-removal criteria, including:
    - Assessment of benthic macroinvertebrate community health that includes consideration of the metal tolerance index,
    - Assessment of sediment/pore-water chemistry and bioavailability that provides mechanistic interpretation of effects or lack of effects of contaminated sediments, and
    - Completion of site-specific toxicity assays to validate any predicted effects or lack of effects of contaminate sediments.

- Consideration of other data (e.g., near-stream groundwater COC concentrations and gradients) that can confirm an historic mining-related source was the cause of any exceedance of established re-removal criteria and resulted in impairment of the stream in accordance with the above weight-of-evidence approach.”

### 2.32.2 EPA Response

As a part of determining if and when removal of recontaminated sediment is required, EPA will consider Probable Effects Concentration sediment reference values listed in the surface water management plan; trends in sediment concentrations; contaminated groundwater concentration, location, and gradient data; biological data; and actions completed to control and prevent recontamination from surface and groundwater contaminant sources. Further information is provided in the surface water management plan, which is attached to the proposed consent decree.

## 2.33 Technical Text and Figure Changes for the 2020 Record of Decision Amendment

### 2.33.1 Comment Summary with EPA Responses

Twelve comments offered suggestions for changes to text, figures, or monitoring station locations that were found in the proposed plan. Those comments are shown below, and EPA’s response is provided immediately after each comment.

- **Comment 22.13.** “Figure 1. Hydrolab cross-sectional profiles demonstrate the lack of mixing between Silver Bow Creek water and BSB Sewage Treatment plant discharge at the current ISCO location for Station SS-07 (blue line). CTEC’s proposed location, shown in red, is located approximately ½ mile downstream and shows the two streams are mixed.”

**EPA Response.** The location of SS-07 is at the downstream edge of BPSOU and the upstream edge of Streamside Tailings Operable Unit, making it an ideal location for monitoring. The physical constraints described in the comment can be overcome and do not outweigh the advantages of leaving the site boundary at its current location.

- **Comment 23.1.** “Please include the attached comments as part of the Public Record on the Butte Priority Soils Operable Unit Proposed Record of Decision Amendment. I have attached a map of Butte Priority Soils Boundary. Since EPA, State of Montana and the Butte Silver Bow Local Government have agreed to take Arco/BP off the

hook for the cleanup and restoration of the iconic Silver Bow Creek and thus claimed it if not part of the Creek and Butte Priority Soils, which is totally false, I felt it essential that the map of Butte Priority Soils be included in the public process.”

**EPA Response.** The attachments have been entered into the administrative record as part of Comment 23. A BPSOU boundary map that includes Silver Bow Creek above its confluence with Blacktail Creek should be included in the 2020 BPSOU Record of Decision Amendment.

- **Comment 43.2.** “As I read through the language provided concerning the ROD amendments, I, and others I've spoken to, found that the language referencing Silver Bow Creek confusing. Sometimes the language represented Silver Bow Creek and other times Upper Silver Bow Creek, sometimes with a small U, sometimes with a capital U. It's unclear what the description "Upper Silver Bow Creek" comprises, where it begins, where it ends and whether the language refers to different stretches of Silver Bow Creek or refers to different stretches of Silver Bow Creek in different parts of the ROD. Language is important. I mean, this is a document that's going to guide us, and so we ought to know what we're talking about and not just bandy about on vague terms. The current legal description of Silver Bow Creek is that it begins at Texas Avenue and continues until it joins Warm Springs Creek and becomes the Clark Fork River. When describing the Silver Bow Creek, a better approach would be to include delineating language so there is no ambiguity about portions of Silver Bow Creek up for discussion. And, as Evan pointed out, for example, Silver Bow Creek west of the confluence of Blacktail Creek to Montana Street, or Silver Bow Creek between Montana Street and Casey Street, etc. I hope that the amendments to the ROD include these clarifying changes and language so that the public, when they read these documents and are invited to have a comment on them, can know what the heck they're talking about. That's all I've got.”

**Response:** EPA now refers to the historically termed Metro Storm Drain (or MSD) channel—that is, the area between the Montana Resources, LLP property boundary near Texas Avenue and the confluence of Blacktail Creek with Silver Bow Creek—as “Silver Bow Creek above its confluence with Blacktail Creek.” Silver Bow Creek from the confluence with Blacktail Creek is referred to as “Silver Bow Creek below its confluence with Blacktail Creek” or



similar language. The 2020 BPSOU Record of Decision Amendment will use these terms consistently.

- **Comment 98.7.** “A. Incorporation of AR’s Comments on the 2004 Proposed Plan, 2006 ROD, and 2011 ESD. On December 20, 2004, EPA released a Proposed Plan (2004 Proposed Plan) identifying the agency’s preferred remedy alternative to address contaminated solid media (mine waste, soil, and residential soil and dust), surface water (base flow and stormwater), and groundwater at the BPSOU. AR submitted significant written comments on the 2004 Proposed Plan to EPA in February 2005. In September 2006, EPA issued the ROD, which selected a comprehensive remedy for the BPSOU, largely adopting EPA’s preferred alternative in the 2004 Proposed Plan. AR submitted additional comments on the ROD to EPA on December 3, 2008, via a letter and attachment titled “BPSOU ROD Requirements - Points Requiring Clarification.” The ROD was amended by EPA in the 2011 ESD. AR submitted comments on the ESD with its Notice of Intent to Comply with the 2011 Unilateral Administrative Order on September 17, 2011. EPA’s April 11, 2019 Proposed Plan identifies several changes to the ROD (as modified by the ESD), which is the primary focus of AR’s comments included herein. The 2019 Proposed Plan, however, makes clear that “[a]ll other components of the 2006/2011 ROD not specifically addressed in this document or the amended ROD remain in effect.” 2019 Proposed Plan at 19. To the extent elements of the ROD are unchanged by the 2019 Proposed Plan (and expected Amended ROD), and therefore would remain in effect going forward, AR reasserts any and all comments from its February 2005, December 3, 2008, and September 17, 2011 submissions applicable to such elements of the ROD. AR therefore reiterates and incorporates herein by reference those comments included in its previous submissions that apply to unchanged elements of the Remedy, some of which are discussed in more detail herein. AR’s general support for the modifications identified in the 2019 Proposed Plan does not amount to a withdrawal or waiver of its previous comments on and objections to the ROD and/or unconditional support for all portions of the ROD that would remain in effect.”

**EPA Response:** EPA has reviewed the documents referenced by Atlantic Richfield in this comment and has appropriately addressed issues needing clarification in the 2020 BPSOU Record of Decision Amendment.

- **Comment 98.16.** “B. Page 3, Figure 1. Figure 1 of the Proposed Plan depicts the various operable units (OUs) of the Silver Bow Creek/Butte Area Superfund Site, including the West Side Soils Operable Unit (WSSOU). The WSSOU includes mining-impacted areas in and around the City of Butte that are not included in the BPSOU, the Butte Mine Flooding Operable Unit, or the Montana Resources’ active mine area (or any other OU for the Site). EPA is conducting the Remedial Investigation / Feasibility Study (RI/FS) for the WSSOU, which is in the initial stages of the RI. Figure 1 appears to depict areas that are or will be included in the WSSOU boundary, which includes areas immediately west of Butte and north of US Interstate I-90/I-15 and areas southeast of Butte and south of the active mine area. Delineation of the WSSOU boundary prior to completion of the RI/FS is premature. Furthermore, much of the area indicated as the WSSOU, particularly the areas southeast of Butte and south of the active mine area, may have little, if any, mining related impacts that require remediation. If EPA retains the depiction of the WSSOU on Figure 1 (or elsewhere), it should be identified as “preliminary” or “to be determined” and subject to change following the RI/FS.”

**EPA Response.** In the 2020 BPSOU Record of Decision Amendment, EPA will revise the legend text for the West Side Soils Operable unit to clearly note that the boundary for the West Side Soils Operable Unit is “preliminary” and that the operable unit’s boundary will not be finalized until the completion of the West Side Soils Operable Unit remedial investigation/feasibility study.

- **Comment 98.19.** “E. Page 5, Column 2, First Bullet. The Proposed Plan states: The RAOs for surface water are to “[e]nsure that point source discharges from any water treatment facility (e.g., water treatment plant, wetland, etc.) meet end of- the-pipe water quality standards after construction and shakedown periods.” Wetlands are not point source discharges regulated under the Clean Water Act unless they are engineered and constructed as a treatment system with defined discharge points. EPA should replace “wetland” with “wetland engineered and constructed as a treatment facility.”

**EPA Response.** The commenter is correct in noting that wetlands are not point source discharges. The 2020 Record of Decision Amendment will not use that term when referring to end-of-pipe discharge standards.

- **Comment 98.25.** “K. Page 9, Second Numbered Paragraphs 1 through 3. The Proposed Plan states: “Implementation of the expanded work elements makes three components in the 2006/2011 ROD unnecessary. They would be removed as part of the final three significant changes,” including (1) “Remove the contingency to install a conventional treatment plant for chemical treatment of storm water; (2) “Remove the option for augmentation of flow to attain remedial goals”; and (3) “Remove the need to evaluate and implement infiltration barriers in the Diggings East and Northside Tailings areas, as these areas would be removed.” For the reasons identified in the Proposed Plan and discussed in AR’s opening statement, AR agrees that the requirement for conventional treatment of storm water should be removed from the remedy as unreasonable and unnecessary. AR also agrees that the other two identified remedy components—flow augmentation and infiltration barriers—should be removed from the 2006/2011 ROD. These potential actions are subsumed by, or not relevant if, the surface water remedy elements described in the Proposed Plan are adopted in the Amended ROD. Specific to the 2006/2011 ROD, the Proposed Plan only refers to removing the need to evaluate infiltration barriers in the Diggings East and Northside Tailings areas. The 2006/2011 ROD included a requirement for assessment of an infiltration barrier in the Parrot Tailings area as well, where the State NRDP is carrying out a removal project. Thus, the Amended ROD should clarify that evaluation of infiltration barriers for each of the three areas described in the 2006/2011 ROD is removed and not part of the final remedy.”

**EPA Response.** The 2020 Record of Decision Amendment makes it clear that the three remedial components described in this comment are no longer required as part of the BPSOU remedy, including evaluation of infiltration barriers for the Parrot Tailings area.

- **Comment 98.27.** “M. Page 11, Text Row 3, Text Column 3, Bullet 1. The Proposed Plan states: “Construct final storm water controls (primarily detention ponds) to settle out contaminated suspended sediments from Buffalo Gulch and drainages reporting to upper Silver Bow Creek for 10-year storm event.” This text incorrectly suggests that all detention ponds for drainages reporting to upper SBC will be sized for the 10-year event. This is true only for the Buffalo Gulch and Diggings East basins. This does not apply to the Northside Tailings detention pond on East Buffalo Gulch, which will be sized for a 6-

month event. South of Silver Bow Creek, the Grove Gulch detention pond size is based on a fixed volume in general agreement with the 6-month design criteria while other Uncaptured Surface Flow Areas will be evaluated on a drainage-by-drainage basis, with the final BMP not to exceed 6-month design criteria. No other drainages outside of BPSOU will be considered as a component of the modified remedy. AR requests that EPA modify this text accordingly in the Amended ROD.”

**EPA Response.** The discussion of basin size in the 2020 BPSOU Record of Decision Amendment has been changed to read as follows: “Stormwater from the EBG subdrainage shall be diverted to a maintainable (concrete or concrete-like) basin or sedimentation bay located at the Northside Tailings, which shall be sized for a maximum 6-month, 24-hour Type I storm volume. In lieu of a larger basin, connection of the Northside Tailings basin or sedimentation bay with the stormwater basin(s) in Diggings East or Buffalo Gulch shall be included in the remedial design and construction. The final design shall be approved by EPA in consultation with Montana DEQ. Additional sediment storage volume beyond the stormwater capacity shall be included to maintain system performance and coincide with the O&M cleanout frequency, which shall occur a minimum of twice per year, or as necessary.”

- **Comment 98.31.** “Q. Page 16, Modification 3. The Proposed Plan states: “The prescriptive surface water monitoring of the 2006/2011 ROD (Section 12.6.6.2) will be simplified to points of compliance at SS-06G and SS-07 (Figure 5). Other monitoring stations will remain in the network as needed, but compliance will be determined at these two farthest downstream stations. Effluent from the Butte wastewater treatment plant enters between SS-06G and SS-07. The surface water sampling methodology will be modified to allow for additional compositing methods at the compliance sampling locations.” AR supports the deletion of the prescriptive monitoring program and in-stream compliance points and replacement with points of compliance at SS-06G and SS-07. AR requests that EPA include text indicating that AR may propose re-location and/or one or more new upstream compliance assessment monitoring station(s) to recognize significant changes to stream flow or water quality entering the BPSOU, which new upstream location(s) may replace or be proposed in addition to the existing upstream assessment station (SS-01).”

**EPA Response.** For compliance purposes, collection of an upstream sample is necessary, and it is anticipated that the upstream station will be at SS-01. The 2020 BPSOU Record of Decision Amendment is not so rigid that the upstream locations could not be modified if justified based on changed conditions if agreed to by EPA and Montana DEQ. That does not have to be recognized specifically in the amendment language.

- **Comment 98.31** “S. Page 16, Modification 6. The Proposed Plan states: “For compliance monitoring, wet weather flow conditions and wet weather events will be defined as when there is measurable outflow from any of the primary outlets of the following main existing or planned storm water ponds within the BPSOU: CB-9 in Missoula Gulch, the Diggings East basin, the Buffalo Gulch basin, and the East Buffalo Gulch/Northside Tailings basin.” AR requests that this text be revised to clarify that in addition to being outside wet weather flow (i.e., where there is measurable flow from one of the main basins), normal flow sampling for compliance assessment also excludes collection of samples for a period of at least 72 hours following a hydrologic change caused by a precipitation or snowmelt event or when one or more of the basins discharges. This period is required to allow for streams to return to normal flow conditions. AR also requests that the text be revised to indicate that this applies to “10-year” existing or planned basins only. Thus, AR requests that “the East Buffalo Gulch/Northside Tailings basin” be deleted from the text above.”

**EPA Response.** Regarding text modifications for the proposed plan, that document will not be modified and reissued. The details in the comment have been considered, and revised language, as appropriate, is included in the 2020 BPSOU Record of Decision Amendment and the definition of the “main basins.” As part of the consent decree and remedial design process, specific monitoring plans and related documents have been or will be developed that will address the detailed issues raised by some of these comments. The amendment itself does not need to specifically address such issues.

- **Comment 98.32.** “R. Page 16, Modification 1 & Figure 3. Modification 1 and Figure 3 of the Proposed Plan propose to “clarify and expand” the BPSOU boundary to “incorporate[] both banks of Grove Gulch to just upstream of its confluence with Blacktail Creek.”

AR agrees that the BPSOU boundary needs to be expanded to include Grove Gulch. A figure showing the required boundary adjustments, which differ slightly from Figure 3 of the Proposed Plan, is attached as Exhibit C to these comments. AR requests the EPA incorporate the boundary adjustments as depicted on Exhibit C into the Amended ROD.”

**EPA Response:** Based on the sizing requirement for the Grove Gulch stormwater basin, EPA plans to make minor adjustments to the BPSOU boundary, as presented in the 2019 Proposed Plan to Amend the 2006/2011 Record of Decision, in the vicinity of Grove Gulch. The final boundary adjustment in the Grove Gulch area is part of the 2020 BPSOU Record of Decision Amendment.

- **Comment 100.5.** “4. Simplify compliance determination. The 2006/2011 ROD specified a flow-weighted concentration approach to determining compliance with water quality standards. ROCC asks for assurance that the modified approach for selecting points of compliance will not affect the ability to restore Silver Bow Creek.”

**EPA Response.** The flow-weighted average methodology specified in the 2006/2011 Record of Decision and proposed for change in the proposed plan was evaluated over the past several years. EPA found that it did not add any information that was not provided by an average value. In the interest of simplicity, the step for calculating flow-weighted average is proposed to be removed from the determination of compliance. This change has no effect on the ability of the community to develop and implement a lined creek in Silver Bow Creek above its confluence with Blacktail Creek as part of the end land use planning for this area.

## 2.34 TI Waiver

### 2.34.1 Supports Proposed Plan

#### 2.34.1.1 Comment Summary

Ten comments were received in support of the TI waiver as described in the proposed plan.

- **Comment 4.2.** “It is unfortunate when a protective water standard cannot be met. But, not all harms have a make whole remedy available, i.e. not all environmental harms can be fixed. If a particular water quality standard can’t be met and there is an equivalent protective standard that can be met, it makes sense to waive

compliance with the standard that can't be met in favor of compliance with a standard that is equally protective and can be met. Such would appear to be the case here with regard to the TI Waiver in the proposed BPSOU plan. The TI Waiver document provides abundant support for the TI Waiver.”

- **Comment 5.4.** “The Technical Impracticability Waiver to federal standards for copper and zinc during wet weather conditions is justifiable for many reasons, including the background contamination from heavily mineralized sources along upper Blacktail Creek. I believe this has been more than adequately explained to the public and that comments criticizing the waiver are unjustified. I also understand the need for potential waivers in the future, after several years of monitoring, if the state standards cannot be met under certain conditions along the BPSOU corridor.”
- **Comment 15.2.** “I’m in favor of the recently published proposed plan amendment. This includes the up front TI waiver for wet weather flow conditions for copper and zinc (to Fed ambient water standards). The watershed has already responding to the significant improvements that have occurred, which includes not just the base flow data, but certain habitat improvements as well.”
- **Comment 37.4.** “Regarding the fundamental proposed change of waiving the State of Montana DEQ-7 acute aquatic life standards and defaulting to the Federal dissolved standards due to technological impracticality, FWP believes that this is likely reasonable given our understanding of the problem.”
- **Comment 55.2.** “And so we're aware in this proposed plan there's a waiver of -- there's a technical impracticability waiver, the total recoverable standard going to the federal standard. There is actually good reason for that. It's well-founded. And the way it's structured right now is simply copper and zinc during storms. Then there is a requirement for a lot of additional work. And I'd like to mention some of that additional work.”
- **Comment 65.7.** “Regarding subject matter experts, I feel, as one, that I would consider myself a part of that group with my experience, background, training and education, that they are substantially in alignment, that this plan achieves the remedial objectives of the site, that the revisions to the ROD are totally appropriate, fair and keep our

fish and our folks safe under the federal water quality standard, which is a scientifically derived standard, as well.”

- **Comment 80.3.** “I support the TI waiver for Wet Weather and understand its necessity. My hope is in the end, the remediation activities to be undertaken will negate the need for this waiver in perpetuity.”
- **Comment 96.13.** “3) In-Stream Water Quality Standards. Butte-Silver Bow understands the data-driven and science-based justifications for the limited use of proposed waivers of Montana water quality standards during storm events (for copper and zinc only) and replacement with the federal standard. It is noteworthy that similar waivers apply to the Clark Fork River below the Warm Springs Ponds for chronic conditions (meaning at all times, not just during storm events) and are deemed protective. Given the substantial work accomplished in the summit valley over the past twenty years and subsequent improvements to water quality in Silver Bow Creek, the application of federal standards during storm events, as outlined in the Proposed Plan, does not compromise broadly supported objectives to sustain and protect the aquatic conditions in Silver Bow Creek. Precisely, due to the work accomplished over the past 20 years and the additional work described in the Proposed Plan, including further reclamation, improving previously reclaimed sites, expanding stormwater controls, and implementing additional ground water capture, Butte-Silver Bow concurs that the water quality standards to be used to measure effectiveness of the remedial actions are reasonable.”
- **Comment 98.4.** “BPSOU Subdrain & Groundwater TI Waiver. The BPSOU Subdrain system, constructed during the 2003-2005 period, effectively captures contaminated groundwater that would otherwise reach and impact water quality in SBC, and therefore is an important element of the BPSOU remedy. Metals from historic mining sources are broadly dispersed within the alluvial aquifer in Butte. And broad areas of city streets, municipal infrastructure, and commercial development overlie buried waste from historical mining activities. These conditions make it necessary to capture and treat a significant amount of impacted groundwater in the BPSOU and supported the EPA’s technical impracticability (TI) waiver of cleanup standards for the alluvial aquifer adopted in the 2006 ROD. The groundwater TI waiver remains in place as part of the BPSOU remedy under EPA’s



Proposed Plan. See Proposed Plan at 14 (“No changes are needed for groundwater because those standards were waived for the BPSOU alluvial aquifer in the 2006 ROD.”). The boundary in the 2006 ROD was established with incomplete information. AR supports EPA’s confirmation of the groundwater TI waiver, but requests that the TI zone boundary in the Amended ROD be revised to reflect data collected since the 2006 ROD. The revised boundary must be based upon the results of groundwater sampling at point of compliance monitoring wells established after the 2006 ROD. AR has prepared a technical memo to summarize this new data—which is dated July 21, 2016, and was resubmitted to EPA on June 17, 2019—that supports and proposes a TI zone boundary adjustment. At a minimum, new point of compliance monitoring wells need to be established, and AR intends to propose establishment of such wells in a future revision of the BPSOU Groundwater Quality Assurance Project Plan (QAPP).

“Upgrades to the BPSOU Subdrain system have been completed by AR since 2006 to improve groundwater capture and further reduce contamination of surface water from groundwater discharges. These improvements include installation of a dry vault, pumping and electrical system upgrades, boring a secondary (i.e., bypass) discharge pipe to the Butte Treatment Lagoons (BTL), improving sections of the surface ditch to minimize infiltration of surface water, and updated O&M practices such as semi-annual jetting and pigging of the collection and transmission piping system to reduce scaling. In addition to these Subdrain system improvements, the Hydraulic Control Channel (HCC) system was extended eastward as part of the Lower Area One (LAO) groundwater collection system. Installation and operation of the BPSOU Subdrain and the LAO collection system to intercept groundwater have resulted in significant surface water quality improvements. EPA now proposes to further expand the existing groundwater control and capture system along Blacktail Creek and through the BRW and Slag Canyon area to intercept additional contaminated groundwater and route the captured groundwater to the BTL for treatment. See Proposed Plan at 9 & 11, tbl. 2. AR generally supports these proposed actions as part of a comprehensive approach to improving surface water quality in Blacktail and Silver Bow Creeks, so long as they are incorporated in a final agreement and CD to implement the Proposed Plan on terms that are agreed to by AR and the other CD Parties. Additional capture will further reduce loading from groundwater to surface water and

help achieve RAOs and increase the protectiveness of the BPSOU remedy.”

- **Comment 98.5.** “Surface Water TI Waiver. Notwithstanding the above-mentioned additional remedial actions that will enhance the surface water remedy, in tandem with the many remedial elements that are already in place, EPA has determined—based on a surface water TI evaluation issued in 2018—that total recoverable copper and zinc concentrations in surface water will not meet Montana DEQ-7 acute water quality standards during most wet weather flow conditions. See Proposed Plan at 6-8. Accordingly, EPA has proposed an up-front waiver of these standards due to the technical impracticability of achieving them. Id. at 6-8 & table 1. AR supports most of the conclusions of the surface water TI evaluation (although based on hypothetical removal efficiencies) and fully supports the immediate waiver of these state surface water quality standards. AR also supports EPA’s proposal to replace the waived standards with the corresponding federal water quality standards for copper and zinc in SBC (subject to further comments specific to use of the Biotic Ligand Model below), which are also hardness-based, but measured as dissolved rather than total recoverable metals. Id. The federal standards are the same standards that are used to protect nearly all streams in the U.S., and the federal standard for copper has been adopted for the Clark Fork River Operable Unit downstream of Butte. Thus, the replacement standards are fully protective of human health and the environment at the BPSOU. Finally, AR supports EPA’s proposed process for possible post-construction waivers of additional Montana DEQ-7 surface water standards and identification of replacement standards where the proposed further remedial actions do not achieve compliance with in-stream performance standards.”

#### **2.34.1.2 EPA Response**

The support for the TI waiver as described in the proposed plan is noted. EPA believes that the up-front waiver to federal standards for copper and zinc in wet weather conditions is scientifically supported and the best path forward for protecting human health and the environment.

#### **2.34.2 Against Proposed Plan**

##### **2.34.2.1 Comment Summary**

Eleven comments were received that were against the TI waiver as described in the proposed plan. They were against a waiver at any time.

There was some confusion in the standards used elsewhere and a sense that Butte was singled out for lesser protection.

- **Comment 1.1.** “Isn't that great can't meet standards, so decrease standard. Great idea, come on we can do better than this !!!!!!!!!!!!!!!!!!!!!”
- **Comment 2.5.** “#4. The document lowers discharge standards at the Headwaters of the Columbia and Clark Fork River Basins for the discharge of Berkeley Pit water---How crazy if that? As the old adage goes---“The solution to pollution is dilution! ... In addition, the new proposal for lowering the proposed water discharge standards to Silver Bow Creek is based on the fact as stated in your fact sheet--- That it is Technically Impracticable to meet the State discharge standards borders on criminal. Let me point out that in the 2006 Record of Decision the same claim was made on the removal of the Parrot Tailings. We now know through research by the Montana Bureau of Mines through requests from the Butte Natural Resource Damage Committee that claim is totally false!”
- **Comment 8.5.** “The plan’s discussion of waivers seems to be a one-way street that steers us down pathways for worst-case scenarios— declaring that if the anticipated improvements in water quality aren’t achieved as a result of the proposed remedies, then (instead of improving the remedies) more waivers may be required. I would hope that the plan’s final text as codified in the ROD and the CD makes it clear that future waivers will be a last resort—and specifies how adaptive management approaches will be used to refine remedial elements to ensure that they produce expected results.

“More pointedly, I would like to see the plan acknowledge the other side of the coin: what if, as everyone hopes, the proposed remedies (waste removals, stormwater and groundwater capture, etc.) are wildly successful, and water quality no longer suffers from high-flow exceedances? I’d like to see the plan explain under circumstances such as these, that the waiver could be dissolved (no pun intended), and water quality here could be assured on the same basis as that in the rest of the state—total suspended.”

- **Comment 31.3.** “1. TI – Technical Impracticability. It is my conclusion that the Modifications to the ROD are due to a lack of proper planning and execution of past cleanup activities by engineers

and contractors. Cleanup activities planned, presented, and executed by licensed engineers and engineering firms were haphazard, and without regard to sources of both groundwater and surface water metals and minerals that test outside of acceptable levels. Currently, there is nothing that is technically impractical. Technically impractical is an alternative way of saying that the planner, the plans, or those responsible to execute the plans are one or a combination of stupid, lazy or careless -"crappy". Proposed changes to 2006 ROD include contingencies that would lessen or eliminate standards for discharge, standards for measurable metals and minerals that occur during storm events, and requirements for infiltration barriers. That is not intelligent, diligent or a standard of excellence for the past, present or future of this area.

“Over the course of 30 years since cleanup activities began, representatives of local, state, and federal government as well as representatives of ARCO, unfortunately and unsystematically approved the cleanup plans that were being presented by licensed engineers. Those cleanup plans have been executed and we are dealing with the results of those cleanup plans at this very moment. I call the past 30 years the "stacked Band Aid approach" to cleanup. The wound was covered up with a band aid, with hopes that the wound will heal itself. The wound was not sterilized, nor investigated to determine the cause of the wound, it is just simply. It should be clear to any intelligent person that the Technical Impracticality would not exist had engineers planned cleanup in a more methodical and logical manner.”

- **Comment 31.9.** “So what should be considered? The past 30 years have included a significant amount of cleanup activity-that cannot be denied. Rivers, streams, banks, and plains have been cleaned up and a dam has been removed. However, the current plans allows for the accumulation of metals and minerals to accumulate and be deposited indefinitely, until at some point in the future, something will lead to a discovery being made that either the estuary of the Columbia, or a damn along the river, contains elevated levels of metals and minerals -because in 2019, the government as a whole accepted an amended and inadequate plan to clean up the Butte Hill, because the necessary plan was technically impractical. When cleanup was proposed and planned over 30 years ago, it was probably unfathomable to think that all areas containing toxic metals and minerals from past mining

activity, including miles of stream bed, hillsides, dams, roads, and railroad beds, would be entirely excavated and restored, reseeded, and planted with native plant materials. If you would have went to an auditorium room full of intelligent people in 1985 and told them that cleanup was being planned, and in 35 years, in the year 2020, almost 80% of the waste and crap would be cleaned up, everything but the source of the contamination, they would probably not believe it.”

- **Comment 34.2.** “1. I am concerned about relaxing any health and safety standards so that allowed contaminant levels are higher than are considered safe for human exposure according to national standards applied in other communities. The same applies to environmental exposures and levels that are above standards that are considered unsafe for fish and other animals. Butte residents and visitors and local wildlife and fish should benefit from the same environmental protections as apply in the rest of the United States.”
- **Comment 42.2.** “You're stating with the waiver that the engineers and contractors have done a crappy job for 30 years, and now that their bills have been paid and hands have been washed and they're ready to retire to Arizona, you're going to waive the standards. Just because you spend a billion dollars doesn't mean you did a good job. You did a job that requires the use of an acronym, "TI." I'm not blaming the EPA or ARCO. I think the folks responsible to create the long-term documents specifying cleanup have done a poor, inadequate, crappy job meant to create their own job stability. And that's all I have.”
- **Comment 58.5.** “And lowering the water discharge standard to allow for discharge of contaminated storm water, and, by the way, Berkeley Pit water that will be discharged in Silver Bow Creek, is even crazier. I mean, how could we lower these standards for our community and let us accept it? Not restoring our huge portion of Silver Bow Creek to a quality creek, where children can play and fish, is unconscionable, and it's wrong, and it should never be accepted.”
- **Comment 74.3.** “3. Waiver of water quality standards. One of the justifications of moving to federal standards rather than state standards is that aquatic life will not be adversely affected by the lowered standards. It is important to note that assertion ignores the sad story regarding the return of fish to the stream following remedy and restoration. While people are happy to see any fish at all in Silver Bow Creek, when compared to the baseline data for fish in the Father

Sheehan Park area of Blacktail Creek, the number of fish per mile downstream is only 10% of what it should be. It seems to me that the waiver request and the rhetoric behind the request, especially that it is not harmful to fish, is hiding the fact that the extensive work so far on Silver Bow Creek fisheries has not been the success that folks have envisioned, but has been a failure in numbers, something that cannot be aided in any way by a lessening of water quality standards.”

- **Comment 84.3.** “We absolutely should not settle for substandard water quality standards at any time. During a rain event or otherwise.”
- **Comment 87.2.** “Another comment I have is changing the water quality standard to meet what is needed to discharge the Berkeley pit water into the Silver Bow creek. I remember when a water treatment plant was built that would use high technology to discharge equal or above the water standard into the creek when the critical level was reached. They should be held to this, no excuse. If the DEQ insists on issuing a variance from water quality standards they should require nothing less than implementation of a pollution prevention plan during the entire duration of the variance!”

#### **2.34.2.2 EPA Response**

EPA appreciates and understands the concerns about the TI waiver expressed in the comments, and as stated in the proposed plan, EPA did not come to this decision lightly. In fact, it took years of evaluation of potential remedial technologies for stormwater on the Butte Hill along with furthering our understanding of water quality in Silver Bow Creek and Blacktail Creek during storm events to arrive at this conclusion that a limited waiver during storm events is justified.

From the early 1990s until today, multiple response actions have addressed surface water quality within BPSOU through contaminated groundwater capture and through several stormwater control features. These efforts allowed EPA, through the settling defendants’ surface water monitoring program and the state’s data collection along the creeks, to gather substantial data regarding the effects of these features on surface water quality. Significant gains in in-stream surface water quality improvements have been made and are shown through the data such that in-stream chronic standards are now met most of the time in the BPSOU surface water bodies. In-stream surface water quality during storm or snowmelt events has also improved.

However, in-stream surface water quality during some chronic flow events, storm events, and spring runoff continue to be out of compliance with the State of Montana DEQ-7 standards for copper and zinc. EPA, with assistance from Montana DEQ and the settling defendants, conducted a detailed TI waiver study, which used the large body of surface water monitoring data collected in BPSOU and developed numerical models to analyze the likely effects from various stormwater control efforts. The 2018 TI evaluation report, which is part of the administrative record for this 2020 BPSOU Record of Decision Amendment, shows that the acute copper and zinc standards will not be met in the BPSOU surface water bodies even with the construction of stormwater controls in every drainage basin within the BPSOU. This is due to the large quantities of stormwater or snowmelt that can occur in Butte, the steep gradient of hill on which the town of Butte exists, the effects of historical mining through uptown Butte, the small size of the surface water bodies within the BPSOU and contaminated surface water coming into the BPSOU from upstream areas.

Under CERCLA, where a site cannot meet cleanup standards due to technical impracticability from an engineering perspective, EPA may waive the standards and replace them with standards that are attainable. That is what EPA has done here. EPA is waiving the Montana DEQ-7 standards for copper and zinc in the up-front waiver described in the 2020 BPSOU Record of Decision Amendment based on the analysis contained in the 2018 TI evaluation report. The amendment replaces the state standards, which are based on the use of the total recoverable method for sampling surface water, with EPA-promulgated surface water quality criteria, which are based on the dissolved method of sampling. The federal dissolved criteria are protective of aquatic life when contaminated sediments do not exist in the water body. Sediments within BPSOU Silver Bow and Blacktail Creeks are currently contaminated and will be removed and replaced with suitable clean materials under the proposed action. Contaminant pathways to sediments (upstream contaminated sediments, contaminated stormwater and floodplain sediments, and contaminated groundwater discharge through the creek sediments) will be addressed under this proposed action. EPA believes the federal standards can be met through the implementation of the extensive stormwater controls and waste removals that are required under the amendment.

Montana DEQ concurs with this waiver based on the settling defendants' commitment to implement all technically practicable remediation measures described in the amendment, and further described in the consent decree and its attachments.

The initial TI waiver is limited and is strictly for waiving the total recoverable standards to dissolved standards during storm events for copper and zinc measured at the points of compliance (i.e., west end of BPSOU) in BPSOU. Contributions from BPSOU exacerbate these conditions. Because of this, a major source of the exceedances is outside of the control of any potential stormwater remediation that could be implemented as a part of BPSOU. In other words, even if all of the stormwater from the BPSOU was able to be captured and treated, Blacktail and Silver Bow Creeks would still have exceedances of the total recoverable copper and zinc standards over 80% of the time. Additionally, the discharge standards for the treated Berkeley Pit water are not being waived and will meet the standards developed in the 2002 Butte Mine Flooding Operable Unit consent decree.

The waived-to standards were recommended by EPA as being protective of aquatic life following strict methodologies involving review of toxicological studies. These recommendations were developed for implementation of the federal Clean Water Act and are independent of Superfund or BPSOU. The waived state standards are based on a different sampling methodology but are also protective. Most states have adopted the federal criteria as state standards. Currently, there are only 13 states in the United States that use either the total recoverable or a combination of dissolved and total recoverable standards.

As outlined in the compliance determination plan, which is attached to the proposed consent decree as Attachment A to Appendix D, additional waivers are possible if the DEQ-7 standards are exceeded more than once every 3 years on average, following the construction of key remedial elements and optimizing their performance.

In-stream ARAR standards were invoked for other operable units within the Clark Fork Basin Superfund sites, including the Clark Fork River and Milltown Reservoir Sediments operable units.



### 2.34.3 Wait to Grant Waivers

#### 2.34.3.1 Comment Summary

Nine comments were received with specific questions or suggestions related to the waiver as described in the proposed plan.

- **Comment 4.3.** “1. Can EPA clearly and convincingly demonstrate that all practicable and feasible ways of meeting the state standard have been considered and evaluated prior to waiving the state standard? Are we sure that everything has been tried before we waive the state standard? Is waiving the state standard the last resort? If the answer to these questions is not a resounding yes, I would ask that these interim measures be investigated and/or implemented before we waive the state standard. 2. There is concern if the laxer federal standards cannot be met, then what will EPA do?”
- **Comment 7.8.** “F. Waiver of water quality standards. 12. It is odd, even opportunistic of PRPs, to see that Waiver of State of Montana water quality standards have been agreed to BEFORE the work is done that will determine if such is needed (cart before the horse). With a Waiver to lower Federal Standards waiting in the wings, how might citizens believe that the best possible cleanup of soils contributing to toxic runoff will be thoroughly accomplished? I suggest that no waiver be allowed until AFTER all the capping of Under- and Unremediated soils is finished on the Butte Hill, and AFTER all possible stormwater diversions from the corridor are completed. Only then with appropriate real data (not assumptions) from WQ testing should a Waiver be considered. I ask that the State of Montana assure Butte citizens this caveat will be attached to any Waiver requirements.”
- **Comment 19.10.** “Question: what has received more effort: writing impracticability justifications or devising innovative, effective ways to improve water quality? On the central issue of adopting lower water quality standards, I stand firmly with those who think that the easiest course is being endorsed and will prevail. Try harder.”
- **Comment 38.1.** “Asking for the first change to the ROD to be a waiver from Montana State Standards to the Federal Standards absolutely should not happen until the work is completed removing all contamination from Casey Street to the Butte Reduction Works. The State is responsible for the removal of the Parrot Tailings behind the Civic Center and the Blacktail Berm. ARCO is responsible for the

Northside Tailings, the Diggings East tailings, the Butte Reduction works and the Silver Bow Creek Channel. The tailings need to be completely removed and water flowing before the tests can be performed to know that a TI is necessary. Since all that is planned is Storm Water Treatment ponds for 2 -3 storms that occur resulting in large amounts of contaminants being deposited by storm water.”

- **Comment 47.1.** “And I'm speaking as a member of the Silver Bow Creek Coalition, but I'm also speaking as a member of the Restore Our Creek group. But my main concern is addressed to the EPA, and that is because of your recommendations for the changes to the ROD. And it seems, to me, that when you are recommending immediately to do a waiver on the quality of the water that it's too quick. ARCO and the other responsible parties are going to be removing tailings. The State's going to continue to remove the tailings of the Parrot. With those removals of the tailings, if it's done correctly, there should be a flowing stream that is not contaminated to the extent that we would need total waivers. And my suggestion is you let the cleanup begin, and if we find, then, that, indeed, things are not changing, then perhaps we need to do some more engineering and more looking at other methods. Now, the Butte Priority Soils is going out around to the Greeley area. We know contamination is coming from that area. We need to know why. Why is there contamination in the storm water that comes from the Greeley area entering down through the corridor of Silver Bow Creek? And we need to make sure that we address that issue in a way maybe a little bit differently than we're doing now. And we need to also wait on the waiver, to see if there are any changes made because of all the good work that ARCO will be doing removing tailings, total removal of tailings. If that happens, there must be a difference in that creek corridor. EPA, I beg you, you do not go for the waiver at this point in time. Let's see what the cleanup will do for us, and then let's go for the waivers only if it's absolutely necessary.”
- **Comment 66.3.** “I agree there might need to be waivers, but let's not put the cart before the horse. Let's get some of the cleanup done and see what the results are of that cleanup that's being done to know whether we really do need to change from Montana standards to federal standards. Montana has stringent water standards because they want to preserve good water in our state. And so I don't think we lightly say, "Oh, sure, no problem. And if the first level isn't okay, come back and we'll give you another level." I don't think so. I think

we need to question some of those things and to say, "Do you really need it before the cleanup is started?" I agree there might need to be waivers, but let's not put the cart before the horse. Let's get some of the cleanup done and see what the results are of that cleanup that's being done to know whether we really do need to change from Montana standards to federal standards. Montana has stringent water standards because they want to preserve good water in our state. And so I don't think we lightly say, "Oh, sure, no problem. And if the first level isn't okay, come back and we'll give you another level." I don't think so. I think we need to question some of those things and to say, "Do you really need it before the cleanup is started?"

- **Comment 82.5.** "No change to the water quality discharge standards should take place until all work has been completed and all tailings removed!"
- **Comment 91.4.** "5. The remediated Creek should serve as the "canary in the mine" regarding the effectiveness of Butte's clean-up and detailed reports on creek status, fishery, and aquatic insect populations should be provided regularly to the Community. Is it premature to waive water quality standards before reviewing the effectiveness of the proposed passive treatment ponds? How certain are the EPA and State of Montana that the passive pond system will be protective?"
- **Comment 100.3.** "2. TI water quality waiver. The TI water quality waiver should incorporate EPA's assurances that it will not preclude the future restoration of a creek or the use of waters from clean, uncontaminated sources that could include Berkeley Pit and/or Silver Lake, or other sources. Further, the TI waiver should not be implemented until ARCO/BP (AR) has completed all remediation activity and evidence establishes that the waiver is still needed."

#### **2.34.3.2 EPA Response**

EPA appreciates and understands the concerns about the TI waiver for the State of Montana acute aquatic life standards for copper and zinc to the federal acute aquatic life standards expressed in the comments. As stated in the proposed plan, EPA did not come to this decision lightly and conducted a comprehensive evaluation of several years of data to determine that a waiver is justified in accordance with the CERCLA requirements for waivers of ARARs.

The waiver of in-stream, acute copper and zinc standards during wet weather conditions is a narrow and limited waiver. It applies only when stream conditions meet the definition of wet weather found in the 2020 BPSOU Record of Decision Amendment and does not apply during chronic or normal flow conditions when Montana water quality standards do apply. During wet weather or storm event conditions, large amounts of rainwater and/or snowmelt run down Butte Hill and flow into Blacktail Creek and Silver Bow Creek from its confluence with Blacktail Creek, which are the two surface water bodies where in-stream ARAR standards are promulgated. The volume of water from these events often overwhelms the waters that are in the surface water bodies when storm events occur. The water running off the Butte Hill becomes contaminated with copper and zinc from the many sources of such contaminants on the Butte Hill. The TI evaluation (EPA 2018b) and its detailed modeling demonstrated that no amount of stormwater controls applied on Butte Hill would result in achieving the Montana standards. Additionally, upstream contaminant of concern contributions from sources outside of the BPSOU contribute to the copper and zinc exceedances during storm events. This situation would occur no matter what was done to control stormwater within BPSOU.

The agencies think that the extensive stormwater controls that will be implemented pursuant to the 2020 BPSOU Record of Decision Amendment will achieve the federal water quality criteria that replace the waived standards. These standards, coupled with the removal of contaminated sediments, floodplain waste removals, and additional groundwater capture provided for in the amendment, should result in the protection of the environment within Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek surface water bodies within the BPSOU. If not, then the compliance determination plan sets out a process for additional surface water quality waivers.

EPA believes that the stormwater retention/detention basins and other stormwater control measures required under the 2020 BPSOU Record of Decision Amendment and the consent decree statement of work will be very effective in reducing the amount of contamination entering the BPSOU surface water bodies of Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek just as the stormwater basins in Missoula Gulch have proven to be very effective. The combination of hydraulic dynamic devices, forebays, retention/detention basins, floodplain waste removals, and additional capping of waste, combined

with other stormwater control features previously implemented within BPSOU, will prevent the vast majority of the contaminated sediments that currently enter the BPSOU surface water bodies from entering those surface water bodies, protecting Blacktail Creek and Silver Bow Creek from its confluence with Blacktail Creek from environmental harm caused by those sediments. Further, if future monitoring reveals that in-stream sediments are being recontaminated, an investigation will be triggered and corrective actions for the pathway(s) causing the contamination will be implemented as provided for in the BPSOU Surface Water Management Plan or the BPSOU Surface Water Compliance Determination Plan, depending on the media and pathway.

The 2020 BPSOU Record of Decision Amendment also provides for the possible waiver of other in-stream standards after remediation has been implemented and extensive monitoring occurs. However, future waivers will not be considered until the remedial elements are completed and shown to be functioning as designed; this is consistent with many of the comments. EPA believes that, aside from acute copper and zinc, the other in-stream standards can be met after the remaining remedial elements are constructed and does not think the future waivers will be triggered.

Finally, the TI waivers of in-stream standards will not prevent the construction of a lined creek in Silver Bow Creek above its confluence with Blacktail Creek, which could hold clean water if funding and a water source are found.

#### **2.34.4 Use Biotic Ligand Models Standards**

##### **2.34.4.1 Comment Summary**

One comment was received on use of the Biotic Ligand Model.

- **Comment 98.20.** “F. Page 5, Column 2, Paragraph 1. The Proposed Plan states that it leaves existing surface water RAOs “unchanged, except for the need to waive certain State of Montana DEQ-7 standards (Montana’s water quality standards), to be replaced by federal water quality criteria.” AR agrees that certain DEQ-7 standards should be waived, as described in the Proposed Plan, and replaced by federal water quality criteria for protection of aquatic life. Consistent with the stated approach, the DEQ standard for copper would be replaced with the current federal criteria for copper. The current federal criteria for copper is the Biotic Ligand Model which calculates a protective numeric criterion utilizing site-specific data. EPA recognizes the possibility that the BLM for copper could be the

replacement standard under Table 1, which confirms EPA's position that the BLM for copper meets the protectiveness criterion.

"H. Page 6, Column 2, Bullet. The Proposed Plan states: "Total recoverable copper and zinc water quality measurements are unlikely to meet Montana DEQ-7 acute water quality standards during most wet weather flow conditions, regardless of measures used to control COCs. Thus, these standards should be waived as technically impracticable and replaced. The replacements are called 'waived-to performance standards.' They use the same numerical standards, but the analysis is for dissolved metals, a dissolved conversion factor is applied, and there is no minimum or maximum value for hardness." AR agrees that the waived-to standards should be based on dissolved metals per the federal water quality criteria. However, AR maintains that the proper waived-to standard for copper should be derived using site-specific data based on EPA's Biotic Ligand Model (BLM) or another federally approved method for development of site-specific criteria. These federal standards are not only appropriate under EPA guidance, but are also equally protective of aquatic species. In fact, EPA states: "Since 2007, the BLM, a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria, has been EPA's national recommended freshwater aquatic life criteria for copper.... The BLM represents the best current and available science, and EPA's scientific judgement is that application of this model is the best way to ensure that resulting criteria will be protective of aquatic life designated users." Letter from S. Garvin, U.S. EPA, R. Huffman, W.V. DEP, at 2 (July 19, 2016). AR requests that EPA clarify that waived-to standard for copper is based on EPA's BLM."

#### **2.34.4.2 EPA Response**

The State of Montana has delegated primacy for the Clean Water Act and has developed water quality standards that were approved by EPA. The State of Montana acknowledges the need for waivers of certain standards in this circumstance and has requested that EPA select hardness-based dissolved standards, which were identified as ARARs in the 2006 BPSOU Record of Decision, for replacement standards. EPA agrees with this approach. If appropriate, the Biotic Ligand Model standard, in place at the time of the compliance standard determination period, will be applied as a replacement standard if the dissolved standard cannot be met. See Attachments A, B, and C of the consent decree for further explanation.

## 2.34.5 Other

### 2.34.5.1 Comment Summary

Ten comments were received with specific questions or suggestions related to the waiver as described in the proposed plan.

- **Comment 31.3b.** “Additionally, while testing is in place to locate other sources of groundwater contamination, such as Timber Butte and the areas of Beef Trail that contain historic mining, milling, and smelting activity, responsibility parties have not been identified. The sources of the contamination, the metals, minerals, carcinogens, chemicals, etc. are not being properly acknowledged. I would suspect that is because a responsible party cannot be identified. It is also possible that there is an attempt to use the Technical Impracticality to deflect cleanup responsibility either in the short term or forever rather than identify sources of additional contamination, or force them to be cleaned up in a manner that would be publicly acceptable with regard to human health.”
- **Comment 37.5.** “However, we disagree with the EPA that the impact of this would be inconsequential to the health of fish and aquatic life in Silver Bow and Blacktail creeks. There is a significant amount of research that suggests elevated metals in sediments have chronic impacts to fish through prey consumption. The long-term effects of total recoverable metals exceedances above DEQ-7 could have chronic effects on fish and aquatic life.”
- **Comment 40.3.** “Any time an agency starts waiving standards, I immediately ask the question, "Well, how can something that is protective one day be waived to a more permissive standard another day and still be protective?" And I understand, I think, the technology -- or the technical arguments behind this. But I hope in the responsiveness summary drafts in response to my comments that there will be a strong justification of how the federal standards will be just as protective as the more stringent state standards. I think that needs to be clearly addressed, what impact will the lesser standards have on the cleanup downstream, and so forth, I think needs to be addressed.”
- **Comment 56.2.** “... [I]n terms of the TI waiver, I think it needs to be addressed in the responsiveness summary what will happen if you can't meet these federal standards. That needs to be specified, how far down the line do we go.”

- **Comment 63.3.** “What I'm struggling with is why the Parrot Tailings is not included and was not included in the TI modeling on -- for this waiver. And it's absolutely true. We can't go beyond what's the law. But we're here tonight because all the parties are asking us to change the law by changing the standard that, you know, is required for discharge in the creek. And, before we do that, it was told to us that everything but the kitchen sink was thrown into these models. Well, if the main focus of your remedy is removing tailings and replacing them with storm water features on the surface, why was the biggest, if you go down to that 1954 map, the biggest of all of those tailings was the Parrot Tailings? And so, I would strongly encourage all the parties realizing that the removal of those tailings has likely occurred after this proposed plan was first put -- first put together. I'd strongly encourage all the parties to go back and do some modeling that includes things like storm water catch basins where the Parrot Tailings are now.”
- **Comment 67.2.** “The question is, they have the words "sediment load." Is there a sediment load waiver for the Clark Fork and Milltown but Butte is a copper waiver, or are they talking about the same thing? I have a question on that one, their waivers. So, Butte's not unique on asking for a waiver, supposedly, to this one. It says the Clark Fork and Milltown have had waivers. But is it apples and oranges? And that was if somebody could say where does that copper come from, how do you fix the problem then? Having worked at the Sunlight at a cyanide mine, laid out all the buildings, all the dams, the impoundment pond, the slurry dikes, and all that, they controlled the cyanide. I don't think it's rocket science. Expensive. It may be expensive to get to that level in Butte. But I'd like to see if it was possible, the high and low extremes, what would it take to get to that point to collect that?”
- **Comment 69.1.** “If I understand correctly what was presented about the water quality standards, and I don't understand water quality standards, but if I understood what you said, the data proves that the quality standards cannot be met so you are asking for a waiver of the standards. Why should we settle for lowering the water quality standards that are already in place? And, if the waiver is not granted, how will you proceed?”
- **Comment 72.1.** “It says even though, generally, the differences in the degree of protectiveness between the federal dissolved and the State



total recoverable standards are small, that the water quality sample, based on the unfiltered, total recoverable measurement allows the State more control over sediment runoff in the waters of the State. My question is how small are these differences? I've been sitting here probably using up my whole family's data package searching the EPA website for some numbers, for some actual numbers. And you were asked a while ago and you threw out the number 30. Thirty what? Parts per million? And how does the State standard compare to the federal standard? I guess if we had some numbers, you know, how big of a leap are we taking here, you know, if we were to consent to this - - this adjustment. You know, is it a little different, like it says here, or is there a really big difference? And I know you can't compare dissolved versus particulates. It's like comparing apples and oranges. But we're not getting any numbers. And your slide doesn't show that.”

- **Comment 91.6.** “We need to question claims that Butte is such a highly mineralized area it cannot be cleaned to water quality standards. Several historical facts suggest water quality is not utterly linked to naturally occurring mineralization. The Brown's Gulch and German Gulch drainages provides fisheries despite draining similar mineralized areas. In fact, they actually improve water quality where they discharge to Silver Bow Creek. The Columbia Gardens initially included a fish hatchery and was located in the center of the current active mining area. The Olympia Brewery started in 1899 and was located near the location of the current. Met Tavern on Harrison Avenue along Silver Bow Creek, which is located in the center of the area under discussion. I cannot recall hearing "naturally occurring mineralization" arguments when other mining remediation projects in Southwest Montana are discussed or when volunteering time to the reconstruction of Butte's municipal water system. This calls into question whether the problem is naturally occurring mineralization or insufficient capping or removal of source areas in BPSOU and West Side Soils.”
- **Comment 98.21.** “G. Page 6, Column 2, Paragraph 1. The Proposed Plan states: “Even with this enhanced remediation, surface water data and current modeling evaluations indicate there is uncertainty as to whether remedial goals and ARAR standards for surface water (State of Montana DEQ-7 standards) could be met.” AR agrees that there is uncertainty (at a minimum) as to whether RAOs and ARAR standards for surface water will be met through construction and operation of

the revised remedy elements; AR suggests that the wording be modified to indicate that the modeling indicates it is improbable that RAOs will be achieved and all ARAR standards for surface water will be met in all conditions and at all times.”

#### **2.34.5.2 EPA Response**

EPA appreciates and understands the concerns expressed in the comments about the TI waiver of the acute standard for copper and zinc during storm events. As stated in the proposed plan, EPA did not come to this decision lightly. The TI waiver is largely a result of exceedances of the total recoverable standards for copper and zinc measured upstream in Blacktail Creek that are not part of the BPSOU and are thus outside of the control of what the agencies can require for cleanup. This is in part why the limited TI waiver is being granted prior to the completion of remedial elements in the corridor. It is not because of expense or lack of proper planning or cleanup work done to date.

However, future waivers will not be considered until all the remedial elements are completed and shown to be functioning as designed; this is consistent with many of these comments. EPA disagrees with the comment stating that it is improbable that remedial action objectives will be achieved and all ARAR standards for surface water will be met in all conditions and at all times. EPA believes this statement is premature and this determination cannot be made in a broad sense as suggested.

EPA believes that the stormwater basins will be effective, just as the stormwater basins in Missoula Gulch have been effective. The basins will retain the vast majority of the sediments, protecting Silver Bow Creek from those contaminated sediments. Additionally, contaminated sediments within Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek will be removed so that a clean streambed in these areas will result. If future sediment or surface water monitoring reveals that cleaned up stream sediments are being recontaminated, sediment removal in the creek would be repeated and the sources/pathways of the contamination will be addressed. Furthermore, if a source is found that is loading sediments and negatively impacting the stream, that source will be remediated within the corridor.

As for the difference between the total recoverable and dissolved concentrations, it can vary greatly depending on the flow rate or agitation of water being sampled. Imagine a glass of water with some silt in the bottom of it. If you stir it and take a sample while it is cloudy, the total

recoverable concentration will be much greater than the dissolved concentration because of the sediment entrained in the water. The difference between total and dissolved could be several hundred parts per billion, or more. However, if you allow that silt to settle first and take your sample from the clear water at the top of the glass, the total recoverable and dissolved concentrations will be much closer to matching each other, if not nearly equal (within a few parts per billion of each other if sufficient time is allowed for settling). This is what the detention/retention basins will help to achieve. If the basins are well managed and incorporate natural vegetation, the last bit of fines from the sediment that take a long time to settle can be further filtered out or entrained by the vegetation, for example, further narrowing the difference between the total and dissolved concentrations in the water. A few parts per billion can make the difference between meeting or exceeding water quality standards for these contaminants of concern.

Additional mine waste removal within BPSOU will also have benefits to stormwater quality because stormwater contamination is primarily coming from buried mine wastes used as building materials all over the Butte Hill and the scouring of bank material. The Parrot Tailings area is generally too far upgradient (uphill) to intercept much stormwater relying on gravity flow, and the modeling that forms the basis of the TI waiver accounted for that. Most of the stormwater flow enters upper Silver Bow Creek at and below Harrison Avenue.

The Texas Avenue hydraulic dynamic device is one of five devices on the hill that initially take out the larger particles during a storm event. Investigations are currently underway through the West Side Soils Operable Unit remedial investigation to further our understanding of the nature and extent of contamination coming from this area, and the response actions for that area may further address contaminated stormwater originating from those areas. Even if that occurs, it does not eliminate the need for extensive stormwater controls within the BPSOU nor would it mean that the in-stream acute copper and zinc standards can be met.

Regarding natural mineralization, some naturally occurring mineralization occurs within the BPSOU in the form of naturally occurring outcrops or similar features that can add contaminants of concern to the overall BPSOU contamination. The amount of this contribution has not been quantified by EPA, and its presence was not a

significant factor in EPA and Montana DEQ's decision-making for the 2020 BPSOU Record of Decision Amendment.

## **2.35 Waste Removal**

### **2.35.1 Supports Proposed Plan**

#### **2.35.1.1 Comment Summary**

Six comments were received that expressed support for waste removal as described in the proposed plan.

- **Comment 5.3.** "Areas where groundwater contacts surface water throughout the upper Silver Bow Creek area is still a concern--I hope the EPA and DEQ will continue to work with local agencies to study the aquifer and explore new ways to capture and contain contaminated groundwater and keep it from entering the creek. I am grateful that the plan includes removal of tailings and other pollution in the Diggings East and Northside Tailings areas, as well as in the Blacktail Berm."
- **Comment 15.4.** "These two actions, along with additional removals near the stream banks in Blacktail Creek and at Butte Reduction works, should add even more to the load reduction during wet weather conditions, though how significantly, is still to be found out. Removal of streambed sediments in the vicinity of lower Blacktail Creek will also prove effective, as the likely source of pore water contaminants recently observed. By removing these materials, it can be actively monitored if the original source is in the streambed, or if it is re-contaminated by ground water, which has not been shown to be elevated in the concentrations needed to match the pore water concentrations."
- **Comment 22.4.** "2.1 CTEC supports the proposed waste removals of the Diggings East and Northside Tailings, Blacktail Creek, and Butte Reduction Works areas. Since the 2004 Proposed Plan, CTEC has advocated for the complete removal of all accessible mining waste in the Silver Bow Creek corridor. Recent data collected by EPA, ARCO, NRD, DEQ, MBMG, and Montana Tech shows the continued impacts of contaminated groundwater on surface water in the Silver Bow Creek watershed. Removal of mining waste will reduce the long-term threats to surface water from contaminated groundwater and reduce perpetual treatment requirements and costs. The result is a more permanent remedy which we support."

- **Comment 25.3.** “Waste Removal. TU supports removal of all accessible mining waste in the Silver Bow Creek corridor that could contribute to further groundwater or surface water contamination. The proposed waste removals at Diggings East, Northside Tailings, Blacktail Creek, and Butte Reduction Works will reduce the risk of on-going and future migration of metals contamination downstream and reduce long-term groundwater treatment costs. If there is a meaningful opportunity for restoration in the upper Silver Bow Creek corridor, it must start with effective waste removal and containment.”
  
- **Comment 30.4.** “Removing the mine wastes from the corridor. This is truly a good thing for Butte and the parties need to be commended for taking this action as opposed to leaving “waste in place”. The question now becomes, “how much will be removed both laterally and horizontally?” It has been stated in one of the EPA presentation meetings that some “600,000 bank cubic yards” will be removed in the corridor. The implication being that the entire area laterally will have waste removal operations. The proposed plan as presented states that the wastes will be removed down to an average high ground water level, i.e., no dewatering will take place. As it has been show that a majority of the contaminants are contained in an organic/silt layer below the wastes and as seen in the Parrott Phase I removal, this layer of silt most likely may lay below the ground water level. Thus, assurances are needed in the ROD amendment that MOST of the contaminates are removed both laterally and horizontally in the entire corridor area and not just those above an arbitrary ground water level or in a small area to provide for a storm water basin.

“In addition, I hope the EPA does not have blinders on or suffers from “not invented here” syndrome. As stated above, waste removals are already taking place in the corridor area at the Parrott tailings site. This is a learning experience and the process followed and the results attained should be incorporated in the clean up plans for the Northside Tailings, Diggings East, and the Blacktail Berm. We have lost access to our groundwater because of contamination due to mining activities. It is imperative that the ground water eventually be allowed to clean up and it will never happen if significant contaminants are left behind.”

- **Comment 52.2.** “Now, I will say this. I will compliment the work being done on the removal of the tailings. I'm proud to see that that

work has been done. I think it's excellent work. I think you're doing the right thing getting those toxins out.”

#### **2.35.1.2 EPA Response**

The comments received in support of waste removals as described in the proposed plan are noted for the record.

### **2.35.2 Other**

#### **2.35.2.1 Comment Summary**

Nineteen comments were received that generally supported the removal of the Diggings East, Northside Tailings, and Blacktail Creek berms (as part of the larger Blacktail Creek removal) and raised issues or suggestions about EPA’s prior and proposed mine waste removals. Issues raised were impacts to local traffic patterns, the need to focus on the Butte Hill for additional waste removal, the depth of excavation proposed for the Diggings East and Northside Tailings removals described in the proposed plan, the amount of cleanup that will be required in the floodplain areas of Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek, and the buried mining wastes that are around the Silver Lake pipeline and Flintstone Creek. One commenter also emphasized the need to make the Silver Bow Creek area above its confluence with Blacktail Creek into a “meandering design” and to remove the BPSOU Subdrain as unnecessary after removal of contaminated groundwater by the State of Montana.

- **Comment 7.5.** “C Tailings Removals. With Parrot Tailings and groundwater removed by the State of Montana, Butte hydrologists have expressed that the creek could repair itself to a natural stream far, far sooner than geologic time IF only EPA will require removal of ALL accessible tailings from Northside, Diggings East and Blacktail berm. Please return the old creek channel to a meandering design. ARCO voluntarily straightened the original creek channel in a failed effort that EPA accepted anyway. It is an eyesore that never received the promised beautification. Please require that channel be contoured back into a natural shape to anticipate the day when it will again carry all the East Ridge water to the confluence with Blacktail Creek. To accomplish this, please require removal of:
  1. ALL tailings in the corridor are removed – not just those above the high groundwater table. This will allow the inefficient French Drain that ARCO voluntarily placed as an experiment to be removed along with the tailings around it. Please require the

dogleg ditch they created be contoured for a meandering stream. With AR's legacy of toxic tailings removed, the argument that clean water "will harm the remedy" is not valid. The ROD Amendment must show a continuous flowing creek uninterrupted by infrastructure.

2. Newly found tailings: During excavation for stormwater ponds, please require at least any obvious mine or smelter waste uncovered be removed regardless of depth.
  3. Tailings from Texas Avenue to Civic Center including Flintstone Park tailings must be removed.
  4. Tailings surrounding Silver Lake Pipeline must be removed.
  5. French Drain Tailings. The slotted-hole pipe buried only 5' below surface is not adequate to collect groundwater contamination from throughout the wide corridor! Please order the pipe be removed. When a greater amount of stormwater is captured in Butte and sent to the Mine Flooding O/U or directly to the Lagoons for treatment, and all accessible tailings are removed, there is lessened need for stormwater basins that use most of the space in the corridor under the Proposed Plan Amendment.
  6. Slag Walls at Montana Street contribute not just mining contaminants but petrochemical organics to Silver Bow Creek. They must be moved out of water's way. In the 1990's ARCO discovered Historic Preservation laws were handy to decrease the amount of cleanup required on the Butte Hill; however, when the "historic mining landscapes" posed serious human health concerns, they were legally replaced by signage that depicted what used to be there. I suggest this approach be used for the slag walls. A large piece of the walls could be moved to a place like the Mining Museum for visitors edification, yet out of water's way. For human health and the environment these walls must come tumbling down and the tailings and organics beneath must be removed to a safe repository."
- **Comment 11.1.** "I'm writing to comment on the proposed remedy for the BPSOU in Butte. My focus is the Diggins East and Northside Tailings area and how it affects the surrounding neighborhood both currently and in the future. Currently, George St. runs thorough the Diggins East. In this section, the road is as wide as a state highway

and drivers use the road for east-west, crosstown traffic. Due to the size of the road through this section, drivers go very fast. Immediately to the east of the Diggins East, George Street is directed into a narrow alley, inches away from homes, and with multiple stop signs. To the east of this section (alley-wide), George St. turns back into a normal sized neighborhood street. Thus, creating a very dangerous bottleneck through the alley-wide section.

“Currently and in the past, many properties have been hit by vehicles. My house, and everything in my back yard was violently hit by a vehicle on a Sunday afternoon. The house directly across the street was hit violently two weeks prior. Luckily that house was vacant at the time. Additionally, most of the properties on the alley-wide stretch have had vehicle collisions and most have built barricades to protect themselves. Due to the bottleneck, most drivers speed through the narrow stretch, and to maintain speed, they run all of the stop signs. I have set up cameras and have done multiple counts on total vehicle traffic as well as wrong-ways and run stop signs. About 350+ people use the ally-wide section a day. More than 200 run the stop signs! An average of 4 people drive the wrong way a day as well.

“The plan for the Diggins East which has been presented to the public shows a wonderful park with many amenities for children and the public. This will increase foot and vehicle traffic on the alley-wide section and will exacerbate the already dangerous current conditions. Likewise, the highway-like road going through the new park will create another hazard. Please, use this opportunity to fix these problems, not to make them worse! There was overwhelming public support for getting rid of or redirecting George St. at EVERY public workshop help on this topic. Please cut off cross-town traffic from speeding through the new park and through our neighborhood alley before someone is hurt or killed by this dysfunctional excuse for a street.”

- **Comment 31.8.** “6. Cleanup Activities that have occurred to Date. All areas, to date, that have been cleaned up have involved very minimal disruption of personal private property, commercial property, residential homes, and public roads. The majority of areas cleaned up is large areas of land and stream bed unoccupied by personal or commercial dwellings or developed real estate. Most of the areas cleaned up to this point have contained a minimal number of private properties and have low levels of regular, daily human usage. These



areas have required a very minimal amount of negotiations to achieve the necessary levels of acceptable cleanup. Parts and pieces of the Butte Hill, for example Missoula Gulch, have been reclaimed, covered and re-vegetated. Once again, it was an area that was largely unoccupied by residential or commercial units. Silver Bow Creek, The Clark Fork River, opportunity ponds are all areas with no residential homes and no commercial activity. All the while, the area with daily human activity, including dwelling units and businesses, is the area that contains the highest amount of exposed and covered mine waste that has not yet been removed. The Focus and Clean Up should be redirected at the Butte Hill.

“Demanding a restored creek, and another major park and playground at this time is a practical joke, and simply continuing to put the cart before the horse. If this town isn't cleaned up and restored, specifically the Butte Hill, there is not going to be a measurable population able and enthusiastic to live or relocate here. That, with the point in the future when Montana Resources has to close, will contribute to a loss of tax base necessary to maintain parks and open spaces. The solution to the problem is an amalgamated effort by individuals, corporations, and government entities. It is not an individual effort or an easy decision; there may be a loss of family homes, parks, and playgrounds. However, the end result will be a healthy community with an economic future that is contributing bright minds and profitable businesses to the economy.

“Hundreds of people have acknowledged publicly and privately that the most effective solution to eliminate the minerals and metals that are causing elevated detectable levels in homes, yards, creeks and waterways, is to completely excavate the Butte Hill within the areas defined. This includes exposed unreclaimed mine waste and insufficiently reclaimed mine waste, as well as mine wastes covered by roads, sidewalks, homes, and insufficient reclaimed caps that are eroding or have plant materials that have died as a result of improper establishment and care.

“Complete excavation would be defined as the total and complete excavation of mine waste in the defined area, identified in orange on APPENDIX A, and described by boundaries in section #2. The Mine waste would then be deposited in an agreeable location, sometimes referenced as the Alice pit or Berkeley pit, with modern and efficient large scale Mining, excavation and hauling equipment. Immediately

following excavation, work would begin to establish modern streets, sidewalks, curbs and gutters with known points of entry and exit to properly divert storm water. The end result would be developable and salable lots with utilities established. The initial stages of the project would be covered as a cost of cleanup and remediation, however, the long term would provide commercial and residential real estate opportunities with new, modern utilities and infrastructure.

“If done correctly the project can circumvent eminent domain requirements, and the saleable lots could, in and of themselves, provide gap funding, a profit, or at a minimum reduce the total cleanup costs. This might require more work and face to face contact with individual personal property owners. However, this plan is not stupid, lazy or careless. The alternative plan involving excavation and redevelopment is intelligent, requires diligence, and sets a standard of excellence for the future.

“The EPA proposed ROD Amendment for BPSOU is a perpetuation of stupid, lazy and careless planning. Accepting the amendments is an acknowledgment of the same. I have spent significant a time over the past 20 years to look over, watch, read and interpret the cleanup plans and action, which were solely for my own benefit and without pay. The staff of the EPA responsible to review, propose and make decisions is being compensated fairly for their time, and further consideration of a proper long-term plan is highly encouraged and appreciated. Anything less than a complete cleanup is, frankly, a mere avoidance of responsibility and a deceptive marketing ploy to refocus attention away from the problem. Leaving this project unfinished only perpetuates the problem into the future, until a new group of leaders, legislators, judges, and government officials can step forward to do what should have been done 30 years ago -start cleanup at the origin of the problem. By not acknowledging the source of the mine waste, and not cleaning up the Butte Hill, we are leaving the option of mine expansion into the area by currently the active mine, Montana Resources.”

- **Comment 68.6.** “I want to put on the record that we will greatly enhance the ability of all the parties to do this thing right with maximum flexibility if, from Kaw Street to Utah Street, that George Street, both permutations of it, are removed and create a bigger open area in there for the ponds and for everything else. So what are we going to find out when we start digging out the Diggings East or the

Northside Tailings. Well, we're not going to really know how bad it is because they're only going to go down so far, to the top of the high groundwater level. Okay. I don't particularly like that. But thank you for taking them out at all because it opens up some opportunity in that area that wouldn't otherwise be there.

“Thank you to the parties for agreeing, and particularly to ARCO for agreeing, to remove the tailings in the Northside Tailings and the Diggings East. If you had followed this all along, you know that decision was made a long time ago that EPA had agreed. The State disagreed. Some of us disagreed. But the EPA and ARCO had come to an agreement that human health and safety did not require the removal of those tailings.”

- **Comment 74.1.** “1. I am in support of removal of tailings in Diggings East and Northside Tailings, however removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level. Additional areas of contamination should be included in the removal whenever possible. ... 8. Tailings around the Silver Lake Pipeline must be removed in addition to the tailings at “Flintstone Park” east of the county shops.”
- **Comment 77.2.** “Additional areas of contamination should be included in the removal whenever possible. I am in support of removal of tailings in Diggings East and Northside Tailings, however removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level.”
- **Comment 79.2.** “1. Removal of the remaining tailings below the high ground water level at Diggins East and at Northside Tailings. Included should be any additional areas of contamination whenever it's possible.”
- **Comment 82.1.** “I am writing in support of several changes to the Record of Decision (ROD). I am in support of removal of tailings in Diggings East and Northside Tailings, however removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level. Additional areas of contamination should be included in the removal whenever possible.”
- **Comment 83.2.** “1. I applaud the decision to remove the contaminated tailings contained in Diggings East and Northside Tailings. This removal should make every effort to remove all the

contaminated tailings practicable and not stop at some arbitrary depth, e.g., the high ground water level.”

- **Comment 84.4.** “We must not settle for leaving tailings in place around the Silver Lake pipeline, east of the county shops, or anywhere.”
- **Comment 85.1.** “I am writing in support of several changes to the Record of Decision. I am in support of removal of tailings in Diggings East and Northside Tailings, however removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level. Additional areas of contamination should be included in the removal whenever possible.”
- **Comment 86.1.** “I am writing in support of several changes to the Record of Decision. I am in support of removal of tailings in Diggings East and Northside Tailings, however removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level. Additional areas of contamination should be included in the removal whenever possible.”
- **Comment 88.1.** “I support removal of the contaminated mine tailings and a restored creek in Butte’s Silver Bow Creek corridor from Texas Avenue to Montana Street. Please remove the toxic waste leaching into the groundwater in the floodplain to protect our children and our community.”
- **Comment 89.1.** “We support removal of the contaminated mine/smelter tailings and a restored creek in Butte’s historic Silver Bow Creek corridor from Texas Ave. to Montana St. The cleanup should be equal to the restoration work that has already been performed downstream. Cleanup must be equal to the level of remediation and restoration work already completed in Silver Bow Creek’s 26 mile stretch downstream to Warm Springs Ponds.”
- **Comment 90.1.** “I support the removal of the contaminated mine/smelter tailings & a restored crick in the Butte's historic Silver Bow Creek corridor from Texas Avenue to Montana Street. The cleanup should be equivalent or even better to the areas already restored downstream. ALL toxic waste should be removed! All of us need to be protected from the harmful tailings in this corridor! Here is another chance to show the people of Butte that you really, for real--- care!!!”

- **Comment 91.7.** “6. The proposed plan calls for removal of contaminants in the Diggings East, Northside Tailings, and Blacktail Berm areas. Will substantially all contaminants be removed or only the amount necessary to construct the passive treatment system? What is the plan if during the removal process more extensive tailings are discovered? Will these be removed or left in place?”
- **Comment 98.17.** “C. Page 4, First Full Paragraph. The Proposed Plan states: “Analysis of additional surface water, pore water, and nearstream solid media found that the 2006/2011 ROD remedy did not encompass certain areas immediately upstream of the current BPSOU boundary that are impacting surface water. This is one of the reasons for the expanded streambank, sediment, and floodplain waste removals that are included in the proposed modified remedy described in this proposed plan.” This paragraph suggests that the expanded removals of streambank, sediments, and floodplain materials is due to the presence of contaminated sources entirely upstream of the BPSOU that have caused contamination of surface water within BPSOU, which is an incorrect statement. AR requests that EPA clarify which upstream areas it is referring to in this paragraph and whether such sources are entirely upstream of the BPSOU boundary or are “upstream” areas within the BPSOU. Historic mine waste sources, if any, located in the Blacktail Creek drainage upstream of BPSOU are not within the projected scope of the BPSOU final remedy.”
- **Comment 100.2.** “1. Tailings Removal. We support removal of tailings in Diggings East and Northside Tailings. We encourage additional removal of tailings beyond what is currently planned in order to remove long-term threats to groundwater and surface water downstream. Tailings removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level.”
- **Comment 101.1.** “I am writing in support of several changes to the Record of Decision. I am in support of removal of the tailings in Diggings East and Northside Tailings. However, removal should not stop at the high ground water level, if during the tailings removal there is obvious contamination below this level. Additional areas of contamination should be included in the removal whenever possible.”

### **2.35.2.2 EPA Response**

The 2020 BPSOU Record of Decision Amendment also provides for extensive floodplain waste removals for Silver Bow Creek below its confluence with Blacktail Creek and in the Blacktail Creek area, including the Blacktail Berms. The reason for the expanded removals of streambank, sediment, and floodplain materials at Blacktail Creek and Silver Bow Creek below its confluence with Blacktail Creek, as outlined in the proposed plan and described more completely in this 2020 BPSOU Record of Decision Amendment, is to verify the protectiveness of the remedy. EPA acknowledges the commenters' support for these removals and the Diggings East and Northside Tailings removals. The 2006/2011 Record of Decision specified removals at the confluence of Silver Bow Creek and Blacktail Creek but not upstream along Blacktail Creek where the berm and wetland areas are located. The reference in the paragraph cited by commenter 98 is to the small area proposed for removal on the east bank of Grove Gulch in the vicinity of the mouth of Grove Gulch. This area was previously outside of the BPSOU boundary, but with the expanded BPSOU boundary that was proposed in the proposed plan and adopted in the amendment, it is now included within the BPSOU.

One commenter asserted that prior Superfund removal within the BPSOU occurred primarily on Atlantic Richfield- or Butte Silver Bow-owned property. The waste removals that have taken place under prior Superfund response actions within BPSOU and are planned under the 2020 BPSOU Record of Decision Amendment requirements were determined based on data gathering and relevant investigations, including surface water, groundwater, sediment, and pore water data and evaluation. Prior removals have occurred on privately owned property and on Atlantic Richfield- or Butte Silver Bow County-owned property. For example, the Alice Pit overburden was removed and placed in the Alice Pit and then revegetated, and this action was located on private property. Residential areas that are addressed under the RMAP occur on privately owned property. The removal of the Lower Area One wastes occurred primarily on publicly owned or Atlantic Richfield-owned property. The goal of the prior and proposed removals is to limit or prevent direct erosion of waste materials into the creeks and discharge of contaminated groundwater into sediments and surface water. There are many areas of mine waste within the BPSOU where capping and revegetation was determined to be the appropriate remedy. The goal of the BPSOU remedy was not to remove all known mine wastes within Butte Hill as this would amount to the

destruction of hundreds of homes and businesses as part of such an action and would be infeasible.

Some mine waste is located under or near infrastructure such as the Silver Lake Pipeline, buildings, and railroads, making removal infeasible because of the risk of damaging these important infrastructure and established constructs. In cases where the tailings are not an active source of the loading to surface water, the decision was made to leave some tailings in place within specific areas that are difficult to access. Remedial programs like the BRES system to monitor and repair capped and vegetated areas and institutional controls that required deed restrictions limiting inappropriate use of capped areas are required under Superfund to continue to protect areas where waste is left in place. The BRES program also can be used to evaluate the area the commenter refers to as Flintstone Park, and remediation of that area can occur under that program.

EPA acknowledges the support for the removal of the Diggings East and Northside Tailings mine wastes that are not saturated with groundwater and the expanded full floodplain removals (both saturated by groundwater and unsaturated) of Blacktail Creek within the BPSOU and Silver Bow Creek from its confluence with Blacktail Creek, which will include full removal of the Blacktail berms. The waste removal actions in these areas will be substantially similar to the removal actions of the floodplain of Silver Bow Creek downstream from the BPSOU boundary within the Streamside Tailings Operable Unit that Montana DEQ previously implemented. Removal of the slag walls in the Butte Reduction Works area is not necessary as Silver Bow Creek in this area will be relocated to the south away from the slag walls and located in a remediated floodplain and will be protected from contaminated groundwater discharge by the expanded contaminated groundwater interception system. The commenter is correct to note that the slag walls are a protected resource under the National Historic Preservation Act and would need offset activities for their removal.

The removal depth of the Diggings East and Northside Tailings (to an elevation where the highest potentiometric surface has been observed over the most recent 3-year monitoring period) is a change to the 2006/2011 Record of Decision where that waste was to remain in place. Based on community and state input, EPA and other stakeholders decided to require removal of the groundwater unsaturated waste in these areas. The stormwater basins that will be installed in these areas will be lined,

which will prevent infiltration of contaminated stormwater into the aquifer in these areas. The removal of the mine wastes above the water table will eliminate a significant amount of source material in these two areas and will allow for the construction of the necessary stormwater retention/detention basins in these areas. The BPSOU contaminated groundwater containment and treatment system will be expanded and will intercept contaminated groundwater anywhere within the BPSOU where it is adversely impacting surface water quality or in-stream sediments from the various sources that will be left in place within BPSOU, including the saturated waste beneath the Diggings East and Northside Tailings areas.

Removal of the BPSOU Subdrain would result in the release of mine waste-contaminated groundwater into Blacktail Creek and Silver Bow Creek above and below its confluence with Blacktail Creek. The subdrain has proven to be effective in capturing some contaminated groundwater from the BPSOU alluvial aquifer for treatment that would otherwise discharge to Silver Bow Creek above and below its confluence with Blacktail Creek. The groundwater interception system will be improved and greatly expanded under the 2020 BPSOU Record of Decision Amendment such that all the necessary contaminated groundwater will be captured and treated so that it no longer adversely impacts the surface water or sediments of Blacktail Creek and Silver Bow Creek. The State of Montana's Parrot Tailings Waste Removal Project will remove all wastes in that highly contaminated site as defined in the state's amended Butte Area One Restoration Plan. Currently, the state's interim contaminated groundwater capture and treatment system of the Parrot groundwater is a welcome addition. See Section 2.31 Subdrain regarding the effectiveness of the BPSOU Subdrain capture system.

EPA will raise the issue of traffic impact (Comment 11) with Butte Silver Bow County authorities, who have the authority to change and enforce local speed limits and traffic laws, and other foot and vehicle traffic issues. Finally, the end land use plan released by Atlantic Richfield in May 2019, and which will be implemented in the corridor described in one commenter's comment, will be returned under that plan to a more natural and aesthetically pleasing state similar to a setting that could host a new, lined, meandering creek if the community later decides to create a creek in this area.



## 2.36 Water Quality District

### 2.36.1 Comment Summary

One comment received included a request for information about what the final Butte Water Quality District and its controlled groundwater area terms and conditions would be. The Butte Water Quality District is part of the institutional controls required for the BPSOU. The comment was submitted by Butte Silver Bow County.

- **Comment 96.7.** “5) Water Quality District. The Proposed Plan does not appear to address final directives on how the Water Quality District, and more precisely, Controlled Ground Water Areas will be regulated in the long term. For example, will directions to sample and monitor private irrigation wells be required in perpetuity? Other considerations requiring resolution under the CD includes a) frequency of testing (e.g., every five years for 30 years?); b) geographic Boundary of Test/Sample area (i.e., Groundwater TI Zone?); and c) abatement requirements (e.g., mandated hook-up to municipal water, payment of fees at average customer consumption until property is transferred, etc.).”

### 2.36.2 EPA Response

Groundwater in and around Butte, Montana, has been contaminated by over a century of mining, milling, smelting, and other mining-related activities. The extent and dispersed nature of groundwater contamination have rendered portions of the alluvial aquifer (which is part of the BPSOU) and the bedrock aquifer (which is part of the Mine Flooding Operable Unit) technically impracticable to clean up such that state and federal drinking water standards could be achieved. A TI waiver was granted for those portions of the aquifers in the 2006/2011 BPSOU Record of Decision and the 1994 Mine Flooding Operable Unit Record of Decision. The State of Montana did not agree with EPA’s TI evaluation and its waiver of groundwater standards in the 2006/2011 BPSOU Record of Decision but is now in agreement with the 2020 BPSOU Record of Decision Amendment if the proposed consent decree is entered.

In 2009, at the request of Butte Silver Bow County, the Montana Department of Natural Resources and Conservation issued the Butte Alluvial and Bedrock Controlled Groundwater Area (BABCGA) petition for the area potentially impacted by mining-related activities in and around Butte, Montana. The terms of the BABCGA must be followed in the manner described in the petition ruling and will discontinue only when

an application is made to and approved by the department to terminate the petition. The BABCGA was designed to address groundwater associated with the Butte Mine Flooding Operable Unit, BPSOU, and the nearby Montana Pole Superfund site by prohibiting new domestic wells and requiring additional monitoring and abandonment of existing wells under certain conditions. The BABCGA is implemented by the Butte Water Quality District, and its implementation is funded by Atlantic Richfield.

The BABCGA identified numerous private wells installed within its boundary that include those used for domestic (potable water), irrigation, industrial, and monitoring. New domestic water wells have been prohibited in Butte since 1992 for residences within 300 feet of a municipal water line; however, other types of well installation for irrigation, industrial, and monitoring are allowed following certain conditions. New, non-domestic groundwater wells are only allowed within the area after review and approval by the Butte-Silver Bow Board of Health (acting as the Butte Silver Bow Water Quality District office), EPA, and Montana DEQ. Monitoring wells are excluded from these provisions while potable, irrigation, and industrial wells are regulated according to their use and the data that are provided when these wells are monitored.

A monitoring program has been instituted for private wells within the BABCGA. The Montana Bureau of Mining and Geology conducts the monitoring within the BABCGA. Remaining domestic wells meeting water quality standards, which allow for domestic use, are sampled every year. Industrial or irrigation wells meeting water quality standards specific to the industrial or irrigation use are sampled every 5 years. The data gathered from the sampling of Butte area private wells quantify the concentrations of total metals from domestic wells and dissolved metals in the groundwater from industrial and irrigation wells. Domestic wells with contaminants of concern concentrations that exceed the drinking water standards will be resampled with samples collected for both total and dissolved metals. If the confirmation samples also exceed the drinking water standards, an alternative drinking water source will be provided to the property. Industrial or irrigation wells exceeding drinking water standards must comply with the use exemption provided in the *Final Order Petition for Butte Alluvial and Bedrock Controlled Ground Water Area No. 76G-30043832* (DNRC 2008) and their use must not be detrimental to human health or the environment.

EPA and Montana DEQ will continue to work with Butte Silver Bow County to provide additional clarity regarding the BABCGA, if necessary, during remedial design for implementation of the BPSOU and Mine Flooding Operable Unit remedies. The 1994 Mine Flooding Operable Unit Record of Decision and the 2006 BPSOU Record of Decision direct the implementation of this institutional control, among others, and further detail is not necessary in the 2020 BPSOU Record of Decision Amendment.

### 3.0 REFERENCES

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DNRC 2008. *Final Order Petition for Butte Alluvial and Bedrock Controlled Ground Water Area No. 76G-30043832*. October 27, 2008.

EPA. 2019a BPSOU Surface Water Compliance Determination Plan, *Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site, Attachment A to the BPSOU Remedial Design/Remedial Action Scope of Work (Appendix D to the Consent Decree)*. October 2019. U.S. Environmental Protection Agency.

EPA. 2019b. BPSOU Surface Water Management Plan, *Butte Priority Soils Operable Unit of the Silver Bow Creek / Butte Area Superfund Site, Exhibit A to Attachment A to the BPSOU Remedial Design/Remedial Action Scope of Work (Appendix D to the Consent Decree)*. October 2019. U.S. Environmental Protection Agency.

EPA. 2019c. *Concurrence Comment on Butte Priority Soils Operable Unit (BPSOU) Point of Compliance Well Evaluation (dated September 23, 2019)*. October 22, 2019.

EPA. 2019d. *Proposed Plan to Amend the 2006/2011 Record of Decision, Butte Priority Soils Operable Unit*. U.S. Environmental Protection Agency.

EPA. 2018a. *Draft Surface Water Technical Impracticability Evaluation Report. Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site*. U.S. Environmental Protection Agency.

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