

EPA Responses to Dr. Beverly Hartline

1. What are the national contamination levels for the metals and the other parameters that would cause or trigger the need for remediation and cleanup?

EPA Response: Cleanup, or EPA remediation, is triggered because of unacceptable risk identified at a site. Site specific data is utilized to develop cleanup levels for each site individually. Please visit the interactive [dashboard](#) that hosts specific information about the development of lead action levels for BPSOU. The Butte community will not come into contact with onsite material or the associated groundwater because no complete exposure pathways will exist.

Risk to groundwater is not present because the alluvial aquifer has been designated a [Technical Impracticability Zone](#) for metals. A domestic well ban is in place, and groundwater collection and treatment are all a major part of the remedy being implemented. EPA also implements a [Surface Water Management Plan](#), where the primary goal is to prevent ingestion or direct contact with contaminated surface water that would result in an unacceptable risk to human health.

2. What is "magic" about the 3-year groundwater table? For other engineering/design criteria for other uses, if they are worried about phenomena that would happen if the contaminated material is below the groundwater table, how many years of groundwater levels would define the fill depth: 20? 50? 100? 1000? Other?

EPA Response: The 3-year groundwater table is a vertical extent of waste removal to be hauled off-site. That vertical depth was determined by the maximum observed groundwater elevation as recorded over the most recent 3-year monitoring period. The fill depth is defined in the CD as the most recent 3 years and was determined by the CD parties and their technical experts.

As mentioned above, risk to groundwater is not present because the alluvial aquifer has been designated a [Technical Impracticability Zone](#) for metals. A domestic well ban is in place, and groundwater collection and treatment are all a major part of the remedy that is being implemented. EPA also implements a [Surface Water Management Plan](#), where the primary goal is to prevent ingestion or direct contact with contaminated surface water that would result in an unacceptable risk to human health.

3. Is there concern about metal leaching from the reused material that could be caused by precipitation and irrigation water entering into and filtering through the fill layer? Or how is such infiltration/percolation precluded?

EPA Response: Leaching of reused material is not a concern because it can only be placed within a groundwater capture system. Groundwater will be captured and treated to limit or prevent plume migration and to prevent discharge to surface water. In addition, the limestone contained within the capillary break layer will provide alkalinity to neutralize groundwater and lower the mobility of metals. An 18-inch cover will prevent direct exposure of the public to Onsite Material. The cap may provide

some measure of groundwater protection but is not designed to completely prevent infiltration of rain/snow melt to groundwater.

There are controls and systems in place (ICs, permitting, groundwater capture and treatment) to prevent exposure pathways to groundwater. The pH requirements for Onsite Material will help prevent leaching into groundwater. Use of Onsite Material beneath the lined basins is permissible, but only above the 3-yr high groundwater elevation. The deepest portions of the basins will be excavated below the 3-yr high groundwater elevation to make room for liner ballast without decreasing the basin volume, therefore, Onsite Material will not be used in these areas. Use of Onsite Material under the liner near the edges of the basins, where the excavation is shallower, may occur. In these areas, the liner will prevent infiltration water from contacting the fill. Outside of the basin areas, additional controls like an irrigation plan will be developed to prevent over-irrigation.

4. What is magic about 3 of the metal contaminants exceeding the levels in the table, that makes 2 exceedances protective of human health and the environment and 3 not? Another set of reference numbers needed is the "cleanup" specs for Butte residential yards, parks, etc. I don't have these in my head, but my recollection is that the special, less protective lead cleanup levels for Butte (less protective compared with the rest of the country) are way below the specs for this material.

EPA Response: The Waste Identification Criteria was developed using metal concentrations to identify tailings versus soil and to determine which materials were removed or left in place. The use of the three-exceeding criteria is to distinguish mine waste from impacted soil. The criteria are not risk-based; and do not determine protectiveness. However, risk is managed by ensuring the public will not come into contact (eliminating exposure pathways) with waste or Onsite Material or the associated groundwater. The non-residential areas in question, are considered open space and have an action level for lead of 2300 mg/kg, for example. So, if this material was to be tested for open space it would be sampled to a depth of 18", if it exceeded 2300 mg/kg then it would be hauled to a repository, anything below 18" would be left in place and covered with 18" of appropriate cover soil. The residential yards in Butte have much lower criteria for lead and please visit the interactive [dashboard](#) that hosts specific information about the development of lead action levels for BPSOU.

Since there is no complete exposure pathway to the Onsite Material, EPA would not normally assess risk in this scenario. However, to help put these values into perspective for both arsenic (As) and lead (Pb), the levels proposed for Onsite Material (As=200 mg/kg, Pb=1,000 mg/kg) are below the Butte residential soil action levels which are risk-based (As= 250 mg/kg and Pb= 1,200 mg/kg). For the remaining metals, the levels of cadmium, copper, zinc and mercury in the criteria can be compared to EPA's generic risk-based Regional Screening Levels (RSLs) for residential soils. These generic screening values are based on conservative exposure assumptions such as a 26-year exposure duration, 350 days per year, and 24 hours per day, and include ingestion, inhalation, and dermal exposure pathways. The Onsite Material criteria for cadmium, copper, zinc, and mercury are all below the RSLs. Values provided below.

Cadmium (onsite material = 20 mg/kg; RSL = 71 mg/kg)

Copper (onsite material = 1,000 mg/kg; RSL = 3,100 mg/kg)

Mercury (onsite material = 10 mg/kg; RSL = 23 mg/kg (mercury salts))

Zinc (onsite material = 1,000 mg/kg; RSL = 23,000 mg/kg)

5. EPA should also explain what is known about the health effects of metal mixtures, which is important background for the scientific basis for establishing "any 3 exceeding..."

EPA Response: An 18-inch clean cover will prevent direct exposure of the public to Onsite Material and it will be placed above the three year high ground water table. It would only be placed at three locations within the ground water capture zone resulting in no exposure to contaminated ground water. Therefore, there is no human exposure pathway to the Onsite Material. Regarding the possibility of interactions between metals found in the environment, some metals may act additively when they are present together, others act independently of each other, and still others are antagonistic or synergistic. In November 2022, EPA announced research grant funding to develop and evaluate innovative methods and approaches to inform our understanding of the human health risks that may result from exposure to chemical and/or metal mixtures in the environment.

6. Since this fill will be buried under 18 inches of cleaner material, we would also be interested in the experience with "leaching through". Along Silver Bow creek just about every year there have been little reworking projects, with big heavy equipment removing material that has been contaminated from underneath.

EPA Response: We interpret this question as concern over efflorescence at the surface (i.e., solutions wicking up to the surface and evaporating, leaving salt deposits). This is addressed by including a capillary break layer below the cover soil to break the surface tension in the soil responsible for the efflorescence. Where necessary, a capillary break at the interface between the 3-year high groundwater elevation and the placement of Onsite Material will be installed. Generally, in Butte 2 inches of crushed and screened lime rock (limestone) is used. The coarse limestone has larger voids to break the surface tension (i.e., responsible for drawing water up to the surface). An added benefit is that infiltration that flows through the limerock to groundwater is alkaline (i.e., limerock can neutralize acidity and increase pH), which limits the mobility of metals within groundwater.

7. Also, we need to know about how metals from this material will leach into the groundwater table and from there to surface waters and aquifers.

EPA Response: As previously discussed, the impacted groundwater will be controlled by capture and treatment, preventing discharge to surface waters, and minimizing transport within the groundwater system. Risk to groundwater is not present because the alluvial aquifer has been designated a [Technical Impracticability Zone](#) for metals, a well ban is in place, and groundwater collection and treatment are all a major part of the remedy that is mostly implemented. Risk to surface water via the discharging groundwater to surface water pathway is an important topic, and the remedy addresses this risk via groundwater collection and treatment coupled with substantial monitoring, including sediment monitoring required in the [Surface Water Management Plan](#).

The leachability of the mine waste has been tested, but not the soils impacted by mine waste. A summary of the leaching tests performed to date are as follows:

- a) Phase II RI Data Summary Report that was produced in 1990 (CH2M Hill, blue binder report)
 - i. Diggings East (high cadmium and zinc leachability)

- ii. North Side Tailings (NST)/Buffalo Gulch (BG) (low arsenic and zinc leachability)
- iii. In the 1990's – areas north of the BPSOU channel, including the BG area, were considered part of NST

During the RI, the primary sources (i.e., tailings) were the focus of the investigations and soil (onsite material) was not tested for leaching.

b) MBMG performed synthetic precipitation leaching procedure (SPLP) testing on mine wastes and other materials associated with the Parrot Tailings area and obtained the following results:

- Tailings (elevated CoC leachability)
- Slag (elevated arsenic, cadmium, and zinc leachability)
- Organic silt (elevated CoC leachability except lead)
- Alluvium (elevated cadmium and zinc leachability)
- Granitic Overburden (elevated arsenic and lead leachability)

Note that the Parrot Tailings, along with other mines/concentrators on the hill, were the source of the alluvial tailings deposited in the NST, Diggings East, and BG areas. The BPSOU remedy will address groundwater contamination in several ways including groundwater capture and treatment, additional planned groundwater capture and treatment at Blacktail Creek and Butte Reduction Works, optimization of current groundwater capture systems, and contingencies to extend groundwater capture, groundwater, and surface water monitoring both of which include triggers for additional diagnostic evaluation (Compliance Determination Plan and Surface Water Management Plan).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15TH Street, Suite 3200
Helena, MT 59626-0096
Phone 866-457-2690
www.epa.gov/region8

November 2, 2023

Dear Dr. Ray:

Please see the Environmental Protection Agency responses below to your inquiries on Onsite Material.

1. How were the levels of acceptable versus unacceptable onsite fill material developed?

EPA Response: At the Stream Side Tailings operable unit (SSTOU) of the Silver Bow Creek/Butte Area Superfund Site, the EPA and MDEQ faced a similar task of developing waste identification criteria. During the Butte Priority Soils Operable Unit (BPSOU) Consent Decree (CD) negotiations, all parties agreed it was appropriate to use the SSTOU waste identification criteria at the upgradient/adjoining BPSOU. During negotiations, the BPSOU parties also determined how to approach the use of onsite material as general fill and outlined this in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of Attachment C to Appendix D to the BPSOU CD.

Provided below are the design criteria that were in Final Design Report – Reach A of Sub-area 1 Stream Side Tailings operable unit (Maxim Technologies, 1999). This design criteria section describes how the waste identification criteria for the SSTOU were determined and subsequently implemented in the Field Screening Criteria and Procedures Phase 7 and 8 Remedial Action, SSTOU Sub-area 4, Reaches R and S (Pioneer 2011) and the Field Screening Criteria and Procedures Remedial Action, SST OU Sub-area 3, Reaches M, N, & O (Pioneer 2013). The criteria was adopted for use at project sites Diggings East, Buffalo Gulch, Northside Tailings, Grove Gulch, Blacktail Creek and Butte Reduction Works, all within the BPSOU.

“As prescribed in the Stream Side Tailings operable unit (SSTOU) record of decision, tailings/impacted material was defined by applying the “order-of-magnitude” criteria initially developed during the RI for the SSTOU. The order-of-magnitude concept was based on the observation that contaminant of concern (COC) concentrations generally decreased with depth in a test pit, and often there is an order-of-magnitude decrease (10 times reduction) in the concentration of several of the COCs within a relatively small vertical depth interval. Although the order-of-magnitude concept was not originally intended to be tied to specific concentration levels. These threshold levels were agreed to by the Agencies and ARCO during meetings related to the supplemental studies for tailings/impacted soils and were used to provide general guidelines that correspond roughly to COC that are a factor of ten (order-of-magnitude) less than average COCs measured in undiluted tailings.”

As described above, the waste identification criteria are not risk-based levels. Rather, these criteria were developed to identify waste materials with elevated COC concentrations for the purposes of prioritizing these waste materials for removal.

2. Are these levels protective of human health and the environment?

EPA Response: The waste identification criteria levels at BPSOU in conjunction with the other remedial elements ensure protection of human health and the environment. Materials that exceed the waste identification criteria are addressed pursuant to the specific design requirements outlined in the BPSOU CD. Any onsite material used as general fill will be covered by an 18-inch-thick soil cap or engineered cap (e.g., concrete or asphalt), which will prevent any direct contact exposure scenarios. Any onsite material used as general fill will be placed above the 3-year-high groundwater level, and these areas will be within a demonstrated groundwater capture area to mitigate the potential for groundwater exposures. For additional information on the design parameters relevant to the potential use of onsite material see the [EPA's position paper](#) and the EPA's Response to [Dr. Hartline](#) (Question #4).

3. How do we know whether or not they are protective?

EPA Response: Please see response to question 2.

4. What is the justification for saying that failing two of the thresholds does not disqualify the material while failing three does? What is the basis of this differentiation?

EPA Response: Please see the answer to question 1 for detailed information on how the Stream Side Tailings OU criteria were determined, which were adopted for BPSOU. Metal concentrations were used to identify tailings versus soil and to determine which materials were removed or left in place. The use of the three-exceeding criteria is to distinguish mine waste from impacted soil. The criteria are not risk-based and do not determine protectiveness. However, risk is managed by ensuring the public will not come into contact (eliminating exposure pathways) with waste or onsite material or the associated groundwater. This is also part of a response provided to [Dr. Hartline](#) (Question #4).

5. Why do standards differ from site to site?

EPA Response: The EPA interprets the term "standard" to refer to soil action levels. Soil action levels are site-specific, risk-based values and often differ between sites. Soil action levels can differ from site to site due to, for example, differences in metal absorption by the gastrointestinal tract due to local geochemistry and characteristics of exposure (e.g., residential versus occupational). Please visit the interactive [dashboard](#) that we developed in response to questions from the community, which provides specific information about the development of lead action levels for BPSOU.

6. What factors are considered in developing site-specific standards?

EPA Response: The factors that are considered when developing site-specific soil action levels include the contaminants of concern, types of receptors present, contaminant bioavailability, target risk levels, best practices/lessons learned from similar mining impacted sites, and acceptable types of risk management and mitigation controls. Additionally, site geology, background conditions, and applicable federal and state environmental laws are often considerations when developing site-specific soil action levels.

Please visit the interactive [dashboard](#) that we developed in response to questions from the community, which provides specific information about the development of lead action levels for BPSOU.

CD Questions:

- 1. [Request] EPA to cite exactly where in the CD there are provisions governing the use of onsite fill material and what these provisions provide**

EPA Response: The BPSOU CD authorizes the use of onsite material as general fill in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of the Further Remedial Elements Scope of Work (FRESOW), which is Attachment C to Appendix D to the CD. The language provides: “If onsite materials do not exceed the Waste Identification Criteria in Table 1 of Appendix 1, the material may be used onsite as general fill provided it meets all other requirements for general fill in Table 2 of Appendix 1 (e.g., texture, pH).”

Any appropriate design details related to the use of such onsite material as general fill, including location-specific controls and confirmation sampling and analysis, will be documented in the Backfill Material Characterization and Reuse Plans, as contemplated in FRESOW sections 1.4, 2.4, 3.4, and 4.3, and enforceable under the CD.

- 2. Did the Consent Decree authorize EPA to use onsite fill material? Does the use of the word may in the Consent Decree authorize EPA’s use of onsite fill material?**

EPA Response: Yes, the BPSOU CD authorizes the use of onsite material as general fill. As stated above, the relevant language is in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of Attachment C to Appendix D to the CD (Further Remedial Elements Scope of Work or FRESOW).

The onsite material language states, “the material may be used. . .” The permissive term “may” authorizes the use of onsite material as general fill subject to the EPA determining that its proposed use is protective of human health and the environment. This language, which was agreed to by all the CD parties, provides the EPA, in consultation with DEQ, the authority to place additional restrictions on the use of any such onsite material. To date the EPA has used this authority to identify restrictions on where onsite material could be used to ensure protection of human health and the environment, including not placing onsite material in areas outside of the stormwater basin’s wetted perimeter but only placing it in areas within a demonstrated groundwater capture system, among other proposed restrictions. Please see the EPA’s [position paper](#) for more information relevant to the potential use of onsite material as general fill.

3. To what extent do actions pursuant to the Consent Decree, authorized by the Consent Decree or permitted under the Consent Decree, justify or mandate a public comment period and public outreach?

EPA Response: The EPA is committed to community engagement and involving the public in every step of the Superfund process. Input provided by the public is valuable and there were numerous formal public comment opportunities during the development of the site remedy and the CD. [Appendix D to the BPSOU Consent Decree](#) describes the requirements specific to BPSOU community involvement activities, which include providing online access to initial submissions and updates of deliverables, including a reasonable opportunity for review and comment. While the August 30, 2023, public meeting and subsequent opportunity to provide feedback on the EPA's onsite material position paper were not required under the Superfund process, the EPA decided it was important to provide this opportunity for public engagement. The EPA appreciates the time and effort of the community members who participated and is working hard to answer questions that were raised about this proposal.

4. With regard to the Consent Decree, would the use of onsite fill constitute a change of or modification of the CD?

EPA Response: No, the use of onsite material as general fill does not constitute a change to the CD because the BPSOU CD already authorizes such use, as cited above.



REGION 8

DENVER, CO 80202

December 12, 2023

EPA Responses to Evan Barrett Comments on EPA's Position Paper on the Use of Onsite Material as General Fill at Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site

Q: The State's NRDP and DEQ CERCLA legal experts' analysis determined this proposal by EPA is a change to the CD. EPA's legal analysis said it wasn't if you just put the dirty dirt under the basins and nowhere else. This proposal says that about the only place the dirty dirt won't be put is under the basins. If these new controls (parking lots, liners, 18" covers, etc.) are not in the CD how is this not a change to the CD? Can EPA provide a legal basis for the use of this dirty dirt? EPA's analysis provided in the publicly available emails states that the dirty dirt can only be used under the basins as required in the Table 2 Criteria B Fill. Why is EPA insisting on making these changes to the CD despite their obvious risks to the middle of our town and water?

EPA Response: The Consent Decree (CD) authorizes the use of onsite material as general fill, and EPA's position paper aligns with the CD. EPA is not contemplating or proposing a change to the CD at this time. Ongoing technical meetings will be used to work through design details and parameters for the use of onsite material. Any approved design plan will be in compliance with the CD.

As indicated in EPA's April 20, 2023 letter to NRDP, appropriate design restrictions concerning the use of onsite material would be memorialized in the Backfill Material Characterization and Reuse Plans, as contemplated in the Further Remedial Elements Scope of Work, which is Attachment C to the CD's Statement of Work. These plans must be approved by EPA, in consultation with DEQ, and any restrictions included in the plans, such as 18" covers or liners used, in part, to prevent exposure, will be enforceable as part of the CD. As with all design elements in the CD, appropriate parameters must be in place to ensure the remedy is protective and consistent with the Site's remedial goals.

Q: Why did EPA not provide us a risk analysis of using this dirty dirt in their proposal? Where is EPA's analysis that this dirty dirt is protective of people and the environment? How can EPA say that this proposal is "protective" without an analysis and if you have an analysis why is it being withheld?

EPA Response: Risk is the product of exposure and hazard. To evaluate risk, there must be exposure. Because the public will not come into contact with any potential onsite material used as general fill, there is no exposure. The remedy addresses potential risks to surface and groundwater through, among other remedy components, existing and future groundwater capture systems. Please also see EPA's response to [Dr. Hartline](#) (Question #4)

Q: If this dirty dirt is protective, why do you have to have an 18" cap, put it under parking lots, or have it in the groundwater capture area? Aren't those requirements mandatory to address the risk that this dirty dirt creates? Clearly this proposal has unacceptable risk and therefore you have to put these other controls on it to address the risk. NRDP distributed Tables several months ago that clearly show that this proposal is not protective of groundwater, vegetation, etc. These Tables even used EPA

guidance for protecting groundwater. (Please acquire these tables from NRDP and address this question.)

EPA Response: The BPSOU remedy employs a combination of removals, capture and treatment, and risk management for protection of human health and the environment. Engineered cover systems are used to prevent exposure to people and therefore reduce risk. Institutional Controls also help ensure people do not come into contact with the material in question.

Q: Are alternative transportation methods being explored (such as conveyor belts)? If yes, why is EPA advancing this bogus Greenhouse gas justification? If not, please explain why such alternatives are not under consideration.

EPA Response: The CD requires BSB and AR to initiate a Repository Siting Study, which will include a community engagement process. The Repository Study will include the existing Butte Mine Waste Repository and identify other potential repository location(s), including proposed haul route(s). EPA is committed to approving a repository and haul route that reflects public safety and input and looks forward to reviewing the Repository Siting Committee's Recommendation for location of a repository. Additionally, EPA has encouraged the evaluation of other modes of transportation like railways and conveyors in consideration of EPA's Greener Cleanup Guidance. Minimizing truck traffic in Butte is an important consideration in repository siting.

It is important to mention that if onsite material were not to be used as general fill, more imported fill would have to be trucked to the Site.

Q: The real risk to the center of town is the risk of a so-called *in-perpetuity* solution to keep dirty dirt away from water (deemed absolutely essential by EPA), when the record in Montana re: such *in perpetuity* solutions is riddled with failures (Zortman-Landusky, German Gulch, Mike Horse Mine, Arrowstone Park, for example). The inevitable *in perpetuity* failure that will come in this case is not out in the boondocks, but is in the center of a city. Why incur that risk for our children and grandchildren?

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 groundwater aquifers technically impracticable to clean up. The CD requires actions to limit exposure to contaminated materials through extensive covers, capture and treatment of contaminated groundwater, and through reducing the flow of contaminated runoff into surface waters. The BPSOU remedy outlined in the CD and attachments (and discussed above) provides for the long-term protections for Blacktail Creek, Silver Bow Creek, and the community of Butte.



REGION 8

DENVER, CO 80202

December 12, 2023

Mr. Fritz Daily

Re: Response to Comments Received from Fritz Daily on EPA's Position on the Use of Onsite Material as General Fill at Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site

Dear Mr. Daily:

Thank you for your input regarding the EPA's position paper on onsite material. This email is intended to respond to questions and feedback you sent in emails dated September 5 and October 2, 2023. The EPA is dedicated to developing a remedy in collaboration with fellow parties to the BPSOU Consent Decree that is effective and protective of human health and the environment. The Consent Decree outlining the parameters of the cleanup and the roles and responsibilities of each party is publicly available on the Butte Superfund website, along with a wide variety of key documents, technical information, and Q&As. In addition, over the past year we have hired several new Community Involvement Coordinators, who will be working with Montana communities, and doubled the number of Remedial Project Managers in our Helena Operations Office. Our Butte site team, specifically, has more than doubled in less than six months. We have started a regular newsletter to keep the community updated on our activities and upcoming meetings; we are working on website improvements and providing written explanations to outstanding questions; and we are piloting opening a series of BPSOU technical meetings for public observation through the end of the year. The EPA is committed to engaging with the community throughout the cleanup process, providing updates, answering questions, and hearing feedback.

Q: The Department of Housing and Urban Development---HUD---in Butte is on record of not accepting a level in their mission of less than 400 ppm. How can EPA possibly be different?

EPA Response: The EPA's screening levels for lead in residential soils for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites and Resource Conservation and Recovery Act (RCRA) Corrective Action facilities differ from the levels for the Toxic Substances Control Act §403 soil lead hazard standards. While the two programs both seek to protect the health of the most vulnerable populations at lead-contaminated residential sites, the approaches taken by the two programs differ because of the purposes of each program. Primarily, the minimum national standards under TSCA §403 are designed to be used at millions of widely varying residential sites and child-occupied facilities across the nation, while the studies that take place at CERCLA or RCRA sites allow levels to be developed that consider site-specific information.

The studies that take place at CERCLA or RCRA Corrective Action sites involve multiple hazardous substances with potentially numerous sources of contamination and multiple pathways of exposure that require cleanup levels to be developed with site-specific information.

In contrast, the TSCA §403 hazard standards for bare residential soil only applies to pre-1978 target housing and certain child-occupied facilities. These hazard standards are minimum national standards that apply to lead-based paint activities (i.e., inspections, lead-hazard screens, risk assessments and abatements) to help prioritize the cleanup of residential and child-occupied facilities affected by lead-based paint.

Q: In the area the EPA and British Petroleum Company are leaving volumes of contaminated tailings as “waste in place” and are NOT going to pump out contaminated ground water as was performed in the Parrot Tailings Area.

EPA Response: Groundwater capture and treatment will occur because the corridor project areas are, or will be, within the capture areas of groundwater capture systems (e.g. subdrain, Butte Reduction Works, Blacktail Creek, etc.). The ongoing optimization study being conducted by AR could result in additional capture systems to address any areas requiring additional capture, including the remedial elements sites, if necessary. Pumping of groundwater will be considered during the optimization phase with consideration to the operation and maintenance of the existing groundwater capture. Please note that NRDP’s Parrot Tailings project was a restoration project whereas EPA’s work at BPSOU is remediation. Remediation cleans up hazardous substances to protect human health and the environment, while restoration restores, rehabilitates, replaces, or acquires the equivalent of the injured natural resources. While remediation and restoration efforts work in concert with one another, they have different responsibilities, authorities, and goals.

Q: How can DEQ and the County enter into a consent decree that ignores the law of Montana? Silver Bow Creek is a natural water course. The decision I made the state did not appeal. It was a valid legal precedent. Despite man-made alterations, it is a natural water course not just in name only. Silver Bow Creek's legal status must be observed by the interested parties in this consent decree.

EPA Response: The judge's ruling did not designate SBC as a water of the state. The ruling only applied to the name to be used, whereby the MSD was to be called "Silver Bow Creek." Below is a complete response from the 2020 RODA that answers questions about the ruling.

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.



REGION 8

DENVER, CO 80202

January 2, 2024

Dear Mr. Macgregor,

Thank you for the feedback regarding EPA's position paper on the use of onsite material as general fill at Butte Priority Soils Operable Unit (BPSOU). Please see responses to your questions below, and if you have further questions please reach out to Charles Van Otten (vanotten.charles@epa.gov) or Dana Barnicoat (Barnicoat.Dana@epa.gov)

Q: Nikia's cross-sectional diagram about potential location for future uses of OSF shows the fill being used above the 3-yr high-water mark—presumably to limit the frequency of its saturation: however--

- Leachability studies would need to be done to ensure that—in the floodplain where this is being considered for use—contaminants from OSF don't leach into cleaner fill below the 3yr high-water level.

EPA Response: Onsite material will not be used within the 100-year floodplain, as indicated in [EPA's August 2023 position paper](#) on onsite material. The Butte Priority Soils Operable Unit (BPSOU) remedy will ensure protectiveness in several ways, including: (1) existing groundwater capture and treatment at Northside Tailings, Diggings East, and Buffalo Gulch; (2) optimization of the existing groundwater capture and treatment system; (3) additional planned groundwater capture and treatment at Blacktail Creek and Butte Reduction Works; and (4) contingencies to extend groundwater capture to prevent contaminants from leaching into groundwater, as well as groundwater and surface water monitoring, both of which include triggers for additional diagnostic evaluation through the Surface Water Compliance Determination Plan and Surface Water Management Plan. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) five-year review process will also be used to ensure ongoing protectiveness of the remedy. While it is not possible to return the area to pre-mining conditions, EPA is committed to ensuring the remedy is protective and will work with the fellow signatories to the Consent Decree (CD) to build in these types of layered strategies to prevent further groundwater contamination.

Q: Groundwater / surface water risks are mostly environmental, not human-health risks; are the contaminants numeric levels listed as criteria permitting their use calibrated for potential migration into a riparian environment, or only calibrated for human health risk?

EPA Response: Numeric criteria for fill are determined on a site-specific basis to be protective of both human health and the environment. Pertaining specifically to protection of riparian environments, onsite material will not be located within any 100-year floodplain, channel, or stream, including future channel alignments (i.e. ROCC's designated channel alignment), in riparian areas, or within the stormwater or sediment ponds or inlet and outlet structures. Importantly, a variety of controls in place

in Butte are designed to eliminate exposure pathways to onsite material from occurring in the first place.

Q: The cross-section diagrams don't give a sense of the depth of OSF in relation to the 3 yr high water level or to the depth of clean fill below that level; how much variation is there in the projected depth of OSF if it's used as shown?

EPA Response: The requested information is currently being modeled using Leapfrog, a 3D geological modeling software for mining, exploration, groundwater contamination, and geothermal energy. The results of the model and how to incorporate them when completed will be discussed during the publicly-observable remedial design technical meetings. EPA will also share the Leapfrog model results with the public.

Q: As explained, the on-site data collected during site characterization studies is fed into models to reach decisions about acceptable levels of risk—to both human health and the environment. I endorse the question John Sorich asked: what can you tell Butte residents to give them confidence to trust 1) that the conclusions about acceptable risk are valid and consistent with the risk levels accepted anywhere else in the country; and 2) that you have monitoring protocols and contingency procedures to ensure that if the models are wrong, and greater exposures to human health and the environment emerge in the future (because of the use of these models, or the data that was fed into them)? I heard this question raised in different forms by several people during the discussion, and for each one, it comes down to asking "show us why we should trust you with our long-term future?"

EPA Response: While each site may have different criteria for the reuse of material found on site, there are examples of such reuse in Montana and across the country as part of the remedies.

The EPA is committed to ensuring BPSOU cleanup decisions are and will be protective of human health and the environment. The Buffalo Gulch, Northside Tailings, and Diggings East sampling methodology and analysis plans will be included within the Backfill Material Characterization and Reuse Plans and Waste Management Plans, which AR will submit per the BPSOU CD. These plans will include the locations where onsite material will be used in designs. Once these plans are received, any deficiencies will be identified by EPA in consultation with the Montana Department of Environmental Quality (DEQ).

The BPSOU remedy will ensure groundwater protectiveness in several ways, including: (1) existing groundwater capture and treatment at Northside Tailings, Diggings East, and Buffalo Gulch; (2) optimization of the existing groundwater capture and treatment system; (3) additional planned groundwater capture and treatment at Blacktail Creek and Butte Reduction Works; and (4) contingencies to extend groundwater capture to prevent contaminants from leaching into groundwater, as well as groundwater and surface water monitoring, both of which include triggers for additional diagnostic evaluation through the Surface Water Compliance Determination Plan and Surface Water Management Plan.

Many protections, contingencies, and further response actions are defined in the CD. The main protection to human health and the environment will come from eliminating the exposure pathways through groundwater collection and treatment, as well as Institutional Controls. In the long term, the protectiveness of the remedy will be routinely evaluated during the five-year review process. These reviews are required by CERCLA when hazardous substances remain on site above levels that permit unlimited use and unrestricted exposure. Five-year reviews provide an opportunity to evaluate the

implementation and performance of a remedy to determine whether it remains protective of human health and the environment.

Q: Both Evan and Mick raised an issue I would have raised had they not: the language in the CD that discusses what was referred there as “gray area material” and is now referred to as “OSF”—that language makes it clear that particular standards to be applied for its use are discretionary: “may” is the operative verb. Not “shall” “must” or even “should”. The unfortunate use of the original phrase in the CD lent itself to the widespread local characterization as “dirty dirt”—not the intended meaning of material on site that doesn’t meet the criteria to fit a neat definition as “waste”, as in “that’s a gray area of the CD’s decision-making, with a non-specific sense of what to do with that material”

EPA Response: To clarify, the term “gray area material” is not in the BPSOU CD. The relevant language in the CD’s Statement of Work says, “If onsite materials do not exceed the Waste Identification Criteria in Table 1 of Appendix 1, the material may be used on site as general fill provided it meets all other requirements for general fill in Table 2 of Appendix 1 (e.g. texture, pH).” The term “may” authorizes the use of onsite material as general fill so long as it meets the appropriate parameters and is protective of human health and the environment. Any additional design requirements will be included in the Backfill Material Characterization and Reuse Plans, to be submitted by AR for review by the CD parties and the public. EPA, in consultation with DEQ, will review the plans to determine if they are protective of human health and the environment and consistent with the CD. Once the documents are satisfactory to EPA and DEQ, the plans will be approved and will become enforceable as part of the CD.

Q: For risk assessors and project managers, having a neatly laid out decision matrix with specific numbers (5000 of one contaminant or exceedances of 3) gives them something to point to as a basis for deciding whether they should go ahead with a particular design decision. It makes it look—scientific—factual—..... but as the questions asked tonight show, the alternatives seem arbitrary, not scientific—why 3 contaminants, why not 2, and why not rank the contaminants for the particular situation under discussion (floodplain; potential riparian interaction; low human health issues)?

EPA Response: The Waste Identification Criteria were adopted from the Streamside Tailings Operable Unit (SSTOU), which was developed using metal concentrations to identify tailings versus soil and to determine which materials should be removed or left in place. The three-exceeding criteria help distinguish mine waste from impacted soil. Risk is managed by ensuring the public will not come into contact with waste, onsite material, or the associated groundwater.

Q: Had I joined the discussion—offered a comment—that evening, it would have focused on a simple notion. The CD gives EPA the discretion to direct how the OSF may be used; with few exceptions tonight’s listening session revealed that *Butte folks want to believe that the folks responsible for the cleanup are committed to doing the best job they can within the limits of their authority under Superfund*. The simple “may” in the CD gives EPA the authority to do just that, without constraining its goals to move forward expeditiously: the discretionary authority specified in the CD about OSF allows EPA to say whether, where, and how any OSF can be used in the corridor.

EPA Response: The term “may” authorizes the use of onsite material as general fill so long as it meets the appropriate parameters and is protective of human health and the environment. Any additional design requirements will be included in the Backfill Material Characterization and Reuse Plans, to be submitted by AR for review by the CD parties and the public. EPA, in consultation with DEQ, will review the plans to determine if they are protective of human health and the environment and consistent with the CD. EPA is committed to enforcing and overseeing the implementation of the CD within the

authority of Superfund. Design level considerations for each individual project area will be developed within each Backfill Characterization and Reuse plan.

Q: I recommend that EPA adopt a position that it will use the CD guidance *to limit the use of OSF in the corridor*, and in situations where OSF may be used, conduct leachability studies, and wherever it IS used, include more extensive monitoring of contaminant migration over the course of coming decades. What I'm recommending here is that EPA should turn the story around—show that the CD is working to improve public confidence *by emphasizing how EPA's discretionary authority actually limits how much—or little--OSF may be used in the corridor*—not just how much “dirty dirt” might get used.

EPA Response: EPA's position remains that the use of onsite material within certain protective parameters allows the remedy to be constructed in a timely manner while protecting human health and the environment, now and into the future. As referenced in responses to earlier questions, the CD allows for use of onsite material as general fill. EPA's Position Paper on the use of onsite material includes additional design parameters for consideration and ensures its use is protective of human health and the environment.

Q: The CD gives the agency the discretion to direct that some, all, or none of the Onsite Fill (OSF) may be used in the remedial design for the corridor. If it decides to remove all the OSF to a repository and bring in clean fill from offsite, it has that authority. If, as is more likely, the agency decides to remove some (as directed by the criteria shown in the decision matrix tonight) but not all OSF, it will need to make the case for doing so every step of the way, keeping communication channels open and not allowing the narrative to take hold that EPA is just doing it to save BP/AR money.

EPA Response: Your comment is understood and appreciated. While the EPA would not characterize its discretion regarding this issue as stated above, the EPA is committed to communicating through the entire process with the community and understands our responsibility to develop and implement remedial design decisions that will be:

- (1) protective of human health and the environment,
- (2) consistent with CERCLA, the National Contingency Plan, and the BPSOU CD, and
- (3) reflective of a transparent community engagement process.

Q: Finally, do not let anyone get confused by the human health risk numbers that appear in the decision matrix. The critical factors for OSF decisions relate to environmental risk associated with leaving material containing these levels of contaminants in the floodplain, and how they may affect that environment in the future. Again, EPA's discretionary authority granted in the CD allows it to ensure that the environment of the Upper Silver Bow Creek corridor is fully protected for the future.

EPA Response: The CD does not allow onsite material as general fill to be placed within a floodplain and any design decisions concerning onsite material as general fill will reflect this prohibition