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January 18, 2021

Arthur Burbank
Remedial Project Manager
Forest Service Intermountain Region
4350 South Cliffs Drive
Pocatello, ID 83204

Subject: Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS)
Simplot's Responses to the October 14, 2020 Agency Comments for the
Draft Feasibility Study Technical Memorandum #2:
Detailed Analysis of Remedial Alternatives

Dear Art,

Attached are the responses to agency comments dated October 14, 2021 to the *Draft Feasibility Study Technical Memorandum #2: Detailed Analysis of Remedial Alternatives* (FSTM#2) for the Smoky Canyon Mine RI/FS. Simplot is submitting the enclosed document and responses to the October 14, 2021 comments in accordance with the August 2009 Settlement Agreement/Consent Order.

This document also can be downloaded from the Feasibility Study folder at the website:

(b) (6)

Please contact me if there are questions regarding this submittal.

Sincerely,

Jeffrey Hamilton
Environmental Engineer

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cc: (1 copy except as otherwise noted)
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Simplot's Response to Comments (October 13, 2020)

Smoky Canyon Mine Draft FS Technical Memorandum #2

General Comments

GC-1 It would be helpful to have figures or maps for each cover alternative, showing the panels, key spring areas, Water Treatment Plant (WTP), seeps and riparian areas, and other important features referred to in the document, in order to better understand which areas would be addressed by a particular alternative.

Response: Figures will be added for each alternative as requested.

GC-2 How do the alternatives meet the Remedial Action Objectives (RAOs)? RAOs are achieved by concentration reductions, but there is little to no discussion about this. The discussion in the text is focused on reductions in selenium loading.

Response: The model can be configured to provide concentration output. Our approach in the draft report was based on the concept that the relative performance of the remedial alternatives was the key metric in the evaluation. We were also concerned that producing concentration estimates would appear to indicate a level of certainty not representative of the assumptions made in the model. However, to address that comment, Simplot will be providing predictions of concentrations for selenium concentrations at groundwater wells and in surface water to evaluate each alternative's ability to meet RAOs. These modeled predictions will be provided in the revised report.

The remainder of this response provides a summary of the Conceptual Site Model. We have provided this information in a consolidated location for reference and clarity throughout the subsequent responses (there are many issues brought up in the comments that require multiple lines of evidence to respond).

As described in Section 3.2.4.1 of the draft report and noted in Specific Comment 116, there are no actionable risks due to direct contact with the Overburden Disposal Areas (ODAs). Additional actions performed since the Remedial Investigation and Risk Assessments were completed (i.e., the cover installed on Pole Canyon ODA for the 2013 Non-Time-Critical Removal Action [NTCRA] and covers installed by reclamation) have reduced the arsenic and selenium concentrations in soil at the surface such that the direct contact RAOs are met on ODAs by current conditions. Therefore, covers are not required for direct contact risks on the overburden areas.

The conditions in groundwater and surface water at the Site are changing as a result of mining activities, reclamation, and the Pole Canyon ODA NTCRAs. Concentrations in groundwater and surface water are predicted to decrease without any additional actions.

For example, the draft report provided a prediction of estimated selenium concentrations over time in Wells Formation groundwater at GW-25 (Figure 1):

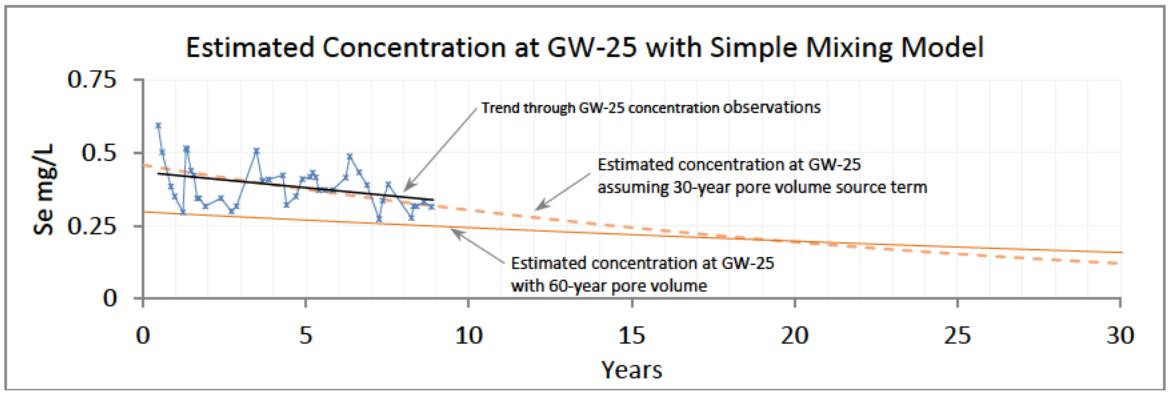


Figure 1 – Estimated Selenium Concentrations at GW-25 (from Figure A-A7 of the draft report)

Expanding the time axis on this graph (see Figure 2), provides a prediction that selenium concentrations at this well will reduce below the MCL in the 60-year timeframe. The revised report will provide a similar evaluation for Wells Formation groundwater at GW-16 and alluvial groundwater at GW-15, GW-22, and GW-26.

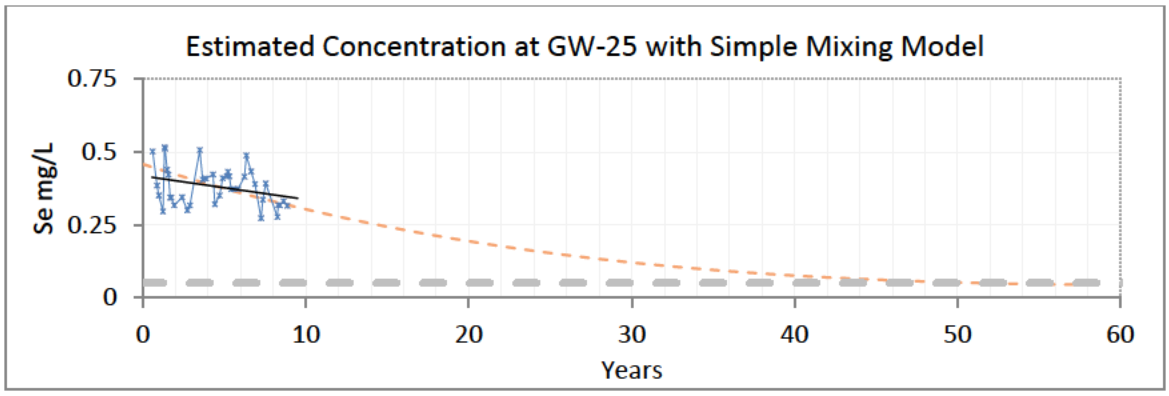


Figure 2 – Estimated Selenium Concentrations at GW-25 (expanded timeframe)

The predicted load of selenium from each of the ODAs to Wells Formation groundwater along with the arrival at the Springs Complex was provided in Figure A-6 of the draft report, as is shown in Figure 3 below. The figure illustrates both the relative magnitude of each source area and its predicted effect on selenium loads at the Springs Complex over time.

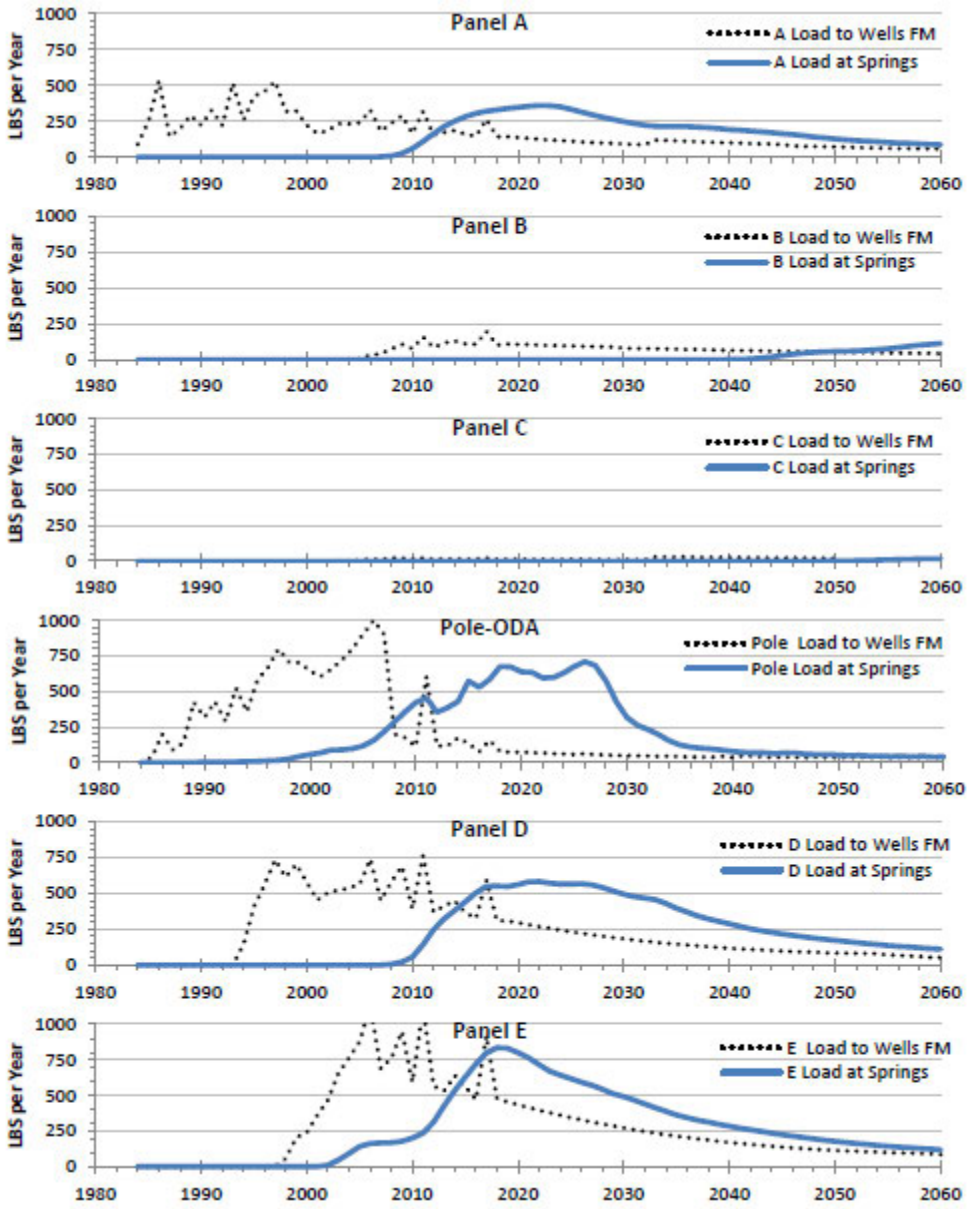


Figure 3 – Estimated Selenium Mass Load to the Wells Formation and Arrival at the Springs Complex for Each Source Area

The time difference in predicted loading to Wells Formation groundwater and the selenium discharging at the Springs Complex is due to the estimated travel time for selenium in groundwater (provided as Figure A-4 in the draft report and shown in Figure 4 below).

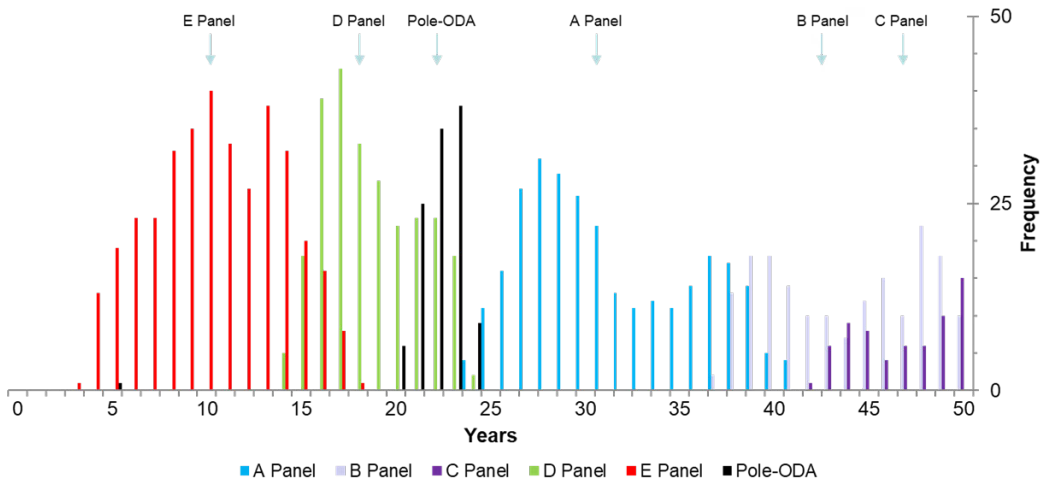


Figure 4 – Estimated Groundwater Travel Times in the Wells Formation from ODAs to the Springs Complex

For each source area the predicted selenium load to the Wells Formation changes over time which will result in changes in both groundwater and surface water quality. As an example of a specific change, Figure 5 below shows the predictions for the Pole Canyon ODA. The predicted load to Wells Formation groundwater over time was reduced significantly by the NTCRA Pole Canyon Creek bypass pipeline and upgradient infiltration basin which were implemented in 2007-2008 and then reduced again by the cover installed by the NTCRA in 2015. The reduction of the load from these actions has not yet reached the Springs Complex because of the approximately 25-year travel time.

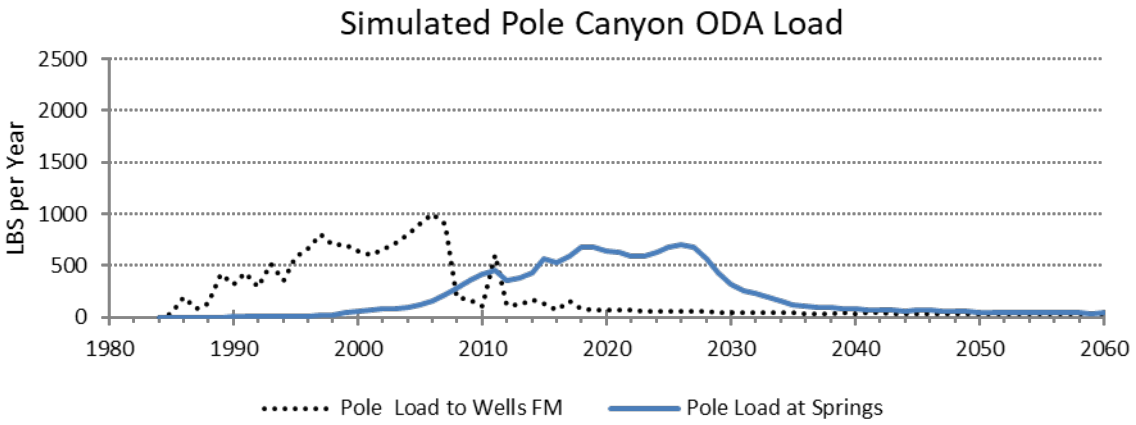


Figure 5 – Predicted Selenium Load from the Pole Canyon ODA to Wells Formation Groundwater and at the Springs Complex Over Time

Figure 6 shows the model predictions for the sources of selenium to the Springs Complex over time. The "active" green line shows the prediction of selenium arriving at the Springs Complex that was released during active mining. In this case "active" means the period of active mining up until the time period when reclamation was performed. For the Pole Canyon ODA, the "active" period is from 1985 when the first overburden was placed in the canyon, up until 2007 when the first NTCRA was performed. The figure shows that selenium discharging from active mining is predicted to have peaked

at the Springs Complex around 2015 and declined through 2020 and is predicted to reduce to zero in the early 2030s (as the effects of the Pole Canyon NTCRAs described above arrive). After this time, the predicted reduction is a result of source depletion.

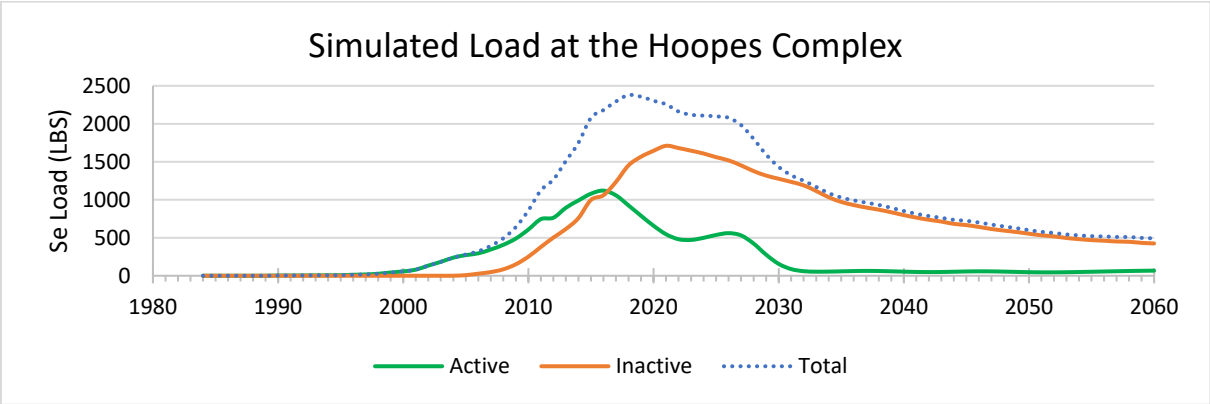
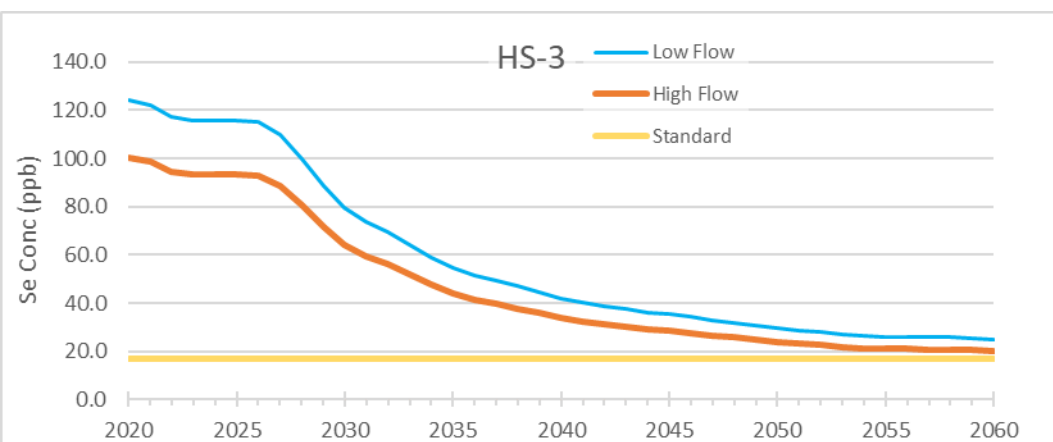


Figure 6 – Predicted Selenium Load at the Springs Complex Over Time

The effect of the selenium discharging at the Springs Complex on downstream water quality can be estimated using the load estimates from the model and historical flow data. The loads at the springs have not been observed to fluctuate seasonally and concentrations in the creeks are highest during low flow conditions (i.e., late summer/early fall). Preliminary prediction of the change in selenium load discharging at the Springs Complex and downstream over time without any additional actions is shown in Figure 6 (the blue dotted line).

Using high flow and low flow values from the creeks, selenium concentrations resulting from the Springs Complex discharge are predicted to vary between the concentrations shown below in Figure 7 (note: these concentrations assume that no further source control is implemented and that the existing water treatment plant at Hoopes Spring is not operating). A "standard" line is shown for reference – compliance will be determined by fish tissue concentrations. The predictions show water concentrations in the range of the standard by 2060 (the limit for the model) and they would continue to reduce after this time such that standards are predicted to be met.



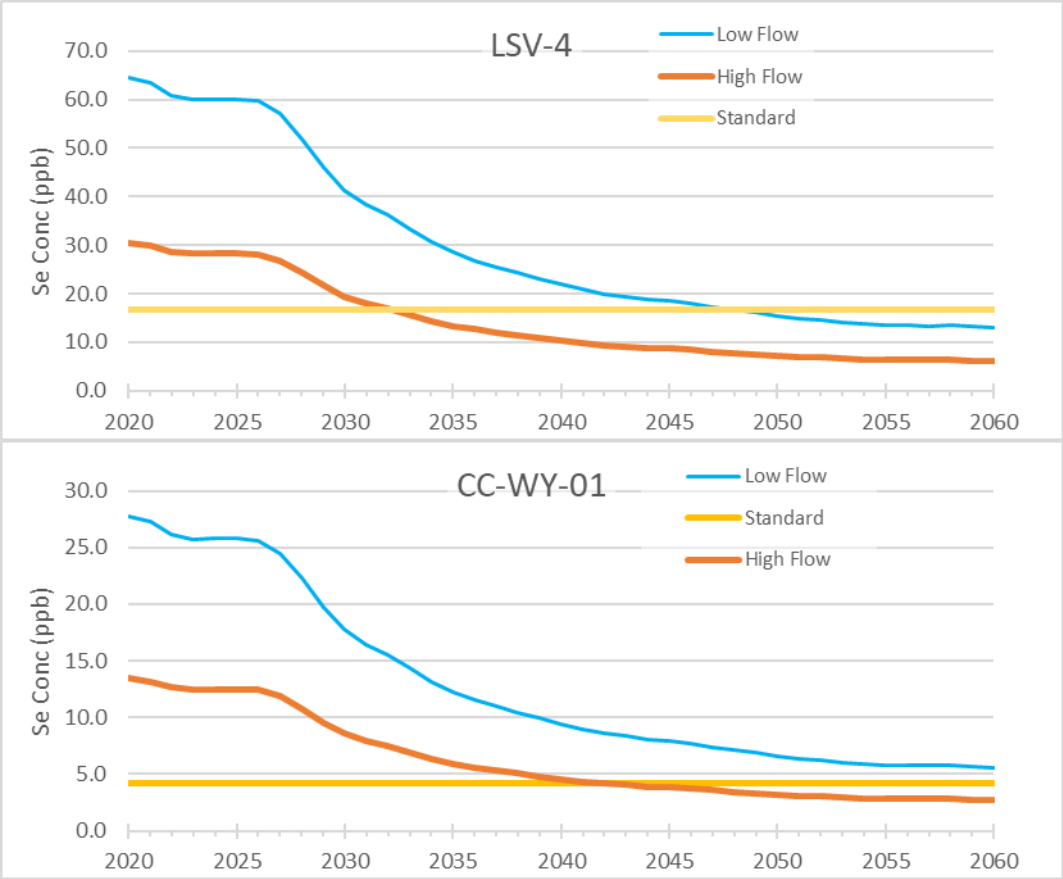


Figure 7 – Predicted Selenium Load at Hoopes Spring, Sage Creek and Crow Creek Over Time with No Further Source Control or Water Treatment

The report will be revised to include this information and also to provide concentration predictions over time for each of the remedial alternatives.

GC-3 What criteria were used to select "target areas" for addressing infiltration? Why were travel timeframes to Hoopes Springs selected? If the focus is long-term effectiveness and permanence of remedies, all source areas should be addressed.

Response: The target areas are part of the overall concept of the remedy approach. As described in more detail in the response to General Comment 2, groundwater and surface water conditions are changing and are expected to continue to change in the future as the effects of active mining, reclamation, non-time-critical removal actions at the Pole Canyon ODA and source depletion progress through Wells Formation groundwater. Per the response to General Comment 2, predictions of selenium concentrations in groundwater and surface water over time will be provided in the revised report.

A brief summary of the mining and reclamation history is provided here for reviewers not familiar with the Smoky Canyon Mine. The selenium content of the overburden varies with variations in the geology and as documented by column test data, is lower at the north end of the mine. In addition, the reclamation (i.e., covers) of the different pits within the mine panels varies

depending on the materials available and the mining and reclamation procedures used at the time. Both factors influence the areas selected for evaluation in the FS. The status of mining and reclamation at each panel is as follows:

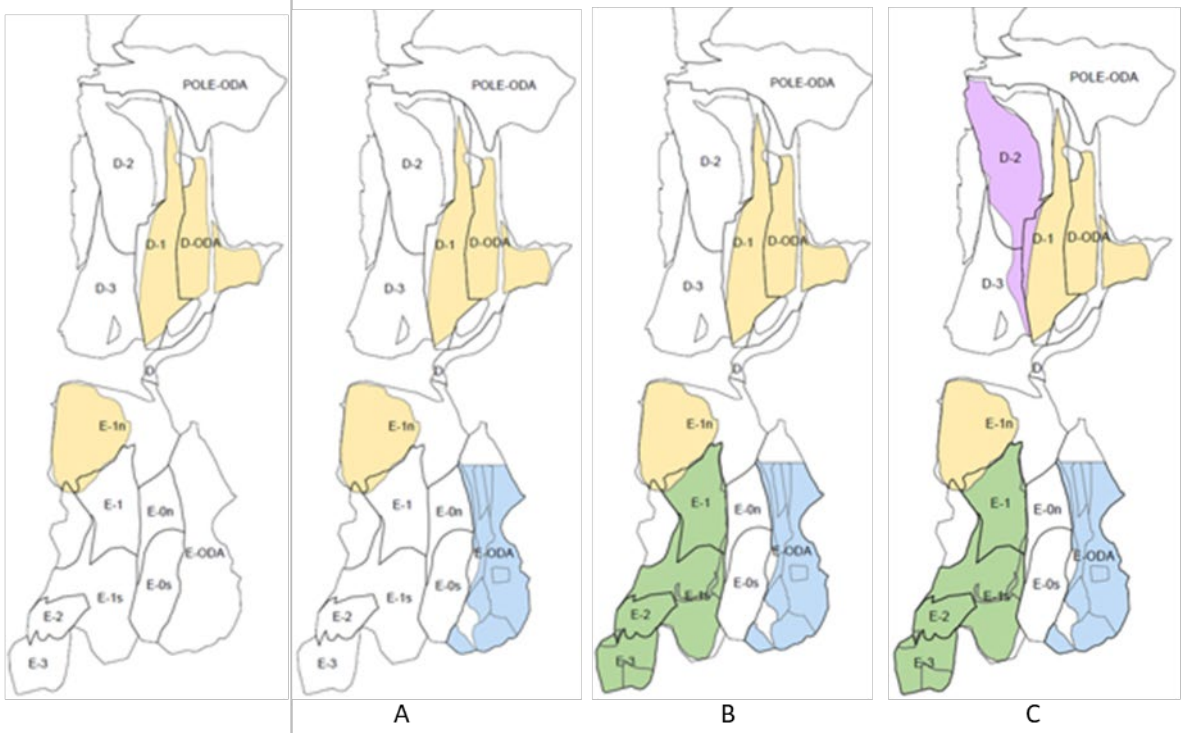
- **Panel A and External ODAs**. Panel A is approximately 245 acres; the external ODA is an additional 135 acres. Mining at Panel A took place from 1985 to 1990. Pits A-1 and A-2 were backfilled shortly after mining and covered with topsoil or reclaimed by direct revegetation. Overburden from Panel C was backfilled in Pit A-4 and A-Pit after 2001. Pit A-3 will be backfilled and reclaimed as part of future mining in Panel B.
- **Panel B and External ODA**. Panel B is approximately 155 acres; the external ODA is an additional 50 acres. Mining at Panel B occurred from 2004 to 2010. The external ODA and Pits B-1 and B-3 were reclaimed with a topsoil-over-chert cover. Mining of Pits B-2 and B-4 will be completed concurrent with the East Smoky Panel.
- **Panel C.** Panel C is approximately 105 acres and was mined from 2002 to 2006. The north end of Panel C was reclaimed in 2008 and the remainder of Panel C was reclaimed in 2010 with a topsoil-over-chert cover.
- **Panel D and External ODA.** Panel D is approximately 268 acres; the external ODA is an additional 89 acres. Mining at Panel D took place from 1993 to 1998 in three pits (Pits D-1, D-2, and D-3). Panel D overburden was placed in an external ODA as well as in portions of the Pole Canyon ODA. The pits and overburden areas were reclaimed in 2002 by direct revegetation or covered with topsoil only or topsoil over chert.
- **Panel E and External ODA**. Panel E contains a total of five pits (Pits E-0, E-1n, E-1s, E-2, and E-3) and is approximately 390 acres; the external ODA is an additional 120 acres. Mining in Panel E began in 1998 and continued through 2006. Reclamation of Pit E-1n and the external ODA was completed in 2003 with topsoil-over-chert or a Dinwoody/Chert cover. Pits E-1s, E-2, and E-3 were reclaimed with a Dinwoody/Chert cover in 2008. Pit E-0 was backfilled with overburden from Panel F in 2010 and covered with a Deep Dinwoody store and release cover system in 2014.
- **Pole Canyon ODA.** The Pole Canyon ODA is a 130-acre external disposal area in the Pole Canyon Creek drainage and was constructed as a cross-valley fill. Most of the overburden originated from Panel A from about 1985 to 1990. A much smaller portion of the overburden originated from Panel D (Pit D-2) in 1997. Two NTCRAs were completed at the Pole Canyon ODA in 2008 (bypass pipeline, infiltration basin, run-on control channel) and 2015 (Dinwoody/Chert cover).

The target areas were identified based on the following criteria:

1) <u>The relative magnitude of each source area.</u> As shown in Figure A-6 of the draft report (and reproduced in Figure 3 in the response to General Comment 2), Panels D and E are the largest current sources, and therefore comprise the largest source terms in the groundwater model, of selenium to the Wells Formation groundwater. As described in Appendix A (page 4), panels to the north of Pole Canyon (A-1, A-3, A-4, and A-Pit), have lower overall source terms because the overburden from the north end of the Site (i.e., from Panels B and C) was placed in these panels and has a lower selenium concentration with an upper bound of 0.24 mg/L. By comparison, the upper bound source term concentration of mine panels south of Pole Canyon is 1 mg/L.
2) <u>Areas with minimal or no covers.</u> On Panels D and E, the target areas were selected because they have minimal or no covers and therefore have the highest relative rates of infiltration.

3) <u>Travel time to the Springs Complex.</u> Actions farther south would have a quicker effect on surface water conditions. The shorter travel time resulted in Panels D and E being prioritized over the smaller uncovered area at Panel A where similar overburden is present (note that a portion of Panel A backfill came from mining at Panel C and consequently has lower selenium concentrations and is a smaller source term).

As indicated in the response to General Comment 2, without any further source control or operation of the water treatment plant, selenium concentrations in Wells Formation groundwater and surface water are predicted to reduce below standards shortly after 2060 and therefore RAOs are predicted to be met without additional source control. However, source control will reduce the time to meet standards and add more assurance that they will be met. Based on this, we propose an incremental approach for source control by covers (5-Foot Dinwoody or Salt Lake Formation/Chert, Capillary, Enhanced Dinwoody and Geomembrane) for the areas shown in the figure below which allow for actions to be evaluated over time based upon monitoring data at the downgradient spring complex.



GC-4 There seems to be little site-specific data to support the capillary break alternative. Were analyses conducted with Smoky Canyon data to determine if this would be effective? How similar is Blackfoot Bridge to Smoky Canyon in terms of elevation, aspect, moisture, etc.? Has the 42% of moisture that percolates through the filter fabric been put into the updated GW model? What are the estimated concentrations that emanate from Hoopes Springs using this alternative?

Response: Attachment 1 (section 2.2) of Appendix A, describes the analyses to estimate the effects of a capillary cover. The analyses are based on site-specific data, including cover material properties (uncompacted Dinwoody and screened chert reported by OKC (2015)) and optimal slope (i.e., 3:1), to estimate drainage bench spacing to achieve the reduction of percolation evaluated in subsequent groundwater modeling analyses. The reduction of percolation resulting in application of the capillary break cover have been evaluated in the groundwater model and presented in the draft report.

Please see the response to General Comment 2 – the model will be used to predict selenium concentrations in surface water for all remedial alternatives.

GC-5 Do Dinwoody and Salt Lake Formation have the same properties such that they are interchangeable in constructing covers? If not, how do you select which material to use? If not, how can the screening evaluation be conducted as described in the FSTM #2? Do they have different levels of effectiveness in preventing infiltration?

Response: Dinwoody and Salt Lake Formation materials referenced in the "5-Foot Dinwoody or Salt Lake Formation/Chert Cover" support revegetation with native low-selenium-accumulating grass species to control erosion. Both materials facilitate evapotranspiration by increasing moisture storage, making the water available for plant uptake, thereby reducing net percolation. The assumption that the Dinwoody and Salt Lake Formation materials are interchangeable for this cover type is consistent with the geologic store and release cover system presented in the East Smoky Mine Panel Final Record of Decision (USFS 2020), which includes Dinwoody and/or Salt Lake Formation in the cover sequence.

Simplot recognizes that Salt Lake Formation materials found in the area have highly variable qualities; some with better properties than Dinwoody and some with worse. Material would be evaluated by the procedures set out in the existing Construction Quality Control Plan currently being utilized at the mine for construction of the Enhanced Dinwoody cover (Simplot, Geosyntec and O'Kane 2020) to ensure that the properties are appropriate. Material selection would be determined during design based on availability and location.

GC-6 Do any of the alternatives meet Applicable or Relevant and Appropriate Requirements (ARARs)? It is unclear from the text in the document, as there is little discussion on action-specific, location-specific and chemical-specific ARARs. There are more ARARs to consider than the selenium surface water criteria.

Response: Please see the response to General Comment 2 regarding the proposed model output to show concentration predictions. Discussion of action-specific, location-specific and chemical specific ARARs was provided in the tables in the draft report. In the revised report, we propose to eliminate the tables and include all the evaluations in the text. The evaluation of alternatives will include a consideration of action-specific and location-specific ARARs.

GC-7 The Preliminary Remediation Goals (PRGs) were identified in FSTM #1. However only a final chosen value was provided in Table 3-3, and in some cases a range was listed instead of clear summary numerical identification of all factors used in determining the final PRG. In FSTM #2, please add an expanded PRG Table 3-3 to the document, building on Table 3-3 from the FSTM #1. This updated Table 3- 3 would include specifics for all contaminants of concern (COCs) with a hazard quotient (HQ)>1), ARAR criteria value (if available), naturally occurring COC background concentration (as applicable), and the risk-based criteria. Including these values in

one table allows for clear identification and documentation of the chosen PRG for remedy evaluation and begins the specific incorporation of background values to the FS process. The added/updated Table 3-3 should also be referenced throughout the document during discussion of alternatives and PRGs.

Response: The updated table will be added as requested.

GC-8 FSTM #1 identified several COPCs above screening values; however, these COPCs were not considered in the evaluation of the alternatives because collocated samples concentrations of selenium were higher than the COPCs. FSTM #2 needs to demonstrate that all COPCs identified in FSTM #1 for each media behave similar to selenium for the proposed remedial technologies.

Response: The report will be revised as requested.

GC-9 FSTM #1 identified arsenic as a COPC exceeding benchmarks for human health through drinking water for the Native American, recreational camper, and hypothetical camper receptors. Although the MCL is being used as a PRG for the cleanup of the site for surface and groundwater, the FSTM #2 should acknowledge that IDEQ is in the process of updating the arsenic human health aquatic life criterion and that arsenic aquatic life criterion applies for surface waters at the site.

Response: The report will be revised to state that the Idaho criterion is being updated.

GC-10 **Section 2:** Inclusion of different types of covers in the alternatives for different media (groundwater, surface water, and solids and soils) is unusual and confusing. Although covers would have benefits for groundwater and surface water, they are often viewed as most directly applicable to solids and soils media. Feasibility Studies (FSs) do not generally have the same technology, applied in the same areas, considered for multiple media. One way to mitigate repetition, overlap, confusion, and potential conflicts between selections of different cover alternatives for different media, would be to use a generic description for a cover component in the groundwater and surface water alternatives, and leaving the evaluation of the different types of covers and locations for implementation to the solids and soils alternatives. For instance, Alternative WG-4 could be changed to something like "source control using covers (see Solids and Soils alternatives, Section X), ICs, and MNA", and then WG-5 through 7 could be deleted. Similarly, for the Surface Water (SW) alternatives. (Note: the approach for covers suggested above is actually already employed in FSTM#2 for the rock covers over seep/riparian areas, where that is mentioned but not nominally included in the WG and SW alternatives, but is only actually included as a component of the Soil (S) alternatives. This comment is suggesting that the other types of covers be handled in the same fashion.).

Response: Please see the proposed revised report structure in the response to General Comment 12.

GC-11 **Section 2:** Another confusing aspect of including cover components in the alternatives for multiple media is: WG and SW alternatives (i.e., WG-4 through -7 and SW-2 through -5) specify covers on the target cover areas shown in Figure 2-1. In contrast, the S alternatives (S-3 and -4) specify covers on the uncovered ODA areas shown in Figure 2-18. The areas depicted in Figure 2-1 (D-1, D-ODA, E-1n) and Figure 2-18 (A-ODA, A-2, D-1, D-2, D-ODA) overlap considerably but not completely. If all areas contain exposed material that serve as a source and/or present a contract risk, why not simply include all areas of exposed contaminated materials shown in both figures as the areas to be covered?

Response: The overburden areas do not represent a contact risk as described in Section 3.2.4 of the draft report. Please see the response to General Comment 12 for the proposed revised report structure.

GC-12 **Section 2:** Please consider a different approach to structuring the document. The approach to presentation/screening of media alternatives is confusing. Consider some reorganization of the document based on the premise that mitigating source material exposure is an overriding theme paramount to remediating contamination of other media. For example, an optional approach might be:

a. Add subsection: Common remedial features of the assembled media alternatives (with the exception of No Action). Describe common remedial features/tools that will be applied to all media alternatives (e.g. Land use controls; Institutional Controls; Long term O&M monitoring and Maintenance; Revegetation, etc.). Then refer back to this section as media alternatives are presented, described and evaluated.

b. Assume that source controls (Containment Options over ODAs and contaminated soils) will be used in conjunction with other media Alternatives and will influence the success of all other alternatives. [Prevents precipitation, runoff or snowmelt from infiltrating and moving through contaminated ODA's, mined areas and soils]

c. **Section 2.3:** Start Description and Screening of Media Alternatives with:

i. ODA Solids and Soils Alternatives* (primary Source Material) and describe the primary source control options (containment) to be screened/evaluated.
   1. 5 foot Dinwoody or Salt Lake Formation/Chert Covers over ODA's
   2. 5 foot Dinwoody or Salt Lake Formation/Chert Covers over uncovered areas
      a. Capillary Covers
      b. Enhanced Dinwoody Covers
      c. Geomembrane Covers
      d. Rock Covers on Soils in Seep and Riparian Areas
      e. Note: * with Run-on/run-off controls
   3. Groundwater Alternatives
      a. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils Alternatives)
      b. Wells Formation
         i. Monitored Natural Attenuation (MNA) and ICs
         ii. GW recovery and treatment
      c. Alluvial Aquifer
         i. MNA
         ii. Permeable Reactive Barriers
         iii. In-situ Treatment of Alluvial plumes by injection
         iv. GW recovery and treatment

ii. Surface Water Alternatives
   1. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils

Alternatives)

2. In-situ Biological Treatment of Source Area Seepage (Wetlands Bioreactor)
    a. Bioreactor Treatment – (Mine influenced Seeps/springs collected to lined ponds, then piped to above ground bioreactor cells)
3. Treatment Plant - (Mine influenced seeps/springs collected to lined ponds, then piped to treatment plant.)

iii. Sediment and Riparian Soils Alternatives
    1. ICs and LUCs in conjunction with Source Controls (i.e. Solids and Soils Alternatives)
        a. Monitored Natural Recovery (MNR)
    2. Sediment Traps/ Basins, and MNR
    3. Removal of contaminated Stream Sediments and Riparian soils with onsite disposal

iv. ETC

Response: In order to simplify the report, we propose to eliminate Section 2. The decision to include a screening step in Section 2 was based on the CERCLA guidance and an attempt to follow the structure of the Ballard FS, which we thought would be the agencies' preference. In drafting the report, Formation had trouble making this screening step meaningful while trying to avoid repetition with the detailed analysis. This contributed to a confusing aspect of the report. Based on the agency comments, all the alternatives that undergo the screening process are now retained. According to the guidance, the purpose of this step is "to reduce the number of alternatives that will undergo a more thorough and detailed analysis." Now that the screening step does not meaningfully reduce the number of alternatives, we propose to delete it.

Justification for removing the screening step is provided in EPA Guidance for RI/FS:

> *"The FS may be viewed (for explanatory purposes) as occurring in three phases: the development of alternatives, the screening of the alternatives, and the detailed analysis of alternatives. However, in actual practice the specific point at which the first phase ends and the second begins is not so distinct. Therefore, the development and screening of alternatives are discussed together to better reflect the interrelatedness of these efforts. Furthermore, in those instances in which circumstances limit the number of available options, and therefore the number of alternatives that are developed, it may not be necessary to screen alternatives prior to the detailed analysis" (EPA 1988, p.4-3).*

In these situations:

> *"...the number of viable or appropriate alternatives for addressing site problems may be limited; thus, the screening effort may be minimized or eliminated if unnecessary" (EPA 1988, p.4-5).*

As such, we do provide responses to comments on Section 2, where appropriate, and will incorporate them into the revised report in the detailed analysis. As described in the response to Specific Comment 6, Table 2-1 summarizes the technologies and process options retained after the screening process in FSTM#1 for groundwater, surface water, and solids and soils. The table also shows which technologies are incorporated as components of the remedial alternatives in the revised FSTM#2.

In terms of the alternatives, we think that moving away from a media-based approach will provide a clearer and more understandable report and propose the following structure for the new Section 2 (Description of Remedial Alternatives):

1. Evaluation of Current Site Conditions

This section will evaluate the new data that has been generated since the Remedial Investigation and Risk Assessments were finalized. As described in the draft report, these data will show that (1) arsenic concentrations in alluvial and Wells Formation groundwater have been reduced below the MCL as a result of the Pole Canyon ODA NTCRAs; and (2) there are no direct contact risks either for ecological receptors due to selenium or for future ranchers due to arsenic in soil (this information was presented in Section 3.2.4.1 of the draft report and will be updated to address comments). No actions for arsenic in groundwater or to prevent direct contact with overburden will be evaluated further in the revised FSTM#2.

2. Common Elements

This section will describe the common elements to alternatives (with the exception of No Action). These are: land use or access controls; institutional controls; long term O&M monitoring and maintenance; grading, erosion control, vegetation, slope reduction, retaining walls, dikes and berms, detention basins, diversion channels, removal/disposal for small volumes of sediment.

Common elements also include Chert/limestone (rock) covers on seeps and riparian areas (DS-7, ES-4 and LP-1) and detention ponds (DP-7 and EP-2).

3. Remedial Alternatives

This section will describe the remedial alternatives.

1. No Action
2. Source Control (5-Foot Dinwoody or Salt Lake Formation/Chert Covers, Capillary Covers, Enhanced Dinwoody Covers, Geomembrane Covers) over incrementally larger Target Area (Options 1 through 4 in General Comment 4)
3. Water Treatment
    a. 2,000 WTP at Hoopes Spring
    b. 4,000 WTP at Hoopes Spring
    c. PRB downgradient of Pole Canyon
4. Source Control + 4,000 gpm WTP Water Treatment

The target areas to be evaluated for covers are described in the response to General Comment 3. This structure will allow assessment of each alternative's performance on a holistic basis rather than focusing on environmental media.

GC-13 Institutional Controls (ICs) generally should not be relied on as a singular alternative to contaminated groundwater. The recommended ICs as the sole remedy for alluvial groundwater would not meet the stated RAOs (reducing concentrations to below MCLs): or PRGs (MCL). In addition, there are consistency issues with alternatives. Section 2 calls AG-3 ICs and MNA, but Section 4 calls AG-3 ICs only while the tables call it ICs and MNA. The final recommend alternative is ICs only. Revisit the recommended alternative.

Response: The text will be clarified to state that all alternatives include the Non-Time-Critical Removal Actions (NTCRAs) already completed at the Pole Canyon ODA. Those actions have provided significant source control, the effects of which on the environment have yet to be fully manifested. The consistency issues will be addressed.

GC-14 More discussion is needed regarding the effectiveness in the screening alternative sections. For example, the Wells Formation screening effectiveness evaluation discussion on the reduction on selenium releases and thus concentrations in the Wells Formation is too ambiguous at this stage. Specific discussion on the alternatives' effectiveness to reduce concentrations to meet PRGs and RAOs at a reasonable time frame needs to be provided.

Response: Please see the response to General Comment 2. The model will be used to provide concentration predictions over time to assess how each alternative will meet PRGs and RAOs and the associated time frame.

GC-15 Use of the term "rock covers" is confusing. It is assumed that what is meant is the chert/limestone cover process option that has been always discussed previously. It is unclear why a change in terminology has occurred. Rock covers are not included in the "profiles of covers" figures.

Response: The term rock covers proposed for soils in seeps and riparian areas will be changed to chert/limestone covers for consistency with the process option. Chert/limestone covers will be added to Figure 2-7 as requested.

GC-16 **Sections 3.0 and 4.0:** The Detailed and Comparative analysis text and tables are exceedingly long and, the length makes them somewhat tedious to read. There is a lot of redundancy, but some important points are made in both text and tables. The Agencies suggest looking for ways to make this more succinct—for instance, capture all the salient points in one (text or tables) while making the other much briefer.

Response: We propose to eliminate the tables and show all the relevant information of the detailed and comparative analysis in the text.

GC-17 FSTM#2 alternatives describe revegetating ODAs with grass/forb species. The risk assessments determined that uptake into and consumption of plant tissue is a significant contributor to exposure. It is important to identify the plant species mix that would be used to understand whether potential cap thicknesses are adequate for reducing COC uptake into plant tissues. Information that describe minimum, typical, and maximum rooting depths of planned seeded grass species could be added. The same information is necessary for forb species that would be included in the revegetation program.

Response: As described in Section 3.2.4.1 of the draft report there are no unacceptable risks for ODAs for current conditions. Installation of any covers at the site would further reduce potential risk. The seed mix used for any remedial action at the site would undergo final

selection and approval during the design process. This may include the seed mix currently approved for reclamation on mitigation covers at the operating mine, but any mix that would result in lower selenium concentrations than currently exist would be acceptable.

GC-18 There is no mention of the prevention of succession of selenium accumulator or hyper-accumulator plant species. The FSPS reports at Conda Mine describe that 80 percent of alfalfa roots occur in 4 to 6 feet of soil with depths some reportedly reaching over 100 feet while gumweed roots extend to 6.5 feet. This information is important to add for consideration of a potential eradication program for deep rooting accumulator and hyper- accumulator species.

Response: Please see the response to General Comment 17. The Conda reference is from the table of typical rooting depths for the seeded and accumulator species based on literature sources. The information provided in that table is intended to illustrate that alfalfa taproot depths are highly variable depending on growing conditions. The 130-foot-deep taproot was the maximum recorded depth for an alfalfa plant where the taproot was observed in the roof of a mine tunnel in Nevada. The 4- to 6-foot interval provided was in reference to alfalfa grown as a crop in uniform well-drained soils. The maximum root depths observed at the Conda test plots ranged from 3 to 6 feet depending on the soil conditions for all plant species including alfalfa.

Specific Comments

SC-1 **Page 1-2, Section 1.1, third bullet:** Please clarify in this section that ARARs identified in FS Tech Memo #1 are subject to change and will be finalized in the ROD.

Response: The text will be clarified as requested.

SC-2 **Page 1-2, Section 1.2:** This early section might be a good place to emphasize that in the alternative screening and detailed evaluation of alternatives, ratings against evaluation criteria are media-specific. For example, the cost of AG-4 is rated high at $444K compared to other AG alternatives, while it is not high at all compared to that of, say, SW-6 ($38M) or at WG-7 ($74M).

Response: Please see the response to General Comment 12. We propose to eliminate the initial screening step from the revised report; therefore, this comment is no longer applicable.

SC-3 **Page 1-2, Section 1.1, third bullet:** Please add to footnote that DEQ "will evaluate all representative whole-body and muscle data to determine compliance with this criterion element" (IDAPA 58.01.02.257.02) and that this will be done under forthcoming guidance on implementation of the selenium aquatic life criteria.

a. *IDAPA 58.01.02 states: Note: "In 2008, Idaho adopted 10 µg/L as its CWA arsenic criterion for both exposure through fish consumption only and exposure through drinking water+fish consumption, choosing the SDWA MCL due to concerns about background levels that exceed EPA's 304(a) criteria (docket 58- 0102-0801). EPA approved this action in 2010. In June 2015, Northwest Environmental Advocates challenged EPA's 2010 approval. Court remanded action back to EPA. On September 15, 2016, EPA disapproved Idaho's adoption of 10 µg/L. Neither EPA nor the state of Idaho has promulgated replacement criteria. For more information, go to*

http://www.deq.idaho.gov/epa-actions-on-proposed-standards."

Response: The footnote will be revised as requested.

SC-4 **Section 2.0:** Throughout this section, under the Effectiveness evaluation, the statement, *"There are no environmental risks associated directly with Wells Formation groundwater."* is consistently made. The Agencies are not sure this is true, please explain and clarify. Wells Formation (WF) ground water quality is influenced by precipitation and snow melt infiltrating the mine ODAs. WF ground water then discharges at the Hoopes springs with high concentrations of selenium daylighting as contaminated surface water (above aquatic criteria standards) creates an environmental risk.

Response: There is no exposure pathway for ecological receptors to Wells Formation groundwater. As noted in the comment, when it daylights as surface water there is an environmental risk due to exposure to surface water (i.e., not groundwater). This will be clarified in the revised report.

SC-5 **Section 2.0 Initial Screening for Alternatives:** Under the text summary criteria for *Effectiveness*, it is not clear that the EPA guidance categories of: Overall protection of human health and the environment; Compliance with ARARs; Short-term effectiveness (during the remedial construction and implementation period); Long-term effectiveness and permanence (following remedial construction); Reduction of toxicity, mobility, or volume through treatment; were addressed during the evaluation for all media alternatives. Please make text summary as comprehensive as Table 2-2.

Response: Please see the response to General Comment 12. We propose to eliminate the initial screening step from the revised report. Also, as described in the response to General Comment 16, we propose to delete the summary tables and include all the information in the text.

SC-6 **Page 2-1, Section 2.0, first paragraph, last sentence:** Please fix Table 2-1 to match Tables 5-1 to 5-3 in FSTM #1. Please ensure all the technologies that passed the screening in FSTM #1 are carried into FSTM #2, and no new technologies or alternatives that were not discussed in FSTM #1 are not introduced into FSTM #2.

Response: Table 2-1 (see below) has been corrected as requested so that the technologies retained by media are consistent with those in Tables 5-1 to 5-3 of FSTM#1 for groundwater, surface water, and solids and soils (the first 3 columns). As noted in footnote 2, discharge at Hoopes Spring and South Fork Sage Creek Springs was considered "groundwater" in FSTM#1 but was considered "surface water" in draft FSTM#2. Note that we are proposing a revised structure for the remedial alternatives as detailed in the response to General Comment 12. The table also shows which technologies are incorporated as components of the proposed remedial alternatives in revised FSTM#2 (the last 3 columns).

Table 2-1. Technologies Retained in FSTM#1 as Components of FSTM#2 Alternatives

Technologies Retained	Media			Source Control Alternatives	Water Treatment Alternatives	
	GW	SW	SOIL		WTP	PRB
Institutional Controls						
Land-Use Restrictions / Grazing Controls			X	X		
Deed Restrictions / Restrictive Covenants	X			X		X
Administrative Orders / Consent Decrees	X	X	X	X	X	X
Information Programs			X	X		
Access Controls / Land Use Controls						
Signs		X		X	X	X
Fences / Gates		X	X	X	X	X
Engineered Covers						
Chert / Limestone (Rock) Covers	X	X	X	X		
Dinwoody (or Salt Lake Formation) Cover	X	X	X	X		
Geosynthetic (Geomembrane) Cover	X	X		X		
Sediment Control Features						
Dikes and Berms		X		X		
Detention Basins		X		X		
Surface Controls						
Grading / Erosion Control			X	X		
Vegetation			X	X		
Slope Stabilization						
Slope Reduction / Retaining Walls			X	X		
Diversion						
Open / Closed Channels	X	X		X	X	
Removal [1]						
Excavation			X		X	X
Disposal [1]						
Onsite Consolidation / Disposal			X		X	X
Offsite Disposal			X		X	X
Discharge to Onsite Treatment Facility	X	X			X	
Ex-Situ Treatment [2]						
Gravity / Mechanical Separation	X				X	
Media Filtration	X				X	
Ultrafiltration / Reverse Osmosis	X				X	
Biodegradation	X				X	
In-Situ Treatment						
Biodegradation		X				X
Natural Treatment						
Monitored Natural Attenuation (MNA)	X			X	X	X

Notes: 1 – Retained for small volumes of sediment and/or treatment residuals.
2 – Ex-Situ treatment technologies retained for groundwater based on existing Hoopes Water Treatment Plant (WTP) Pilot Study. For FSTM#2 the spring discharge is considered surface water, not groundwater as in FSTM#1.

SC-7 **Page 2-1, Section 2.1:** It would be helpful to have a section before 2.1 that lists and describes the remedial alternatives (e.g., "development") before describing the "screening" process and criteria.

Response: Please see the response to General Comment 12 for the proposed revised report structure. We propose to eliminate the initial screening step from the report. Section 2 will include a description of the common elements and all the alternatives (development) before the detailed analysis.

SC-8 **Page 2-1, Section 2.1, second paragraph:** Please include the entire description of the evaluation criteria from USEPA 1988 instead of an edited version of paragraphs (see Sections 4.3.2.1, 4.3.2.2, and 4.3.2.3 of the RI/FS Guidance). For the cost criterion, please include O & M costs.

Response: Please see the response to General Comment 12. We propose to eliminate the initial screening step from the report (the current Section 2). Costs in the detailed analysis include all appropriate elements per the guidance.

SC-9 **Page 2-2, Section 2.2:** This section seems out of place in this chapter. It may be better placed in Chapter 1, before 1.3, as an update to RI efforts.

Response: The modeling of selenium transport section will be moved to Chapter 1 as requested.

SC-10 **Page 2-3, Section 2.3:** In concert with an earlier comment, please delete "Description and" in the title.

Response: Please see the proposed revised report structure in response to General Comment 12.

SC-11 **Page 2-3, Section 2.3, first paragraph, first sentence:** In conjunction with the previous comment, please delete "descriptions of the media-based remedial alternatives and".

Response: As described in the response to General Comment 12, we propose to eliminate the initial screening step (the current Section 2) and to structure the remedial alternatives to a location/feature basis, rather than media based.

SC-12 **Page 2-4, Subsection 2.3.1, Remedial Alternatives for Wells Formations Wells:** An RAO for Wells Formation groundwater is to reduce or eliminate arsenic and selenium within a reasonable time frame and given the circumstances at the site. It would be helpful for there to be a discussion included about what a reasonable time line is and what circumstances of the site would impact remediation efforts. It appears to be a significant subject, however, it is unclear where such information is presented.

Response: Please see the response to General Comment 2. The model will be used to provide a prediction of the timeframe to meet RAOs.

SC-13 **Page 2-4, Subsection 2.3.1, Remedial Alternatives for Wells Formations Wells**: Per the second paragraph on Page 2-4, "*the rate of selenium release after mining depends on location specific conditions; primarily the setting, areal extent of the overburden and the cover placed on it. The relative magnitude of selenium loading to Wells Formation groundwater is proportional to net infiltration rates through overburden*." Based on these comments, the Agencies would expect the design of the cover system to be considered crucial and more emphasis placed on it and the system components within this Technical Memorandum (TM). There is a considerable lack of information within this TM of not only the geotechnical criteria of the proposed "capillary" cover system but also the geotechnical properties of cover materials. More information and design criteria should be included for the various components of the cover system, including a discussion that the proposed "capillary" cover system provides equivalent protection to other waste type cover systems intended to greatly reduce infiltration. Please refer to the Wyoming Department of Environmental Quality Solid and Hazardous Waste Division Solid Waste Guideline #19, "Hydrologic Evaluation of Landfill Performance (HELP) Model."

Response: Attachment 1 (section 2) of Appendix A in the draft report describes supporting analyses for evaluating cover performance. As discussed in Attachment 1, section 2.1, the Hydrologic Evaluation of Landfill Performance (HELP) model is used to support the estimation of annual (water year) water balance components for covers. Details of the HELP analyses are documented in the Remedial Investigation report (Formation 2014, Appendix H, section 5.2.2) and is referenced accordingly in section 2.1. Revisions to FSTM#2 will include additional discussion of prior and supporting analyses.

Please refer to the response to General Comment 4 regarding the evaluation of a capillary cover system using site-specific data. We believe that much of the information requested in this comment is appropriate at the design stage. The cover concept and costs are based on similar covers constructed at other sites in the area, other evaluations performed by Simplot, and design experience at other sites. The material properties are well understood and appropriate for cover construction and we believe this level of detail is appropriate for a Feasibility Study.

SC-14 **Page 2-4, Section 2.3.1, Identification of "Target Cover Areas":** Please add a discussion of the specific decision criteria used for determination of which areas are included for cover remediation and which are not proposed for covers (i.e. Panel A). A table with the all contaminated soil areas listed, decision criteria, specifics regarding loading rates, groundwater travel times and proposed reduction percentage / concentration needs to be identified for quantified assessment of the target areas for cover as included in FSTM2.

Response: Please see the response to General Comment 3. A table will be added as requested.

SC-15 **Page 2-4, Section 2.3.1, first paragraph, first sentence:** Are hypothetical residents on private lands the only domestic users of ground water for drinking water? Is the culinary well at Smoky Canyon Mine considered?

Response: Residential use on public land is not a reasonably anticipated future land use. The culinary well is used for the mining operation at the Smoky Canyon Mine and is required to be properly abandoned at the end of mining. Use of water from the well is regulated under the Safe Drinking Water Act overseen by the Idaho Department of Environmental Quality. The well is completed in the Dinwoody formation (i.e., not the Wells Formation) and selenium concentrations in the culinary well are unaffected by mine operations and are below MCLs.

SC-16 **Page 2-4, Section 2.3.1, second paragraph:** What criteria were used to select "target areas" for addressing infiltration? Why were travel timeframes to Hoopes Springs selected? If the focus is long-term effectiveness and permanence of remedies, all source areas should be addressed.

Response: Please see the response to General Comment 3.

SC-17 **Page 2-4, Section 2.3.1, second paragraph about target cover areas for FS covers (Figure 2-1):** Are there other areas of the site where uncovered or inadequately covered waste rock exists that are thought to have lower infiltration rates through overburden and/or are not as close to springs, which are not included in the target cover areas? If so, would those areas not eventually function as long-term sources of contaminants to groundwater and surface water? Why would such areas not warrant covers as well?

Response: Please see the response to General Comment 3.

SC-18 **Page 2-4, Section 2.3, fourth paragraph:** The text states that the retained remedial technologies are capable of addressing the RAOs. Subsequent discussion in the document does not explain how the remedial alternatives meet the RAOs, which describes concentration reductions. The text discusses loading. Please revise.

Response: Please see the response to General Comment 2.

SC-19 **Pages 2-4 and 2-5, WG alternatives:** Alternatives are normally developed by combining media-specific technologies into remedial options that might have a reasonable likelihood of addressing the threats at the site. ICs or MNA alone would not be adequate. EPA guidance frequently mentions that the NCP emphasizes that ICs are meant to supplement engineering controls and will rarely be the sole remedy at a site. Consequently, there seems to be little or no value of considering alternatives WG-2 (MNA only) and WG-3 (ICs only). The Agencies suggest deleting those as stand-alone alternatives.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: Please see the response to General Comment 13.

SC-21 **Page 2-5, Section 2.3.1.1, third paragraph:** In addition to Alternative WG-1 not being protective of human health, it also does not meet ARARs. Please state as such.

Response: As described in the response to General Comment 2, the model will be used to predict concentration changes over time Wells Formation groundwater. This will allow for an assessment of whether alternatives meet ARARs.

SC-22 **Page 2-5, Section 2.3.1.1, fourth paragraph, second sentence:** How much time will it take for the mass flux of selenium to reduce and to what levels?

Response: Please see the response to General Comment 2. The model will be used to provide a prediction of the timeframe to meet RAOs.

SC-23 **Page 2-5, Section 2.3.1.1, fourth paragraph, last sentence:** It is uncertain whether selenium concentrations will reduce over time because the No Action alternative does not implement source control. Please state this in the paragraph.

Response: Please see the response to General Comment 2.

SC-24 **Page 2-6, Sec 2.3.1.2, second paragraph under Description:** Use of MNA as a component of a remedial alternative requires more effort than just conducting long-term monitoring (please see USEPA's MNA guidance documents).

Response: The following USEPA guidance documents were reviewed to identify additional implementation components for monitored natural attenuation (MNA):

- Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites. August 2015, OSWER Directive 9283.1-36

- Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. April 1999, OSWER Directive 9200.4-17P, EPA 540/R-99/009
- Monitored Natural Attenuation of Inorganic Contaminants in Ground Water, Volume 2: Assessment for Non-Radionuclides Including Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Nitrate, Perchlorate, and Selenium. October 2007, EPA 600-R-07-140

USEPA's guidance documents describe long-term monitoring paired with evaluating data in relation to expected attenuation. This information will be added to the revised report.

SC-25 Page 2-7, second paragraph, and Figure 2-5 and 2-6: The discussion of the meaning of Figures 2-5 and 2-6 is not likely to be understood by most readers, unless they are familiar with the Hay et al. reference. Please provide further explanation in the text. Also, the figures should be able to stand alone; please add notes to explain what the diagonal lines represent.

Response: The text will be revised to provide further explanation as to how the ratio of selenium to sulfate when compared to the results of the unsaturated column tests, as presented by Hays et al. (2016), can be used to indicate if concentrations of selenium are being reduced due to natural attenuation. Additionally, notes will be added to Figures 2-5 and 2-6 to explain what the diagonal lines shown on the plot represent.

SC-26 Page 2-7, Sec 2.3.1.2, Effectiveness Screening Evaluation: Existing data indicates that MNA is not significantly influencing selenium concentrations in the Wells Formation (TetraTech 2008). Please elaborate on the research indicating that the probability of conditions changing to favor MNA as a significant remedial process are influential enough to retain it as a viable alternative. No mention was made of any study results illustrating how EPA's defining criteria for MNA were met. Please include.

Response: MNA was retained in FS Tech Memo #1 at the request of the agencies. We agree that MNA is not significantly influencing selenium concentrations in the Wells Formation groundwater. Natural attenuation as related to biological reduction or precipitation is expected to be minimal as indicated in the comment. However, dispersion and dilution processes also occur. However, as discussed in the response to General Comment 2, the conceptual site model anticipates a gradual reduction in the source concentrations over time. MNA is retained in relation to the decreasing source term and is proposed to be included as a common element for all alternatives.

SC-27 Page 2-7, Section 2.3.1.2, second paragraph: Please state whether MNA alone will meet ARARs.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations over time.

SC-28 Page 2-7, Section 2.3.1.2, last paragraph: Please include the costs for long-term O&M.

Response: Please see the response to General Comment 12. We propose to eliminate the initial screening step from the report (the current Section 2). Costs in the detailed analysis include all appropriate elements per the guidance.

SC-29 Page 2-8, Section 2.3.1.2, first paragraph, third sentence: How is WG-2 different than the effectiveness of WG-1 and WG-3?

Response: Selenium concentrations change at the same rate for all three alternatives. WG-3 provides protection of human health through ICs.

SC-30 Page 2-8, Section 2.3.1.3, first paragraph: IC implementation is not limited to Simplot owned land in Sage Valley. If necessary, restrictions can also be placed on Forest Service land.

Response: Comment noted. There are no ICs needed on Forest Service land because future residential land use is not a reasonable anticipated future use.

SC-31 Page 2-8, Section 2.3.1.3, last paragraph: How do ICs meet ARARs? Please revise.

Response: Please see the response to General Comment 13.

SC-32 Page 2.8, Section 2.3.1.3 Alternative WG-3 and Section 3.3.3 AG-3 – Institutional Controls (ICs): ICs should not generally be identified as a stand-alone alternative. ICs can be used for short-term and long-term use during the RI/FS and then after only as a component of the final remedy. As identified in the NCP § 300.430, section iii (D): "EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy"

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: The report should have more clearly stated that the alternatives included the source control actions performed by the Pole Canyon ODA NTCRAs. Please see the proposed revised report structure in the response to General Comment 12; ICs and MNA are included in the common elements for all the remedial alternatives.

SC-33 Page 2-9, Section 2.3.1.4: What is actually being proposed with this alternative WG-4? Is it a 5-ft thick layer of Dinwoody material or Salt Lake Formation/Chert Covers? How do the geotechnical properties of Dinwoody compare to Salt Lake Formation material? These should technically be two different sub-alternatives; unless the materials are identical. Is this cover not considered a "capillary" cover also? This is a simple evapotranspiration cover system with a capillary break (coarser graded material).

Response: It is a 5-foot-thick cover with 3 feet of either Dinwoody or Salt Lake Formation over 2

feet of chert. Please see the response to General Comment 5 regarding material properties.

SC-34 **Page 2-9, Section 2.3.1.4, first paragraph:** Is the purpose of including this type of cover to provide an assessment of a cover type that is similar to the one constructed at the Pole Canyon ODA? The ODA cover was intended to significantly reduce infiltration and subsequent contamination of groundwater.

Response: As stated in the text, "The purpose of including this type of cover is to provide an assessment of a cover type that is similar to the one constructed at the Pole Canyon ODA as part of the 2013 NTCRA." The updated model for this Feasibility Study suggests that, although infiltration is estimated to be reduced in overburden areas using a Pole Canyon-type cover, the estimated reductions in infiltration are greater for other cover types (e.g., Capillary Cover, Enhanced Dinwoody Cover, Geomembrane Cover).

SC-35 **Page 2-9, Subsection 2.3.1.4:** More information is needed for the proposed two alternatives under this subsection. It appears that soil material will be placed over coarser grained material, and the soil will be seeded. More geotechnical information needs to be provided and compared.

Response: The intent of the alternative was to evaluate a cover type that was functionally the same as the one placed on the Pole Canyon ODA under the 2013 NTCRA. Please see the response to General Comment 5 regarding material properties for the Salt Lake and Dinwoody Formations.

SC-36 **Page 2-9, Section 2.3.1.4, last paragraph:** Is infiltration a concern for drainage features over waste? Please explain why infiltration is not addressed in these drainage features.

Response: It is proposed to clarify the text as follows: "Channels and spillways on overburden would be constructed of low permeability materials and lined with riprap as needed to prevent erosion."

SC-37 **Page 2-9, Section 2.3.1.4, second paragraph:** Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same reduction in infiltration?

Response: Please see the response to General Comment 5.

SC-38 **Page 2-9, Section 2.3.1.4, first paragraph, Target Cover Areas:** How and where were target cover areas determined? The target cover areas need to be determined through agreement not assumed and stated. Many of the source areas identified in Section 2.2, second paragraph are not addressed. Why?

Response: Please see the response to General Comment 3.

SC-39 **Pages 2-9 through 2-17, Alternatives WG-4 through WG-7**: Why do all the different cover alternatives have the same effectiveness ranking of "moderate to high" when they are said to reduce infiltration by widely varying percentages (29%, 58%, 95%, and 100%)?

Response: The ranking was based on the effect on groundwater quality rather than infiltration reduction. As discussed in the response to General Comment 2, the model predictions indicate that selenium concentrations in groundwater will reduce to below the MCL over time (for example, around 60 years at Well GW-25). The different covers had relatively small effects on the predictions. Per General Comment 2, the predictions of selenium concentrations in groundwater over time will be presented in the revised report and the effectiveness rankings will be revisited.

SC-40 **Page 2-10, fourth paragraph:** What is the basis for the assumption that infiltration would be reduced by 29%? Appendix A is not a demonstration of hydrologic performance of a cover system, rather it is a report about the fate and transport of selenium. Attachment 1 of Appendix A does discuss infiltration; please make reference to those sections here.

Response: The revised report will include references to appropriate sections of Appendix A and to the HELP model results. Please see the responses to General Comment 4 and Specific Comments 13 and 39.

SC-41 **Page 2-10, Section 2.3.1.4, fourth paragraph:** Please discuss how the Dinwoody or Salt Lake formation cover would lead to meeting ARARs for ground water.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative.

SC-42 **Page 2-11, Section 2.3.1.4, second paragraph:** What are the O&M costs? Please include those costs in the discussion.

Response: Please see the response to General Comment 12. We propose to eliminate the initial screening step from the report (the current Section 2). Costs in the detailed analysis include all appropriate elements per the guidance.

SC-43 **Page 2-11, Section 2.3.1.4, third paragraph:** The Agencies disagree with analysis to not retain this alternative, which is similar to the Pole Canyon ODA. Please include this alternative.

Response: The cover alternative will be retained for further analysis.

SC-44 **Page 2-12, Section 2.3.1.5, fifth paragraph:** The Agencies disagree that the effectiveness of a capillary cover at 58% reduction can be rated as "high" and in the same category as enhanced Dinwoody and GCL. Please revise.

Response: Please see the response to Specific Comment 39.

SC-45 **Page 2-13, Section 2.3.1.5, first paragraph, third sentence:** Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same reduction in infiltration?

Response: Please see the response to General Comment 5.

SC-46 **Page 2-13, Section 2.3.1.5, third paragraph:** Please discuss how this alternative [capillary cover] provides long-term protection and how it will meet ARARs.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative.

SC-47 **Page 2-13, Section 2.3.1.6 - Alternative WG-6 and Page 2-22 –Section 2.3.2.4 Alternative SW-4 – Enhanced Dinwoody Covers, ICs and MNA:** WG-6 should be carried forward through the detailed analysis. The rationale states that performance of the Enhanced Dinwoody cover is similar to WG-7 Geomembrane, however the covers are significantly different. Inclusion of the WG-6 in the detailed selection also allows clear documentation for remedy selection at Smoky Canyon in direct comparison and consistency with other phosphate mining sites undergoing CERCLA cleanup within Southeast Idaho.

Response: We are not aware of any other phosphate mining CERCLA sites in Southeast Idaho that are evaluating an Enhanced Dinwoody cover. However, the alternative will be carried forward through the detailed analysis, as requested.

SC-48 **Page 2-14, Section 2.3.1.6:** Please discuss how this alternative [Enhanced Dinwoody cover] provides long-term protection and how it will meet ARARs.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative.

SC-49 **Page 2-15, Section 2.3.1.7, first paragraph**: What would the "conceptual layers be" and how much consideration was given to this alternative [geomembrane cover] if the layers haven't been configured?

Response: As shown in Figure 2-7, the geomembrane covers would consist of (from surface to base):

1-foot of topsoil
2-feet of loose Dinwoody
6-inch screened chert layer
Geosynthetic layer (geomembrane)
1-foot protective subgrade

The geomembrane cover would include drainage benches and stormwater controls. The cover concept and costs are based on similar covers constructed at other sites in the area, other evaluations performed by Simplot, and design experience at other sites. The material properties are well understood and appropriate for cover construction and we believe this level of detail is appropriate for a Feasibility Study.

SC-50 **Page 2-15, Section 2.3.1.7, first paragraph:** One foot of what type of material is considered for geomembrane subgrade and what is the gradation? Has the membrane been appropriately sized for thickness and the need for any underlying cushion geotextile? For the 3 feet of protective liner cover, what is the gradation for that material, as well as other geotechnical properties such as hydraulic conductivity? Hydraulic conductivity, along with slope, will impact the amount of leakage through geomembrane. How much head is anticipated to be on the geomembrane? Has any modeling been performed to preliminarily evaluate the performance of the "conceptual" geomembrane design?

Response: We believe that much of the information requested in this comment is appropriate at the design stage. The cover concept and costs are based on similar covers constructed at other sites in the area, other evaluations performed by Simplot, and design experience at other sites. The material properties are well understood and appropriate for cover construction and we believe this level of detail is appropriate for a Feasibility Study. No modeling has been performed to assess the effectiveness of a geomembrane cover. One-hundred percent effectiveness was assumed as a book-end value for this analysis. This assumption is based on the geosynthetic clay laminated liner (GCLL) evaluation in the Ballard Feasibility Study (MWH Americas/Stantec 2017). The Ballard evaluation assumed the GCLL liner was intact and resulted in an estimated infiltration of less than 0.001 in/yr (0.005% of precipitation). Potential leakage through a geomembrane cover will be provided in the revised report (see response to Specific Comment 55).

SC-51 **Page 2-15, Section 2.3.1.6, Alternative WG-6, Subheading Screening Result:** The reviewer understands the logic of excluding this alternative to reduce redundancy with WG- 7 in selenium removal, but prefers to have seen this alternative moved forward. As presented to the Agencies on May 18, 2020, this alternative removes 95% of selenium (as compared to 100% and 58% with WG-7 and WG-5, respectively). The costs as presented are $107k, $195k, $240k for WG-5, -6, and -7, respectively. The Agencies acknowledge the 82% increase in this alternative; however, given the increased selenium reduction and the 124% increase (WG-7), WG-6 should be moved forward.

Response: The Enhanced Dinwoody cover alternative will be moved forward to the detailed analysis as requested.

SC-52 **Page 2-15, Section 2.3.1.6, third paragraph:** The Agencies disagree with the elimination of enhanced Dinwoody covers. It should be retained as Simplot is using them at Smoky Canyon already. It has high effectiveness.

Response: The Enhanced Dinwoody cover alternative will be retained for detailed analysis.

SC-53 **Page 2-15, Section 2.3.1.6, Decision to not retain WG-6:** The justification for screening out WG-6, said to reduce infiltration by 95%, because WG-7, said to reduce infiltration by 100% in the short-term does not seem strong – especially when the estimated cost of WG-6 is $60M versus $74M for WG-7 (nearly 20% lower).

Response: See the response to Specific Comment 52.

SC-54 **Page 2-16, Subsection 2.3.1.7:** Erosion control measures will be required for all cover alternatives proposed within this TM. The necessity to stabilize disturbed soil should in no way be considered a hindrance or reason to not consider this alternative. The same applies to storm water controls. Please clarify that Erosion Control Measures are not part of the justification for not selecting this alternative.

Response: The text will be clarified as requested.

SC-55 **Page 2-16, Section 2.3.1.7**: Installing a geomembrane cover is not estimated to reduce infiltration by 100%; cover system modeling accounts for leakage through geomembrane to account for damage or errors in construction, etc. Please use an infiltration reduction number reflective of leakage potential.

Response: We agree that a geomembrane cover would not reduce infiltration by 100% due to

the factors described. An evaluation will be provided that addresses geomembrane leakage potential. Please see the response to Specific Comment 50.

SC-56 **Page 2-16, Section 2.3.1.7:** Please provide the "finite" life expectancy of geomembrane along with a source. HDPE is highly resistant to chemicals and is extremely durable. Polymer breakdown primarily occurs due to oxidation from UV, however, HDPE has approximately 2-3% carbon black content to act as anti-oxidants. Furthermore, HDPE has been shown to have minimal reduction in shear and tear strength after excessive UV exposure on the scale of 20-40 years. Lastly, the geomembrane will be buried – please provide an evaluation of the expected life of geomembrane in the intended application. Also, please specify what geomembrane is being considered.

Response: Uncovered geomembranes typically have a life expectancy of between 10 and 20 years. When covered, the performance of geomembranes is increased dramatically, but they still may not last indefinitely because of issues associated with degradation due to oxidation and post-installation damage due to root penetration or burrowing animals (US BOR 2018). EPA (2002) suggests that geomembranes (e.g., HDPE) may have a life expectancy of hundreds of years. Although HDPE has a high resistance to oxidation from ultraviolet light and chemical degradation, this type of geomembrane can be very stiff, especially during cold weather and is susceptible to stress and cracking (US BOR 2018). The type of geomembrane will be specified during design if the geomembrane cover alternative is selected as the preferred remedy.

SC-57 **Page 2-16, Section 2.3.1.7:** Constructability issues occur frequently with ET covers as well as geosynthetic covers; please clarify.

Response: The text will be revised to acknowledge that there are constructability issues with ET covers as well as geomembrane covers.

SC-58 **Page 2-16, Section 2.3.1.7, fourth paragraph**: The Agencies would rate the effectiveness as Very High, not moderate to high as there is 100% reduction in infiltration. Please revise.

Response: Please see the response to Specific Comment 39.

SC-59 **Page 2-16, Section 2.3.1.7, sixth paragraph:** Please note in the text on implementability that geomembrane covers have been successfully installed at many sites around the country, including in the phosphate patch, over many years. Many firms have experience in constructing these types of covers.

Response: The text will be revised to note that there are specialized companies that install geomembrane covers and these covers have been successfully installed at phosphate mines in southeast Idaho.

SC-60 **Page 2-17, Section 2.3.1.7, first paragraph:** Life expectancy of geomembrane can be many years if properly maintained; it should not be a reason to exclude it from further consideration.

Response: Please see the response to Specific Comment 56 regarding life expectancy. The geomembrane cover will be evaluated in the detailed analysis as requested.

SC-61 **Page 2-17, Section 2.3.2:** Since there are risks to human receptors associated with surface water per the text in Section 2.3.2, are there ICs or other access restrictions (e.g., fencing, signage, etc.) that

could be applied in conjunction with the surface water alternatives to prevent exposure until cleanup levels are met? If so, should these be added as a component to the alternatives?

Response: Access controls such as fencing and signage will be added as suggested.

SC-62 **Page 2-18, Section 2.3.2, SW Alternatives:** The Alternative SW-6 title needs to be made clearer. It sounds like it would only treat Hoopes Spring water, but subsequent text indicates that the Hoopes Spring WTP currently treats water from both Hoopes Spring and the South Fork Sage Creek springs. The Agencies suggest a title of Treatment of Contaminated Water from Hoopes Spring and South Fork Sage Creek springs at the Hoopes Spring WTP.

Response: The title of the alternative will be revised as suggested.

SC-63 **Page 2-19, Sections 2.3.2.2, second paragraph, last sentence:** Please include fences and signs in the WG alternatives.

Response: Access controls such as fencing and signage will be added as requested.

SC-64 **Pages 2-19 through 2-25:** Rock covers over seeps, detention ponds, and riparian areas are mentioned in the descriptions of alternatives SW-2 through SW-6. The rock covers do not appear to be nominal components of those alternatives, but, rather, are included as components of S alternatives. Thus, where rock covers are mentioned in the SW alternatives, the text should make clear that they are actually components of S alternatives and cite those relevant sections. Are the cost of the rock covers included in the S alternative rather than the WG and SW alternatives? What is the purpose of the rock covers? The text on Page 2-19 says that they would be placed on seeps and detention ponds (DS-7, LP-1, DP- 7, and EP-2) "to prevent direct contact with surface water with arsenic concentrations greater than the MCL." However, text on Page 2-34 says that they are used to create a "physical barrier layer on soils in overburden seep and riparian areas (DS-7, ES-4, and LP-1) and detention ponds (AP-3, DP-7, and EP-4) below ODAs to prevent terrestrial biota from contacting or ingesting soil with elevated selenium concentrations." Therefore, it appears that they apply to both SW and S media, and it seems appropriate to present them as components of the S alternatives as is done. Please mention both of these functions (prevent contact with contaminated solids and water) where they are discussed in the S alternatives.

Response: Rock covers can be used to prevent contact with contaminated solids and water. Per the response to General Comment 12, we propose to include rock covers at seeps, detention ponds, and riparian areas as noted in the comment in the common elements for all alternatives.

SC-65 **Pages 2-19 through 2-24, cover effectiveness:** Please see earlier comment asking why the effectiveness is rated the same (moderate to high) for alternatives with different types of covers, when the degree of infiltration prevention differs widely.

Response: Please see the response to Specific Comment 39.

SC-66 **Page 2-20, Section 2.3.2.3:** In FSTM #1 Page 2-14, Section 2.3.3, paragraph 5, it indicates that several surface water monitoring locations showed exceedances of cadmium. Similarly, this section of FS Tech Memo #1 also points out that in addition to arsenic, exceedances of benchmarks for other non-selenium COPCs were observed for cadmium, chromium, nickel, vanadium, and zinc in the seeps and detention basins; however, these exceedances were generally associated with selenium

exceedances. Therefore, to ensure that the preferred alternative proposed in FS Tech Memo #2 (Alternative SW-6 and SW-3) described in sections: 2.3.2.3, 2.3.2.6, 3.2.2, and 5 are protective of other COPCs identified in surface waters, seeps and detention basins, please provide rationale to support that cadmium, arsenic, chromium, nickel, vanadium, and zinc behave similarly to selenium for the selected remedy in surface water.

Response: The revised report will discuss and address the other COPCs as well as selenium.

SC-67 **Page 2-20, Section 2.3.2.3:** The text indicates that rock covers will be similar to alternative SW-2 described on section 2.3.2.2: "…*rock covers would be placed as a physical barrier layer on seeps (DS-7 and LP-1) and detention ponds (DP-7 and EP-2) to prevent direct contact with surface water with arsenic concentrations greater than the MCL. Fences and signs to notify people that drinking the water is potentially unsafe may be installed in the interim to prevent contact*." Please clarify if this remedy will also be protective of human health exposures through drinking water for other COPCs identified in seeps and detention ponds at the site. In addition, the FS Tech Memo#2 needs to clarify how aquatic life criterion will be met for other contaminants (i.e., cadmium, arsenic, chromium, nickel, vanadium, and zinc) in surface waters at the site.

Response: The report will be revised to clarify that rock covers will be protective of human health for other COPCs because direct contact is prevented. The report will be modified to clarify how the aquatic life criterion will be met for other contaminants in surface waters at the site.

SC-68 **Page 2-20, Section 2.3.2.3:** The text indicates that rock covers will be similar to alternative SW-2 described on section 2.3.2.2: "…*rock covers would be placed as a physical barrier layer on seeps (DS-7 and LP-1) and detention ponds (DP-7 and EP-2) to prevent direct contact with surface water with arsenic concentrations greater than the MCL. Fences and signs to notify people that drinking the water is potentially unsafe may be installed in the interim to prevent contact*." Please clarify if this remedy will also be protective of human health exposures through drinking water for other COPCs identified in seeps and detention ponds at the site. In addition, the FS Tech Memo#2 needs to clarify how aquatic life criterion will be met for other contaminants (i.e., cadmium, arsenic, chromium, nickel, vanadium, and zinc) in surface waters at the site.

Response: Please see the response to Specific Comment SC-67.

SC-69 **Page 2-26, Section 2.3.2.6, second paragraph, last sentence:** Could the capacity be increased to 5,000 gpm to treat 100% of the water? If not, why not?

Response: The water discharging at the Springs Complex consists of a core plume with a selenium concentration of approximately 167 micrograms per liter (µg/L) selenium at Hoopes Spring and 117 µg/L selenium at South Fork Sage Creek Springs. Outside the core, there are other flows of water with lower selenium concentrations. Based on detailed sampling, it is estimated that the influent selenium concentration for a water treatment system would drop from 167 µg/L for a 2,000gallons per minute (gpm) flow to 126 µg/L for a 4,000 gpm flow. Above 4,000 gpm the remaining water flow has much lower selenium concentrations (in the range of 50 µg/L or less) and treatment of this water would remove little mass and may in fact reduce treatment efficiency due to dilution. In the revised report, it is proposed to evaluate the current 2,000 gpm capacity treatment system currently operating at Hoopes Spring and a 4,000 gpm treatment system.

SC-70 Page 2-26, SW-6, Effectiveness discussion: The text says the existing 2,000 gpm system removes 40% of Se mass flux emanating from Hoopes Spring and the South Fork Sage Creek springs, whereas an expanded 3,000 gpm system would remove 60%. Assuming the selenium removal efficiency across the WTP is high given the rigorous treatment process, are these mass flux reduction percentages because they represent collection and treatment of only a modest portion of the total flow and load discharging from those spring complexes and/or from other contaminant sources? If so, is collecting and treating only those fractions of the total contaminated flow sufficient to achieve the two surface water RAOs? If not, would capturing more of the total flow allow the RAOs to be achieved? Is it not practical to capture significantly more than 60% of the contaminated discharge flow, and if not, why not?

Response: Please see the response to Specific Comment 69.

SC-71 Page 2-26, SW-6 cost: Please clarify whether the stated estimated cost of $38M is for the 2,000 or 3,000 gpm system.

Response: The estimated cost of $38M is for the 2,000 gpm system.

SC-72 Page 2-29, Section 2.3.3.2, Alternative. AG-2, second paragraph: The text states… "with the exception of dispersion and dilution, limited natural attenuation of selenium is occurring in the alluvial groundwater. Relatively high dissolved oxygen and low concentrations of dissolved iron and manganese also suggest oxic conditions with limited natural attenuation due to reductive precipitation." Please elaborate on the research indicating that the probability of conditions changing within the alluvial aquifer to favor MNA as a significant remedial process are influential enough to retain it as a viable alternative. As with the deeper Wells Formation aquifer, no mention was made of any study results illustrating how EPA's defining criteria for MNA were met. Please include.

Response: Please see the response to Specific Comment 26.

SC-73 Page 2-29, Section 2.3.3.2, fourth paragraph: Are additional wells necessary for MNA, which would entail some capital costs? What are the O&M costs associated with MNA?

Response: The need for additional wells may depend on the final remedy construction, and the identification of possible data gaps in the flow paths downgradient from the remedies. O&M costs associated with MNA would be routine sampling, laboratory, data validation and reporting costs. Per the response to General Comment 12, MNA is proposed to be included in the common elements of all alternatives and therefore if additional wells are required it would not affect the comparative analysis and alternative selection.

SC-74 Page 2-29, Section 2.3.3.2, Alternative AG-2, last paragraph: It does not make sense to retain an alternative that that is ineffective. The text states… "*geochemical attenuation mechanism does not currently limit the extent of selenium transport from the Pole Canyon ODA, and natural attenuation may offer only limited reductions in selenium concentrations in downgradient alluvial groundwater*." This does not seem like a viable alternative unless evidence can be provided that supports conditions in groundwater are expected to change that would result in geochemical attenuation.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: Please see the response to Specific Comment 26.

SC-75 Page 2-30, Section 2.3.3.3, fourth paragraph: Are additional wells necessary for MNA, which would entail some capital costs? What are the O&M costs associated with MNA?

Response: Please see the response to Specific Comment 73.

SC-76 Page 2-31, Section 2.3.3.4, Alternative AG-4: When describing the *Effectiveness* of the PRB, will the reduced conditions liberate arsenic from contaminated soils that revert a soluble form once it leaves the PRB? If so how will this be handled?

Response: There is a potential for release of arsenic, depending on the site-specific conditions. In the Conda PRB Pilot Study, the reduced conditions produced by the technology mobilize arsenic and other contaminants because of the presence of mine related materials around the PRB location. The study indicated relatively small amounts of arsenic in the treatment media, which, by themselves would not be expected to result in degradation of downgradient groundwater. At Conda the concentrations decrease rapidly downgradient of the pilot study as the treated water mingles with the more oxidized water of the shallow aquifer. The presence of overburden materials in the potential location downgradient from Pole Canyon is not anticipated. If arsenic release from the PRB at Pole Canyon was an issue, it would be expected to be limited in extent and would be addressed by a combination of institutional controls for groundwater in the area immediately downgradient of the system, and MNA along the groundwater flow path.

SC-77 Page 2-31, Alternative AG-4 Description, first sentence: The text "…PRB to treat water from the LP-1 seep" is confusing. Do you mean to intercept and treat alluvial ground water via PRB upgradient from the LP-1 seep before it emerges as surface water?

Response: The intent would be to treat the water from LP-1 in the subsurface before it reaches alluvial groundwater. As shown on Figure 3-10, the selenium mass flux associated with the seep is estimated to be approximately four times higher than is transported in the alluvial groundwater at that location. The estimated depth to the top of the main transport zone for alluvial groundwater is around 20 to 30 feet with a thickness of around 100 feet; too deep for effective PRB treatment of the alluvial groundwater.

SC-78 Page 2-31, Section 2.3.3.4: PRBs were covered as SW in FS TM #1. You could simplify this TM by discussing AG and WG together since you are looking at the same response actions, and move PRB to SW. This would eliminate Section 2.3.3.

Response: Please see the proposed revised structure for the remedial alternatives in the response to General Comment 12.

SC-79 Page 2-32, Section 2.3.4: Please clarify that these remedial alternatives are for waste dump areas that do not have an infiltration issue.

Response: Please see the responses to General Comments 2 and 3 for details on selection of areas for covers.

SC-80 Page 2-32, Section 2.3.4, first paragraph: Does Panel A contribute to the ground water contamination? If so, why is this area not considered in the WG alternatives?

Response: Please see the response to General Comment 3.

SC-81 Page 2-32, Section 2.3.3.4, AG PRB alternative cost: Does the estimated cost include removal and management/disposal of the PRB media at the end of the project, to eliminate the chance of re-mobilizing selenium and arsenic accumulated in the media in the future? If not, please include.

Response: The current cost estimate only includes the construction and O&M. Costs to excavate and dispose of the treatment media at the end of its active lifespan will be added as requested.

SC-82 Page 2-32, Section 2.3.4: This would be a logical place to discuss that the solids and soils media represent a source of contaminants to groundwater and surface water, and that covering exposed Soils media would serve as a source control method.

Response: Please see the responses to General Comments 2 and 3 for details on selection of areas for covers, and the response to General Comment 12 for our proposal for the revised report structure.

SC-83 Page 2-33, S Alternatives: Alternative S-2 does not appear to address the stated S RAOs except in seep/riparian areas. Thus, it does not seem like a valid alternative, except in how it applies to the WG and SW media. Please correct this incongruity.

Response: We propose to revise the report to describe the conditions for ODA soils up-front (i.e., that there are no actionable risks for ODA soils) in order to assert that remedial alternatives, specifically soil covers, are not needed. Minor actions at seeps and detention ponds to prevent contact will be included as common elements in all alternatives. Please see the response to General Comment 12 for a description of the proposed revised report structure.

SC-84 Page 2-34, Section 2.3.4.2, Alternative S2 Rock Covers: Please elaborate on the *effectiveness* of these covers to prevent small mammals and reptiles from being able to burrow through cracks and crevices created by the rock covers. If this is a common occurrence, then risk still remains for environmental receptors and effectiveness should be ranked no higher than moderate.

Response: Populations of small mammals and reptiles are the receptors considered in the Ecological Risk Assessment. Population level risk to small mammals is considered on an ODA-by-ODA basis. Risk to reptiles was not directly assessed in the BERA, rather the risk estimated for birds were assumed to be protective of reptile populations at the Site. The size of the rock (chert/limestone) cover areas is much smaller than the ODAs. It is possible that a few animals may burrow through the cracks and crevices in the rock covers and then potentially be exposed to the soils underneath. However, risks to the populations due to such exposure would be below levels of concern for two primary reasons:

1) The rock covers are too small for a significant portion of the receptors in the area to be exposed to the soils beneath the cover and the majority of the individuals in the area would be expected to forage in the large areas of higher quality habitat surrounding the covers, both on and off the mine.

2) The rock covers are designed to significantly limit the amount of vegetation that occurs in the area after placement of the cover. Small mammals and reptiles are assumed to ingest both plants and invertebrates. The lack of plants would limit the exposure from ingesting plant tissues and would also limit the number of invertebrates present in the area, particularly those that rely on vegetation. Because potential risk is due to both food and soil exposure, the lack of a reliable or limited food source would further limit exposure to receptor populations.

This information will be added to the revised report.

SC-85 Page 2-35, Section 2.3.4.3, first paragraph, first sentence: Do Dinwoody and Salt Lake Formation have the same properties, such that they are interchangeable in cover construction to get the same level of protection?

Response: Please see the response to General Comment 5.

SC-86 Page 2-35, Section 2.3.4.3, third paragraph: The ICs discussion is not consistent throughout the document. It seems like these ICs would work as a component for all cover alternatives. Please revise the document for consistency.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: ICs will be described as common elements of all alternatives and will be used in conjunction with other alternatives, not as stand-alone treatments in new Section 2.2. Please see the proposed revised report structure in the response to General Comment 12. The report will be revised for consistency as requested.

SC-87 Page 2-36, Section 2.3.4.4, first paragraph: Why are both 2 feet and 5 feet depths considered? What are criteria for choosing one depth over another? Why not 3 feet of cover depth or 4 feet?

Response: The five-foot thick cover was included as a similar concept to the Pole Canyon ODA 2013 NTRCA cover. The two-foot cover was included as the thinnest cover that could be reliably constructed. As noted in the response to Specific Comment 116, there are no direct contact risks for soil on ODAs and therefore it is proposed to eliminate the remedial alternatives for ODA soil (please see the proposed structure for the revised report in response to General Comment 12).

SC-88 Page 2-36, Section 2.3.4.4, Alternative S-4, 5-Foot Dinwoody or Salt Lake Formation/Chert Covers on Uncovered Areas of ODAs and Rock Covers on Soils in Seep and Riparian Areas: Alternative S-4 is not retained for detailed analysis, as stated "Alternative S-4 would provide the same level of effectiveness as Alternative S-3. The thicker cover would not provide additional protection. It has a significantly higher cost and is therefore NOT RETAINED." Identification of performance or infiltration reduction for both the 2-foot (S-3) and 5-foot (S-4) is not identified in each respective section, so the statement that protection is not increased with a thicker cover is not supported. Please provide further information on this determination. It is recommended that the 5-

foot cover in S-4 be retained for detailed analysis, as it is consistent with completed cover installed at the Pole Canyon ODA and has current performance data available.

Response: Please see the response to Specific Comment 87.

SC-89 Page 2-38, Section 2.4: The list of remedial alternatives that are retained for the detailed analysis will need to be modified based upon Agencies' comments.

Response: Comment noted.

SC-90 Page 3-1, Section 3.0, second paragraph, last sentence: The treatability study data should have been considered in the development and screening of alternatives in order to determine whether the pilot WTP is a viable alternative to move into the detailed analysis phase. This sentence should be revised or deleted.

Response: The sentence will be deleted as requested.

SC-91 Page 3-1, Section 3.1: Please add the reference for the nine criteria within the National Contingency Plan (40CFR300.430(e)(9)).

Response: The reference for the nine criteria within the NCP will be added as requested.

SC-92 Page 3-2, Section 3.1.1, first paragraph, last sentence: For completeness and ease of review, the chemical-, action- and location-specific ARARs should be presented in FSTM#2 as well. Please revise.

Response: The ARARs tables from FSTM#1 will be included in Section 1 of FSTM#2 as requested.

SC-93 Page 3-2, Section 3.1.2, Long-term effectiveness and permanence: Please include a discussion that magnitude of residual risk and adequacy and reliability of controls are important components of this criterion.

Response: The description of the long-term effectiveness and permanence evaluation criterion will include a discussion of the magnitude of residual risk and adequacy and reliability of controls as requested.

SC-94 Page 3-2, Section 3.1.2, Reduction of TMV: Please correct this criterion to be Reduction of TMV through treatment and include the pertinent components of this criterion, as described in USEPA 1988, in the description.

Response: The description of this criterion will be corrected to include the pertinent components as requested.

SC-95 Page 3-2, Section 3.1.2, Cost: Please note that the cost criterion also includes the present worth analysis.

Response: Comment noted. The text will be revised to state that the cost criterion includes the present worth analysis.

SC-96 Page 3-3, Section 3.2: The individual analysis of alternatives was not presented or conducted in accordance with the USEPA 1988 RI/FS guidance. Per USEPA guidance, the narrative discussion of the analyses, should for each alternative, present the assessment of the alternative against each of the criteria. The "assessment" in FSTM#2 does not do that. Please revise to include a discussion of each alternative against each criterion individually. The Agencies will review and comment on the individual analysis of alternatives in the next iteration of the FSTM#2.

Response: The individual analysis of alternatives was provided in Tables 3-1 thought 3-4. The tables will be deleted, and this information will be incorporated into the text in the revised report (please see the response to General Comment 16).

SC-97 Page 3-7, Section 3.2.1.1, third paragraph, second sentence: How much reduction in selenium concentrations is expected to occur? Please revise.

Response: Please see the response to General Comment 2.

SC-98 Page 3-7, Section 3.2.1.1, third paragraph, second sentence: The Agencies disagree that the source should remain uncontrolled for the next 50 to 100 years. A more robust source control alternative should be preferred.

Response: Please see the responses to General Comments 2 and 3.

SC-99 Page 3-7, Section 3.2.1.2, Alternative WG-3 – ICs: As mentioned above, ICs alone do not address the WG RAOs.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: ICs will be described as common elements of all alternatives and will be used in conjunction with other alternatives, not as stand-alone treatments in new Section 2.2. Please see the proposed revised report structure in the response to General Comment 12.

SC-100 Page 3-8, Section 3.2.1.3, third paragraph, last sentence: Please also note that the relatively new cover concept is also unproven. It is unclear why the Agencies would support such an alternative to be selected as a remedy when the effectiveness would need to be analyzed during design. Please clarify.

Response: The revised report will include a background discussion of the capillary cover type and the uncertainties associated with its construction and performance.

SC-101 Page 3-9, Section 3.2.1.3, Alternative. WG-5, Capillary Covers: Some of the descriptions are lacking in relevant information such as: "Overburden grading or addition of fill material (Dinwoody, Salt Lake Formation or chert) will be required to produce the continuous slopes required for effective performance." What slope grades are needed for effective performance? Or, the capillary cover has a preliminary estimate of reducing infiltration by 58% based on performance of a similar cover at the Blackfoot Bridge Mine. Are climatic conditions (specifically precipitation and snow accumulation) and cover materials similar enough between the Blackfoot

Bridge site and Smoky Canyon to conclude that the cover would produce the same results. Please provide a summary statement citing the data, if available, indicating it would function the same.

Response: The estimated performance of the capillary cover is based on a site-specific analysis (see Appendix A, Attachment 1). Based on material characteristics (uncompacted Dinwoody and screened chert) present at the site, diversion bench spacing and optimal slope (i.e., 3:1) were evaluated and resulted in a preliminary estimate of 58% infiltration reduction. The revised report will include a figure illustrating slope and applicable areas for the capillary cover. Please refer to the response to General Comment 4 for additional discussion.

SC-102 **Page 3-10, Section 3.2.1.4, second paragraph, third sentence:** What does finite life expectancy mean? How many years is it expected to last?

Response: Please see the response to Specific Comment 56.

SC-103 **Page 3-10, Section 3.2.1.4, second paragraph, last sentence:** Please note, as with all cover systems, proper O&M and annual inspections can minimize these effects.

Response: A sentence will be added to note that annual inspections, monitoring and maintenance procedures would be implemented to provide for long-term performance and integrity of the geomembrane cover system.

SC-104 **Page 3-10, Section 3.2.1.4, third paragraph and fourth paragraph:** The challenges to install a geomembrane are noted, but there are specialized companies that install these types of liners, with many successes over decades. Please note in the text.

Response: Please see the response to comment Specific Comment 59.

SC-105 **Page 3-12, Section 3.2.2.1, third paragraph, seventh sentence:** Please change "Canon" to "Canyon".

Response: The typographical error will be corrected.

SC-106 **Page 3-12, Section 3.2.2.1, third paragraph, last two sentences:** Please provide a reference document for the Ground Water Model in order to review the decrease in load from the active mining at the site.

Response: Please refer to Appendix A and accompanying Attachment 1 of the draft report.

SC-107 **Page 3-13, Section 3.2.2.1, third paragraph:** Based upon Figure 3-7, there is a significant amount of selenium still remaining in the waste dumps. The first pore volume has not yet been depleted and still may have 15 to 30 years before it is depleted, according to the model. It could be another few hundred years before the estimated concentrations in the pore volume meets ground water quality standards at the edge of the waste management area. Please clarify the section to reflect this perspective accurately.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations over time.

SC-108 **Page 3-13, Section 3.2.2.1, fourth paragraph:** Unless there is more certainty on whether selenium concentrations would meet surface water standards, the phrase "and could ultimately be in the range of the surface water standard" should be deleted.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative.

SC-109 **Page 3-11, Section 3.2.2.1, Assessment and all subsequent Assessment sections in FSTM#2:** As previously noted, the Assessment section does not address the CERCLA nine criteria for remedy selection. Please revise.

Response: Please see the response to Specific Comment 96.

SC-110 **Page 3-16, Section 3.2.2.4, Assessment, last paragraph, last sentence and Page 3-17, first paragraph, last sentence:** Could the capacity be increased to 5,000 gpm to treat 100% of the water? If not, why not? As noted in the next paragraph, selenium concentrations would be reduced to below water quality standards more quickly with treatment.

Response: Please see the response to Specific Comment 69.

SC-111 **Page 3-17, Section 3.2.2.4:** Estimated selenium concentrations of assuming 3,000 gpm system are generally above the selenium water quality standards 16.7 micrograms per liter [µg/L] for Hoopes Spring and Sage Creek; 4.2 µg/L for Crow Creek. This section needs to clarify how the exceedances in the summer, winter, and fall will be minimized at LSV-4 and CC-WY-01 and if additional treatment will be considered.

Response: Please see the response to General Comment 2.

SC-112 **Page 3-17, SW-6a and -6b Assessment:** The data presented in Figure 3-9 and associated text demonstrate that the existing Hoopes Spring WTP, while removing considerable amounts of selenium, is generally not capable of removing enough selenium to meet compliance with water quality standards (WQS) in surface waters, when treating either 2000 or 3000 gpm. This suggests that, in order to meet the surface water RAOs and to be protective, there is a need to: (a) improve selenium removal efficiency across the WTP, or (b) collect and treat more selenium-contaminated water, so that more selenium mass can be removed, or (c) both. Is it practical to collect more selenium-contaminated water at the spring complexes or elsewhere for treatment, so that more selenium mass is available for removal? In Figure 3-9, Agencies suggest adding a note saying that "Measured" means with treatment of 2000 gpm (if that is correct – it is not clear). The last paragraph under the Assessment heading is likely true but does not seem like particularly strong support for this alternative in terms of achieving RAOs in the short-term.

Response: Please see the response to General Comment 69 regarding the WTP options proposed for evaluation. Also, as described in the response to General Comment 2, while the surface water standard is not predicted to be met in the short term, it is over a longer timeframe. This will be evaluated under the short-term effectiveness criterion. Treatment would result in the standard being met earlier and would provide greater assurance that it would be met (given the uncertainties associated with the groundwater model).

SC-113 **Page 3-19, Section 3.2.3.2, Alternative. AG-3 ICs and MNA:** The description and assessment speak solely to the role of ICs; there is no mention of MNA. Please include relevant information on MNA as well.

Response: The description and assessment of this alternative will include relevant information on MNA as requested. Note that we are proposing to include both actions in the common elements for all alternatives (please see the response to General Comment 12).

SC-114 **Pages 3-19 to 3-20, Section 3.2.3.3, Alternative. AG-5 PRB, ICs and MNA**: The description and assessment speak solely to the role of PRBs and ICs; there is no mention of MNA. Please expand the description to include information on MNA processes, if any.

Response: Please see the response to Specific Comment 113.

SC-115 **Page 3-20, Section 3.2.3.3, last paragraph under Assessment of AG-5:** There are other studies and even full-scale PRB systems treating selenium in eastern Idaho that could provide an indication of the ability to achieve RAOs and the performance of PRB treatment over time. Is the last sentence is missing the word like "system" after "treatment"?

Response: The typographical error will be corrected to include the word "media." In 2020 in the Conda PRB pilot study, influent selenium concentrations averaged 6.2 mg/L and were reduced to 0.003 mg/L in the treatment media; a treatment efficiency of greater than 99%. In the draft report, we used a conservative treatment value of 95% removal (Formation and NewFields 2020).

SC-116 **Pages 3-20 to 3-26, Section 3.2.4, Solids and Soils Remedial Alternatives:** Based on the assessment of Alternative. S-1 through S-3, the evaluation appears to conclude that the PRG for arsenic is met under current conditions and no further remedial action needs to be considered for uncovered ODAs, with the exception that contaminated seeps and springs will receive a rock cover. The objective of the rock cover is to prevent direct contact by birds and small rodents with contaminated surface water. It appears that this is the result of additional risk assessment information. With some explanation, it appears that most of the remedial options for this media could be/should be screened out at an earlier stage of the FS process. Please change the document to reflect this screening.

Response: We propose to revise the report to describe the conditions for ODA soils up-front (i.e., that there are no actionable risks for ODA soils) in order to assert that remedial alternatives, specifically soil covers, are not needed. Minor actions at seeps and detention ponds to prevent contact will be included as common elements in all alternatives. Please see the response to General Comment 12 for a description of the proposed revised report structure.

SC-117 **Pages 3-21 to 3-23, Section 3.2.4.1:** Unless the small mammal study at the Conda Mine has been approved by the Agencies as a final document, please delete all references to that study.

Response: The study has been approved.

SC-118 **Page 3-21 through 3-25, Section 3.2.4.1, S Alternatives Assessment:** Section 2.3.5 says there are potential risks associated with the Soils media, to seasonal ranchers from consumption of beef grazed on ODAs (due to arsenic in soil), and to terrestrial biota (due to selenium in soil). Is this text

in Section 3 basically presenting new information that contradicts the earlier statement and concludes that there are, in fact, no risks associated with the Soils media? And, later, the Summary section on Page 4-13 says "Protection of human health and the environment is achieved under current conditions for overburden…" It appears that the document has concluded, based on new information presented, that the solids and soils media present no risk and, therefore, does not require remedial action – is this understanding correct? The S alternative selected for the recommended remedy consists of just rock covers in seep and riparian areas, which might be for the purpose of preventing contact with SW. If there is really no risk or need for remedial action for the S media, why was that case not made up-front and the development and evaluation of S alternatives omitted? Another possible reason for S media remediation is source control, to mitigate migration of contaminants from solids and soils to groundwater and surface water. Please include this reason for S media remediation.

Response: The conclusion is based on new information that was compiled after FS Tech Memo #1 was completed; in particular the results of additional soil sampling that has been performed since the RI and risk assessments were completed, and is presented in Appendix C. Per the comment, we propose to revise the report to describe the conditions for ODA soils up-front (i.e., that there are no actionable risks for ODA soils) in order to assert that remedial alternatives are not required. Minor actions at seeps and detention ponds to prevent contact will be included as common elements in all alternatives. Please see the response to General Comment 12 for a description of the proposed revised report structure.

SC-119 **Pages 3-22 and 3-23, Assessment:** Please delete all references to the Nu-West sites as those documents and the site-specific TRVs cited have not been approved by the Agencies.

Response: Per the email from Art Burbank on December 17, 2020 the TRVs for the Nu-West sites have been approved by the agencies.

SC-120 **Page 3-26, Section 3.2.4.4:** Placement of rock covers on soil in seep and riparian areas would prevent exposure of small mammal (e.g., deer mice) and bird (e.g., American robin) populations to selenium in soil in seep and riparian areas downstream of Panel D, Panel E, and the Pole Canyon ODA (DS-7, ES-4, and LP-1). Since FS Tech Memo #1 identified terrestrial biota exposed to other COPCs (i.e., cadmium, chromium, copper, lead, manganese, molybdenum, vanadium and zinc) had lower risk compared to co-located areas of selenium, the text need to emphasize that the remedy is also protective of other COPCs identified at the site where selenium concentrations were elevated and ensure that the remedy is also protective of these contaminants, and not only selenium.

Response: Because rock covers would be expected to significantly reduce exposure to terrestrial receptors from soil in seep and riparian areas, exposure to all COPCs would be reduced at the same rate as exposure to selenium. This will be clarified in the text.

SC-121 **Page 4-1, Section 4.0, first paragraph, second and third sentences**: The purpose of the comparative analysis stated in the document is not exactly correct. Per EPA's RI/FS guidance, "...a comparative analysis should be conducted to evaluate the relative performance of each alternative in relation to each specific evaluation criterion. This is in contrast to the preceding analysis in which each alternative was analyzed independently without consideration of other alternatives. The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs the decision maker must balance can be identified." Please revise.

Response: The text will be revised as requested.

SC-122 **Page 4-1, Sec 4.1, WG alternatives - first two (threshold) evaluation criteria**: EPA's RI/FS guidance document states that the two threshold criteria – protection of human health and the environment, and compliance with ARARs – must be met by each alternative retained (except a No-Action alternative). Therefore, the discussion of how these criteria are addressed for each alternative normally contains what is basically a "yes or no" answer. If the answer for either of the threshold criteria is "no", there is really no need to go any further in evaluating the balancing criteria. In many instances, this document presents an equivocal answer to one of these criteria for alternatives. This suggests that (a) more analysis may be needed to give an unequivocal answer, or (b) additional components are needed in the alternatives to allow them to more definitively comply with these criteria. (Note: this comment also applies to alternatives for the other media in Section 4, evaluation of the alternatives in Section 3, and the alternative detailed analysis tables.) Please change the document to reflect the desired yes/no criteria.

Response: The report will be revised as requested.

SC-123 **Page 4-1, Section 4.1, third paragraph:** The Agencies disagree that there are no significant differences between alternatives WG-3, WG-5, or WG-7 in terms of overall protection of human health and the environment. WG-7 provides 100% reduction in infiltration which controls the source of the contamination. ICs do not provide source control, and capillary covers provide limited source control. Please revise.

Response: Please see the response to Specific Comment 39.

SC-124 **Page 4-3, Section 4-1, Summary:** The summary section should be deleted as it is not part of the comparative analysis. Please delete here and in subsequent similar sections.

Response: The revision will be made as requested.

SC-125 **Page 4-4, Sec 4.1, WG alternatives Summary:** The first paragraph on this page indicates that the remedy relies on decreases in selenium concentrations over time, caused by previous remedial actions at the site and potentially enhanced by new covers if selected, but states that "it is uncertain whether selenium concentrations will ultimately reduce to below the MCL at all monitoring locations." Unless this uncertainty could be decreased (e.g., through additional data collection and analysis over a period of time and/or modeling), a need for additional remedial action to be protective and meet MCLs/RAOs/ARARs, such as groundwater treatment, is indicated. Further consideration/discussion of this is warranted.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative.

SC-126 **Page 4-4, Section 4-1, Summary, first paragraph, last two sentences**: The text contradicts the earlier statement that there is no significant difference between the alternatives.

Response: Contradictory statements will be rectified.

SC-127 **Page 4-4, Section 4.2, bulleted list:** Alternatives SW-3 and SW-5 are redundant with WG alternatives. These should be deleted from SW discussion.

Response: Please see the response to General Comment 12 for the proposed report structure.

SC-128 **Page 4-4, Section 4.2, Overall Protection of Human Health and the Environment**: The text needs to be revised as most of the discussion does not focus on the criterion.

Response: Please see the response to General Comment 2. The revised report will provide an evaluation of how alternatives meet RAOs and ARARs and provide overall protection of human health and the environment.

SC-129 **Page 4-6, Section 4.2, Compliance with ARARs:** Please state which alternatives will or will not meet ARARs. The ARARs are more than the surface water standard. Please discuss the pertinent location-, action- and chemical specific ARARs, as well as any TBCs, here and in subsequent similar sections.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will be met for each alternative. ARARs were discussed in detail in Section 3 and discussions of pertinent location-, action- and chemical specific ARARs, as well as any TBCs will be added to the comparative analysis as needed to highlight the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs can be identified.

SC-130 **Page 4-6, Section 4.2, second paragraph and Figure 4-1:** What does relative reduction mean? While relative reduction values are useful for comparing alternatives, some idea of how much load reduction is required to meet WQS/RAOs/ARARs is needed to evaluate alternative effectiveness. (For example, achieving 60% contaminant load reduction might sound good, but not if 80% reduction were needed to meet WQS.) Also, it appears that something is missing in the sentence that includes "…the system average treatment flow rate is 1,700 and 2,550 gpm, respectively…" Please revise.

Response: Please see the response to General Comment 2. The model will be used to predict selenium concentrations and assess whether ARARs will met for each alternative. The sentence will be modified to clarify that the average treatment flow rates are for the 2,000 gpm and 3,000 gpm capacity systems, respectively (note that we are proposing to evaluate a 2,000 and 4,000 gpm system in the revised report).

SC-131 **Page 4-9, Section 4.3:** EPA guidance for threshold criteria states, "Overall protection of human health and the environment and compliance with ARARs will generally serve as threshold determinations, and that they <u>must be met</u> by any alternative in order for it to be eligible for selection." The description of alluvial groundwater alternatives states that modeling indicates the rate of release of selenium from the Pole Canyon ODA with ICs only are expected to decrease over time (at least a decade), which would eventually result in water quality below MCLs down gradient of Pole Canyon. Construction of a PRB at seep LP-1 would result in a more rapid reduction with the same results. Under both scenarios, water quality in Pole Canyon would degrade naturally at the rate of selenium release from the Pole Canyon ODA. It appears that

incorporation of the PRB at LP-1 as a pro-active remedial measure comes closer to promoting compliance with ARARs as mandated by guidance than utilization of ICs alone. This would also fulfill EPA's preference for treatment over the use of ICs only. Please reconsider your remedial option selection. As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: Please see the response to General Comment 13. The remedy is not ICs alone but includes the source control activities implemented by the Pole Canyon NTCRAs. Per the response to General Comment 2, the revised report will provide predictions of selenium concentrations in groundwater over time. This will support the analysis of the alternatives against the threshold and balancing criteria. Also, we propose to include ICs in the common elements for all alternatives (please see the response to General Comment 12).

SC-132 **Page 4-9, Section 4.3:** Selected alluvial groundwater remedy AG-3 includes institutional controls only. This is an inappropriate remedy selection for the site, as ICs cannot constitute the entire remedy for an exposure matrix unless specific requirements (not addressed in FSTM2) are met as identified in the NCP and EPA guidance. In addition, alternative AG-3 does not meet expectations for the return of usable ground waters to their beneficial uses. Based on the 3 alternatives brought forward for this evaluation, only AG-5 is a viable option for use based on EPA policy and CERCLA guidance. Reference sections from the NCP and IC Guidance are below.

§ 300.430 Remedial investigation/feasibility study and selection of remedy.

(iii) *Expectations.* EPA generally shall consider the following expectations in developing appropriate remedial alternatives:

(D) EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.

(F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction

Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites (OSWER 9355.0-89 EPA-540- R-09-001 December 2012):

> *CERCLA*. Under the NCP, the remedy selection process under CERCLA is guided by several expectations. These include: (1) treatment should be used wherever practicable to address principal threat wastes; 10 (2) groundwater should be returned to its beneficial use wherever practicable in a reasonable time frame; 11 and (3) ICs should supplement engineering controls as appropriate to prevent or limit exposure, but ICs normally "shall not substitute for active response measures…as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy."
>
> Thus, consistent with the NCP, an IC- only remedy may be appropriate under certain circumstances. The remedy selection process that culminates in an IC- only ROD should be carried out consistent with the statute (e.g., on-site remedial actions must meet or waive ARARs pursuant to section 121(d)) and the NCP, including provisions which address expectations (e.g., 40 CFR 300.430(a)(1)(iii)(D)), developing a range of alternatives (40 CFR 300.430(e)(1) and (2)), and analyzing alternatives through the nine-criteria analysis (40 CFR 430(e)(9)). ICs often play an important role by minimizing the potential for exposure for residual contamination and by protecting engineered remedies; however, as provided in the NCP, ICs are not intended to be a way "around" treatment or groundwater restoration.

As is indicated in Feasibility Study Technical Memo #1 (FSTM#1), p. 4.4, Section 4.3.3 and p. 4.8, Section 4.3.8, Institutional Controls (IC) and Monitored Natural Attenuation (MNA) will be used in conjunction with other alternatives, not as stand-alone treatments.

Response: Please see the response to General Comment 13. The remedy is not ICs alone but includes the source control activities implemented by the Pole Canyon NTCRAs. Per the analysis described in Section 4.3, Alternative AG-3 does meet expectations for the return of usable groundwaters to their beneficial uses.

SC-133 **Page 4-12, Section 4.4, Compliance with ARARs:** Please discuss any TBCs or location or action specific ARARs for the soils and solid media alternatives.

Response: TBCs or location- or action-specific ARARs will be discussed for source control alternatives as needed to highlight the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs can be identified.

SC-134 **Page 5-1, Section 5.0, third point:** Please provide additional arguments supporting the selection of alternative 6a as opposed to 6b. As presented in to the Agencies on 18-May- 2020 on slide 141, neither of these rates were predicted to reduce selenium below the aquatic life criterion 100% of the time (noting the 3,000 gpm was predicted to reduce below threshold a couple months out of the year). It is unclear why the 2,000 gpm alternative is preferred. Please clarify.

Response: Please see the response to Specific Comment 112.

SC-135 **Page 5-1, Section 5.0:** FSTM#2 as written has not demonstrated that the recommended site remedy reflects the best balance of the CERCLA remedy selection criteria, as the current analysis does not follow USEPA RI/FS and remedy selection guidance. The Agencies will review this section after the requested changes to the document have been completed.

Response: Comment noted.

SC-136 **Page 5-1:** Sage Creek and Crow Creek do not have any designated uses under IDAPA 58.01.02.110 through 160; however, IDAPA 58.01.02.101 states: "undesignated waters shall be protected for beneficial uses which includes all recreational use in and on the water and the protection and propagation of fish, shellfish and wildlife, whenever attainable." Further, IDAPA 58.01.02 101.01.b and 101.01.c specifies that DEQ "…will apply cold water and aquatic and primary and secondary contact recreation criteria to undesignated waters". Thus, the human health criteria ("fish only") of the Table of Numeric Criteria for Toxic Substances contained in IDAPA 58.01.02.210.01 apply to Sage Creek and Crow Creek. The following table shows the current applicable water quality criterion for the COPCs identified at the site for Sage Creek and Crow Creek.

COPC	Aquatic Life Criterion (µg/L)		Fish Only (µg/L)
	Acute	Chronic	
Arsenic	340	150	10
Cadmium	1.3	0 6	NA
Chromium III	570	74	NA
Chromium (VI)	16	11	NA
Nickel	470	52	100
Vanadium	NA	NA	NA
Zinc	120	120	1,500

The values highlighted in gray are the most conservative and should be considered as threshold values. Vanadium does not have a threshold value. Ohio has a chronic aquatic life criterion for vanadium of 44 µg/L that could be consider as a threshold value. The FS Tech Memo #2 needs to acknowledge that ARARs related to surface water quality criteria apply (i.e., Primary and Secondary Contact Recreation uses (Fish only criteria) for Crow Creek and Sage Creek) and for arsenic the human health criteria are more stringent that the WQS. Therefore, the EPA's human health criterion for arsenic applies. Please revise.

Response: The report will be modified as requested.

SC-137 **Page 5-3, Section 5:** This states that deed restrictions will be in placed on Simplot-owned land in Sage Valley to prevent the use of Wells Formation and alluvial groundwater with selenium concentrations greater than the MCL as a source of drinking water. This section should also emphasize that the proposed remedy will also prevent exposures to elevated levels of other COPCs

(aluminum, iron and manganese) in Wells Formation and aluminum and arsenic in alluvial groundwater as stated on page 2-11 of the FS Tech Memo #1.

Response: The text will be revised as requested.

SC-138 **Figure 2.1, Section 2.2, second paragraph:** The source areas are identified to include Panels A, B, C, D, and E and the associated ODA's, yet the target area only includes a small portion of the identified sources of contamination. Please explain why the other areas are not addressed with covers to prevent Wells Formation ground water and surface water contamination.

Response: Please see the response to General Comment 3.

Tables

T-1 **Table 2-1**: This Table provides the technologies retained from FSTM#1. However, many of these technologies are not included in the assembled alternatives. There is no discussion on how/why these were screened out. Please correct.

Response: All technologies retained from FSTM#1 were included in the alternatives in the draft report but were not specifically described in each alternative because they were minor components of the alternatives. Sediment control features (dikes and berms, detention basins), surface controls (grading, erosion controls), slope stabilization (slope reduction, retaining walls), diversion (open/closed channels) were part of all cover alternatives. Offsite disposal of treatment residuals was included in the Hoopes WTP alternatives. Excavation and onsite consolidation / disposal could be added as an alternative for sediments in seep/riparian soils and detention ponds. In-situ biodegradation is the technology used in the PRB alternative. The individual technologies will be described in more detail in the revised report. Please see the response to Specific Comment 6 for an updated version of Table 2-1.

T-2 **Table 2-2, Column 2, WG-2, MNA:** Column test results do not provide evidence that aquifer conditions are conducive to MNA as an effective remedial process to reduce selenium in the GW. This stage is intended to retain only those remedial technologies with promise of being effective. Please justify why it was retained. (For example, show how it meets EPA's Guidance Criteria for MNA).

Response: We agree that column test results do not provide evidence that aquifer conditions are conducive to MNA. MNA was included as a remedial technology in FSTM#1 Revision 3 (March 21, 2019) and retained for further evaluation as per General Comment 2 of February 20, 2019 Agency Comments on FSTM#1 Revision 2 (September 28, 2018).

T-3 **Table 2-2, Column 3, WG-3, Row Protection of HH and the Environment:** The text states that… "There are no environmental risks from Well Formation GW." Please clarify how this statement can be true when contaminated Wells Formation ground water discharges from the Hoopes Springs and South Fork of Sage Creek Springs and contaminates surface water in Sage and Crow Creeks. (The same question applies to WG-4, WG-5, WG-6, WG-7).

Response: Please see the response to Specific Comment 4.

T-4 **Table 2-2, Column 4, WG-4 5-Ft Dinwoody or Salt Lake Formation/Chert Cover, ICs, MNA, Row Effectiveness:** Please justify a Moderate to High rating. This should be reduced to Moderate only, since infiltration is only reduced by 29% and the balance contributes to the contaminated discharge at Hoopes Springs (Surface Water).

Response: Please see the response to Specific Comment 39.

T-5 **Table 2-2, All Columns, WG-2 to 7, Row Compliance with ARARs:** The text as written does not indicate whether the Alternative will result in compliance with ARARs. Please revise and clarify whether it will or will not.

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs in the revised report.

T-6 **Table 2-3, Column 2, Alternative. SW-2, 5-Ft Dinwoody or Salt Lake Formation/Chert Covers; Row Effectiveness:** Please justify a Moderate to High rating. This should be reduced to "Moderate" only, since… "*Selenium concentrations are anticipated to decrease over time; however, it is uncertain whether they will ultimately reduce below the water quality standard at all monitoring locations in Sage Creek and Crow Creek over the long term.*" The surface water associated with the Springs still carries a risk to the environment. Rock covers do not mitigate the environmental risk to small mammals, birds, and amphibians (this also applies to Alternatives SW-2 thru SW-6).

Response: Please see the response to Specific Comment 39 regarding the ratings. Please see the response to General Comment 2 regarding how selenium concentrations are predicted to change with time. Rock covers do mitigate risks to populations of small mammals and birds (please see the response to Specific Comment 84). The Ecological Risk Assessment found no unacceptable risks to amphibians.

T-7 **Table 2-3, All columns, SW-2 thru 6; Row Compliance with ARARs**: The text as written does not indicate whether the Alternative will result in compliance with ARARs. Please revise and clarify.

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs in the revised report.

T-8 **Table 2-4, Column 2, AG-2. MNA:** Column test results do not provide evidence that aquifer conditions are conducive to MNA as an effective remedial process to reduce selenium in the alluvial ground water…. "*It appears that the geochemical attenuation mechanism does not currently limit the extent of selenium transport from the Pole Canyon ODA, and natural attenuation may offer only limited reductions in selenium concentrations in downgradient alluvial groundwater.*" This stage is intended to retain only those remedial technologies with promise of being effective. Please justify why it was retained. (For example, show how it meets EPA's Guidance Criteria for MNA).

Response: Please refer to General Comment 12 for the proposed report structure. Please see the response to Comment T-2 regarding MNA.

T-9 **Table 2-4, Column 3; AG-3, ICs and MNA; Row Effectiveness:** Please justify the Moderate to High rating. This should be reduced to "Moderate" only, since alluvial ground water likely mixes with Wells Formation ground water as it discharges at the Hoopes and South Fork of Sage Creek Springs, resulting in a continued risk to environmental receptors.

Response: Please see the response to Specific Comment 39.

T-10 **Table 2-5, All columns, SW-2 thru S-4; Row Compliance with ARARs:** The text as written states there are no chemical specific ARARs for selenium in soil. This statement does not indicate whether the Alternative will result in compliance with other action and location specific ARARs (comment also applies to Alternatives. S-3 and S-4). Please revise and clarify.

Response: This information will be added to the revised report.

T-11 **Table 2-6:** Please add a footnote to the table identifying the spring/seep location abbreviation with a name.

Response: This table is proposed for deletion in the revised report. The information will be added to any relevant tables in the revised report. Please see the response to General Comment 12 regarding the proposed report structure.

T-12 **Table 3-1, Column 1; WG-1 No Further Action; Row Compliance with ARARs:** Detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise.

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs in the revised report.

T-13 **Table 3-1, Column 2; WG-2 Institutional Controls; Row Compliance with ARARs:** Same comment as for WG-1. Detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise.

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs in the revised report.

T-14 **Table 3-2, Column 2; SW-3 Capillary Covers; Row Compliance with ARARs:** The text defers to the previous protection of the environment discussion. This response is not adequate. It should be a definitive answer, either yes it will achieve ARARs or not. Please revise. Also adjust the rating from "Moderate – High" to "low – Moderate". [This comment is applicable to the other SW Alternatives, as well]

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs in the revised report and include statements about whether each alternative achieves ARARs. Please see the response to Specific Comment 39 regarding ratings.

T-15 **Table 3-2, Column 2; SW-3 Capillary Covers; Row Time until Remedial Objectives are Met:** The following text provides no insight as to when remedial objectives will be met. "*Completion of*

covers at the target areas would result in a reduction of selenium releases from these ODAs and would be expected to reduce selenium mass flux in Wells Formation groundwater and consequently the mass flux discharging at the springs compare over time." Please revise. [Same comment for Alternative. SW-5]

Response: Please see the response to General Comment 2. The model will be used to assess compliance with ARARs (including timing) in the revised report for all alternatives.

T-16 **Table 3-3, Column 1; AG-1 No Further Action; Row Compliance with ARARs:** The result of the detailed analysis should be changed from Moderate to Low. Eventual reduction over time with no certainty that selenium concentrations will be below MCLs warrants a low rating. Please revise. This applies to Alternative. AG-3 as well.

Response: Please see the response to Specific Comment 39 regarding ratings.

T-17 **Table 3-3, Column 3; AG-3 ICs and MNA; Row Long Term Effectiveness and Permanence:** The rating should be changed to "Low to Moderate" based in the lack of confidence that MNA is a reliable remedial action. Please revise.

Response: Please see the response to Specific Comment 39 regarding ratings.

Appendix A – Attachment 1 – Supplemental Analyses

A-1 Please provide inputs and outputs for all HELP demonstrations, including comparisons between Dinwoody and Salt Lake Formation. There needs to be data for each type of evapotranspiration cap being proposed.

Response: Please see the response to Specific Comment 13. HELP outputs will be provided as attachments to Appendix A in the revised report.

Appendix B – Cost Estimate for Remedial Alternatives

B-1 **Page 1, Introduction, first paragraph:** It would be helpful to include a description of what is meant by cost-effective, as outlined in USEPA's RI/FS guidance. "A remedial alternative is cost effective if its "costs are proportional to its overall effectiveness" (40 CFR 300.430(f)
(1) (ii)(D)). Overall effectiveness of a remedial alternative is determined by evaluating the following three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility and volume (TMV) through treatment; and short-term effectiveness. Overall effectiveness is then compared to cost to determine whether the remedy is cost-effective." Please include.

Response: The text will be revised as follows starting with the last sentence:

"Overall effectiveness of a remedial alternative is determined by evaluating the following three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility and volume through treatment; and short-term effectiveness. A remedial alternative is considered

cost effective if its costs are proportional to its overall effectiveness (40 CFR 300.430[f]). Both CERCLA and NCP guidelines require that selected remedies must be cost-effective."

B-2 **Page 2, Sec 2.4., last paragraph:** Bid contingencies typically range around 35%. Please clarify.

Response: The 10 – 20% range for the bid contingency was selected based on the USEPA 2000 reference "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study." The technologies evaluated in Appendix C are similar to other actions completed at Smoky Canyon and costs were developed by engineers completing the work so we feel confident that they are appropriate.

B-3 **Page 2, Section 2.6:** The current Mobilization/Demobilization cost estimates are the same for all (WG-4, -5, -6, -7). The current cost estimate will not cover scope of work items outside of equipment, personnel and possibly a few of the work plans. Please clarify/confirm the scope of work listed that costs are covered by the last sentence of this section.

Response: The mobilization/demobilization will be reviewed and revised as necessary.

B-4 **Page 3, Section 2.7, last paragraph:** A discount rate of 7% may understate inflation and/or overstate investment return. Based on current conditions rate of inflation may go higher and return on investment lower. Does the EPA Guidance set the rate or is it variable range?

Response: From the USEPA guidance document:

"USEPA policy on the use of discount rates for RI/FS cost analyses is stated in the preamble to the NCP (55 FR 8722) and in Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-20 entitled "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA 1993). Based on the NCP and this directive, a discount rate of 7% should be used in developing present value cost estimates for remedial action alternatives during the FS. This specified rate of 7% represents a "real" discount rate in that it approximates the marginal pretax rate of return on an average investment in the private sector in recent years and has been adjusted to eliminate the effect of expected inflation. Therefore, this rate should be used with "constant" or "real" dollars that have not been adjusted for inflation (i.e., a dollar spent in future years is worth the same as a dollar spent in the present year), which is the typical situation for RI/FS cost analyses private sector in recent years and has been adjusted to eliminate the effect of expected inflation. Therefore, this rate should be used with "constant" or "real" dollars that have not been adjusted for inflation (i.e., a dollar spent in future years is worth the same as a dollar spent in the present year), which is the typical situation for RI/FS cost analyses.

"The 7% discount rate was established through an economic analysis performed by the Office of Management and Budget (OMB). USEPA's policy regarding the use of discount rates in present value calculations performed during the FS will be reevaluated periodically or when OMB updates Circular A-94.3 Any changes to this policy will be contained in an update of OSWER Directive 9355.3-20, which can be found at http://www.epa.gov/superfund/."

During the review of applicable guidance documents, no updates to the policy of using 7% as the discount rate was identified.

B-5 **Page 4, Cost Estimates for Media-Specific Remedial Alternatives, first paragraph, second sentence:** Are Simplot costs significantly different than the RS Means Costs? It would be helpful to understand if Simplot costs generally run higher or lower than RS Means Costs.

Response: For equipment and labor provided by Simplot, costs are generally lower than RS Means. Material costs from local vendors vary both lower and higher than RS Means. Costs are based on actual costs incurred by Simplot for similar projects at the mine.

B-6 **Page 4, Section 3, first paragraph:** Please check reference to "RS Means 2018". Footnote 1 identified RS Means 2019 in Table B-2l.

Response: The correct reference is RS Means 2018. The typographical error will be revised.

B-7 **Page 4, Section 3.1, fourth bullet, Alternative WG-4**: Estimate detail breakdown indicates estimate based on two 2-foot layers of cover material installation. Please confirm 5-foot is correct.

Response: The thickness for the Deep Dinwoody Layer should have been listed as 3-ft. The cost and thickness will be verified and updated in the detailed breakdown.

B-8 **Page 5, Section 3.1.4, second sentence:** The cover description does not align with detailed estimate scope/cost breakdown (Table B-1h). The estimate cover cost is based on 2-foot of layer of Dinwoody and a 2-ft layer of Dinwoody/SLF. Please clarify.

Response: Please refer to the response to comment B-7.

B-9 **Page 5, Section 3.1.5, second sentence:** The cover description does not align with detailed estimate scope/cost breakdown (Table B-1i). The estimate cover cost is based on 2-foot of layer of Dinwoody and a 2-ft layer of Dinwoody/SLF. Please clarify.

Response: Please refer to the response to comment B-7.

B-10 **Page 6, Section 3.1.6, second sentence:** The layers do not align with estimate breakdown detail thickness, quantities and/or layers (Table B-1j). Please verify the number of layers, materials, and layer thickness.

Response: Layer numbers and thicknesses will be reviewed and revised to be consistent with the narrative cover description. The correct layers and thicknesses for this cover are (from bottom to top): 6 inches of screened Dinwoody or Salt Lake Formation material, 6 inches of enhanced Dinwoody, 12 inches of chert/limestone, filter fabric, 2 feet of loose Dinwoody or Salt Lake Formation material, and 1 foot of topsoil.

B-11 **Page 6, Section 3.1.6, second paragraph:** Based 194 acres at 35 acres completed per season, it would take 5.5 seasons to complete; at 30 acres per season, it would take 6.5 seasons. Please clarify.

Response: The capital costs occur in years 0 to 5 (i.e., a total of 6 years): an average of the two values described in the comment.

B-12 **Page 6, Section 3.1.6:** What are the interim O&M cost for years 2 – 5? If 35 acres are completed per year, then year 2 would require 35 acres O&M, year 3 would require 70 acres O&M and so on until year 6 (or 7). Please clarify.

Response: Interim O&M costs will be added to the estimate.

B-13 **Page 6, Section 3.1.7, third sentence:** The layers, thickness and/or material description do not align with the detailed estimate scope/cost breakdown (Table B-1k). Please clarify.

Response: Layers and thicknesses will be reviewed and revised, as necessary. The correct layers and thicknesses for this cover are (from bottom to top): 1 foot of protective subgrade, the geomembrane layer and 3 feet of Dinwoody or Salt Lake Formation material.

B-14 **Page 8, Section 3.2.4, second paragraph:** What are the interim Annual O&M costs? Beginning with year 2, Alternative WG-6 will complete up to approximately 35 acres of cover per construction season year 1; adding 35 acres each of the following years. Please clarify.

Response: Interim O&M costs will be added to the estimate.

B-15 **Tables B1a – B1g:** The summary tables are not consistent with detailed tables. Periodic costs are included in summary table but are 0 in detailed tables. Please revise.

Response: The detailed tables will be revised to include the correct periodic costs.

B-16 **Table B1-b and subsequent tables, footnote b:** US Forest Service, as the lead agency, is responsible for conducting the five-year reviews -- not Simplot and not USEPA. Please revise.

Response: The table will be revised as requested.

B-17 **Table B-1b:** There is no cost breakdown for groundwater monitoring, based on note c and 10 sampling locations. How many samples will be collected and analyzed? What are QA/QC costs? What is sampling frequency? Does this assume no additional sampling locations, well maintenance, or production of an annual report?

Response: The monitoring costs (surface water and groundwater) for all alternatives are the same and are based on the current program costs for the same scope. Details will be developed during remedial design.

B-18 **Table B-1c:** Please provide the cost breakdown for each estimated cost.

Response: The costs for the groundwater monitoring program is based on the current program. Costs for ICs and 5-year reviews are based on experience at other sites. The cost breakdown appears appropriate for this Feasibility Study.

B-19 **Table B-1d:** Please provide a cost breakdown for the covers and estimated cost. Please verify 5 feet of cover over 194 ac = ± 1,565,000 cy, whereas cost breakdown in Table B-1h based on 4 feet of cover in "Misc. Layers"?

Response: Layers and thicknesses presented in the cost breakdown Table b-1h will be verified.

B-20 **Footnote c:** What are the general details of the Pole Canyon estimates? For example, what were the Pole Canyon conditions compared to current Smoky Canyon conditions (material to grade/area of Pole Canyon where Cover was installed -percent compared to Alternative WG-6)?

Response: Please refer to the Final Pole Canyon Overburden Disposal Area 2013 Non-Time-Critical Removal Action (NTCRA) Construction Inspection Report (Formation 2017) for the full detailed description of the Pole Canyon cover construction process and conditions encountered. The Pole Canyon NTCRA had a number of project specific variables (such as building around the 2006 pipeline NTCRA), but in general the overburden present at the ODA is anticipated to have similar characteristics to overburden elsewhere at the site in terms of material properties for grading and construction purposes. In general, there was little grading/fill work necessary on Pole Canyon, which may underestimate the cover costs for other areas. Based on a preliminary evaluation, about 33% of the target cover area would not require significant regrading. 32% would need work to get to 3:1 and 35% is basically flat and will need significant dirt work to make drain. Costs associated with additional grading/fill work will be added to the cost estimates.

B-21 **Table B-1f, Annual O&M cover starting in year 6 after completion of cover installation:** The estimate does not breakdown O&M cost for progressive completion of the cover… (i.e. 35 acres per construction season). Please provide more detail.

Response: The costs will be revised to include interim O&M costs for the alternatives with multiple year construction schedules.

B-22 **Table B-1g, cover end of year 1**: Given the limited construction season and the scope work required to complete grading and installation of the protect subgrade layer, how many years will installation of the geomembrane (temperature limitation) and geomembrane cover. Or will it only take a single season to install the cover?

Response: It would take multiple years to install a geomembrane cover across the proposed 194 acres included for this alternative. Simplot has communicated with P4 Corporation regarding this work at Blackfoot Bridge and will be incorporating their experience in regards to the time estimates. The table and costs will be updated to reflect a multiple year construction process.

B-23 **Table B-1h**: The costs for Regrade/Compact/Strip at $0.023/SF seems low. What is the Simplot estimate based on? How much grading (cubic yards of cut & fill), compaction effort (loose lift compaction) and striping (vegetation, topsoil, disposition of strip materials) is needed? How does the Regrade/Compact/Strip WG-4 differ from WG-5 as well as compare with Pole Canyon?

a. What are the haul road specifications? For example, what is the width, estimated total feet of haul road, grade, surface material, drainage (culverts, ditches, swales, etc).

b. Is topsoil included in the "Misc. Layers" cost? It does not appear that 3.1.4 Alternative includes a top soil layer?

c. Please correct the Misc. Layer description. The table header identified as 5-Foot layer in table B-1h but only as 4 feet in "Misc. Layers". The text describes 3.1.4 Alternative WG-4 as consisting of a 2-foot layer of chert or limestone overlain by an approximately

3-foot layer of Dinwoody.

d. Erosion Control: Is a storm water/run off water control pond/impoundment required for this Alternative?

e. Mobilization/Demobilization: Section 3.1.4 Alternative WG-4 includes substantially more scope than equipment and training. Please clarify.

f. Global comment Footnote e: Please provide Simplot cost breakdown.

g. Global comment Footnote f: Please provide general details of the Pole Canyon O&M estimates, cost by acre/cubic yard, and when work was started and completed.

Response: Additional description will be added to the regrade/compact/strip unit cost to clarify assumptions.

a. All haul roads would be constructed to the same specifications as the active mining haul roads. Similar haul roads would be required for all covers, therefore total costs based on site-specific information are appropriate.
b. Topsoil is not included in the miscellaneous layers items. "Topsoil" will be removed from the list of potential borrow areas.
c. The table will be revised to correctly identify a 3-ft Dinwoody or Salt Lake Formation layer over lying the 2-ft Chert layer.
d. A pond is not required.
e. Mobilization and demobilization costs will be reviewed and revised as necessary based on the scope and complexity of the alternative.
f. Overall the Simplot costs are based on similar projects performed at the mine are represent total costs for particular elements. Breakdowns of these costs are not available and are not needed for the cost estimates because they provide Site-specific information.
g. Additional details for the Pole Canyon cost estimates will be provided.

B-24 Table B-1i:

a. What is the basis for $3,500/ac? Other than 194 acres, no other information is presented to support the cost estimate.

b. How does the Regrade/Compact/Strip effort differ from WG-4?

c. How does the third party survey for effort WG-4 ($1,000/ac) differ form WG-5 ($5,000/ac)?

d. How does the third party survey for effort WG-5 ($5,000/ac) differ form WG-6 ($15,000/ac)?

e. Please include haul road specifications.

f. What is the core material source and specification?

g. Please correct "Misc. Layers"…3.1.5 Alternative WG-5 states the layers as bottom to top, 6-in screened Dinwoody, 1-ft screened chert, 2-ft layer un-compacted Dinwoody.

h. Section 3.1.5 Alternative WG-5 calls for a bottom layer of 6-in screened Dinwoody and does not refer to compacted 6-in Screened Dinwoody. Please clarify the WG-5 layers and layer materials.

i. Section 3.1.5 Alternative WG-5 does not refer to Core Materials, placement of Core Materials, Riprap, Drainage Benches and/or outlet ponds. Please clarify the source of Core Materials, Riprap and Placement.

j. Excavate and grade outlet ponds: Please provide the design information upon which this estimate is based.

k. Are the Erosion Control Costs the same as WG-4? There is a considerable difference of surface runoff management between WG-4 and WG-5. Please clarify.

l. Mobilization /Demobilization: This appears to require additional equipment and labor resources than required over WG-4. Is WG-5 same cost as WG-4? Section 3.1.5 Alternative WG-5 includes substantially more scope than just equipment and training. Please clarify.

Response:

a. The value is based on similar projects performed by Simplot at the mine. This information will be added to the footnote.
b. The unit value for WG-4 should also be $3,500. Tables for that alternative will be updated.
c. Alternative WG-5 includes more involved material requirements for the capillary break layer and a more complex design requiring more CQC and third-party review of the design, which is included in the same line item. Survey costs should be relatively similar.
d. Alternative WG-6 includes more stringent material and compaction requirements and a more complex design requiring more CQC and third-party review of the design, which is included in the same line item. Survey costs should be relatively similar.
e. Please see the response to Comment b-23a.
f. "Core" is a typographical error and will be revised to "coarse." The coarse materials for the drainage benches will be a well sorted gravel. The exact specifications would be part of the remedial design.
g. Layers will be revised to correlate with the text description.
h. Layers will be revised to correlate with the text description.
i. "Core" is a typographical error and will be revised to "coarse." The coarse materials for the drainage benches will be a well sorted gravel. The exact specifications would be part of the remedial design.

j. The cost for ponds is based on Simplot's experience building similar structures. Specifications for ponds would be developed as part of the remedial design.

k. Erosion control for these cost estimates are based on minimizing surface transport of soil and includes silt fencing and straw wattles. For both alternatives the surface area and configuration of the covers would be similar, thus the same values for the erosion control.

B-25 Table B-1j:

a. How does the Regrade/Compact/Strip effort differ from WG-4?

b. How does the third party survey for effort WG-5 ($5,000/ac) differ form WG-6 ($15,000/ac)?

c. Please include haul road specifications.

d. Geomembrane is not addressed in 3.1.6 Alternative WG-6. Please clarify Geomembrane drainage ditch installation.

e. Section 3.1.6 Alternative WG-6 states bentonite as 5% additive, bur is identified in Table as a 7%. Which is correct?

f. Please clarify the Haul Bentonite line item cost.

g. Section 3.1.6 Alternative WG-6 states the drainage is a 12-in layer, but is identified in Table as 18-inch layer. Which is correct?

h. Section 3.1.6 Alternative WG-6 does not refer to Core Materials, placement of Core Materials, Riprap, Drainage Benches and/or outlet ponds. Please clarify the source of Core Materials, Riprap and Placement.

i. Excavate and grade outlet ponds: Please provide design information upon which that estimate is based.

j. Mobilization / Demobilization: Section 3.1.6 Alternative WG-6 includes substantially more scope than just equipment and training and multiple mobilizations. Please clarify.

k. Initial Annual O&M starting with year 6: Please refer to Table B-1f. Should the estimate include progressive O&M costs for completed cover for year 1 to start of year 6?

Response:

a. For the purposes of the FS cost estimate they are assumed to be the same.

b. Alternative WG-6 includes more stringent material and compaction requirements and a more complex design requiring more CQC and third-party review of the design, which is included in the same line item. Survey costs should be relatively similar.

c. Please see the response to Comment B-23a.

d. Geomembrane would be used to line ditches were necessary and is not part of

the cover configuration.

e. The mixing ratio is 5%, but the bentonite is added to achieve the desired material properties. In some instances, more is necessary to meet the material specifications therefore 7% was used for the costs estimates to account for additional material that is typically needed to complete these covers.

f. The bentonite has to be transported from where it is manufactured to the site.

g. The drainage layer is 12-inches. The table will be revised.

h. "Core" is a typographical error and will be revised to "coarse." The coarse materials for the drainage benches will be a well sorted gravel. The exact specifications would be part of the remedial design.

i. The cost for ponds is based on Simplot's experience building similar structures. Specifications for ponds would be developed as part of the remedial design.

j. Mobilization/demobilization costs will be reviewed and revised.

k. Interim O&M will be added to the cost estimate.

B-26 Table B-1k:

a. Please address same comments as Table above for these aspects of this table:

   i. Prepare Slope for Cover System

   ii. Prepare Materials

b. Section 3.1.7 Alternative WG-7 does not refer to a GCLL layer. Please clarify the GCLL and Geocomposite layer (materials and installation).

c. Section 3.1.7 Alternative WG-7 identifies the cover layers as: 1-foot protective subgrade layer, geomembrane layer, and 3-feet of Dinwoody/Topsoil on top of the hydraulic barrier. Is the 1-foot protective subgrade layer is missing?

d. Excavate and grade outlet ponds: Please provide design information upon which that estimate is based.

e. Mobilization / Demobilization: Does this require additional equipment and labor resources requirement similar to WG-5. The scope of work may require more than a single mobilization to complete the cover. Section 3.1.7 Alternative WG-7 includes substantially more scope than just equipment and training.

f. Initial Annual O&M Costs and Subsequent Annual O&M Costs. What is the basis of a 200% increase over WG-6?

Response:

a. Similar issues called out on previous tables will be revised for this table.

b. Additional details will be provided for the GCLL. The material consists of a geosynthetic clay liner laminated to a geomembrane. The GCLL system has been used at the Blackfoot Bridge Mine, and the configuration described in the Table is similar to that used at that site. The GCLL is placed on the run of mine material

and is overlain with a geosynthetic geocomposite drain layer. This configuration is similar to more traditional geosynthetic membrane cover arrangements, with the benefit of the GCLL being more durable than a membrane.

c. The protective subgrade is missing and will be added.

d. The cost for ponds is based on Simplot's experience building similar structures. Specifications for ponds would be developed as part of the remedial design.

e. Mobilization/demobilization costs will be reviewed and revised.

f. Interim O&M will be added to the cost estimate.

B-27 Tables B-2b:

a. Capital Cost: Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling as WG-4, or additional sampling? Please clarify.

c. Footnote d.: Is this the same sampling as WG-4? How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

Response:

a. The physical barriers line item is specifically for fencing to restrict access to ponds and seeps.

b. Please see the response to B-17.

c. Please see the response to B-17.

B-28 Tables B-2c:

a. Capital Costs: Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling as WG-5 or additional sampling? Please clarify.

c. Footnote d: Is this the same sampling as WG-5? How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

Response: Please refer to the response to comment B-27.

B-29 Tables B-2d and Table B-2e:

a. Capital Costs: Are Institutional Controls cost associated with Physical Barriers?

b. Annual O&M Costs, Surface Water Monitoring: Is this the same monitoring and sampling? Please clarify.

c. Footnote d: Is this the same sampling as WG-5 and 6? . How many samples are collected at each sampling location and frequency (annual, quarterly, monthly)?

Response: Please refer to the response to comment B-27.

B-30 Tables B-2f:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Section 3.2.6 Alternative SW-6a refers to continued operation of an existing WTP. There is no reference to WTP capital cost. Please clarify.

c. Section 3.2.6 Alternative SW-6a refers to SW-6a capital cost as the direct cost for rock covers, fences, and signs. Please describe physical barriers.

d. Surface Water Monitoring & Footnote c: The text refers to 10 sampling locations. The WTP would be one sampling location? Please clarify.

Response:

a. The physical barriers line item is specifically for fencing to restrict access to ponds and seeps.

b. The WTP was constructed as a treatability pilot-study under CERCLA to test the effectiveness and implementability of the fluidized bed bioreactor technology. As per the 2000 EPA CERCLA document "Guide to Developing and Documenting Cost Estimates During the Feasibility Study," treatability studies are considered a capital cost associated with the remedial design. From Section 6.4 of the guidance document regarding Cost Estimate of Proposed or Selected Remedy:

   "For contingency remedy decisions, the total project cost for implementing the contingency should be provided in addition to the costs for the conditional action. This estimate should include treatability study costs, if applicable."

   While the plant has been operational at 2,000 gpm capacity since February 2018, if continued water treatment is selected as part of the final remedy, then the cost of the plant would be part of the cost of the remedy.

c. Additional details will be provided to describe physical barriers.

d. Since implementation of the WTP there have been three samples routinely collected from within the plant. The monitoring costs provided in the FS tables are approximate, and full sampling plans will be developed as part of the post-remedial site control plan after the remedy has been implemented.

B-31 Tables B-2g:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Should include only the capital cost for construction of 1 - 1,000 gpm parallel treatment system (not the new system plus the existing system)? Please clarify.

c. Surface Water Monitoring & Footnote c: The text refers to 10 sampling locations. The WTP would be one sampling location? Please clarify.

Response:

a. Please refer to the response to comment B-27.
b. Please refer to the response to comment B-30.
c. Please refer to the response to comment B-30.

B-32 **Table B-2h:** Refer to Table B-1h for capital cost review comments.

Response: Please refer to the response to comment B-23.

B-33 **Table B-2i:** Refer to Table B-1i for capital cost review comments.

Response: Please refer to the response to comment B-24.

B-34 **Table B-2j:** Refer to Table B-1j for capital cost review comments.

Response: Please refer to the response to comment B-25.

B-35 **Table B-2k**: Refer to Table B-1k for capital cost review comments.

Response: Please refer to the response to comment B-26.

B-36 **Table B-2l:**

a. Construct 2000 gpm WTP: Section 3.2.6 Alternative SW-6a Refers to an existing Hoopes 2,000 gpm WTP. Why is capital construction cost included for an existing facility?

b. Indirect Construction: Mobilization/demobilization cost should reflect items required for barrier protection scope of work.

c. Indirect Construction: Water/Sediment Control costs should be based on the scope of work addressed in 3.2.6 Alternative SW-6a. Section 3.2.6 Alternative SW-6a refers to physical barriers at seep DS-7 and LP-1 and detention basin DP-2 and EP-2s. Is this line item the construction for the described work? The indirect construction cost is based on a percentage of construction cost of existing facility. Please clarify.

d. Remedial Design and Project/Construction Management: With the exception of water/sediment control, Alternative SW-6a refers to a fully operational facility. Please clarify.

e. O&M Costs. Please provide a breakdown of Simplot O&M Cost (labor, materials, equipment, analysis, disposal, etc.).

f. Footnote f: This footnote is missing.

Response:

a. Please refer to the response to comment B-30.
b. The mobilization/demobilization costs will be reviewed and revised as necessary.
c. The water and sediment control line items referenced are for the construction activities required to build a WTP and are not related to other site features.
d. For the purposes of the FS, the cost estimate for the WTP alternatives include information on the plant that was constructed as part of the pilot study. Please refer to the response to comment B-30.
e. The estimates are based on actual total costs and are appropriate site-specific information for the FS.
f. The missing footnote will be added.

B-37 Table B-2m:

a. Construct 2000 gpm WTP: Section 3.2.6 Alternative SW-6a Refers to an existing Hoopes 2,000 gpm WTP. Why is capital construction cost included for an existing facility?

b. Expand to 3000 gpm: Please provide a cost breakdown of footnote d, Simplot cost estimate?

c. With new parallel treatment system, should there be an initial annual O&M cost?

d. Annual O&M Costs. Please provide a cost breakdown of the O&M costs.

Response:

a. Please refer to the response to comment B-30.
b. Additional details will be provided for the plant expansion cost.
c. Initial annual O&M costs will be provided for the expanded system.
d. Additional details will be provided for the annual O&M costs.

B-38 Table B-2n:

a. Capital Costs: Is haul road construction required?
b. Please provide design information for DP-7 and EP-2.

Response:

a. Roads are already in place to the features where physical barriers would be installed. No new haul roads are anticipated.
b. Design details for DP-7 and EP-2 would be part of the remedial design. Quantities assumed for the FS cost estimate are based on the site topography are sufficient for a comparative alternative analysis.

B-39 **Table B-3b:** Five Year Review:

a. Is sampling the same cost as for the 10 sampling locations? Annual O&M above is lower for 3 locations versus 10 locations. Please clarify.

Response:

a. The annual O&M cost to sample 3 locations is less than the cost to sample 10 locations.

B-40 **Table B-3c:** Five Year Review:

a. Is sampling the same cost as for the 10 sampling location? Annual O&M above is lower for 3 locations versus 10 locations. Please clarify.

b. No footnote d is identified in the Table.

Response:

a. Please refer to the response to comment B-39.
b. A reference to footnote d will be added to the Monitoring line item.

B-41 **Table B-3d:**

a. Footnote g: Is the estimate based on media replacement years 10, 20 and 3? Should this be 30?

Response:

a. The footnote is indicating that the media lifespan is anticipated to be between 10 to 20 years. The cost estimate conservatively assumes the shorter end and provides replacement costs for changing media out every 10 years.

B-42 **Table B3e:**

a. Excavate PRB: Does this include any ground water issue during installation or disposition of excavation spoils (contaminated)?

b. Replacement of Media: Is there any disposal cost of exchanged media? Are certain items included in the periodic media replacement costs that could be one- time capital costs: Additional Monitoring Wells, Water/Sediment Control, As- built drawings & completion report, Sampling Plan, Remedial Design and related contingency cost and $147,000/media change out. Please clarify.

c. Missing footnote called out in table notes.

Response:

a. Groundwater management is not anticipated for the PRB alternatives. Construction would occur in the late fall when water levels are at their lowest,

and the trench would be excavated and backfilled sequentially to prevent sloughing. The trench would be placed in an area where run of mine materials are not present. Soils could be sampled ahead of time to determine if they would need to be consolidated on site, but those are design considerations that are outside the scope of the FS cost estimates.

b. Additional details will be provided regarding the media replacement process.

c. The missing footnote will be added.

B-43 Table B-4b:

a. Capital Costs. Are Institutional Controls cost associated with Physical Barriers? Please clarify.

b. Section 3.4.2 Alternative S-2 includes installing cover on DS-7, ES-4, LP-1, AP- 3, DP-7 and EP-4. However, cost backup Table B-4e does not include costs for AP-3, DP-7 and EP-4. Please clarify.

c. Missing footnote c called out in table notes.

Response:

a. Physical barriers consist of the fencing and rock used to prevent access to ponds and seeps.

b. AP-3, DP-7 and EP-4 will be added to the cost estimate.

c. The missing footnote will be added.

B-44 Table B-4c:

a. What is the area/acreage of Covers on Uncovered ODA? Please clarify.

b. Footnote c: How similar are the grades, slopes, and cut/fill quantities (on an acre basis)? Please clarify.

c. Footnote d: Is this the same sampling scope as WG Alternatives? Are 10 locations correct?

Response:

a. 360 acres. Please refer to table B-4f.

b. Please see the response to Comment B-20.

c. Yes, this a standard assumed monitoring cost until such time as a more detailed plan is developed for the selected remedy.

B-45 Table B-4d:

a. The cover estimated cost is not included in cost breakdown. Scope of work is for a 5-

foot layer on uncovered areas of Panel A and Panel D. What is cost basis for cover estimate? Does the $40,542 cover all of the capital costs included in Rock Cover estimated cost? Please clarify.

b. Footnote c: How similar are the grades, slopes, and cut/fill quantities (on an acre basis)?

c. Footnote d: Is this the same sampling scope as WG Alternatives. Are 10 locations correct?

Response:

a. Line items are provided in Table B-4d for both the 5-foot Dinwoody or Salt Lake Formation/Chert covers and for the rock covers. The cost basis for the 5-foot covers is based on the Pole Canyon NTCRA, and the costs for the rock covers is based on the materials and labor to place rock in the designated locations described for the alternative.
b. Please refer to the response to comment B-44.
c. Please refer to the response to comment B-44.

B-46 Table B-4e:

a. Section 3.4.2 Alternative S-2 includes a cover layer on AP-3, DP-7 and EP-4. Please clarify.

b. Footnotes a and j are missing from table.

Response:

a. Rock covers for AP-3, DP-7 and EP-4 will be added to the cost estimate.
b. The missing footnotes will be added.

B-47 Table B-4f:

a. Regrade/Compact/Strip. What is the grading effort per acre (estimated cut/fill cubic yards, compaction effort, strip (vegetation, grass, soil?)) compared to the Pole Canyon work?

b. Construct Haul Road: Please provide estimated linear feet if haul road to be constructed, estimated cut/fill, erosion control (riprap, etc.), road surfacing.

c. Haul Loose Dinwoody to Project Area: Does haul loose Dinwoody to Project Area also include cover placement to line and grade? Is there a need for a top soil layer?

d. Mobilization / Demobilization: Is this double the extended cost of WG-4? Are there the same or very similar labor and equipment resources?

e. Footnote g is missing from table.

Response:

a. Please see the response the Comment B-20.
b. Please see the response to Comment B-23a.
c. Yes, the hauling line item also includes placement. Additional description will be added. Topsoil is not needed for this alternative as the loose Dinwoody or Salt Lake Formation material would serve as the growth media.
d. The mobilization/demobilization costs are the same for WG-4 and S-3 because the same labor and equipment would be used for both variations of Dinwoody or Salt Lake Formation excavation, hauling and placement.
e. The missing footnote will be added.

B-48 Table B-4g:

a. Regrade/Compact/Strip. Under notes, Footnote e is missing in the bottom of the Table. It should read e: Based on cost provided by Simplot for S-4 Alternative slope prep work. Please correct omission of Footnote e.

b. What are the specifications for the Simplot haul road estimate basis? The extended haul road cost for this scope of work (360 acres) is over $5.4 million. Please clarify.

c. Haul Core Material: Please clarify this scope of work. Where is the core now and where will the stockpile be located? What is the quantity of material?

d. Haul Topsoil: The topsoil layer is not referenced in the Section 3.4.4 Scope of Work. Is this Dinwoody/SLF material loose? What is the haul route or routes for the topsoil?

e. Misc. Layers: Alternative S-4 header identifies the cover as five feet. Section 3.4.4 Alternative S-4 call for a 5-ft Dinwoody or SLF covers on uncovered area of Panel A and Panel D. Please correct Misc. Layers material and thickness in the Table.

f. Mob/Demob. Is this double the extended cost of WG-4. Same or very similar labor and equipment resources?

g. Footnote g. Missing from table.

Response:

a. Footnote e for this table is the same as it has been for all of the other cost estimate tables. All costs provided by Simplot are based on their experience with other projects and active mining operations.
b. The haul road costs will be reviewed and revised as necessary. Please see the response to Comment B-23.
c. "Core" is a typographical error and will be revised to "coarse." The coarse materials for the drainage benches will be a well sorted gravel. The exact specifications would be part of the remedial design.
d. "Topsoil" will be revised to "loose Dinwoody or Salt Lake Formation material". The hauling for the loose material would be the same as hauling for the deeper consolidated material.

e. The thicknesses will be corrected in the table.

f. The mobilization/demobilization costs are the same for WG-4 and S-3 because the same labor and equipment would be used for both variations of Dinwoody or Salt Lake Formation excavation, hauling and placement.

g. The missing footnote will be added.

Appendix C – Statistical Analysis of Soil Data

C-1 **Appendix C, Section 2.2, Page 3:** The outlier analysis describes a potential selenium outlier for the APL-10 sample location. The sample was removed from consideration. The Final Remedial Investigation Report stated "there are no known activities in the area of sampling location APL-10 (southeastern corner of Panel A, near the Pole Canyon ODA) that may have caused this anomalous result." APL-10 also had one of the highest selenium concentrations in terrestrial invertebrate tissue and is located in Panel A Pit A-2 which reported the highest selenium tissue concentrations of all panels for both grasses and forbs. The statistical analysis alone is not sufficient to exclude selenium concentration data from APL-10 because data from several other media confirm that the area contains elevated selenium. Note that the inclusion of the APL-10 data will require changes to several tables and associated text.

Response: The outlier analysis completed in Appendix C accurately identifies the selenium data from sampling location APL-10 as a statistical outlier. The analysis does not indicate or suggest that the data from the sampling location is somehow inaccurate, only that it does not fit within the expected distribution of the data from the A Panel exposure area. Since exposure within the A Panel is being estimated as an average exposure from throughout the area, the presence of a single sample at a selenium concentration more than five times higher than all of the other soil selenium concentrations within the panel significantly skews the soil exposure estimation for the panel as discussed in Appendix C. As indicated in USEPA's ProUCL guidance document: "The inclusion of outliers in the computation of the various decision statistics tends to yield inflated values of those decision statistics, which can lead to poor decisions. Often statistics that are computed for a data set which includes a few outliers tend to be inflated and represent those outliers rather than representing the main dominant population of interest."

As noted in the comment, relatively high selenium concentrations were observed in other tissues at APL-10. Since terrestrial vegetation, invertebrate, and small mammal tissue samples were all collected at the soil sampling location, if the soil data were truly representative of the sampling location, then it could be expected that the selenium concentrations in the other collocated media would also likely be outliers. However, USEPA's ProUCL software's outlier test does not identify selenium concentrations in any of the collocated tissue samples from APL-10 as an outlier indicating that they are within the statistical range of the population of selenium data in A-Panel. This provides another line-of-evidence supporting the removal of the selenium soil data from APL-10 from the area-weighted exposure calculations. This provides another line of evidence that the soil concentration at APL-10 is as an outlier that is not representative of the average exposure to wildlife receptor populations at the Site.

Risks to small mammals and human health are being managed on a panel-by-panel basis. The inclusion of the data from a significant outlier sample results in an overestimation of the average risk across the entire panel based only on risk from a small area of the panel. This is most important to the small mammal receptors since the risk is being managed based on the population of receptors that inhabits the entire panel and not just the individuals that inhabit the area near APL-10 where risk may be higher.

C-2 **Appendix C, Section 2.2, Page 3:** No information has been presented to justify removal of the arsenic concentration from APL-10? The APL-10 arsenic result (53.7 mg/kg) needs to be included. As with selenium at APL-10, elevated concentrations of arsenic were found in terrestrial invertebrate tissues at this location.

Response: Similar to selenium, arsenic at sampling location APL-10 is a significant outlier. A discussion of the statistics for arsenic will be added to Appendix C. As discussed in the previous comment for selenium, the presence of elevated arsenic concentrations in non-soil media is not relevant to the outlier analysis for soils. The outlier analysis does not suggest that the data from APL-10 are inaccurate, only that the data fall well outside of the expected range of data from the rest of the panel which significantly skews the estimation of the average soil arsenic concentration for the exposure area. Since arsenic is being managed based on risk to human receptors, the skewed influence of a single sampling location on the exposure point concentration artificially skews the estimated risk.

C-3 **Figure C-1:** Sample APL-10 needs to be added to the figure.

Response: Sample APL-10 will be added to the figure.

C-4 **Table C-1:** Arsenic (53.7 mg/kg) and selenium (245 mg/kg) results from sample APL-10 need to be added to the table.

Response: The arsenic and selenium results from APL-10 will be added to the table.

References

Formation Environmental, LLC and NewFields. 2020. Treatability Study Findings Report Field-Scale Permeable Reactive Barrier Pilot Study Conda/Woodhall Mountain Mine. Draft Report. March.

MWH Americas, Inc./Stantec. 2017. Ballard Mine Feasibility study Report Memorandum 2 – Screening, Detailed, and Comparative Analysis of Assembled Remedial Alternatives, Final Revision 2. April.

OKC. 2015. O'Kane Consultants USA. Memorandum: Modeling Performance of Current and Enhanced Cover System Designs based on Preliminary Field Response Modeling Inputs.

Simplot, Geosyntec Consultants, and O'Kane Consultants USA. 2020. Smoky Canyon Mine "F" and "G" Panels Expansion – Enhanced Dinwoody Cover System Construction Quality Control Plan. June 2020. Final approved by BLM July 1, 2020.

U.S. Bureau of Reclamation (US BOR) 2018. Design Standards No. 13 Embankment Dams, Chapter 20: Geomembranes Phase 4 (Final). Reclamation Managing Water in the West. September.

U.S. Environmental Protection Agency (EPA). 1999. Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites. April 1999, OSWER Directive

9200.4-17P, EPA 540/R-99/009

U.S. Environmental Protection Agency (EPA). 2002. Assessment and Recommendations for Improving the Performance of Waste Containment Systems. EPA/600/R-02/099. December.

U.S. Environmental Protection Agency (EPA). 2007. Monitored Natural Attenuation of Inorganic Contaminants in Ground Water, Volume 2: Assessment for Non-Radionuclides Including Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Nitrate, Perchlorate, and Selenium. October 2007, EPA 600-R-07-140

U.S. Environmental Protection Agency (EPA). 2015. Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites. August 2015, OSWER Directive 9283.1-36

U.S. Forest Service. 2020. Final Record of Decision Authorization of Off-lease Activities, On- and Off-lease Mineral Material Permits, and a Revised Forest Plan Amendment, East Smoky Panel Mine. Caribou-Targhee National Forest, Caribou County, Idaho. July.