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Mr. Lider, following are the U.S. Forest Service responses to your 18 May 2015 comments on the Explanation of Significant Differences/Removal Action Memorandum and the Workplan/Design Drawings for the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Removal Action to be implemented at the Monte Cristo Mining Area (MCMA).

#### **Hazardous Waste Repository Area**

##### **C1. “Hazardous Waste Repository”**

R1. No materials identified as dangerous waste under MTCA or hazardous waste under RCRA will be placed into the repository.

##### **C2. “Sheet G2 calls out a Borrow Area and to see Sheet C11....Please provide details of what work will be accomplished in this area, including cross sections of proposed work in this area for our review”**

R2. Reference to Sheet C11 is a typo. The borrow area is discussed in Section 2.7.2 of the work plan, and is outlined as a designated source of cover soil in the Biological Assessment. The limits of excavation will be determined based on the amount of cover soil generated from the repository.

##### **C3. “Existing native soil at the repository exceeds the Washington Model Toxics Control Act (MTCA), Level Action levels by a factor of four for Arsenic and a factor of two for Chromium. There are no erosion or sediment controls called out at the repository site, immediately adjacent to the South Fork Sauk River.”**

R3. MTCA Method A Soil Cleanup Levels for Unrestricted Land Use were developed for sites undergoing routine cleanup or sites with relatively few hazardous substances and are not appropriate for use at the MCMA.

Erosion controls are specified at the lower rail grade at the repository in Section 2.5 of the work plan. The work plan also specifies additional sediment control devices will be installed adjacent to the SFSR and tributaries, Glacier Creek, Seventysix Gulch, and minor tributaries to prevent the migration of sediment into surface water bodies. If additional erosion controls are deemed necessary, they will be installed at the direction of the Forest Service OSC.



C4. ***“The Monte Cristo Mining Area is part of the Spada Lake Anomaly described by University of Washington professor Cliff Mass as receiving around 140 inches of precipitation a year. In the process of excavating the repository, the native soil will be fluffed and become oxygenated and thus far more mobile in this high precipitation area. Currently these native soils are covered by a 100 year old tree canopy and duff that prevents surface water flow. Removing the tree canopy will expose the arsenic and chromium contaminated soils to severe erosion.”***

R4. The repository is scheduled to be excavated in June, 2015. Available climate data from the Big Four weather station, which reported from 1931 to 1942, indicates approximately 6% of the annual precipitation fell during the month of June. Available data from the weather station operated at the Monte Cristo townsite from 1895 to 1901 identified approximately 5% of the annual precipitation falling in June. Therefore, the repository will be excavated during one of the drier periods of the year. Suggesting the native soil will become more oxygenated and far more mobile is speculative.

Per your reference to “contaminated soils” see Response R 3 above.

C5. ***“Where will the excavated repository’s soils with high levels of metals be stockpiled during the transport of hazardous materials from the mine town site.”***

R5. Native material excavated for repository construction will be stockpiled at the designated borrow area northwest of the repository location.

C6. ***“What temporary sediment erosion controls (TESCs) will be provided.”***

R6. Silt fencing and runoff controls will be utilized as discussed in the work plan.

C7. ***“What is the monitoring plan to assure heavy metals do not become mobilized.”***

R7. Groundwater samples will be collected from monitoring wells surrounding the repository before and following the Removal Action and will continue as part of the Long Term Monitoring program.

C8. ***“The 95% construction drawings do not call out or show any TESCs whatsoever for the repository that is immediately adjacent to the South Fork Sauk River . Furthermore, there is no Stormwater Pollution Prevention Plan (SWPPP) or similar type of drawing showing how TESC measures will be installed and maintained”***

R8. SWPPPs are required for construction or industrial activities to comply with permitting associated with the National Pollutant Discharge Elimination System (NPDES). The National Contingency Plan (NCP), section 300.68(a)(3), clearly states that "Federal, State, and local permits are not required for Fund-financed action or remedial actions taken pursuant to Federal action under section 106 of CERCLA." Thus, permitting under NPDES stormwater discharges is not required for a Removal Action.

As discussed, erosion controls are specified at the lower rail grade at the repository in Section 2.5 of the work plan. The work plan also specifies additional sediment control devices will be installed adjacent to the SFSR and tributaries, Glacier Creek, Seventysix Gulch, and minor tributaries to control the migration of sediment into surface water bodies. If additional erosion controls are deemed necessary, they will be installed by direction from the Forest Service OSC.

- C9. ***“Erosion and sediment controls must be designed by an engineer who is qualified and certified under Washington’s Certified Erosion and Sediment and Control Lead (CESCL) or a similar approved and recognized certification.”***
- R9. There are no provisions in CERCLA law requiring a CESCL to design erosion and sediment controls for Removal Actions.
- C10. ***“Straw wattle barriers are proposed for use up to 1 cfs per the Technical Specifications 02251, page 5 3.3A, however, current BMPs and good engineering practices prohibit the use of straw hay bales at any location with flowing water.”***
- R10. Stormwater Management Manual for Western Washington was amended in December 2014. Wattles will be placed at the Site on even, gently sloped areas that need flow controls. Dissipation facilities will be placed closer together on steeper slopes to prevent water from building higher velocities as it flows downslope. Wattle installation will be completed in accordance with *BMP C235: Wattles*, as well as all manufacturer specifications and any updated guidance, as it becomes available.
- C11. ***“These examples of poor TESC design and lack of an SWPPP serve to demonstrate the looming problems that will be generated worsening the situation at Monte Cristo, particularly since the USFS and its sole source contractor CES are not using current BMPs.”***
- R11. CES is not a sole-source contractor to the Forest Service. CES is one of four firms selected under the Region 6 Mine Reclamation Services IDIQ.
- C12. ***“Preventing delivery sediment carrying high levels of metals to the South Fork Sauk River is of the utmost importance to protect endangered bull trout as well as preventing even greater contamination of the environment, placement and compaction of excavated mine tailings, and recovering the mine tailings with the excavated native soils that also contain hazardous materials.”***
- R12. The most important consideration of the Removal Action is minimization of exposure of hazardous substances from the legacy mines to human and ecological receptors.

Preventing delivery of sediment carrying high levels of metals will be accomplished via excavation, transport, and consolidation of waste rock and tailings in the repository. Clean cover soil at the repository contains heavy metals at concentrations well below natural background levels. Therefore, implying sediment with high levels of metals from clean cover soil generated at the repository is false.

Bull trout are currently listed under the Endangered Species Act as “Threatened”, not “Endangered”.

Native soils at the repository contain low concentrations of metals. These levels are primarily below natural background for the area. TCLP and SPLP analysis of samples collected during the geotechnical investigation indicated concentrations of metals in the extracts were well below dangerous waste criteria under MTCA and hazardous waste criteria under CERCLA.

- C13.** *“Provide a SWPPP or similar document to show exactly how and where TESC measures will be installed to prevent delivery of hazardous materials to the SF Sauk River.”*
- R13. An SWPPP is not required, since no permitting is necessary for this Removal Action. Native soils at the repository contain low concentrations of metals, primarily below background levels for the Site. Hazardous materials will not be delivered to the South Fork Sauk River from development of the repository.
- C14.** *“All TESC measures must be designed by qualified individuals with CESCL or equivalent certification.”*
- R14. There are no provisions in CERCLA law requiring a CESCL to design erosion and sediment controls for Removal Actions.
- C15.** *“The revised design has eliminated the lower HDPE liner and now proposes to compact the subgrade in lieu of installing the lower liner. This is an ill-advised cost-cutting measure.”*
- R15. Noted.
- C16.** *“There is no compaction requirement called out for the repository sub-base. A minimum of 95% compaction should be achieved per ASTM 1557. However, the cross slope for the excavation is called out on a 20% grade. Compaction equipment cannot deliver the energy to soil required to achieve 95% compaction of a 20% grade; that is why all earthwork specifications require embankments to be constructed in horizontal lifts. Detail 3, Sheet D1 incorrectly shows the bottom of the repository as flat, when it is actually a 20% cross slope.”*
- R16. Compaction is specified in specification 02220.3.11 Method 3; Embankments and backfills and the top one foot of excavation sections shall be compacted to at least 95 percent of the maximum density.
- Compaction of the base layer will be tested to verify, but compaction can be obtained on a 20% grade. Specification 02220.3.11 Method 2 Layer Placement states: “Surfaces steeper than a ratio of three to one, upon which embankment is to be placed, shall be roughened or stepped when shown on the drawings to provide permanent bonding of new and old materials”. Stepping is a method to tie horizontally compacted material into steep slopes.
- In addition, the repository base and soil conditions at planned subgrade elevations will be inspected by a geotechnical engineer during development. The geotechnical engineers will collect samples that will include up to seven compaction (proctor) tests and fourteen gradation analyses, completed in general accordance with applicable ASTM procedures.
- Detail 3, Sheet D1 shows a not-to scale cross section of the placement scheme for the base, contaminated media, and cover materials. It is not intended to be a representation of the true cross section elevations at the Site.
- C17.** *“The USFS also claims that no Dangerous Waste per WAC 173-303 will be delivered to the repository. However, there is no way for sure the USFS can be certain that excavated hazardous materials from the mine sites do not contain hazardous wastes, unless samples from each and every dump truck are analyzed per WAC 173-303. Therefore, the entire Repository must be designed to totally encapsulate all hazardous materials delivered to the repository.”*

***Install a lower liner to completely surround and completely encapsulate all hazardous mine wastes delivered to the repository”***

- R17. Development of the soil exposure pathway under CERCLA guidance allows for delineation of source dimensions, and investigating the degree of the source of contaminants. Since 2003, over 100 samples have been collected from waste sources at the Site to refine dimensions of areas with high levels of contamination. Of these, two have contained leachable arsenic and/or lead concentrations that exceed dangerous waste toxicity criteria. Both samples were collected from spilled concentrates below the Concentrator. No samples of waste rock or spilled material from the Ore Collector and Haulage Ways contained metals at concentrations exceeding dangerous waste criterion. Many of the leachate analyses revealed metals were not present in the extracts at concentrations above the laboratory method reporting limits.

Based on the results of these analyses, it is reasonable to conclude materials with the potential to exceed the toxicity threshold for dangerous waste are present at the Concentrator. Eight subsequent samples have been collected in an approximate 100-foot x 100-foot grid to estimate the dimensions of the dangerous waste at the Site.

Considering the sampling effort completed to date, the suggestion that source material volume and toxicity cannot be quantified is incorrect.

As described in the ESD, a fully encapsulated repository is not warranted at the Site.

- C18. ***“The proposed liner is a 60-mil High Density Polyethylene sheet with a 20 year warranty. Additional, Sheet D-1 calls out a bedding of 6” of drain gravel above the liner, but no bedding below the liner. 60-mil HDPE sheeting is not flexible and can become brittle with age. Sharp rocks, sticks, and similar objects protruding from the mine tailings can potentially cause stress points in the liner resulting in premature failure of the liner. Bedding must be provided on both sides of the liner to prevent damage from equipment operating on top of the liner.”***
- R18. Specification 02220.3.16 states: Tailings and waste rock placed within 12 inches of the top liner shall be free of boulders, cobbles, and other particles larger than 3 inches in maximum dimension.
- C19. ***“Additionally, drain rock is like marbles; a round rock that is easily displaced. Construction equipment spreading the drain gravel as well as the native material cap will damage the HDPE liner causing it to fail. There is no way to guarantee the liner has not been punctured or compromised by construction equipment working on a 2H:1V side slope . All materials placed above any liner should be done in a manner that does not utilize wheeled or tracked construction equipment such as a conveyor belt or similar method. Protection of the liner is especially important at this location because monitoring is impossible in winter months and liner failure could deliver a significant amount of hazardous materials to the SF Sauk River before liner failure is discovered in the spring after the snow melt.”***
- R19. There is an eight-ounce non-woven geotextile over the liner in the design to protect it. Either a maximum bearing allowed for the equipment performing this task will be specified or the placement contractor will provide a procedure for prior approval.

Access to the repository is not impossible in the winter months. During low snow years, standard four-wheel drive vehicles can easily access the Site. Snowmobiles can reach the Site in winter months when avalanche hazards are low.

**C20. *“Provide bedding above and below the liner.”***

R20. Refer to Responses R18 and r19 above.

**C21. *“Provide a liner above and below all hazardous materials and seal edges to prevent loss of either hazardous or dangerous wastes.”***

R21. A liner will be installed over the waste material placed in the repository. There will be no bottom liner. The repository will be sealed in the sense that all waste materials will be denied oxygen and water, and thus will not be allowed to oxidize further.

No materials identified as dangerous waste under MTCA or hazardous waste under RCRA will be placed into the repository.

**C22. *“The question of how mine tailings will be spread out in the repository is still a mystery to us. The bottom of the repository will be constructed at a 20% grade. Operating loaded dump trucks on a 20% grade while driving in the north/south direction will likely roll over creating an OSHA/WISHA violation; and the dump trucks will churn up the compacted native base or not even be able to drive in the east/west direction due to the steep slope.”***

R22. This issue is discussed in Section 2.8.5 of the work plan. Dump truck operating zones at the Site will be limited to the existing County Road and cleared access routes. Trucks will not be allowed to track into the repository, or over tailings/waste rock piles. A designated drop off zone will be established at the repository. Sheet G4 depicts access routes and operating zones at the Site.

A dozer and excavator, dedicated to working within the repository, will spread out the mine waste as it is dumped. The doze and excavator will not leave the repository, and thus, will not track contaminated media outside the hot zone.

**C23. *“Provide a circulation plan for how and where dump trucks will off-load the mine wastes and turnaround to circulate on the narrow county road or 7% grade on the access road shown on Sheet C-5.”***

R23. Section 2.8.5 of the work plan stipulates a designated drop off zone will be established at the repository. No dump trucks are allowed within the footprint of the repository.

In each mine cleanup, the location of the dump truck loading areas (at the cleanup sites) and unloading area (at the repository site) requires that a truck turn-around area that preserves a clear and distinct line between the "hot zone" and "cold zone". This is typically done with constructed "T-type" turnarounds within the cold zone at each end, with bumpers at the end of the truck back-up, and a spotter assisting with the turn-around maneuvers. In addition, there is a grade separation so that the truck is always above the loading and dump grade, using gravity to maintain separation of clean and contaminated zones. Following deposition of waste rock or tailings in the repository, an excavator and dozer, working only within the repository, move and compact this material into final location. As work in the repository proceeds, the dump area may be moved one or more times to optimize the efficiency of the operation, always preserving the separation of hot and cold zones.

**C24. *“How will mine wastes be deposited without rolling over dump trucks or driving over previously dumped mine wastes and tracking wastes out onto the Country Road.”***

R24. Refer to Section 2.8.5 of the work plan. No dump trucks are allowed within the footprint of the repository.

**C25. “How will the compacted base (or a lower liner) be protected from damage from wheeled or track construction equipment.”**

R25. A lower liner will not be installed at the Site.

No wheeled equipment will be utilized in the repository.

The common practice when filling a repository on a compacted base is to dump the material on the base surface, then push it into place without driving directly on the base.

**C26. “Explanation of Significant Differences....It is highly unlikely the repository can be constructed and sealed in a single season....A partially completed repository cannot be access in the winter and could result in catastrophic release of hazardous sediments into the Sauk River when the site cannot be access due to snow.”**

R26. Noted.

**C27. “Furthermore, the Explanation of Significant Differences statement that a rain tarp will be deployed when rain if forecast does not agree with CES Action Work Plan...Even a football field sized tarp (300’ x 160’) is inadequate to completely cover the disturbed area of the repository. Furthermore, a typical 1-inch per hour rain event during a thunderstorm will generate a flow of 160 feet per cubic second on a 20% grade. This will generate high velocities that will wash contaminated soils directly into the South Fork Sauk River.”**

R27. Tarp deployment procedures will be refined immediately following excavation of the repository. Sections of 100-foot by 100-foot sections will be utilized to obtain full coverage.

Precipitation will collect on the downgradient portion of the excavated base over the rain tarps. Pumps will be stationed onsite to remove accumulated precipitation at the base of the repository during construction. Water would be pumped to the adjacent forest duff during precipitation events.

**C28. “Exactly what rain forecast will trigger deployment of the rain tarp....”**

R28. The NOAA, National Weather Service website will be monitored <http://www.noaa.gov/wx.html> for the Verlot, Washington area. In addition, the National Weather Service, Climate Prediction Center will be monitored for short-term (6-10 day and 8-10 day) weather patterns <http://www.cpc.ncep.noaa.gov/>.

During daylight construction activities, any precipitation would trigger deployment of the tarp. The work plan quantifies the action amount at 0.1 inches, but any noticeable precipitation would necessitate covering the repository. The tarps would be deployed at night if any chance of showers are forecast overnight. A weather station will be positioned onsite to measure precipitation and document tarp usage during the course of the Removal Action.

**C29. “Clarify which governs the CES Work Plan of Explanation of Significant Differences.”**

R29. The work plan is the planning document for construction activities at the Site.

**C30. “Whose rain forecast will be used to decide deployment of the rain tarp.”**

R30. The NOAA, National Weather Service website will be used to monitor local forecasts. Since 0.1 inches of rain can accumulate quickly, any noticeable precipitation during construction would necessitate covering the repository. The tarps will be deployed at night if any measurable precipitation is forecast.

**C31. “Will the tarp be deployed if there is a 10%, 20%, or 100% chance of rain.”**

R31. Note Response R28 above.

**C32. “How long does it take to deploy and un-deploy the rain tarp.”**

R32. The practice of using the tarps will be refined in the field following excavation of the repository. Timing to deploy and “un-deploy” the tarps will be dependent on the level to which the repository is filled. For instance, a longer deployment time is required when the repository is originally excavated and a cavity is present versus the time when the repository level is relatively even with the surrounding topography as it fills. As such, the time required to deploy and “un-deploy” the tarps will vary.

**C33. “What is the tarp material thickness, and is it scrim reinforced.”**

R33. The tarps will be 10 millimeter, 14 x 14 weave, 5.5 ounces per square yard. The tarps are not scrim reinforced.

**C34. “How many personnel are required to deploy a football field sized tarp on a 2H:1V slope over rough terrain consisting of rocks and hazardous materials.”**

R34. Using 100-foot by 100-foot tarps, approximately three to five people are expected per deployment.

**C35. “How will the tarp be secured to keep it from blowing off in a windstorm.”**

R35. This will depend on the degree to which the repository is filled. However, available onsite materials with requisite weight to hold the tarps in place can be used to prevent them from blowing away in a windstorm.

**C36. “Where will the precipitation be measured and what equipment will be used to measure and record precipitation.”**

R36. The weather station will be sited at a flat, open area at the townsite. A Campbell Scientific weather station will be utilized at the Site. The station will have the following specifications:

- Model TE525WS-L30-PT, Texas Electronics rain gage 0.01 inch (0.254mm) tip
- Model CSL CS215-L11-PT temperature probe
- Model 41303-5A, RM Young 6-plate gill solar radiation shield
- Model 03101-L11-PT, RM Young wind sentry anemometer

The weather station will be connected to a datalogger that will allow real time observations of measured precipitation.

**C37. “Will rainfall data at the site be made public.”**

R37. Yes. These data can be made public on a weekly, monthly, and/or annual basis.

**C38. “When deployed, when can the rain tarp be removed and work commence.”**

R38. The tarps may be removed when precipitation ends, there is no precipitation forecast for the remainder of the day, and accumulated water is pumped off the tarps.

**C39. “How will the tarp be decontaminated once it comes into contact with hazardous materials and where will it be stored.”**

R39. The tarps will not be decontaminated after each use. Rather, they will be rolled from the top, or they may be folded and stored within the footprint of the edge of repository within the hot zone.

**C40. “Show how high flows from the tarp runoff will be routed to the SF Sauk River.”**

R40. Precipitation accumulating on the tarp will not be routed to the SF Sauk River. It will be pumped to the adjacent forest duff crossgradient from the repository.

**C41. “Is it proposed to hydroseed the native soil that has been stockpiled then replaced. However, the native soil is extremely thin and poor and is unlikely to sustain healthy germination that will produce a cover sufficient to prevent extreme rilling and gullyng and delivery of heavy metals from the 8-million gallons of precipitation (200-inches) that will fall on the repository. Furthermore it is likely that seeding will be done in the late fall, at a time of reduced daylight and temperature will result seed germination and a thick growth of grass cover sufficient to prevent massive erosion during winter storms when the site is inaccessible.”**

R41. Hydroseeding is not proposed at the Site.

Native plants and shrubs adapted to the microclimate and soils near Monte Cristo can germinate and spread quickly, regardless of the soil quality. However, rates and composition of succession will vary, depending on the Site. Therefore, to suggest the repository cover will not sustain germination is misleading, especially considering the successful adaptation of local successional species in the area. Native early successional species (e.g., salmonberry) are expected to colonize the opening in conjunction with the seeded mixture soon after the repository is covered. Soil disturbances associated with timber harvest in coniferous forests are known to be conducive to growth and establishment of salmonberry. Rhizomatic shrub saplings will also provide competition from conifer establishment on the repository and provide erosion control.

Tree tops, limbs, logs, and stumps will also be used on the repository as slope breaks to and to provide organics. Slope breaks will be anchored in a perpendicular manner across the slope to prevent extreme rilling and gullyng.

The reference to 200 inches of precipitation is a contradiction to the statement regarding “around 140 inches of precipitation” in the Introduction. Publically available data from the Big Four weather station, which reported from 1931 to 1942, identified a mean annual precipitation of 142.47 inches of precipitation per year. Available data from the weather station operated at the Monte Cristo townsite from 1895 to 1901 identified about 118.62 inches of annual precipitation. There is no reference to the 200 inches of precipitation, and therefore, a response cannot be provided for this assumption.

- C42. *“Imported topsoil must be included if there is to be successful seed germination, tackifiers, and similar permanent TESC measures .”***
- R42. Early successional species and early seral classes of vegetation are abundant in the Monte Cristo area. Mineralized areas with coarse talus have salmonberry and alder stands growing on steep slopes above the Monte Cristo townsite.
- Topsoil will not be imported to the Site as there is sufficient topsoil available and there is a risk of introducing invasive weeds via imported material.
- C43. *“The weed free designation of straw is intended for agricultural feed and is not intended for construction projects such as this. Only the use of Woodstraw™ or a similar product that is intrinsically weed free should be permitted for mulch.”***
- R43. Woodstraw™ is intended to be utilized for reclamation at the Site, in conjunction with slash and grubbed material generated onsite.
- C44. *“Describe how the 3-foot thick native material cover will be monitored during the winter months and what actions will be taken in the event of sediment delivery containing heavy metals to the Sauk River during the winter months when the site is not accessible .”***
- R44. The Site will be monitored during accessible periods, during low snowpack or during low avalanche forecast conditions via snowmobile. Erosion would not be anticipated when the repository is covered under deep snowpack. Therefore, the Site will not be visited during these conditions.
- C45. *“Provide for the import of a minimum of 12-inch thickness of weed-free topsoil to cover the entire area of the disturbed repository.”***
- R45. Refer to Response R42 above.
- C46. *“Describe what method will be used to monitor grass germination.”***
- R46. Vegetative cover will be monitored at the repository. However, since the succession of early seral native species (including native shrubs) is unknown, grass germination will not be quantified.
- C47. *“Provide an alternate plan to vegetate the slope with native vegetation.”***
- R47. An alternative plan will not be provided. Early successional shrubs will be planted at the Site in conjunction with the seeding. It is anticipated the native, early seral shrubs (e.g. salmonberry) will colonize the repository.
- C48. *“Eliminate the use of all straw that potentially contains noxious weeds.”***
- R48. No straw with the potential to contain noxious weeds is planned for the Site.
- C49. *“Provide a monitoring plan for the elimination of windblown noxious weeds or weeds introduced during construction that will likely invade the disturbed repository site.”***
- R49. Measures to prevent the introduction of invasive or noxious weeds are included in the Workplan.

**C50. “As previously discussed, the USFS cannot guarantee there will be no DW inadvertently placed in the repository. Indeed, 2,000 gallons per year of leachate delivered directly to the South Fork Sauk River is significantly higher than what is occurring at the mine sites.”**

R50. Per the DW comment refer to Response R1 above.

The current area of disturbance from historic mining operations at the Near Features and Remote Features is approximately 2 acres. If we assume 140-inches of precipitation per year, a 30% porosity of the tailings and waste rock, and a minimal depth of one inches of waste material, the total surface flow input to Glacier Creek from the contaminated mines is estimated at 2.3 million gallons per year.

**C51. “Provide a minimum 10,000 gallon storage tank and show how it will collect leachate from the repository and be gravity fed to the storage tank.”**

R51. A leachate collection system for the repository is discussed in the ESD.

**C52. “Uncollected leachate from mine waste as well as heavy metals in the replaced native soils will wash out onto the County Road and .....In turn, hikers and their children and pets will be exposed to heavy metals. Mountain bike tires will spray their riders with mud during rains. When dry, mountain bikers and hikers will inhale dust with high concentrations of metals.”**

R52. These are a series of highly speculative statements. Hikers and their children and pets are already exposed to unacceptable levels of heavy metals at the Near Features and Remote Features, the highest of which, are 324 times greater than the concentrations of native cover soil at the repository. The Removal Action will significantly reduce exposure to visitors.

**C53. “Provide a gravity-feed leachate collection system at the toe of the repository and make provisions for disposal on a year-round basis.”**

R53. Refer to Response R51 above.

**C54. “Provide a stormwater collection system to treat runoff from the replaced native materials containing elevated levels of heavy metals to keep it off the hiking and biking trail and putting the public at greater risk.”**

R54. Stormwater will be managed, as discussed in Section 2.5 of the work plan. The area upslope from the repository will require run-on management, including a drainage ditch from the depressional area adjacent to the former E&MCR rail line to a riprapped ditch that discharges northwest of the repository. Additional runoff will be developed by installing a 12-foot wide terrace drain on the repository, which will discharge to a riprapped ditch adjacent to the lower repository terrace. Stormwater will be discharged to native soils adjacent to the repository.

### **Ore Concentrator, Assay Shack, and Comet Terminal Mine**

**C55. “We must question the wisdom to disturb the wastes that are now covered by significant vegetation and over a century of duff and soil deposition. Excavating this area will not only mobilize heavy metal transport to environment but exposes future hikers and users to undo risk.”**

R55. The Concentrator has obvious areas devoid of vegetation as shown in the photos below:



**Contaminated surface material at the Lower Concentrator, which contained total arsenic at about 127 times the natural background**



**Upper Concentrator also devoid of significant vegetation, duff, or soil deposition. This area contained total arsenic at a concentration about 145 times the natural background**

Heavy metals have already been mobilized, and continue to currently be mobilized by waste material left in place at legacy mines. Arsenic loading rates in the South Fork Sauk River currently range from approximately 611.74 pounds per year to 4,151 pounds per year, depending on the time of year and the location sampled. Contaminated sediments in Monte Cristo Lake are over three feet thick. The Removal Action will consolidate these mine wastes, precluding access to oxygen and water, and thus immobilizing heavy metals at the Site.

**C56. “Only mineral soil will be left that is likely very highly contaminated with naturally occurring heavy metals. There is no plan to control sediment runoff once the forested areas are clear cut for excavation. There is not plan to import clean topsoil or to re-vegetate or restore these sites. The site will remain an ugly scar at the entrance to the Henry M. Jackson Wilderness area.”**

R56. The reclaimed areas will be covered with clean cover soil from the repository and borrow area, all of which contains metals at concentrations below background. Therefore, to suggest this material is highly contaminated is incorrect.

Erosion and sediment control is outlined in the work plan, Section 2.5.

Topsoil will not be imported to the Site as sufficient material is available onsite. The risk of weed introduction from imported soil is too great. The plan to revegetate reclaimed areas is presented in Section 2.14 of the work plan.

“Ugly scar” is a subjective statement. The present conditions at the Site have resulted in surface water that is undrinkable from the townsite to Monte Cristo Lake. Mine scarred lands present at the Site represent a threat to human and ecological receptors that could be considered an “ugly scar.”

**C57. “In turn these hikers rarely venture off trail in these destinations in Glacier Basin or on to Poodle Dog Pass. Simply signing these areas and warning hikers to stay on trails would be sufficient to**

***protect the public. In turn duff deposition could be allowed to further reduce the risk to the public at a greater cost savings to the taxpayers.”***

- R57. The first sentence contradicts the third paragraph of the Comment Letter Introduction, which states “*this is especially true at the Ore Concentrator, Assay Shack, and Comet Terminal Mine, locations that are heavily visited by hikers*”. Glacier Creek Trail #719 splits at the former townsite intersection of 2<sup>nd</sup> Street, Glacier Street (now the Glacier Creek Trail), and 76<sup>th</sup> Street. Hikers routinely follow the lower trail (formerly 2<sup>nd</sup> Street) to the Concentrator, the trail (formerly 76<sup>th</sup> Street) to the Assay Shack, and Glacier Creek Trail #719 through the Comet Terminal and Haulage Ways. Hikers do not have to venture off trail to access these areas.

Institutional controls are an ineffective measure to prohibit the public from accessing these areas of the Site. This option was considered in the EE/CA and was determined to provide limited to no reduction in risk to ecological receptors. The alternative has low effectiveness as it would provide no reduction of toxicity, mobility, or volume of waste material. Furthermore, this alternative does not comply with potential chemical-specific ARARs and proposed cleanup goals, or achieve the Removal Action Objectives.

Duff deposition has not reduced the risk of exposure to hikers at the Concentrator since it ceased operating in 1912. There is no expectation it will do so in the near future.

This project is not funded by taxpayers. It is funded by the AASARCO bankruptcy settlement, which was reached when a subsidiary of Grupo Mexico purchased AASARCO’s assets and liabilities. The settlement provided \$1.79 billion to fund environmental cleanup and restoration projects across the United States. This project is funded at no cost to the taxpayer.

- C58. ***“Because over the last century this area has become forested, surface flow runoff has been reduced to near zero. Removing the trees would only worsen the situation, exposing hikers to higher levels of contamination from naturally occurring Arsenic and Chromium and other heavy metals in soil. This can totally be avoided by allowing duff and clean topsoil to continue to accumulate and seal off the remnant metals in the vicinity of the Ore Concentrator, Assay Shack, and Comet Mine areas.”***
- R58. Surface flow runoff is currently prevalent near the lower Concentrator, Rainy Mine, and Pride of the Woods Mine during high runoff.
- Suggesting hikers will be exposed to higher levels of contamination from naturally occurring arsenic and chromium is inaccurate. The natural background concentration of arsenic is 284 mg/kg. The highest concentrations of arsenic at the Concentrator is 92,100 mg/kg.
- C59. ***“The drawings also fail to show private property lines in any of the project areas and fails to note the Township Range and Section where any of the work is to occur so that illegal trespass does not occur by the USFS or its contractor.”***
- R59. Sheets C7 and C8 clearly show property boundaries and survey markers.

- C60.** *“Show all private property lines and wilderness boundary lines on all plan views where these features occur.”*
- R60. Sheets C7 and C8 clearly show property boundaries and survey markers. The Pride of the Woods Mine is the only feature where work will occur in the wilderness. The scale of Sheet C11 does not allow for a zoomed out view of the wilderness boundary.
- C61.** *“A Land Surveyor in the State of Washington should stake and flag all property lines and wilderness area boundaries in close proximity to any proposed work to avoid encroachment of trespass in these areas.”*
- R62. Surveying by a PLS has been completed at the Site. Refer to the EE/CA and DGA Report from 2010.
- C63.** *“Obtain written permission or access easements from private property owner prior to commencement of work .”*
- R63. This process is ongoing by the Washington State Department of Ecology.
- C64.** *“Redesign the proposed cap in place and increase vegetation rather than the proposed clear cut and strip mine remediation project .”*
- R64. Cap in place does not meet the Removal Action Objectives for the Site. A “clear cut” is a specific term in timber management and is a form of timber stand regeneration. As the repository will not be regenerated to forest, but rather to early seral vegetation it does not constitute a “clear cut”.

There is no strip mine remediation project described in the Removal Action.

### **Mine – 2- Market Road**

- C65.** *“There are two major avalanche chutes the cross the Mine-2-Market Road from the Monte Cristo Campground to road crossing Glacier Creek. There is a real concern that thousands of dump truck loads of hazardous and dangerous waste will be spilt on this road during the USFS project. This can occur as a result of leakage, washout during rainy periods, or as dust blowing out of uncovered dump trucks.”*
- R65. Approximately 12 yards of material identified as dangerous/hazardous waste will be sealed in drums and transported offsite. Risk of spillage from sealed drums is minimal.
- The Glacier Creek crossing will be constructed with curb barriers to prevent any inadvertent spills of waste rock and tailings from reaching Glacier Creek. Haul trucks will not be overfilled in order to minimize spillage of waste rock. If spillage occurs, work will be halted, the spilled material cleaned up, and the engineer may require the trucks to be covered during transport. Loading areas and spur roads shall remain free of spilled material, to the extent practical, to avoid tracking of waste rock and contaminated soil along the haul routes. Excavator tracks will be cleaned with hand tools inside the repository, if removed during RA activities.
- C66.** *“Although the Contractor has stipulated it will not work during rainy periods, we question whether or not this requirement this will be actually be followed. For instance, CES failed to follow the construction start and stop times stipulated in its work plan to protect nesting*

***endangered Marbled Murrelets and even situated their construction camp in the heart of old growth forest and Marbled Murrelet nesting area in contravention of its own work plan.....We anticipate similar contract variance if it is in the contractors best economic interest to continue to work in rainy periods where hazardous materials can be delivered to Glacier Creek.”***

- R66. The work plan states no work will be conducted at the repository during rainy periods. Other Removal Action duties may commence, as planned during precipitation events, as long as they do not represent a safety concern or lead to a potential environmental release. Work conducted at the Site can be corroborated with precipitation measurements collected from the weather station.

Previous work conducted in murrelet habitat is discussed in detail in the 2013 Noise and Turbidity Memorandum and the 2014 Biological Monitoring report. Deviations from the work plan are outlined in the report. Since these activities have no bearing on the proposed work, they will not be discussed in detail herein. Both reports are available for download from the Mt. Baker-Snoqualmie Forest website.

Marbled murrelets are listed as Threatened under the Endangered Species Act, not Endangered.

### **Mathew Allen Grindy Memorial**

- C67. ***“There is not mention in the work plan to or drawings to salvage or replace the Matt Grindy Memorial, located approximately halfway between the Monte Cristo Campground and Glacier Creek Crossing. This memorial historic and must be preserved. The bench at this location provides a very peace place to stop and rest on the hike up to Glacier Creek. A suitable location with a view should be provided so that this historic memorial is not destroyed.”***

- R67. The Matthew Grindy Memorial does not meet the definition of “historic”. However, the Memorial will be removed prior to commencement of work to access Rainy Mine, placed in storage and replaced at the completion of the Removal Action.

Neither the Memorial nor the Rainy Mine access route are located along Glacier Creek Trail #719.

### **Rainy Mine**

- C68. ***“It is proposed to extend Mine-2-Market Road for access to the Rainy Mine site. The road has been obliterated by Glacier Creek just south of bench mark GC-5. Road construction in the active road channel at this location will introduce huge amounts of sediment into Glacier Creek that will be harmful to endangered bull trout. Likely many of these sediments would contain elevated concentrations of metals that would be classified as hazardous or dangerous wastes.”***

- R68. The comment is confusing based on the reference to “road construction in the active road channel”. Access to the Rainy Mine is anticipated to occur in late June or July and can be achieved without equipment entering any active flow channels.

Bull trout are listed as Threatened under the Endangered Species Act, not Endangered.

**C69.** *“There is no design proposed for the road into Rainy Mine site except a single” dashed” line on the drawings. This design fails to depict the difficulty of building a construction access road and the severe impacts it will have on Glacier Creek. ”*

R69. Refer to Response R68.

**C70.** *“Provide detailed design drawings of how the construction road into Rainy Mine site will be constructed without sediment delivery to Glacier Creek.”*

R70. The access route will not require detailed road construction design, as it does not meet the requirements of a Level II road. Erosion and sediment control devices will be placed, as needed to prevent runoff from hauling activities.

**C71.** *“Identify and mitigate all impacts from construction of a new road into the Rainy Mine site.”*

R71. The access route will include upgrades to the former road to the mine. A new road will not be constructed.

The impact to Glacier Creek has been identified. It will be mitigated by removing waste rock from the Rainy Mine and consolidating the material in a repository.

**C72.** *“Provide details for abandonment and obliteration of the construction road into the Rainy Mine Site.”*

R72. See Section 2.15 of the work plan and Section 02110 of the Technical Specifications. This will include re-contouring the route for proper drainage, ripping to 12 inches, seeding, and mulching. Potted rooted trees, a mix of western hemlock and Pacific silver fir will be planted at the terminus of the Rainy Mine access route. Access route portions that are within the ordinary high water line of Glacier Creek, and not currently vegetated, will be decommissioned by re-contouring of the stream channel to pre-construction conditions.

**C73.** *“Show how the road will be constructed without heavy filling and sediment delivery containing heavy metals to Glacier Creek.”*

R73. The most significant threat of sediment delivery of heavy metals to Glacier Creek is the Rainy Mine itself. The Removal Action addresses this concern by removing and consolidating waste rock from the mine in the repository.

Available onsite material will be used to fill areas, as needed. Erosion and sediment control devices will be placed as needed.

**C74.** *“Drawing C9 depicts the excavation work at the Rainy Mine site. The USFS anticipates 444 cubic yards of hazardous waste mine tailings to be excavated from the Rainy Mine site. Steep slopes from this excavation area extend down to the bank of Glacier Creek. It will be impossible to operate heavy equipment such as bull dozers, track hoes, front end loaders, etc. on these steep slopes without introducing hazardous materials into Glacier Creek. ”*

R74. Approximately 3,300 yards of material will be removed from the Rainy Mine and none of this material meets the definition of Dangerous Waste under MTCA or Hazardous Waste under RCRA.

These materials are not tailings. Tailings are created from processing ore, such as the waste materials at the Concentrator. Waste material at the Rainy mine is waste rock.

Equipment will not operate on the steep slopes of the Rainy Mine, only on flat benches already created on the pile.

**C75. *“Furthermore, there are no erosion controls proposed in this area such as a barrier wall to prevent the loss of hazardous materials and sediments into the creek. A simple silt fence will not stop large rolling rocks with contaminated materials from entering the creek.”***

R75. Erosion controls are proposed around all areas with proposed excavation to protect aquatic and cultural/historic resources. Silt fencing is not proposed in the creek channel. Moreover, it should be noted, due the lower surface area than particles with smaller grain size, large rocks typically do not have as high of concentrations of metals. Nonetheless, as discussed in Section 2.8.5 of the work plan, Glacier Creek may be diverted away from the Rainy Mine waste rock pile to the southern bank during the excavation activities to prevent large rocks from rolling into the active channel.

**C76. *“Provide a SWPPP or similar document to show TESC measures proposed for the Rainy Mine site.”***

R76. Refer to Response R8 above.

**C77. *“How will hazardous materials be kept from rolling down the steep hillsides directly into Glacier Creek.”***

R77. As discussed in Section 2.8.5 of the work plan, Glacier Creek may be diverted away if necessary from the Rainy Mine waste rock pile to the southern bank during the excavation activities to prevent large rocks from rolling into the active channel.

### **Ore Collector Site**

**C78. *“The Ore Collector site is located in the HMJ Wilderness areas, but is not identified as such on the drawings. Indeed nowhere on the drawing is the HMJ Wilderness boundary depicted whatsoever. Not only should the wilderness area be shown on the drawings, but it should be conspicuously flagged in the field by licensed land surveyors to prevent accidental equipment entry into unauthorized work areas within the wilderness area”***

R78. As shown on the map emailed to you on 5 June 2015, the Ore Collector is situated approximately 2,000 feet outside the HMJ Wilderness boundary. Given this distance and the steep slopes in this area, surveying and flagging the wilderness boundary is not necessary and will not be completed.

The Ore Collector and surrounding area was surveyed by a PLS in 2010.

**C79. *“CES has demonstrated lack of care for the HMJ Wilderness by erroneously reporting monitoring wells installed in the HMJ wilderness area when clearly they were not. This lack of care is critical when working on the wilderness boundary and the USFS needs to take extra care to supervise this contractor when working in this sensitive area.”***

R79. The monitoring well locations are reported to Ecology by the well drillers, not the companies that hire them. Well drillers do not typically report locations in unsurveyed Sections in National Forest administered land and they originally reported the incorrect quarter Section. They submitted amended well logs when notified of the error and Ecology has the updated well location on their website for review.

**C80.** *“The Ore Collector is extremely steep an in excess of 100% slope. It is unclear how equipment will operate in this area”*

R80. Equipment will create flat benches and work down to the loading area at the access route.

**C81.** *“The location of Glacier Creek is quite close to the toe of the Ore Collector, but is not shown on the drawings. No TESC measures are proposed.*

R81. The Ore Collector and proximity to Glacier Creek is clearly shown on Sheet C9.

Erosion and sedimentation controls will be utilized as discussed in the work plan.

**C82.** *“This excavation will create an ugly, unaesthetic scar visible on land from the Glacier Basin above.”*

R82. The Glacier Basin is oriented on a north-northwest axis. The scenery downstream from the Glacier Basin along Glacier Creek provides a landscape view of Foggy Peak and Ida Pass. The Ore Collector is not visible from the Glacier Basin due to the obstruction of Mystery Ridge to the west.

### **Pride of the Woods Site**

**C83.** *“On May 7, 2015 a logging helicopter crashed in the Colville National Forest staring the Hungry Hill Fire....The Pride of the Woods Mine is in far rougher terrain than the logging helicopter that crashed on the CNF. The steepness of the terrain at the Pride of the Woods mine site will create much stronger downdrafts and cross winds that will make helicopter operations in this area extremely risky. Firefighting operations in the wilderness will be extremely difficult if a helicopter crashes with likelihood of severe or fatal injuries.”*

R83. The unfortunate incident on the CNF is a reminder of the importance of safety during helicopter operations.

**C84.** *“The helicopter proposes to refuel at Station 13+00 that was the site that was improperly used by CES for its construction camp in 2013. During the 2013 construction season, CES repeatedly violated the Marbled Murrelet start and stop times of 2-hours after sunrise and 2-hours after sunset. We remain concerned that CES will continue to violate the start and stop times that USFS staff knowingly allowed to be violated in 2013. We therefore urge the USFS not to allow any fueling operations or construction activities in the Marbled Murrelet nesting areas during nesting season.”*

R84. Reconsultation for the use of the clearing at 13+00 for helicopter refueling has been initiated with the U.S. Fish and Wildlife Service.

**C85.** *“Furthermore, use of the inventories roadless area was never approved as a helicopter landing, maintenance, or refueling site in Secretary Vilsack’s decision July, 9 2009 decision. Secretary Vilsack’s decision was only to allow construction of a road in the inventories roadless area, not helicopter operations. These newly proposed helicopter impacts on nesting Marbled Murrelets were never discussed in any of the USF&WS Biological Opinions (BO) or USFS Biological Assessments(BA).”*

R85. Refer to Response R84 above.

- C86.** *“No cutting of trees should be allowed for helicopter refueling. Helicopter refueling should occur at the designated helistop at the Mt. Dickerman trailhead and not in the inventories roadless area.”*
- R86. Noted.
- C87.** *“Address the violation of the roadless inventoried use for helicopter landings and fuelling operations not approved in Secretary Vilsack’s July 9, 2009 decision to allow road construction .”*
- R87. Refer to Response R84 above. Your reference to a “violation” per Secretary Vilsack’s decision is not clear.
- C88.** *“Address impacts to Marbled Murrelets from helicopter landing and re-fueling operations in revised BO’s and BA’s.”*
- R88. Refer to Response R84 above
- C89.** *“Address past start/stop time violations by USFS’s contractor and the likelihood that these violations will be continued for helicopter operations in the inventories roadless areas.”*
- R89. No violations occurred with respect to Terms & Conditions outlined in the original BO. Deviations from the Conservation Measurements are outlined in detail in the 2013 Noise and Turbidity Memorandum and 2014 Biological Monitoring report.
- C90.** *“Relocate the helicopter landings and fueling to the currently designated helistop at the Mt Dickerman Trailhead.”*
- R90. Landing and fueling a helicopter at an unsecured, popular trailhead presents a significant safety risk to the public.
- C91.** *“It has been approximately five years since USFS released its EE/CA study. Now that we have a definitive design proposal to review, I remain convinced more than ever this project will not only fail badly, but create a toxic mess that will haunt this area for generations to come .”*
- R91. Noted.
- C92.** *“It would be by far in the public’s and environment’s interest to scale back this project to cap in place and not disturb or transport both hazardous and dangerous waste. I would be willing to sit down with you and your staff to discuss these issues more thoroughly.”*
- R92. Noted.
- C93.** *“I also reiterate my request to be granted access to the MCMA in order to document my concerns expressed in this comment letter that likely will not be adequately addressed and relay my findings to other regulatory agencies and other environmental organizations.”*

The Forest Service provided you a site visit on 2 June 2015. During that site visit, you surreptitiously video and audio taped the site visit and associated discussions. I would respectfully request that on any future visits you either ask my permission or notify me that the events are being recorded.

The Forest Service is currently evaluating the process for site visits to the MCMA during the Removal Action. We will inform you once that evaluation is complete regarding any future site visits to the project.

Sincerely,

//SIGNED//

JOSEPH GIBBENS, PE, CESL  
CERCLA On-Scene Coordinator

Cc: Harry Romberg, Sierra Club, Washington State Chapter  
Steve Kuennen, Forest Supervisor, MBS National Forest  
Tracy O'Toole, Public Affairs Officer, MBS National Forest  
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