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April 19, 2016

Michael Huffine  
Kootenai National Forest  
31374 U.S. 2, Libby MT 55923-3022  
rockcreekmine@fs.fed.us

Re: Comments on proposed Rock Creek Mine DSEIS

Thank you for the opportunity to comment on the proposed Rock Creek Mine DSEIS. These comments are submitted on behalf of Earthworks, Rock Creek Alliance and Clark Fork Coalition.

Earthworks is a national non-profit organization dedicated to protecting communities and the environment against the adverse effects of mineral extraction. Earthworks has offices in Montana, Colorado, Texas, Washington D.C., California, and New York.

The Rock Creek Alliance is a non-profit organization headquartered in Sandpoint, ID with a field office in Trout Creek, MT. The Alliance strives to protect water quality, public lands, and wildlife resources from proposed hardrock mining activity in northern Idaho and western Montana, with a focus on the protection and preservation of the Clark Fork-Pend Oreille Watershed and the Cabinet Mountains Wilderness.

The Clark Fork Coalition (CFC) is a member-supported organization of 2,700 citizens, scientists, business people, and recreationists dedicated to protecting and restoring the Clark Fork River watershed.

Lake Pend Oreille Waterkeeper (LPOW) is a non-profit organization located in Sandpoint, Idaho. LPOW's mission is to protect the water quality of the Clark Fork/Pend Oreille Watershed so that our local waterways remain swimmable, fishable and drinkable for future generations through education, community engagement and advocacy.

Idaho Council of Trout Unlimited ("ITU") is a non-profit conservation organization dedicated to protecting, reconnecting, and restoring naturally sustaining salmonid fisheries and their habitat. ITU has over 2,000 members in the state of Idaho, and is part of the larger network of Trout Unlimited affiliate state councils. ITU has worked on important recovery Issues throughout the bull trout's range in Idaho, including an extremely successful collaborative effort to relicense the Avista Power Projects on the Clark Fork River in Idaho and Montana.

Further, ITU members in the Panhandle Region of Idaho have worked with Avista, Crown Pacific, state and federal resource agencies, and a private landowner to improve bull trout and westslope cutthroat trout habitat on much of lower Twin Creek, a tributary of the lower Clark Fork River. Protection of Rock Creek bull trout is an important component of ITU's watershed-scale efforts to protect bull trout, and is integral to ITU's long-term commitment to native salmonid restoration in the lower Clark Fork River.

Defenders of Wildlife is a nonprofit organization dedicated to the protection and restoration of all native animals and plants in their natural communities, with 1.2 million members and supporters nationwide.

Great Old Broads for Wilderness is a national organization that engages and ignites the activism of elders to preserve and protect wilderness and wild lands. Conceived by older women who love wilderness, Broads gives voice to the millions of older Americans who want to protect their public lands as Wilderness for this and future generations. We bring knowledge, commitment, and humor to the movement to protect our last wild places on earth. With 36 chapters (Broadbands) in 15 states, including Montana and Idaho, we bring the grassroots to many conservation efforts.

Our organizations' members live, work and recreate in the region, and are deeply concerned about the direct, indirect and cumulative effects of the proposed Rock Creek Mine on the Cabinet Mountains Wilderness, Outstanding Resource Waters, the lower Clark Fork River watershed, the fish and wildlife that rely on these resources, and the quality of life in the region.

The Cabinet Mountains Wilderness Area is one of the first ten areas protected by Congress. This 93,000-acre gem remains the sole wilderness area in the 2.2 million-acre Kootenai National Forest.

The Draft Supplement Environmental Impact Statement (SDEIS) for the proposed Rock Creek Mine identifies substantial impacts to the Cabinet Mountains Wilderness Area, Outstanding Resource Waters, lower Clark Fork River watershed and the fish and wildlife that rely on these resources, including:

- Dewatering of wilderness rivers, lakes and streams (Outstanding Resource Waters)
- Harm to threatened fish and wildlife species
- Risk of failure from outdated and dangerous tailings dam design along the Clark Fork River
- Subsidence of underground tunnels
- Potential for acid mine drainage or other harmful discharges

The cumulative effects of the proposed Rock Creek Mine and Montanore Mines would fundamentally and forever alter the Wilderness Area and the ecosystems it was set aside to protect.

These impacts are incompatible with maintaining and protecting the Outstanding Resource Waters, fish and wildlife habitat, recreational uses and other significant values for which the Cabinet Mountains Wilderness Area was established.

The DSEIS includes new hydrologic analysis on the effects of groundwater dewatering, yet fails to provide adequate data on the effects to wilderness rivers and streams and the aquatic life that they support.

The plan for the paste tailings storage facility is outdated and the failure modes effects analysis demonstrates that it presents an unacceptable risk of failure. This analysis presents new information that necessitates a new look at alternatives for mine waste disposal, including backfill.

We appreciate the opportunity to comment on the proposed Rock Creek Mine, and we urge the Forest Service to deny the permit, based on its failure to provide adequate data, analysis, or mitigation measures.

In addition to the detailed comments below, we submit the comments of technical experts, including Dr. Dave Chambers (geophysicist), Dr. Kendra Zamzow (geochemist), Dr. Tom Myers (hydrologist), Dr. Chris Frissell (fisheries biologist), and Dr. Ann Maest (geochemist).

These comments adopt and incorporate by reference herein into the administrative record all previous comments and administrative appeals filed by these groups on the Rock Creek Mine, including but not limited to all comments/appeals submitted regarding the previous Draft, Supplemental, and Final EISs and Record of Decision issued by the Forest Service, including the Evaluation Adit EA as well as the Montana DEQ mine and MPDES permitting process. (Note: the DSEIS says that the 1995 DEIS, 1998 Supp. DEIS, and 2001 FEIS are incorporated into the new DSEIS). Further, due to the connection between the impacts from the Rock Creek and Montanore Mines, all comments submitted by these groups to the Forest Service on the Montanore Mine, including comments and Objections submitted on the Draft, Final, and Joint Final EISs for Montanore are hereby adopted and incorporated by reference herein.

The Draft, Final, and Joint Final EISs, and Record of Decision for Montanore must also be included in the administrative record for the Forest Service's review of the Rock Creek Mine. At a minimum, all types of analysis done for Montanore must be done for Rock Creek (plus additional analysis noted herein and in our incorporated documents, as well as our comments/Objections on Montanore).

Sincerely,

Bonnie Gestring  
Earthworks  
140 South 4<sup>th</sup> St. West Unit 1

Mary Costello  
Rock Creek Alliance  
P.O. Box 2636

Missoula, MT 59801  
[bgestring@earthworksaction.org](mailto:bgestring@earthworksaction.org)  
406-549-7361

Karen Knudsen  
Clark Fork Coalition  
P.O. Box 7593  
Missoula, MT 59807  
[karen@clarkfork.org](mailto:karen@clarkfork.org)  
406-542-0539

Jonathon Proctor  
Rockies and Plains  
Defenders of Wildlife

Shelley Silbert  
Executive Director  
Great Old Broads for Wilderness  
PO Box 2924  
Durango, CO 81302

Sandpoint ID, 83864  
[maryrca@rockcreekalliance.org](mailto:maryrca@rockcreekalliance.org)  
208-610-4896

Shannon Williamson  
Lake Pend Oreille Waterkeeper  
PO Box 732  
Sandpoint ID 83864  
[Shannon@lakependoreillewaterkeeper.org](mailto:Shannon@lakependoreillewaterkeeper.org)  
208-597-7188

Ed Northern  
Chapter President  
Idaho Council of Trout Unlimited  
PO Box 1971  
Boise, Idaho 83701

## **OVERVIEW**

The DSEIS notes that its first purpose is to address the three deficiencies found in *Rock Creek Alliance v. USFS, Revett Silver, and USFWS* (CV 05-107-M-DWM and CV 08-028-M-DWM consolidated). The second stated purpose is, “to ensure a complete analysis of the proposed mining project, the SEIS will update other resource analyses if there are significant new circumstances or information relevant to environmental concerns and directly related to the proposed action or its impacts.”

*Comment: With respect to the second purpose, the DSEIS is missing important new information and analysis with respect to tailings dam design and disposal methods, bull trout data and analysis, grizzly bear data and analysis, and baseline data for rivers and streams effected by dewatering.*

## **SUMMARY**

Overall, as shown herein and in the attached and referenced documents and in the incorporated comments/appeals/Objections/documents, the Rock Creek Mine, and the Forest Service’s review and proposed approval of the Plan of Operations, does and will violate numerous federal and state public land and environmental laws, including but not limited to NEPA, the Clean Water Act, the Clean Air Act, the Endangered Species Act, the Forest Service Organic Act, the National Forest Management Act, the Wilderness Act, Montana water quality and mining laws, and the implementing regulations of all of these laws. At a minimum, due to the deficiencies in the DSEIS noted herein and in the other documents, a revised DSEIS must be submitted for full agency and public review (i.e., the USFS cannot proceed to issue a Final SEIS).

### **Environmental Consequences**

#### ***Issue 1: Effects on quantity and quality of Montana and Idaho surface water and groundwater.***

The DSEIS states that discharge from the extension of the evaluation adit would be discharged into infiltration ponds in the Miller Gulch drainage about 1,500 feet upgradient of Miller gulch. It further states that “Due to dilution and dispersion, effects on surface water quality would likely be negligible.”

*Comment: The DSEIS must provide data and analysis on the potential impacts of all discharges, and demonstrate that all discharges will comply with water quality laws and regulations and adequately protect aquatic life. The EIS cannot defer this to future permitting processes nor defer to state permitting processes without full review in the federal NEPA and mine review process.*

According to the DSEIS, the closure phase for options 2 and 3 could involve plugging the adit and allowing the groundwater to move downgradient from the mine void via fractures. If the area to be mined is currently hydraulically connected to area springs

and/or streams, then as the mine void filled with water, those connections would be reestablished. The DSEIS states that it is unlikely there would be measureable effects on springs or stream water quality downgradient of the mine void, but it defers additional site data collections in each of the streams draining the proposed mine area prior to and during the Evaluation phase to determine if there would be effects on surface water quality where baseflow occurs in each of these streams.

*Comment: The DSEIS must provide baseline data on stream flows, including baseflows, for area streams to characterize the potentially affected waters and to determine impacts. This data is readily available, and cannot be deferred until after the ROD. Furthermore, the DSEIS provides insufficient data or analysis to support the assertion that spring and stream quality are unlikely to be affected at closure or to demonstrate that wilderness waters will not be degraded.*

According to the DSEIS, an average of 0.15 cfs will be diverted to the mill during operations rather than reaching Rock Creek. It also appears that a portion of runoff to Rock Creek will be intercepted by the tailings pond (not specified) during operations. In a separate section, the EIS estimates flow reductions to Rock Creek from groundwater drawdown from the Rock Creek Mine and Montanore Mine.

*Comment: the EIS should calculate the maximum, mean and minimum amount of flow reductions in Rock Creek as a result of all of these activities, and evaluate the potential effects.*

## ***Issue 2: Stability of the tailings impoundment***

The DSEIS identifies a number of serious stability issues associated with the proposed paste tailings storage facility, including the potential for foundation failure due to soft clay deposits underneath the TSF, paste tailings collapse resulting in partial failure of the embankment, and earthquake induced failure that could cause the embankment to be deformed by up to 3 feet and compromise the use of the facility for mine closure. (DSEIS, p. S-26) The DSEIS proposes to defer all of these issues until after the ROD is issued, and proposes to collect additional information, conduct further analysis, and assign a technical advisory group to make a determination on the final design of the tailings dam.

*Comment: The Failure Modes Effects Analysis (FMEA) clearly indicates that the design and analysis of the paste tailings facility presents an unacceptable failure risk, and will not meet requirements for acceptable reclamation and closure. This new analysis demonstrates that the existing TSF is unacceptable, and alternative tailings storage, including backfilling the paste tailings into underground tunnels, must be considered. This analysis cannot be deferred until after the ROD because it has substantial implications for mine design and operation. The recent tailings dam failures at two modern mines, the Mount Polley mine in British Columbia and Sanmarco, Brazil, highlight the continued risk of tailings failures at modern mines. In January 2015, a panel of experts released its findings from its investigation of the Mount Polley tailings dam, a modern impoundment that breached on August 2014 and released 25 million*

*cubic meters of tailings into the Fraser River watershed in British Columbia.<sup>1</sup> The panel concluded that the dam failed because of a faulty design that didn't account for the instability of the lacustrine deposits on which it was constructed. The expert panel also made recommendations of Best Available Technology and Best Practice to reduce the potential for catastrophic failure, and concluded that, "This can be achieved most directly by storing the majority of the tailings below ground—in mined-out pits for surface mining operations or as backfill for underground mines." It emphasized the need to consider these issues at the earliest stage in the mine review process. These failures, and the associated expert analysis, constitute new information and developments that should be taken into account in this DSEIS.*

*The panel also found that human error was a substantial issue with respect to tailings dam failures. This has already been an issue for Hecla at the Grouse Creek Mine that it owned and operated on Forest Service lands in the Salmon Challis National Forest in Idaho. The Forest Service and Environmental Protection Agency were required to conduct a time critical removal action "to reduce the threat to human health and the environment due to releases of contaminants from the tailings impoundment to Jordan Creek, the Yankee Fork, and associated surface and regional groundwaters."<sup>2</sup> The time critical removal action was necessary because of the immediate risk that the impoundment would reach its design capacity, presenting an emergency condition requiring immediate response action. In 2000, HECLA entered into an Administrative Order on Consent under CERCLA for the time critical removal action with the EPA and Forest Service. Thus, HECLA's tailings management history also highlights the need to reconsider tailings disposal options that reduce the risk to the environment and public safety.*

*Given that the mine proposes to use paste tailings and a room and pillar method of mining, the next logical step involves the backfilling of the paste tailings into the underground mine void.*

*Additional stability concerns arise from the use of outdated and inadequate seismic safety calculations. Although Montana requires the use of the 10,000-year event for use in seismic safety calculations for tailings dams, the analysis presented in the DSEIS relies on a seismic safety analysis using the 2,500-year earthquake. Please see the comments submitted by Dr. Dave Chambers (Attached).*

### ***Issue 3: Effects on wetlands and non wetland waters***

According to the DSEIS, "The indirect effects on wetlands, springs, and seep habitat overlying the mine are difficult to predict. Indirect impacts on wetlands due to mine

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<sup>1</sup> Independent Expert Engineering and Review Panel, Report on Mount Polley Tailings Storage Facility Breach, January 30, 2015. Available at: <https://www.mountpolleyreviewpanel.ca/sites/default/files/report/ReportonMountPolleyTailingsStorageFacilityBreach.pdf>

<sup>2</sup> EPA and Forest Service, Removal Action Memorandum, Grouse Creek Mine Mine Tailings Impoundment Dewatering, May 21, 2003.

dewatering were estimated using the 3D model to assess changes in baseflow of streams and springs near the mine. These headwater streams have steep gradients and are deeply entrenched. Although baseflows on these streams would be reduced, in most years, surface runoff and precipitation would continue to provide the primary hydrologic support for wetland vegetation. The reduction in baseflows would be most notable in dry years and would likely occur only in late summer to early fall. The effects from the reduction in baseflows on wetland vegetation along these stream reaches would be negligible because of the continued hydrologic support from surface runoff and precipitation.” DSEIS at S-28.

*Comment: The DSEIS asserts that indirect effects on wetlands due to mine dewatering were estimated using the 3D model to assess changes in baseflow of streams and springs near the mine (DSEIS, p. S-28) but it doesn't include analysis of any of the headwater streams. It only provides an estimated impact far downstream from where the largest effects are predicted to occur. This is inadequate for determining impacts on groundwater dependent ecosystems from dewatering associated with the mine. The DSEIS also asserts that the reduction in flows would have negligible effects on the wetland vegetation along stream reaches because of the continued hydrologic support from surface runoff and precipitation. This assertion is unsupported by any documentation. Furthermore, the EIS does not provide adequate baseline data on GDEs; it defers analysis of the effects of groundwater drawdown until after the evaluation phase; and fails to identify any mitigation measures to reduce potential impacts. This does not meet the requirements of NEPA for taking a “hard look” or applying best scientific data. Any project approval based on such incomplete analysis would also violate the CWA, Wilderness Act, Organic Act, NFMA, Montana water quality laws, and their implementing regulations.*

Information is lacking in the DSEIS about the impacts to wetlands including the type and acreage impacted, and whether or not an individual permit is required. “None of the 17.8 acres of jurisdictional wetlands wetlands would be impacted...” (p. S-27).

*Comment: Since there is no 404 permit application or a 404 permit authorization, it is impossible to determine if there will be impacts, and what kind or how many acres of impacts there would be to the 17.8 acres of jurisdictional waters confirmed during the Jurisdictional Determination.*

On Page S-11 it is stated "In its March 2013 Jurisdictional Determination (JD) for the Rock Creek Project, the Corps determined that aquatic resources within the paste tailings facility and mill site were isolated nonjurisdictional waters.....The Corps indicated that the access road upgrades, culvert installations and in-stream diffuser may be eligible for authorization under the current Nationwide Permit (NWP) 44 for Mining Activities. The DEQ has issued a Section 401 CWA Certification for NWP 44."

*Comment: The DESIS cannot assume that an Individual Permit will not be required. The Corps' Individual Permit (IP) is used for projects proposing extensive impacts or impacts to rare or special aquatic types. Generally speaking, the Corps' IP is always used for projects that propose impacts equal to or greater than one (1) acre of wetland or*

*stream. The Corps can, at their discretion, elevate any project to be reviewed as an Individual Permit. Individual Permits require the evaluation of U.S. Army Corps of Engineers applications under a public interest review and the environmental criteria set forth in the Clean Water Act Section 404(b)(1) Guidelines. If Avista and FERC approve the discharge diffuser line onto the streambed of the CFR, or if there is more than 1 acre of impacts, an Individual Permit may be required. In addition, MDEQ would have to issue a 401 Water Quality Certification for a Corps Individual permit.*

DSEIS, Page xxi, Appendix F: "404(b)(1) No longer needed. The Corps determined an individual 404 permit for the Rock Creek Project is not necessary."

*Comment: This is incorrect. The ACOE stated that some proposed actions in the project MAY BE eligible for a nationwide permit.*

The USACE also concluded that all Project related stream crossing activities are to be regulated pursuant to the Nationwide Permit program. Pg. 1, 2014 Wetland Mitigation Plan, WESTECH Environmental Services, Inc. Rock Creek Project.

*Comment: Without a permit application, this determination cannot be made.*

## **CHAPTER 1. PURPOSE NEED AND PERMITTING PROCESS FOR THE ROCK CREEK PROJECT**

### **Section 1.3. Purpose and Need**

The DSEIS states that the proposed Rock Creek Project would partially fulfill society's demand for copper and silver. Yet, according to the 10-Q report filed by Revett with the Securities and Exchange Commission:

*"The Rock Creek mineral resources are not equivalent to reserves. Although we believe these mineral resources are significant, it does not mean they can be economically mined. A mineral resource is not equivalent to "proven reserves" or "probable reserves" under standards promulgated by the SEC, principally because of the absence of sufficient quantifiable data. We will not be able to determine whether Rock Creek contains a commercially mineable ore body until our evaluation program has been completed and we have obtained a final, economic and technical feasibility study that will include an analysis of the amount of ore that can be economically produced under then-prevailing market conditions. Stockholders are cautioned not to assume that mineral resources will ever be converted into proven reserves or probable reserves."*<sup>3</sup>

HECLA also describes the Rock Creek deposit as an inferred resource, and that "The category of "inferred resources" is not recognized by Guide 7. Investors are cautioned not

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<sup>3</sup> United States Security and Exchange Commission, SEC Report 10-Q, Filed by Revett Mining Company, May, 2015

to assume that any part or all of the mineral deposits in such categories will ever be converted into proven or probable reserves. “Resources” have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of such a “resource” will ever be upgraded to a higher category or will ever be economically extracted.<sup>4</sup>

This section also provides outdated information about copper demand and supply that doesn’t reflect the 5-year decline in global copper demand that the sector is currently experiencing. Copper prices have fallen more than 50% since their peak in 2011.



*Comment: Copper prices have been in a dramatic downward decline due to the diminished demand from China. This section contains outdated information that should be updated to include current information about this commodity. It should also make clear that there isn’t sufficient information to demonstrate that this project can be mined economically.*

### Section 1.5 Status of Permits and Approvals

The SDEIS identifies a preferred alternative (Alternative V) in which the first phase would include the evaluation adit construction, development, and data collection. The second phase would be mine construction, operation and reclamation. The evaluation adit

<sup>4</sup> <http://www.hecla-mining.com/rock-creek/>

plan in the exploration license approved by the DEQ includes several changes to Alternative V from that presented in the 2001 FEIS. The most significant change involves providing power to the evaluation adit site through a powerline rather than using generators, burying the evaluation adit water pipeline in the access road rather than placing the pipeline aboveground, and discharging treatment mine water from the evaluation into infiltration ponds (Groundwater) rather than discharging to the Clark Fork River. (DSEIS, S-13)

*Comment: These changes are a substantial variation from the existing exploration license and Montana ROD, and require analysis by the State under the Montana Environmental Policy Act (MEPA). The State of Montana was not involved in developing this DSEIS or analyzing these changes. When will this analysis take place, and how will this process integrate with the Forest Service DSEIS, FEIS and ROD, as it must? State law also requires more detailed designs and analysis of the tailings dam during the permit application phase. The new statutory language (MCA 82-4-376) related to tailings storage facilities must be implemented. How will this process interact with the current Forest Service review?*

The SDEIS states that the Forest Service will establish technical advisory groups to advise deciding KNF officials, including potential advisory groups for tailings, groundwater, geochemistry, groundwater hydrology and rock mechanics.

*Comment: While we consider third-party technical experts a benefit, we disagree with any process that defers this expert analysis outside of the NEPA process. This type of data and analysis should be incorporated into the Environmental Impact Statement to inform the analysis, mitigation measures, and the range of preferred alternatives.*

*Regarding the other permits and proposed activities listed in Table 1-1, the revised DSEIS must fully analyze all the impacts/alternatives/mitigation/etc. for these projects, as well as conduct the full public interest review required by FLPMA, the NFMA and their implementing regulations. For example, the USFS should not grant any special use permits, road use permits, or mineral material permits for the Rock Creek Project, as the Project does not satisfy all of the public interest requirements of FLPMA, NFMA, and their implementing regulations.*

*Regarding Montana water quality permitting, as noted herein, the USFS cannot simply defer to the state process, but must fully analyze all impacts/alternatives/mitigation/etc. for all project discharges. In addition, Table 1-2 does not include the required point source discharge permit requirements for all road culverts. See Northwest Environmental*

*Defense Center v. Brown*, 640 F.3d 1063, 1070-71 (9<sup>th</sup> Cir. 2011) (culverts directing stormwater flows are point sources subject to NPDES permitting) *overturned on other grounds Decker v. Nw. Env'tl. Def. Ctr.*, 133 S.Ct. 1326 (2013). Although the Supreme Court overturned *Brown* on other grounds, the culverts-as-point-sources rule remains. The Ninth Circuit recently reiterated, in light of the Supreme Court's and its previous decision in those cases, that:

The Court left intact our holding that “when stormwater runoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a ‘discernable, confined and discrete conveyance’ of pollutants, and there is therefore a discharge from a point source” within the meaning of the Clean Water Act's basic definition of a point source in 33 U.S.C. § 1362(14).

*Northwest Environmental Defense Center v. Decker*, 728 F.3d 1085-86 (9<sup>th</sup> Cir. 2013).

## **Section 1.6 Agency Roles and Responsibilities**

### **1.6.6 Financial Assurance**

*Comment: Please see the comments submitted by Dr. Dave Chambers (Attached). In addition, the USFS must include the financial assurance/bond analysis in the NEPA process, and cannot defer such critical mitigation and related analysis until after the public NEPA process is over.*

## **CHAPTER 2. DESCRIPTION OF ALTERNATIVES**

### **Section 2.3.1.2 Evaluation Adit**

According to the DSEIS the combined Outfall 006 sediment basin and 600,000 gallon pond would have the capacity to contain runoff from a 100-year/24 hour storm event.

*Comment: Montana DEQ and the U.S. Bureau of Land Management have stated that designing mine features for a 100-year/24 hour storm event is inadequate to protect against releases, given the increase in large storm events associated with climate change, using the Zortman Landusky Mine as a case study.<sup>5</sup> The EIS should evaluate the adverse effects of a failure or overtopping of the sediment pond and 600,000 gallon stormwater minewater retention pond on downstream resources, and it should incorporate more protective design requirements.*

### **Section 2.3.1.4 Mine Plan**

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<sup>5</sup> U.S. Bureau of Land Management, “Climate Change: Extreme Conditions: Do Plans of Operations Need to Include an Ark?” Presented by David Williams at Mines, Design, Operations and Closure Conference, April 29-May 3, 2012. Available at:

[http://www.mtech.edu/mwtp/conference/2012\\_presentations/Dave%20Williams.pdf](http://www.mtech.edu/mwtp/conference/2012_presentations/Dave%20Williams.pdf); Montana Department of Environmental Quality, “Zortman: Dealing with Extreme Weather Events,” Presented by Warren McCullough and Wayne Jepson at Mines, Design, Operations and Closure Conference, April 29-May 3, 2012. Available at: [http://www.mtech.edu/mwtp/conference/2012\\_presentations/Warren%20McCullough.pdf](http://www.mtech.edu/mwtp/conference/2012_presentations/Warren%20McCullough.pdf)

The DSEIS states that an estimated 1 million tons of waste rock would be generated and used to construct the mill site pad, tailings buttresses and tailings facilities foundation, if geochemical testing indicates that waste rock is suitable for construction material. However, if geochemical testing determines that it is unsuitable for construction, the waste rock would be disposed of in the underground mine below the groundwater table to prevent oxidation. If it was encountered before underground storage is available, it would be stored in an approved waste storage area within the paste tailings facility footprint or other KNF and DEQ approved storage area with stormwater controls and covered until adequate underground storage became available.

*Comment: The plan for waste rock storage is vague and doesn't provide sufficient information to determine what the potential effects could be from storing it in the paste tailings facility footprint, underground, or some other, still undetermined, storage area. The EIS must provide detailed information on how this waste rock will be stored and managed. Where will this waste rock be stored in the tailings footprint if it will then be removed and disposed of in the underground tunnels at a later date? How will seepage from the waste rock be managed? What type of cover system would be used at the TSF? Where would this "other KNF and DEQ approved storage area" be located? What type of cover system would it use? The EIS also proposes to use underground reservoirs to store large volumes of excess water, and proposes to store it below the pre-mining water level if possible. If unsuitable waste rock is stored underwater in underground tunnels, how will this effect the available space to store water, and/or affect groundwater quality? If metal prices drop and mine operations are suspended, as they have in the past, how will any surface disposal of waste rock be managed over a multi-year period? How will seepage be managed? The mine needs to provide detailed engineering plans, and contingency plans, for how these issues will be addressed.*

#### **Section 2.3.1.7.2 Tailings Transport**

The DSEIS indicates that there will be multiple pipelines, carrying tailings, reclaim water, and concentrate from the mill to the paste plant. It further states that the tailings pipeline will be buried at least 24 inches, and either be placed on bridges that span all wetlands and waters of the U.S. or buried beneath all wetlands and waters of the U.S.

*Comment: The EIS must provide more detailed information of both options and analyze the potential impacts. How many waterways and wetlands will be affected, which ones? What are the potential impacts of burying the tailings pipeline in wetlands or underneath waters of the U.S.? How much additional sediment will be generated in the process of burying these pipeline along the entire route, including all the pipelines identified in Table 2-7?*

The DSEIS proposes a 3-acre contingency tailings slurry feed containment site. (p. 2-34).

*Comment: This is a new facility. Where are the details about the construction and management of this site, and the associated engineering diagrams? What analysis has*

*been done to determine potential impacts to groundwater as a result of seepage if failure causes long-term storage issues.*

#### **Section 2.3.1.7.4 Tailings Deposition**

The tailings design plans for year-round operation, but there is inadequate information on how the paste tailings facility will account for cold weather conditions, and what mitigation measures will be used to ensure that the tailings facility is effective in the winter months.

*Comment: Detailed information should be provided on how the paste tailings deposition, dewatering and management will respond to cold climates, which has been identified as an issue in the scientific literature,<sup>6</sup> and how this will be managed and mitigated. Detailed information is needed on the quality of process water used in tailings production, and the potential effects to paste management.*

#### **Section 2.3.1.9 Water Use and Management**

The SDEIS states that RCR holds two beneficial use permits for a maximum of 40 gpm, and does not hold beneficial use permits sufficient for mine operations.

*Comment: Please specify the volume of additional water that will require a beneficial use permit in all stages of mine operations. Are there other water use permits or instream flow permits that would be affected? DNRC has been requiring new water use permit applicants in the lower Clark Fork River to mitigate their water use. How will this be handled for RCR? Will mitigation be required, and how?*

The DSEIS states that water encountered in the adit will be run through a biotreatment system and an ion exchange treatment plan and then discharged in three 1.0 acre infiltration ponds in the paste tailings facility discharge footprint.

*Comment: According to the DSEIS (Table 1-2), the mine doesn't have a permit for these discharges. The Forest Service should not defer this analysis to the State agencies. The impacts should be analyzed in the EIS document.*

The DSEIS states that during the wet season, excess mine water *would likely* be stored underground. During the dry season, stored water would be released and directed to the mill reservoir.

*Comment: Much more detail is needed to understand and evaluate this water storage process. Where will these water storage reservoirs be located in relation to the underground tunnels that will be actively mined? How large will they be? In what part of the deposit will the reservoirs be located? What is the potential for additional leaching*

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<sup>6</sup> Review of Potential and Geotechnical Effects of Adopting Paste Technology under Cold Climate Conditions. Available: [https://pure.ltu.se/portal/files/43755253/Literature\\_Review\\_on\\_Potential\\_Geochemical\\_and\\_Geotechnical\\_Effects\\_of\\_Adopting\\_Paste\\_Technology\\_under\\_Cold\\_Climate\\_Conditions.pdf](https://pure.ltu.se/portal/files/43755253/Literature_Review_on_Potential_Geochemical_and_Geotechnical_Effects_of_Adopting_Paste_Technology_under_Cold_Climate_Conditions.pdf)

*of metals or acid leaching from the surrounding rock into the groundwater before release? What volume of water would be stored at maximum? If the underground reservoir is dysfunctional because of seismic activity, how will the water be managed during the wet season? Does the water treatment system have the capacity to treat all discharge water from the mine? What are the possible impacts if greater than expected inflow is encountered? If seepage occurs, and the mine must take action to prevent water quality impacts, will the water treatment system have the capacity to treat this water during the wet season? How will seepage be determined? The EIS should provide details on where and how the groundwater monitoring would be placed to evaluate whether seepage occurs.*

The DSEIS states that “If technically feasible” the underground reservoir would be located below the pre-mining water table to avoid seepage to groundwater. P. 2-43.

*Comment: The EIS must analyze the other alternatives, and provide detailed information on the alternatives to an underground reservoir that doesn't sit below the pre-mining water table, and the potential effects of seepage to groundwater resources.*

The DSEIS states that wastewater would be treated and discharged to the Clark Fork River if approved by DEQ and KNF.

*Comment: It is our understanding that the diffuser also requires approval from Avista for an easement to access the site, and Avista has repeatedly stated that it will not issue that authorization. What are the necessary steps for approval of the diffuser? If it isn't approved, where will the wastewater be discharged, and what are the long-term effects of these discharges? The EIS should provide details on how this water will be managed throughout mine operations, closure and post-closure, and demonstrate that the company has a guaranteed plan in place before the ROD is issued. The EIS should not identify a preferred alternative if it is unable to demonstrate how discharges would be managed long-term.*

The DSEIS states that RCR holds two beneficial water use permits for a maximum appropriation of 40 gpm and 12.5 acre feet per year, and that “these permits would not be adequate for all RCR water use requirements.” It states that RCR will have to obtain beneficial water use permits to appropriate water for all RCR water use requirements. (P. 2-40) According to the SDEIS the mine will require 3,052 gpm at full production – vastly more than the RCR appears to have the authority to use.

*Comment: the SDEIS must disclose where the additional water will be obtained to provide for water use in the mine (groundwater/surface water), and the effects of diverting that water for mine consumption. Will the mine require a water use permit to use groundwater inflow entering the underground tunnels for its beneficial use in the mill operations? Has the mine secured that water right? When and how will that process occur? This information should be thoroughly disclosed in the EIS.*

The DSEIS states that the mine will require 3,052 gpm (1.6 billion gallons per year) of

process for mill operations during full production. (p. 2-43)

*Comment: The conceptual model provided in the EIS lacks the necessary details to understand the water use impacts of the project, and to determine whether mitigation measures are sufficient. There are substantial unknowns and uncertainties that preclude the effective analysis of this project, including:*

- *The company hasn't secured beneficial uses for the water it needs for mine operations.*
- *It hasn't secured permission to place the diffuser for discharges of waste water treatment plant discharges to the Clark Fork River.*
- *There doesn't appear to be a back-up plan if it doesn't secure that approval.*
- *It hasn't received a discharge permit from the State for its discharges, so information is missing on the potential effects of this discharge, whether it's lawful, and what mitigation measures will be required.*
- *It hasn't shown compliance with the EPA New Source Performance Standard.*

*Considering the highly speculative nature of the water balance model, the EIS should include thorough analysis of alternatives. For example, according to the DSEIS, if other water sources are inadequate for mill operational needs, RCR will use a makeup water well in the Clark Fork River alluvium adjacent to the discharge capable of supplying full makeup water requirements (p. 2-43). The EIS fails to say whether RCR has a water right for that water, or analyze the effects of this water removal.*

According to the DSEIS, water from the mill will be treated and ultimately discharged to the Clark Fork River via a diffuser. (Table p. 2-47) shows that mill water bleed off and mill reservoir excess water, estimated at over 300 gpm, is expected to be discharged to the Clark Fork River. The predicted discharge of mill bleed-off and excess mill reservoir water contradicts the the zero-discharge requirements of EPA's New Source Performance Standards for copper milling operations using froth-flotation (the milling method here). Subject to minor exemptions not applicable here:

“[T]here shall be no discharge of process wastewater to navigable waters from mills that use the froth-flotation process alone, or in conjunction with other processes, for the beneficiation of copper, lead, zinc, gold, silver, or molybdenum ores or any combination of these ores.” 40 CFR 440.104(b)(1).

*Comment: Any discharge from the mill would violate the new source performance standard in the CWA requirement and could not be authorized. The USFS has not demonstrated how the proposed project meets the New Source Performance Standards for copper milling operations using froth-flotation. It should be noted that the JFEIS and FEIS for the Montanore Mine show that the “net precipitation” exemption to the zero-discharge requirement does not apply to this area. JFEIS at M-378. As such, the USFS cannot authorize any operation that would result in any discharge from the mill (including any discharge routed through other facilities).*

### **Section 2.4.3 Tailings Disposal Methods**

According to the SDEIS, tailings would be transported 4.1 miles from the mill to the paste plant as a slurry where they would then be dewatered to make a paste tailings. (p. 2-33). The paste would then be deposited into a facility that would encompass about 319 acres (p. 2-38).

*Comment: Backfilling mine tailings is considered best practice for underground mining operations, and it is increasingly the norm for underground mines.<sup>7</sup> Backfill is the next logical step after the creation of paste tails, but the backfilling alternative was dismissed due to the cost to the company. In their comments on past versions of the EIS, the EPA urged the permitting agencies to require backfilling. We agree that backfilling should be analyzed in the EIS, especially given the risks related to contamination from metals-laden seepage water, catastrophic failure of the TSF, and underground subsidence. The addition of cement should also be analyzed. To help reduce the risk of subsidence, which could have grave consequences to wilderness water bodies, tailings backfill should be aggressively analyzed and include consideration of backfilling both the underground rooms and access ways. This would allow the tailings that remain after backfill to be placed in a smaller impoundment further from the river.*

*The benefits derived from the use of backfill at Rock Creek would likely include:*

- 1. A much smaller volume of tails on the surface and a reduced footprint;*
- 2. Fewer water quality impacts due to reduced seepage;*
- 3. Less risk of catastrophic failure of the TSF;*
- 4. The potential to locate a smaller volume of tails to a location further away from the Clark Fork River and Rock Creek;*
- 5. A reduced risk of subsidence.*

*Comment: Please see the comments from Dr. Dave Chambers (attached).*

## **CHAPTER 3: AFFECTED ENVIRONMENT**

*Overall, the DSEIS and related documents fail to fully analyze the baseline conditions for all potentially affected resources, such as ground and surface water quality and quantity, wildlife and wildlife habitat, air quality, geology, geochemistry, GDEs, wetlands, etc.*

### **Section 3.5 Geology**

*Comment: Please see the specific comments from Dr. Kendra Zamzow and Dr. Ann Maest (attached)*

### **Section 3.6 Environmental Geochemistry**

*Comment: Please see the specific comments from Dr. Kendra Zamzow and Dr. Ann*

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<sup>7</sup> Sudbury Mining Solutions Journal, "Backfill Basics," June 2007.

*Maest (attached).*

## **Section 3.7 Water Quality and Quantity**

### **Section 3.7.1.5.2 Forest Plan**

The DSEIS identifies 2015 Kootenai Forest Plan direction applicable to streamflow and water quality.

*Comment: the EIS does not demonstrate that the proposed mine plan will meet the 2015 Kootenai Forest Plan, including but not restricted to all standards, desired conditions, objections, goals, and guidelines including, FW-DC-WTR-01, FW-DC-WTR-02, FW-DC-WTR-03, GOAL-WTR-01, FW-DC-WTR-02, GA-DC-WTR-CLK-02, INFISH, or that mitigation measures are in place to mitigate these impacts. How will this be addressed?*

The 2015 KFP direction considered in the analysis of water quality is: GOAL-WTR-01. Maintain or improve watershed conditions in order to provide water quality, water quantity, and stream channel conditions that support ecological functions and beneficial uses. FW-GDL-WTR-01. Management activities in impaired watersheds (listed by the state under section 5 of the Integrated 303(d)/305(b) Report) with approved TMDLs are designed to comply with the TMDL. Management activities in watersheds with streams on the 303(d) list are designed to maintain or improve conditions relative to the cause for impairment and will not cause a decline in water quality or further impair beneficial uses. A short-term or incidental departure from state water quality standards may occur where there is no long-term threat or impairment to the beneficial uses. (Page 3-60)

*Comment: The clearing of 36 acres for the power line will create sediment and lessen large woody debris (LWD) recruitment, which will further impair Rock Creek. Rock Creek is listed for "other anthropogenic substrate alterations from silviculture activities." This clearing will result in impacts that are in direct conflict with the Forest Plan direction. How will this sediment and reduction in LWD recruitment impact Rock Creek 's beneficial uses and bull trout habitat?*

#### **Section 3.7.2.1. Surface and Groundwater Quality**

*Comment: Please see specific comments from Dr. Tom Myers (attached).*

##### **Section 3.7.2.1.1. Water Quality**

*Comment: The baseline data presented in the tables for water quality at potentially affected water resources are outdated and fail to characterize the existing condition of the environment as required by NEPA. For example, Table 3-16 presents data from 1985-1991 and 2000. This data is 15 years old, and may not reflect current water quality conditions. The most recent data in Table 3-18 is 1993, more than 20 years ago. Table 3-23 and Table 3-24 for lakes in the CMW are also outdated. There are no water quality or quantity data for St. Paul Lake. Table 3-33 Flow measurements for springs are estimated, rather than measured. This is inadequate to provide statistically reliable data*

*to determine impacts.*

### **Section 3.7.3. Groundwater Hydrology**

*Comment: Please see the specific comments from Dr. Tom Myers (attached).*

### **Section 3.7.4. Surface Water Hydrology**

*Comment: Please see the specific comments from Dr. Tom Myers (attached).*

#### **Section 3.7.4.9 Streams in the Cabinet Mountains Wilderness**

*Comment: More information is needed to characterize the Outstanding Resource Waters (and waters downstream from the Wilderness boundary that are also protected by Montana's nondegradation requirements) that are potentially affected by the proposed mine, including baseline data on streamflows, habitat, gaining and losing reaches, and any other data necessary to characterize the existing environment and understand the potential effects of groundwater dewatering.*

#### **Section 3.11.2.4 Fish**

The 3-d model identified the stream reaches that may have the largest predicted changes in baseflow as Chicago Creek, South Basin Creek, North Basin Creek and the East Fork Bull River above St. Paul Lake. (p. 4-194)

*Comment: Baseline data on fish populations, habitat, and other aquatic life are missing for streams that the EIS predicts will suffer from reduced flows, including but not limited to Chicago Creek, South Basin Creek, and North Basin Creek. NEPA requires that the EIS provide sufficient baseline data to characterize these resources and evaluate the potential impacts. The EIS for the proposed Montanore Mine conducted hydrologic analysis on the impacts to watershed streams, and this should be done for the proposed Rock Creek Mine.*

#### **Section 3.13 Threatened and Endangered Species**

*Comment: The Forest Service must reinitiate ESA consultation with FWS concerning the effects of mine-induced stream flow reductions on Bull Trout.*

The DSEIS incorporates and relies upon the 2006 Biological Opinion for the Rock Creek Mine and the 2007 Supplement to that opinion (collectively "Rock Creek BiOp" or "BiOp"), in which FWS concluded that the mine will not jeopardize the survival or recovery of bull trout nor destroy or adversely modify bull trout critical habitat.<sup>8</sup>

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<sup>8</sup> U.S. Fish & Wildlife Serv., Supp. to the Biological Opinion on the Part B: Effects to Bull Trout from the Implementation of Proposed Actions Associated with Plan of Operations for the Revett RC Resources Incorporated Rock Creek Copper/Silver Mine (as amended Sept. 2007) ("2007 Supplement"). The 2007 supplement contains an amended biological opinion concerning project effects on bull trout, which

Pursuant to 50 C.F.R. § 402.16, the Forest Service and FWS have a duty to reinitiate consultation under ESA section 7, 16 U.S.C. § 1536, where, *inter alia*, “new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered,” 50 C.F.R. § 402.16(b). Pursuant to this regulation, the Forest Service must reinitiate ESA consultation with FWS concerning predicted reductions in the base flow of project-area streams that are occupied by bull trout and contain designated critical habitat for the species. New data reveal that the Rock Creek Mine will significantly reduce base flows in valuable bull trout streams and the effect of such reductions on bull trout was not analyzed in the BiOp, including new information contained in the Montanore Aquatic BiOp, FEIS and JFEIS on individual and combined/cumulative impacts from the two mines. Further, these data demonstrate that the mine project will affect bull trout habitat in the Bull River drainage, which FWS excluded from its analysis in the BiOp based on its determination that the project would have no effect on that area.

The Rock Creek BiOp assumes no harm to bull trout or their designated critical habitat as a result of mining-induced reductions in stream flows. Though FWS expressed “concern” in the BiOp “that mining activities may intercept sources of groundwater that could result in changes in surface flows and stream temperatures in Rock Creek,” it ultimately concluded that harm to bull trout from such changes was “not anticipated,” and therefore omitted from its analysis any consideration of the effect that base flow changes would have on bull trout in Rock Creek or any other project-area stream.<sup>9</sup> Forest Service biologist John Carlson confirmed in 2012 that in conducting their ESA analysis of the Rock Creek Mine, the Forest Service and FWS assumed that the project would yield “a net gain to surface water” and the agencies “never looked at a loss of water from either Rock Creek or the Bull River.”<sup>10</sup>

Critically, the BiOp acknowledges that “if new information reveals that [a] risk to Rock Creek bull trout is anticipated” because of predicted base flow changes, “re-initiation of consultation would be warranted.”<sup>11</sup> That hypothetical has now become a reality, as data developed since 2007 reveal that the Rock Creek Mine will cause base flow reductions in project-area streams that are occupied by and contain designated critical habitat for bull trout, unleashing harmful effects that were not considered in the BiOp. Indeed, the Forest Service itself acknowledges in the DSEIS that the Rock Creek mine may reduce base flows in designated bull trout critical habitat in mainstem Rock Creek, East Fork Rock Creek, East Fork Bull River, and mainstem Bull River; as well as bull trout-occupied reaches of West Fork Rock Creek.<sup>12</sup> When considered cumulatively with predicted base flow reductions caused by the nearby Montanore Mine, the DSEIS predicts substantial flow reductions in these streams: up to 14% in Rock Creek above the confluence with the Clark Fork River, up to 9% in East Fork Bull River above the confluence with the

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“provide[s] clarification in several places” on FWS’s 2006 BiOp. *Id.*, cover letter at 2. For clarity, all subsequent citations to the analysis of bull trout impacts in the BiOp are to the 2007 Supplement.

<sup>9</sup> 2007 Supplement B-105.

<sup>10</sup> Email from John Carlson, U.S. Forest Serv., to Eric Klepfer, Klepfer Mining Co. (Aug. 3, 2012) (attached).

<sup>11</sup> 2007 Supplement B-81 to B-82.

<sup>12</sup> DSEIS 4-148.

Bull River, and up to 5% in the Bull River above the confluence with the Clark Fork River.<sup>13</sup> The Forest Service further observes that base flow periods in these streams generally coincide with sensitive stages of the bull trout life cycle and concludes that predicted flow reductions may decrease available spawning and rearing habitat in critical habitat reaches of East Fork Rock Creek, Rock Creek, East Fork Bull River, and Bull River.<sup>14</sup> Critically, however, the flow-reduction estimates reported in the DSEIS measure anticipated reductions in downstream reaches of the affected streams where flows are relatively high; the Forest Service fails to report estimated flow reductions that the mine will cause in upstream reaches of project-area streams, despite acknowledging that base flow changes “may be more significant in the small headwater drainages adjacent to the mine site” than in the downstream reaches for which flow-reduction estimates are provided in the DSEIS.<sup>15</sup> Given that bull trout critical habitat in the project area extends substantially upstream of the locations for which the DSEIS provides flow-reduction estimates, it is likely that impacts on bull trout will be more severe than the data presented in the DSEIS suggests.<sup>16</sup>

Data contained in the biological opinion and final EIS for the nearby Montanore Mine reinforce the conclusion that the Rock Creek Mine will cause significant flow reductions that threaten bull trout.<sup>17</sup> In the Final EIS for the Montanore Mine, the Forest Service predicted that flow reductions in Rock Creek attributable to the Rock Creek project alone may adversely affect the functioning of the Lower Clark Fork River Core Area bull trout population by extending the time periods during which migratory fish are excluded from that stream and the time periods during which resident fish experience “restricted movement, making them more susceptible to environmental changes.”<sup>18</sup> The Forest Service also predicted that flow reductions attributable to the Rock Creek project will markedly reduce available habitat for bull trout in East Fork Rock Creek and the Bull River.<sup>19</sup> Further, the biological opinion prepared for the Montanore Mine reveals that the cumulative base flow reductions from the Rock Creek and Montanore projects will significantly impact local and core-area populations of bull trout on the west side of the Cabinet Mountains.<sup>20</sup>

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<sup>13</sup> See *id.* Table 4-15.

<sup>14</sup> *Id.* at 4-150.

<sup>15</sup> *Id.* at 4-38.

<sup>16</sup> See *id.* Fig. 4-3 (map of locations for which flow-reduction estimates provided), Fig. 3-15 (map of designated bull trout critical habitat in project area).

<sup>17</sup> See U.S. Fish & Wildlife Serv., Final Biological opinion on the Effects to Bull Trout and Bull Trout Critical Habitat From the Implementation of Proposed Actions Associated with the Plan of Operations for the Montanore Minerals Corp. Copper/Silver Mine Table 5 (March 31, 2014) (“Montanore Aquatic BiOp”) (attached) (estimating cumulative base flow reductions in Rock Creek and East Fork Bull River from simultaneous development of Montanore and Rock Creek Mines); U.S. Forest Serv. & Mont. Dep’t of Env’tl. Quality, Joint Final Env’tl. Impact Statement, Montanore Project 472-73 & Tbl. 118 (Dec. 2015) (“Montanore JFEIS”) (relevant pages attached).

<sup>18</sup> Montanore JFEIS 473.

<sup>19</sup> *Id.*

<sup>20</sup> See Montanore Aquatic BiOp Tbl. 5 (estimating percent reductions in stream base flow and bull trout habitat in East Fork Rock Creek, mainstem Rock Creek, East Fork Bull River, and Bull River due to Rock Creek and Montanore mines), 94-95 (describing impact of predicted flow reductions on bull trout and bull trout habitat).

This new evidence of stream flow impacts is especially significant because it reveals that the Rock Creek Mine will degrade not only the Rock Creek drainage but also the important Bull River drainage. The Forest Service and FWS repeatedly have recognized the critical importance of the Bull River—particularly its East Fork—for bull trout spawning and rearing.<sup>21</sup> However, the Rock Creek BiOp contains no analysis of the mine’s impact on bull trout or their habitat in the mainstem or East Fork Bull River, based on FWS’s erroneous belief that the project would have no effect on the Bull River system.<sup>22</sup>

In sum, new data developed since the issuance of the Rock Creek BiOp undermine two critical assumptions in the BiOp: (1) the assumption that bull trout in the project area will suffer no adverse impacts from mine-induced reductions in stream flows, and (2) the assumption that the Rock Creek Mine will have no effect on bull trout or their habitat in the Bull River drainage. These data constitute “new information reveal[ing] effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered,” triggering the Forest Service’s duty to reinitiate consultation under ESA section 7. 50 C.F.R. § 402.16(b). In addition to violating the ESA, the effects from the dewatering of Rock Creek and Montanore, separately and combined, violate the CWA, Organic Act, NFMA, Montana water quality and mining laws, and their implementing regulations.

*Comment: The Forest Service must reinitiate ESA consultation with FWS to consider new evidence that the conflict-reduction measures relied upon in the BiOp will not offset increased risks of human-caused grizzly bear mortality.*

New data also undermine the conclusion by FWS and the Forest Service that planned mitigation measures will be adequate to completely offset the increased risks of human-caused grizzly bear mortality associated with the Rock Creek Mine. These new data, described below, reveal that grizzly bears face greater risks of human-caused mortality than the agencies considered in the BiOp, triggering the Forest Service’s duty to reinitiate ESA consultation. 50 C.F.R. § 402.16(b).

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<sup>21</sup> See, e.g., Rock Creek SDEIS 454 (describing East Fork Bull River as “a stronghold for bull trout populations in the Lower Clark Fork Core Area”); Rock Creek BiOp, 2007 Supplement B-54 (“The Bull River and the Vermillion River supports more spawning bull trout than other tributaries in the Lower Clark Fork Core Area.”), B-65 (“Bull River ... is the most important bull trout stream in the lower Clark Fork River [Core Area]”), B-81 (“[T]he Bull River system is the primary source (about 80-90 percent) of the Cabinet Gorge Reservoir migratory bull trout population”) (citing Moran 2005); see also U.S. Dep’t of Interior, Comments to Forest Serv. on Montanore Mine SDEIS 2 (Nov. 15, 2011) (attached) (“The East Fork Bull River is the single-most important bull trout spawning and rearing stream in the Lower Clark Fork bull trout core area .... Currently, 80 percent of observed bull trout redds in the East Fork Bull river occur upstream of the wilderness boundary”) (emphasis in original).

<sup>22</sup> See Rock Creek BiOp, 2007 Supplement B-18 (excluding Bull River drainage from action area “because no impacts are anticipated in that drainage as a result of the proposed action .... In other words, under normal operations, the anticipated biological effects of the proposed action would be limited to those bull trout that inhabit Rock Creek and Cabinet Gorge Reservoir downstream to the dam”), B-81 (stating “[n]o impacts related to this project are anticipated in the Bull River drainage .... Impacts of this project are anticipated to only affect the local population of bull trout in Rock Creek, and these impacts are expected to result from sediment delivery during the construction period and two years following”).

In the Rock Creek BiOp, FWS recognized that “[t]he most prominent direct and indirect effects on grizzly bears from the implementation of the proposed Rock Creek Mine project would stem from the influx of mine employees into this relatively remote area” and the associated increase in human-caused mortality risks.<sup>23</sup> Given the precariously small size of the affected grizzly bear population, the killing of even a single bear will adversely affect survival and recovery prospects.<sup>24</sup> Indeed, FWS repeatedly has acknowledged that the existing level of human-caused grizzly bear mortality in the U.S. portion of the Cabinet-Yaak Ecosystem (“CYE”)—which the agency measured as approximately one bear per year over the past 30 years—already is unsustainable, even in the absence of the Rock Creek and Montanore Mines.<sup>25</sup> Accordingly, FWS’s no-jeopardy determination in the Rock Creek BiOp depends upon its conclusion that planned conflict-reduction measures will be adequate to completely offset the increased risk of human-caused mortality posed by the mine and further reduce that risk below the pre-project baseline.<sup>26</sup> In the DSEIS, the Forest Service expressly adopts and relies upon this same assessment of the efficacy of conflict-reduction measures.<sup>27</sup>

However, a “test run” of the core conflict-reduction measures evaluated in the BiOp since its issuance in 2006 reveals that those measures, while positive, are incapable of offsetting the substantial increase in human-caused mortality risk associated with the Rock Creek Mine. Beginning in 2007, Montana Fish, Wildlife and Parks has employed a grizzly bear specialist dedicated to reducing human-caused grizzly bear mortality in the CYE, as called for in the Rock Creek Mine mitigation plan.<sup>28</sup> Based in Libby, Montana, this specialist has implemented many of the conflict-reduction measures identified as essential in the BiOp, including provision of bear-proof garbage containers to local residents, installation of electric fencing, and extensive public education and outreach

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<sup>23</sup> Rock Creek BiOp A-68. This recognition of the unique threat posed by increased human use of grizzly bear habitat accords with research showing that grizzly bear mortality is a function of the frequency of human contact and the lethality of that contact. Mattson, D.J., Herrero, S., Wright, R.G., and Craig M. Pease. 1996. Science and Management of Rocky Mountain Grizzly Bears. Conservation Biology. Volume 10, No. 4, August 1996.

<sup>24</sup> See U.S. Fish & Wildlife Serv., Final Biological Opinion on the Effects to Grizzly Bears From the Implementation of Proposed Actions Associated with Plan of Operations for the Montanore Minerals Corporation Copper/Silver Mine 121 (March 31, 2014) (“Montanore Terrestrial BiOp”).

<sup>25</sup> See Rock Creek BiOp A-96; Montanore Terrestrial BiOp 121.

<sup>26</sup> See, e.g., Rock Creek BiOp A-76 (stating that, “[w]ith reasonable certainty, we expect that implementation of [the conflict-reduction] measures would result in a net decrease in the potential for conflict and in the actual number of conflicts between grizzly bears and people that would arise in the CYE, with or without the Rock Creek mine project . . .”), A-104 (“We reasonably expect that the measures taken to reduce potential for human-caused mortality, within and outside the action area, would result in no net increase, and more likely a net decrease, in overall human-caused grizzly bear mortality rates within the CYE . . .”), A-105 (concluding that anticipated take of grizzlies due to mine will not jeopardize CYE population because “the net reduction in existing and anticipated future grizzly bear mortality rates” from conflict-reduction measures, in conjunction with habitat improvements and population augmentation, will “more than offset” mine’s adverse effects).

<sup>27</sup> DSEIS 4-162 to 4-163.

<sup>28</sup> See Selkirk/Cabinet-Yaak Subcommittee of the Interagency Grizzly Bear Committee, May 13, 2014 meeting summary 2 (attached) (describing bear specialist’s role and tenure); Rock Creek BiOp A-75 to A-76.

programs.<sup>29</sup> Contrary to FWS’s forecast in the BiOp, however, these efforts have not reduced the overall number of human-caused grizzly bear killings in the CYE—even in the absence of the Rock Creek Mine and the nearby Montanore Mine. From 2007-2014, concurrent with implementation of focused conflict-reduction measures in the CYE, there were 13 known human-caused grizzly bear mortalities in the U.S. portion of the ecosystem.<sup>30</sup> This reflects an increase in human-caused mortality compared to the preceding eight-year period, in which 12 human-caused mortalities occurred in the same area.<sup>31</sup> Further, the rate of 1.63 human-caused mortalities per year from 2007-2014 exceeds the one-bear-per-year mortality rate that FWS recently described as “not sustainable” given the small size of the CYE grizzly population.<sup>32</sup>

These data, which were not available when FWS issued the BiOp in 2006, critically undermine the assumption by FWS and the Forest Service that the mitigation measures required by the Rock Creek Mine mitigation plan can be counted on to more than offset the increased risks of human-caused grizzly bear mortality associated with the project. FWS cited no data in the 2006 BiOp measuring the effectiveness of conflict-reduction measures in reducing the human-caused mortality rate below the baseline. The cited evidence that the first phase of conflict-reduction efforts in the ecosystem has not yielded a reduction in the human-caused mortality rate—even in the absence of two large-scale mining projects and associated influx of 1,500-plus people to the region—contradicts the agencies’ assumption that implementation of mitigation measures will improve the status of CYE grizzlies and constitutes “new information” that CYE grizzlies will in fact face human-caused mortality risks from the Rock Creek Mine “to an extent not previously considered.” 50 C.F.R. § 402.16(b).

## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

### Section 4.5 Geology: Subsidence

*Comment: Please see the comments from Dr. Dave Chambers (Attached).*

Subsidence and hydrology impacts occur at every underground mining operation bringing about changes to surface landforms, ground water and surface water.<sup>33</sup> Although the same impacts to mining operations, man-made surface structures and other features are relatively well known and studied, the environmental impacts related to subsidence and

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<sup>29</sup> See K. Annis, Mont. Fish, Wildlife & Parks, Human-Bear Conflict Mgmt. & Prevention, Cabinet-Yaak Ecosystem (2014) (attached); Rock Creek BiOp A-75 to A-76 (describing mitigation plan components).

<sup>30</sup> Kasworm, W.F., T.G. Radant, J.E. Teisberg, A. Welander, M. Proctor, and C. Servheen. 2015. Cabinet-Yaak grizzly bear recovery area 2014 research and monitoring progress report. U.S. Fish and Wildlife Service, Missoula, Montana. 96 pp (attached). This figure is derived from summing the grizzly bear mortalities reported as human-caused and occurring in the U.S. within 10 miles of the recovery zone, as reported in Table 1.

<sup>31</sup> See *id.* Table 1.

<sup>32</sup> Montanore Terrestrial BiOp 121.

<sup>33</sup> Blodgett, M.S. and JR Kuipers, P.E. 2002. Technical Report on Underground Hard-Rock Mining: Subsidence and Hydrologic Environmental Impacts

hydrology at underground mines are not well known and have not been extensively described.

The two most common forms of surface subsidence from room-and-pillar mining are sink-hole collapse and a saucer-shaped depression following pillar failure. In the case of room-and-pillar mining, surface subsidence can occur many years after mining is done (Whittaker and Reddish, 1989).<sup>34</sup>

The DSEIS states: Site-specific geologic discontinuities such as jointing, faults, or dikes affect the strength and response of the surrounding rock during mining. At Rock Creek, the nature and extent of such discontinuities, other than major faults, have not been identified in detail and their influence on the potential for subsidence is unknown. (DSEIS, p. 4-20).

The DSEIS also states: Analytical rock mechanics data for the Rock Creek site are not available. As described in the Rock Mechanics Data Collection and Subsidence Monitoring Plan (Appendix K), some of these data would be obtained during construction of the evaluation adit and should the Rock Creek Project proceed, additional data would be obtained during construction of the production adits. Much of the existing information regarding rock strength, artificial support (for example, rock bolts), and room-and-pillar sizing and spacing is extrapolated from experience gained at the Troy Mine. (p. 4-22).

*Comment: Given the occurrences of subsidence at the Troy mine, which were not predicted, the use of the Troy analogue would seem to indicate that subsidence would occur at Rock Creek. The lack of rock mechanics data and site-specific information on faults, fractures, and joints translates into great uncertainty regarding the risk and severity of subsidence. Baseline data should be collected and an analysis made available to the public during the NEPA process.*

The DSEIS states: Mitigation measures involve leaving a minimum of 450 feet of overburden over the mine workings. A buffer of 1,000 feet around Cliff Lake and the north and south ore outcrop zones, and 100 feet on either side of the Copper Lake Fault and the Moran Fault would remain unmined until the geotechnical conditions and hydrogeology of this area was better characterized through monitoring and updated modeling. RCR could mine closer than 1,000 feet to these features only after approval of the KNF and DEQ. (p. S-15).

RCR would use a minimum 0.8 pillar width to height ratio as a preliminary numeric criterion, to be finalized during later design efforts, and subject to KNF and DEQ approval. Other mitigation measures to reduce the potential for subsidence include not removing support pillars, not mining areas where overburden thickness was less than 450 feet without further study and Forest Service and DEQ approval, submitting a detailed mine plan for Forest Service and DEQ approval, maintaining a 100-foot buffer on either

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<sup>34</sup> Id.

side of the Moran and Copper Lake Faults and other minor faults encountered, and maintaining a 1,000-foot buffer around Cliff Lake and the ore outcrops. Contingent on the mitigations, including adequate monitoring, rock characterization, and pillar design, and given the similarities in rock strength and mining method of the Rock Creek Project, the risk for subsidence is expected to be low to insignificant. (Summary 29-30)

*Comment: There is no evidence presented in the DSEIS that these mitigation measures will be effective. The highly fractured nature of the bedrock that will be mined will be conducive to the opening of pathways whereby water contained beneath Cliff Lake could migrate, thus promoting the potential draining of the lake. Subsidence at the Troy Mine has not been preventable, and once subsidence has occurred at Rock Creek the impacts to the overlying Wilderness will have occurred. Any occurrence of subsidence could result in measurable hydrological effects to the surface within the Wilderness, adversely affecting aquatic life, ONRWs, and wilderness values. The DSEIS fails to provide an adequate review of these impacts.*

*Comment: The SDEIS does not demonstrate that mitigation measures will prevent adverse effects to Wilderness Outstanding Resource Waters and downstream waters after mine closure and at all times, as required by the CWA, Organic Act, NFMA, NEPA, Montana water quality laws and their implementing regulations. In fact, the DSEIS acknowledges this uncertainty on page S-34, "1,000 foot buffer zone along ore outcrop zones plus a 450-foot vertical buffer between the mine workings and the surface **should** minimize the potential for the creation of post-mining springs and seeps."*

#### **Section 4.6 Geotechnical Engineering**

*Comment: Please see the comments from Dr. Dave Chambers (Attached)*

#### **Section 4.7 Water Quality and Quantity**

*Comment: Please see specific comments from Dr. Kendra Zamzow, Dr. David Chambers, and Dr. Ann Maest (attached)*

*Comment: Please see the specific comments from Dr. Tom Myers (attached).*

According to the DSEIS, during Phase I, groundwater would flow toward the adit. Springs located near the adit that have a bedrock component of flow may be affected by drawdown from dewatering the evaluation adit. (P. 4-66)

*Comment: Baseline data should be collected during the NEPA process and provided in the revised DSEIS to characterize spring flows and water quality. Without this data, it is impossible to evaluate the potential impacts of mine activities, including those planned during Phase I.*

According to the DSEIS, "The model predicted virtually no changes in concentrations of the attenuated metals (arsenic, antimony, cadmium, copper, lead and silver). The SDEIS

attributes this to a significant sorption capacity for these parameters in the lacustrine system. (P. 4-68). Yet, the SDEIS states that soft clay deposits under the tailings facility would be removed in alternative V reducing the probability of a foundation failure. (P. 4-27) The SEIS (P. K-58) also indicates that lacustrine clay layers that form the foundation of the tailings facility may be removed: “Specific construction items that would be monitored include the identification and removal of areas of glaciolacustrine clay, pore pressure monitoring of foundation clays if left in place, construction of foundation shear keyways, and installation of foundation underdrains.” (P. K-58) According to the SEIS, the PPTAG would review a number of construction mitigations as part of the final design process to determine whether the clay is retained or replaced with other materials. (p.4-28)

*Comment: The conceptual model fails to demonstrate that metals, including arsenic, will not make their way into ground water and be transported to Rock Creek and the Clark Fork River. The EIS must clarify whether these lacustrine deposits will be removed, how much will be removed, and how that would effect seepage from the tailings facility and/or stability of the tailings facility. If an alternative material is used, where will it come from? How will it affect seepage rates? It is inappropriate to defer key design components and analysis for the paste tailings facility until after the NEPA process. This information and analysis is essential to determine the potential impacts of the project and mitigation measures. The revised DSEIS should include alternatives and mitigation analysis of a liner system for the tailings facility that includes leak detection (and prevention) systems.*

Table 4-11 (p. 4-68) provides the average groundwater quality downgradient of the paste tailings facility. Table 4-11 (p. 4-68) provides the average groundwater quality downgradient of the paste tailings facility.

*Comment: The data presented in this table is insufficient to understand the potential impacts. A range of maximum and minimum concentrations should be provided. The EIS must identify the extent and potential impacts of groundwater discharges and demonstrate that the project will comply with state water quality laws, including securing approval for a groundwater mixing zone. It is critical that the groundwater quality downgradient of the tailings impoundment be adequately characterized to protect bull trout habitat in Rock Creek. The 2006 Biological Opinion acknowledged that groundwater infiltration of metals contamination to Rock Creek may result from the project, and that impacts to groundwater quality from waste rock seepage, tailings seepage, tailings impoundment structures and underground mine pool, during operations and upon closure of the mine, are expected. It also stated that if the metals concentrations are elevated in the groundwater and then flow to Rock Creek, aquatic organisms may be adversely impacted. (2006 Bi-OP B-75)*

*Comment: It is inappropriate to use the Troy Mine as an analogue for estimating water quality in Rock Creek wastewater (Table 4-10) and seepage from tailings (Table 4-11) or waste rock. There isn't sufficient information from Rock Creek to demonstrate that it's sufficiently comparable to Troy, and in fact, there are substantive geochemical*

*differences as outlined in the attached comments from Dr. Kendra Zamzow. It is impossible to determine potential water quality impacts based on the current hypothetical data presented, and NEPA requires a “hard look.”*

According to the DSEIS, a seepage collection pond would be constructed near the buttress of the paste tailings dam to collect wastewater captured by the finger drains at the base of the tailings facility. It is proposed to be constructed to meet a 100-year/24-hour storm event.

*Comment. Montana DEQ and the U.S. Bureau of Land Management have stated that designing mine facilities to accommodate a 100-year/24-hour storm event is insufficient to address the more frequent large storm events associated with climate change. The EIS should consider a design for this facility that will provide more certainty, given its proximity to the River and to Rock Creek. Where are the engineering designs for this facility? How large is this facility? What volume of wastewater will it hold? How will it be lined? What is the expected water quality of the wastewater that will be stored in this facility?*

According to DSEIS, if water quality monitoring below the tailings facility indicated an impact on water quality above action levels, then the monitoring network would be converted to a pumpback system. P. 2-38.

*Comment: Seepage from tailings facilities is a chronic problem at mines throughout the U.S. A 2012 peer-reviewed report evaluated 14 out of 16 operating copper mines representing 89% of U.S. copper production. It found that the water treatment and capture systems failed to control contaminated mine seepage at 92% of the mines (13 out of 14 mines), resulting in adverse water quality impacts. The seepage failure rate was also identified by the Environmental Protection Agency in evaluating a proposed copper mine in Alaska.<sup>35</sup> Given the failure rate associated with controlling mine seepage, the mine plan should require a pumpback system as part of mine operations, rather than including it as a contingency, and require more frequent monitoring to detect water quality impacts in a timely manner. Quarterly sampling is insufficient to identify and respond to water quality impacts in a timely manner. Furthermore, the EIS should analyze the effect of operating the pumpback system on groundwater and area streams, given the proximity of the tailings dam (500 feet) to Rock Creek. NEPA requires the analysis of mitigation measures. Such an analysis was performed at Montanore (albeit not in full compliance with NEPA). The revised DSEIS must analyze the effects of such a potential capture and pumpback system on groundwater, wetlands, GDEs, and dependent streams and aquatic life both under NEPA as well as the agency’s duties to protect fisheries habitat and ensure compliance with all water quality standards and beneficial uses (e.g., Montana nondegradation flow requirements).*

The DSEIS estimates the potential for a groundwater mixing zone downgradient of the tailings dam facility, and states that RCR will be required to apply to DEQ for a mixing

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<sup>35</sup> [https://www.epa.gov/sites/production/files/2015-05/documents/bristol\\_bay\\_assessment\\_final\\_2014\\_vol1.pdf](https://www.epa.gov/sites/production/files/2015-05/documents/bristol_bay_assessment_final_2014_vol1.pdf)

zone or an authorization to degrade. As part of this process, RCR would be required to submit information on the size, configuration and location, and if DEQ granted a mixing zone, water quality changes might occur.

*Comment: The EIS cannot defer to a future permitting process to evaluate the effects of water quality impacts to groundwater. Without this information, the EIS fails to identify the potential impacts and potential mitigation measures. Without approval for a mixing zone, the EIS should analyze the potential for a pumpback system to prevent groundwater degradation, and the associated impacts. Further, reliance on a mixing zone that does not ensure full protection of aquatic life, fisheries, and beneficial uses would violate the CWA, Organic Act, NFMA, Montana water quality laws, and their implementing regulations.*

#### **Section 4.7.2 Uncertainty Analysis**

With respect to the simulation of mitigation scenarios, AquaResource stated: “The report does not provide an uncertainty analysis for mitigation scenarios, including those representing set-backs/grouting to mitigate interaction with faults or plugging designed to return the [hydrologic] system to pre-development distributions of flows through the area. An uncertainty analysis is not required at this point; however, it is expected that by the time such measures would be required, additional data would be in place to refine and better constrain the analysis, such that appropriate mitigation measures can be designed.”

*Comment: The DSEIS does not provide data or analysis on mitigation for groundwater drawdown, or even whether it can be effectively mitigated with the proposed grouting, set backs or plugs. The Forest Service engineer evaluating the potential to mitigate dewatering effects at the Montanore Mine by grouting concluded that it wasn't effective over the long-term.<sup>36</sup> Werner (2014) states that the service life of concrete and grout is variable depending on the materials used in the concrete and grout mixes, construction specifications, and environmental conditions. As a result, there is no documented consensus on design life due to the multitude of variables affecting bulkhead longevity. A reasonable estimate is about 100 years. The Montanore Mine Joint FEIS (Volume 2, p. 612) also highlights the ineffectiveness of grouting: The effectiveness of grouting over the long term (i.e., 100 years or more) is uncertain. Limited information is available on the functionality of fracture grouting in mines once mining is completed, and there are no data on the design life of grout in an underground flooded environment. The uncertainty of constructed concrete bulkheads also would apply to fracture grouting.*

#### **Section 4.7.3.2 Surface Water Quantity**

According to SDEIS (p. 4-61), baseflow for most of the streams in the study area have not been measured and the proportion of streamflow from bedrock groundwater discharge in all study area is unknown. The SEIS states (p. 4-60) that a sufficient number

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<sup>36</sup> U.S. Forest Service, Memorandum from Peter Werner, Engineer Gallatin National Forest to Lynn Hagarty, Montanore Mine EIS Coordinator, January 6, 2014. Long-Term Effectiveness of Constructed Low Permeability Bulkheads.

of streamflow measures will be collected to determine if streamflow after mining began is statistically different from the natural variability of flow that occurred pre-mining, regardless of measurement error. However, this baseline data collection has been deferred until after the FEIS and ROD, and it infers that only one year of data would be collected. It states that baseline streamflow monitoring would be collected at least 1 year prior to the initiation of evaluation adit construction in the area where surface water or groundwater may be affected by Phase 1 Construction and Operations. At least 1 year of surface water baseline data would be collected prior to the initiation of Phase II in the area where surface water or groundwater may be affected by Phase II construction and operations.

*Comment: First, it is inappropriate for this DSEIS to be released without baseline data to characterize stream base flows in the area streams for phase I and phase II. This is critical baseline data, necessary for characterizing the resources at risk, and essential to understanding the potential impact of dewatering from mine activities. This baseline data is readily attainable, and should be collected and presented in the EIS. Furthermore, one year of data is insufficient to characterize the existing conditions, and account for variability from year to year, and under different climatic conditions. The Environmental Protection Agency (EPA) has also highlighted the inadequacy of one year of data collection in characterizing baseline conditions in its comments on the proposed Montanore Mine.<sup>37</sup>*

**While determining the seasonality of surface and groundwater systems is important, collection of seasonal data over a one year period will not provide an adequate baseline dataset. Determining interannual variability of the surface and groundwater conditions will be critical to understanding the hydrologic conceptual model and determining baseline conditions.** In general, MMC should collect a minimum of three to four years of data that encompass years that are above, near and below average precipitation and snowpack. It is worth noting that the non-intrusive, low disturbance nature of surface water monitoring is feasible even given wilderness constraints and could thus be initiated this season.

#### ***4.7.3.4.3 Phase II - Operations***

##### **Wastewater Discharge to the Clark Fork River**

Outfalls related to the perpetual discharge of wastewater to the Clark Fork River and to ground water from the tailings facility have been voided for failure to comply with Montana state law.

*Comment: The SDEIS states that RCR has not applied for a new MPDES permit for discharges to the Clark Fork River. Given that the mining company has not applied for a new permit, there is no evidence that the discharges can in fact comply with Montana's*

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<sup>37</sup> Environmental Protection Agency, Letter to USFS on Montanore FEIS and ROD, May 29, 2015.

*water quality laws. Further, reliance on perpetual treatment fails to ensure that the Project can be fully reclaimed, fails to determine the timeframe for Project operations and completion (see 36 CFR Part 228), and otherwise violates the Organic Act, the Mining and Minerals Policy Act, and their implementing regulations.*

According to the SDEIS Volume 2, p. 4-78: “Effluent discharges would need to meet Montana surface water standards for metals (Table 3-1) at the end of a mixing zone. In 2007, the IDEQ developed TMDLs for cadmium, copper, zinc, and total dissolved gas for the mainstem of the lower Clark Fork River (IDEQ 2007). The entire flow-based load capacities for these metals are allotted as total load allocations at the Montana-Idaho border. It is the responsibility of the state of Montana to meet the load capacity and Idaho water quality numeric standards at the border. Load capacities are calculated using the cadmium, copper, and zinc standards, which are based on water hardness and the flow of the river. In 2012, when metal concentrations were most recently measured in the Clark Fork River near the state line, cadmium, copper, and zinc concentrations were well below the most stringent standards (using a hardness of 10 mg/L for cadmium and 25 mg/L for copper and zinc) (DEQ 2015c). Because of these very low concentrations, it is assumed that the load capacities in 2012 were below the TMDLs for the Clark Fork River at the state line. MPDES permit effluent limitations would prevent impairment of the Clark Fork River at the Montana/Idaho border.”

*Comment: It should be noted that Montana uses total recoverable methods for metals, and Idaho uses dissolved. What are the actual load capacities, and what Idaho water quality standards are in effect at the border? Where were the metals concentrations in 2012 measured? In Montana, or in Idaho? If they were measured using total recoverable or dissolved, which concentrations were they were below (Montana's or Idaho's)? Who did the measurement and why wouldn't MTDEQ (or IDEQ for that matter) know whether the load capacity exceeded the TMDL? Who is assuming that the TMDL wasn't exceeded? Also, the assumption that the load capacities in 2012 were below the TMDL cannot be determined without providing both the river flow at the time of the measurement and whether the concentrations were total recoverable or dissolved. The river flow fluctuates quite markedly due to the operation of the dam, not to mention seasonally (spring run-off vs. summer/fall low flows). Simply stating that load capacities were assumed to be below the TMDL at the state line is insufficient.*

*Furthermore, the statement that it is the responsibility of the state of Montana to meet the load capacity and Idaho water quality numeric standards at the border, does not relieve the Forest service of its duty to minimize environmental impacts and protect public resources. The Forest Service should not depend on a future, hypothetical wastewater permit being issued. What is the anticipated temperature of the discharge? Also, the cumulative impact of all past, present, and reasonably foreseeable discharges must be calculated and analyzed in the revised DSEIS. Under the CWA, additional discharges of a parameter into a water impaired for that parameter is nto allowed, absent detailed compliance schedules not applicable here. Friends of Pinto Creek v. EPA, 504 F.3d 1007 (9th Cir. 2007).*

### Section 4.7.3.2 Surface Water Quantity

According to SDEIS (p. 4-61), baseflow for most of the streams in the study area have not been measured and the proportion of streamflow from bedrock groundwater discharge in all study area is unknown.

The SEIS states (p. 4-60) that a sufficient number of streamflow measures will be collected to determine if streamflow after mining began is statistically different from the natural variability of flow that occurred pre-mining, regardless of measurement error. However, this baseline data collection has been deferred until after the FEIS and ROD, and it infers that only one year of data would be collected. It states that baseline streamflow monitoring would be collected at least 1 year prior to the initiation of evaluation adit construction in the area where surface water or groundwater may be affected by Phase I Construction and Operations. At least 1 year of surface water baseline data would be collected prior to the initiation of Phase II in the area where surface water or groundwater may be affected by Phase II construction and operations.

*Comment: First, it is inappropriate for this DSEIS to be released without baseline data to characterize stream flows in the area streams for phase I and phase II. This is critical baseline data, necessary for characterizing the resources at risk, and essential to understanding the potential impact of dewatering from mine activities. These baseline data are readily attainable, and should be collected and presented in the EIS.*

*Furthermore, one year of data is entirely insufficient to characterize the existing conditions, and account for variability from year to year, and under different climatic conditions. The EIS should provide comprehensive baseline data on all waterbodies potentially affected by the project. The data must be sufficient to provide statistically reliable data to evaluate impacts.*

As further stated on page. 4-49: “Because the pre-mining contribution of groundwater to area streams, as baseflow, has not been fully defined, it is difficult to determine specifically where baseflow reductions might occur and by how much. The 3D model identified the stream reaches that may have the largest predicted changes in baseflow proportional to pre-mine baseflow. These reaches are East Fork Bull River upstream of St. Paul Lake, North Basin Creek, South Basin Creek, and Chicago Creek (Figure 4-3). The geology, topography, and hydrology suggest that most, if not all, of the reduction in baseflow would occur in the upper watersheds that drain the mine area. RCR would collect data in these drainages during the Evaluation and Construction Phases (see Appendix K).”

The SDEIS also states that “impacts from dewatering the mine and adits may be expressed in other ways, such as a change in the elevation at which streams have perennial flow. Mine dewatering may result in a trend toward perennial flow beginning at a lower elevation in the affected drainages. Another potential effect would be that in stream reaches where surface flow is intermittent, baseflow reduction may result in periods with no surface flow occurring more frequently and lasting longer.

*Comment: Once again adequate baseline data is essential to characterize the existing environment and to evaluate the impacts of the proposed mine. Data must be collected to determine the effects of dewatering on perennial flows, and the resulting effect on available habitat (both the amount of time, frequency and geographic scope). The impacts from dewatering may also result in a reduction of groundwater upwellings that bull trout prefer for spawning, which should be evaluated. Baseline data to determine the losing and gaining reaches of the streams, and identify where perennial flows begin should be conducted and presented in the EIS. The SDEIS states that synoptic sampling can be used to determine whether the stream segments are gaining water from the regional groundwater system. This sampling should be done for any rivers and streams potentially affected by dewatering to characterize the resource, and have sufficient baseline pre-mining data to evaluate the impacts of groundwater drawdown from mining. Given the uncertainties associated with modeling, the data collection needs to take a conservative approach and analyze the effects on all groundwater dependent ecosystems, including the maximum dewatering effects predicted by modeling efforts.*

*The DSEIS asserts that predicted baseflow reductions cannot be translated into quantitative estimates of bull trout habitat loss. See DSEIS 4-149, 4-150 (“potential impacts on bull trout critical habitat related to changes in water quantity from Alternative V cannot be quantified”). This is inconsistent with the Forest Service’s analysis of Montanore. The 3D groundwater model developed for Montanore appears to rest on the same types of data and modeling methodology used for Rock Creek. For Montanore, the Forest Service and FWS used the 3D groundwater modeling results and a “wetted useable area” analysis to quantify habitat losses that are likely to result from predicted base flow changes. See Montanore Mine Aquatic BiOp at 93-95 & Tbl. 5. The Forest Service should conduct a comparable analysis of Rock Creek habitat impacts. The DSEIS lacks even a qualitative assessment of the impact that predicted base flow reductions will have on bull trout habitat availability.*

*Similarly, the Forest Service claims that the 3D groundwater model “cannot be used to quantify exact changes in baseflow in the upper watersheds because a number of model input parameters are not well defined and because pre-mining baseflow measurements in the upper watersheds were not available for model calibration.” DSEIS 4-38. As a result, the DSEIS presents estimates of baseflow reductions for only three stream locations within the entire project area, all of which are relatively low-elevation downstream locations where flows are at their highest. See DSEIS Fig. 4-3 (map of reported baseflow locations); Tbls. 4-9 (chart of predicted base flow changes at maximum drawdown, showing effects at three stream locations), 4-15 (showing maximum drawdown at same three locations from cumulative effects of Rock Creek and Montanore Mines); see also DSEIS 4-38 (acknowledging that “changes in streamflow may be more significant in the small headwater drainages adjacent to the mine site” than in the downstream reaches for which results are reported in the DSEIS). Given that bull trout critical habitat extends substantially upstream of these reported flow monitoring locations, see DSEIS Fig. 3-15 (map of designated critical habitat in project area), and the Forest Service’s acknowledgment that flow impacts may be more severe in the upstream habitat areas, the agency has not presented sufficient information to analyze*

*impacts of stream dewatering on bull trout. See 40 C.F.R. § 1502.22. Further, once again, any claim that such data cannot be presented or developed is undermined by the fact that the Forest Service presented quantitative estimates of base flow reductions for higher-elevation stream reaches in its analysis of the Montanore Mine. See Montanore Mine Joint Final EIS, Tbls. 99-101 (showing predicted flow reductions at stream locations within Cabinet Mountains Wilderness and downstream waters).*

*Moreover, while the three stream locations for which the DSEIS does report estimated base flow reductions—Rock Creek above the confluence with the Clark Fork River, East Fork Bull River above the confluence with the Bull River, and Bull River above the confluence with the Clark Fork River—are insufficient for the agency to take the required “hard look” at impacts to bull trout, even the data for those isolated locations indicates a substantial threat: the Forest Service predicts cumulative base flow reductions from implementation of the Montanore and Rock Creek mines of 14% at the Rock Creek site, 9% at the East Fork Bull River site, and 5% at the Bull River site. DSEIS Tbl. 4-15. These streams support critically important bull trout populations and contain irreplaceable habitat. As the USFWS notes in its November 15, 2011 SDEIS Comment letter, “the East Fork of Bull River is the single-most important bull trout spawning and rearing stream in the Lower Clark Fork bull trout core area” and “80% of observed bull trout redds in the East Fork of Bull River occur upstream of the wilderness boundary.”<sup>38</sup> The USFWS further states that, “Currently, the East Fork Bull River and Rock Creek are the only bull trout spawning populations in the Cabinet Gorge reservoir reach in the LCFR. These two local populations represent the strongest populations in this reach and maintaining spawning and rearing success in these two local populations is essential to maintaining the existing survival status and potential for recovery of the LCFR bull trout core area population.” Montanore Biological Opinion (BIOP) at 122. The Montanore SDEIS states that “Any loss of bull trout from these cumulative impacts would represent an irretrievable loss of genetic diversity.” (Montanore SDEIS, p. 165) Yet the DSEIS appears to contain no analysis—quantitative or otherwise—of the impact these predicted flow reductions will have on the affected bull trout populations or their habitat.*

*The DSEIS relies on a revised version of the Hydrometrics 2014 3D groundwater model analysis, which was issued in October of that year. There is another version of the analysis that was issued in January 2014, and it contains a table (the final page of the attached PDF) of “Simulated Groundwater Discharge to Surface Water for Additional Locations Requested by U.S. Forest Service” that was omitted from the October 2014 version cited in the DSEIS. The missing table appears to show more substantial dewatering impacts for higher-elevation stream locations.*

According to a December 2011 letter from the COE, “The National Research Council identified certain wetland types that cannot be effectively mitigated and recommends impact avoidance. Ephemeral, intermittent and permanent streams provide high levels of water quality and quantity, sediment control and nutrients. Headwater streams are, in part, responsible for maintaining the high quality of the Nation’s river system. Though

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<sup>38</sup> USFWS, Letter to Paul Bradford, US Forest Service on the SDEIS for the Montanore Mine, November 15, 2011.

ephemeral and intermittent streams may go dry during a portion of any given year, the period during which they do flow is essential for the plants and animals using those resources. These aquatic resources would continue to provide habitat and biological integrity for benthic macro-invertebrates and amphibians that utilize water flows within the substrate. Mitigation of headwater streams is technically difficult when attempting to create their lost functions and services. Compensatory mitigation for stream impacts would be difficult and may, in fact, be infeasible when attempting to offset aquatic and special aquatic losses.<sup>39</sup>

*Comment: The EIS should provide analysis on the importance of these headwater streams, and the potential inability to mitigate the impacts to these systems. Any adverse impacts to any affected water (and certainly any baseflow reductions of 10% or more) would violate the CWA, Organic Act, NFMA, Montana water quality law, and their implementing regulations.*

#### **Section 4.7.8 Cumulative Effects**

According to the DSEIS, the cumulative effects of Rock Creek and Montanore would result in reductions in baseflow in Rock Creek of about 14% at the mouth of Rock Creek or as much as 17% if the actual baseflow at the wilderness boundary is higher than that predicted by the Montanore Model. P. 4-87

*Comment: The predicted reductions in flow trigger the nondegradation provisions in Montana's Water Quality Act, and require nondegradation review for waters outside of the Wilderness, and are prohibited for Outstanding Resource Waters within the wilderness.*

#### **Section 4.11 Temperature**

*Comment: The EIS fails to provide data or analysis on the impacts of increased temperature on water resources and aquatic life as a result of dewatering and climate change. Scientists have used a number of modeling efforts to predict the effects of climate change to salmonids, including bull trout. Given the importance of the Cabinet Mountains Wilderness as critical habitat for threatened bull trout, and the East Fork Bull River and East Fork Rock Creek's role as the two most important bull trout recovery streams in the lower Clark Fork River region, it is reasonable to take a hard look at the potential cumulative impacts.*

According to the Montanore Mine Biological Opinion, cold water temperatures play an important role in determining bull trout habitat, as these fish are primarily found in colder streams (below 59° Fahrenheit (F)), and spawning habitats are generally characterized by temperatures that drop below 48 degrees F in the fall (Fraley and Shepard 1989, Pratt 1992, Rieman and McIntyre 1993).

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<sup>39</sup> Todd Tillinger, Army Corps of Engineers, SDEIS comments on proposed Montanore Mine, to Paul Bradford, Kootenai National Forest, December 21, 2011.

Thermal requirements for bull trout appear to differ at different life stages. Spawning areas are often associated with cold-water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992, Rieman and McIntyre 1993, Baxter and Hauer 2000, Baxter and McPhail 1997, Rieman et al. 1997). Optimum incubation temperatures for bull trout eggs range from 35 to 39 degrees F, whereas optimum water temperatures for juvenile rearing range from about 46 to 50 degrees F (McPhail and Murray 1979, Goetz 1989, Buchanan and Gregory 1997).

The Ninth Circuit has rejected the agency's attempt to avoid reviewing impacts by simply discussing general effects (and even that was not done in the FEIS):

As we have observed on multiple occasions, “general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.” *Klamath–Siskiyou*, 387 F.3d at 993–94 (quoting *Ocean Advocates*, 361 F.3d at 1128). Even if the BLM was unable to indicate with any great degree of certainty the results of the Project, because the cumulative effects analysis requires an agency to predict future conditions, uncertainty is an inherent part of the process. Therefore, a general statement about uncertainty does not satisfy the procedural requirement that an agency take a hard look at the environmental effects of an action. The BLM can certainly explain specific projections with reference to uncertainty; however, it may not rely on a statement of uncertainty to avoid even attempting the requisite analysis.

*Oregon Natural Resources Council Fund v. Brong*, 492 F.3d 1120, 1134 (9<sup>th</sup> Cir. 2007).

As demonstrated by the extensive research in this area (attached), the implications of climate change on salmonids, including bull trout, are profound. Rieman *et al.* (2007) predicted that climate warming could result in 18 to 92 percent loss of thermally suitable habitat for bull trout. Wenger *et al.* (2011) used a hydrological model to predict the effects of changes in the flow regime and stream temperatures resulting from climate change on cutthroat trout, brook trout, brown trout, and rainbow trout. These species were predicted to lose between 35 and 77 percent of their current habitat due to increased temperatures beyond the species' thermal limits, negative biotic interactions, and increases in winter flood frequency.

Jones et al. developed a spatial stream temperature model to predict stream temperatures throughout the Flathead River Basin, estimate thermal regimes for bull trout habitats, and predict thermal changes under a range of future climate warming scenarios. Model results can be used to focus conservation and management efforts on populations of concern, by identifying critical habitats and assessing thermal changes at a local scale.

Isaak et al. (2010) employed spatially explicit, spatial statistical models to retrospectively estimate the effects of climate change and wildfire on stream temperatures and critical bull trout habitats in the Boise River Basin in central Idaho. The models estimated that from 1993 to 2006 bull trout lost 11–20% of headwater spawning and rearing streams.

The Intergovernmental Panel on Climate Change (2007) determined that changes in temperature and precipitation have occurred in northwest Montana and are likely to continue to occur in the future. Warmer stream temperatures and changes in flow regimes would directly affect some cold water fish species, including bull trout, cutthroat trout, and other salmonids by contracting and shifting the range of habitat suitable for such fish and increasing the risk of egg scour.

Williams et al. (2009), examined how increased summer temperatures, uncharacteristic winter flooding, and increased wildfires—are likely to affect broad-scale population persistence among three subspecies of cutthroat trout *Oncorhynchus clarkii*. Those results suggest that as much as 73% of the habitat currently occupied by Bonneville cutthroat trout *O. c. utah*, 65% of that occupied by westslope cutthroat trout *O. c. lewisi*, and 29% of that occupied by Colorado River cutthroat trout *O. c. pleuriticus* will be at high risk from one or more of these three factors.

Scientists repeatedly call for resource managers to take these issues into account in their management and decision-making. The Rocky Mountain Research Station has already mapped predictions of water temperature increases as a result of climate change in the Cabinet Mountains Wilderness Area at this interactive website:

<http://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST.html#> (attached).

These are major changes that aren't accounted for in the cumulative effects analysis, yet are critical to understanding the potential impacts to threatened bull trout and other aquatic species, when considered in conjunction with the adverse, and long-term effects of the proposed Rock Creek project on aquatic life, particularly bull trout.

#### **Section 4.11 Aquatic Life and Fisheries**

Comment: Please see the specific comments from Dr. Chris Frissell (Attached)

The installation of the powerline will result in the clearing of 36 acres. About 10 acres of power line corridor would be within a RHCA. Clearing associated with the power line would consist of removal of hazardous trees; minimum ground disturbance would occur in the clearing area and impacts on nonhazardous trees, brush, and herbaceous vegetation would be temporary. The minimal vegetation removal does not affect the overall functionality of the RHCAs within the affected stream reaches. 4-143

*Comment: What are hazardous trees? How many trees will actually be removed? What percentage of these trees are old-growth trees? What is "minimal vegetation removal?" If old growth is cleared, how will this be mitigated?*

The DSEIS discusses the past effects of past silviculture on large woody debris:

During the 2012 survey of mainstem Rock Creek, woody debris was most abundant between river miles 1.7 and 4.4 and least abundant in upper reaches where logging has previously occurred in riparian areas (Salmon Environmental Services 2012). Due to its

large second-growth cedar stands that form a complete overstory, during the 2012 survey, West Fork Rock Creek had more woody debris than the mainstem and East Fork Rock Creek and the highest recruitable woody debris (Salmon Environmental Services 2012). The different definitions of LWD and recruitable LWD between 2000 and 2012 surveys prevent direct comparisons of survey results.

LWD recruitment potential in the Rock Creek drainage has been influenced by past timber harvests. Historical aerial photography indicates that riparian timber harvest occurring prior to 1933 has had a long-term effect on LWD recruitment in mainstem Rock Creek. Pre-1933 riparian timber harvest was generally heavy from upstream of Engle Creek (NFS road #150 bridge) to West Fork Rock Creek, and was heaviest between Big Cedar Creek and West Fork Rock Creek. Based on Watershed Consulting (2000) data, the lowest recruitment potential occurs between Big Cedar Creek and Orr Creek (Table 3-41), where evidence of riparian timber harvest is the greatest; instream woody debris is also low in this section.

Timber harvest has occurred in the Rock Creek watershed since 1933, including harvesting of more than 8% of the West Fork Rock Creek watershed in the 1960s (GEI 2005). West Fork Rock Creek in the vicinity of the area harvested in the 1960s showed signs of channel migration, as evidenced by woody debris-formed step pools and dry side channels in 2011 (Salmon Environmental Services 2012). Since 2000, logging activities in the Rock Creek drainage have been limited (based on acres logged) compared with activities prior to 2000 (Salmon Environmental Services 2012). Recent logging activities have generally maintained riparian buffers around Rock Creek and its tributaries (Salmon Environmental Services 2012).

Very little timber harvest has occurred in the East Fork Rock Creek drainage, which contains fairly large quantities of LWD (GEI 2005; Salmon Environmental Services 2012). Woody debris jams and side channels are common in sections of East Fork Rock Creek (Salmon Environmental Services 2012). In 2011, Salmon Environmental Services (2012) noted riparian clearing of large cull cedar on East Fork Rock Creek that appeared to be causing erosion and sediment delivery to East Fork Rock Creek. 3-129

*Comment:*

*What impact will the clearing of 36 acres have on large woody debris in the Rock Creek drainage? What additional amount of sediment will be released to the stream due to these activities? How will it affect the impaired status of Rock Creek? What impacts will this have on bull trout?*

#### **Section 4.12 Biodiversity of Wildlife Habitat/Vegetation and Wildlife Species**

*Comment: According to the Forest Service, “groundwater dependent ecosystems “encompass regionally-and nationally- significant ecosystems on NFS lands and are critical to management of some threatened and endangered species. In many watersheds, they support a disproportionately large percent of the total biodiversity relative to their*

size.”<sup>40</sup> *The SDEIS fails to describe the cumulative effects to groundwater dependent ecosystems by the proposed Rock Creek Mine and Montanore Mine. The Montanore Mine ROD (Attachment 3, p. 40) and Rock Creek DSEIS both propose to collect baseline data to characterize these resources after the ROD has been issued.*

#### **4.12.2.2.2 Forest Service Sensitive Wildlife Species**

##### ***Sensitive Species***

###### ***Wolverine***

See comments herein and comments referenced and attached from Defenders of Wildlife.

###### ***Fisher***

See comments herein and comments referenced and attached from Defenders of Wildlife.

###### ***Bighorn Sheep***

The DSEIS dismisses any impacts that might occur to bighorn sheep from the project by concluding that “the overall population trend for bighorns in the Cabinet Mountains since reintroduction has been increasing.” Sheep in the Cabinet Mountains have in fact been decreasing in number due to the large mortality inflicted from vehicle collisions between Thompson Falls and Plains.

*Comment: Accurate baseline data is needed on bighorn populations, and appropriate mitigation measures should be taken to protect the Berray Mountain Herd given the downward population trend of bighorn sheep in the Cabinet Mountains.*

###### **Harlequin Ducks**

The DSEIS, page S-38, states that under Alternative V, impacts on harlequin ducks and their habitat would be less than the other action alternatives because of busing mine employees, slurring concentrates and seasonal closing NFS road #150B, operating limitations, moving the evaluation adit support facilities site, and realigning the Alternative V access road to reduce impacts on RHCAs.

On page 2-65 the DSEIS states that “Before mine construction, RCR would develop for KNF and DEQ approval and implement a RMP for Phase II (called a traffic management plan in the 2001 FEIS) to minimize effects on RHCAs, reduce total average daily traffic (ADT) to the mill site, and mitigate impacts on harlequin ducks as well as grizzly bears. The plan would address all phases of mine-related traffic. Mine-related construction traffic would be limited to 30 roundtrips per month on NFS road #150B between April 1 and July 31.” It also is stated that the plan would describe how emergency medical access

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<sup>40</sup> Carlson, Christopher, Ph. D., “Groundwater Dependent Ecosystems on Forest Service Lands, National Groundwater Program Leader, USDA Forest Service. Available at: <http://www.lic.wisc.edu/glifwc/uvhumw/Presentations/Carlson%20EWR%20pres%20for%20USGS.pdf>

to the mill and mine sites would be provided and how reasonable access for private landowners to their property and public access to NFS lands would be maintained.

*Comment: The effectiveness of this mitigation plan, given the level of proposed industrial activity in this corridor and increased traffic and human presence, is purely hypothetical. How will the effects to harlequin ducks be monitored? Has baseline data on the breeding population been collected? How will you detect impacts to this population, and what changes will be made if the mitigations do not effectively reduce disturbance, and therefore cause abandonment of natal streams by harlequin ducks? How will you effectively restrict access on Road 150 by private landowners? What constitutes reasonable access by landowners and the public? Isn't it likely that when the public demands access, the Forest Service will grant it? Why is the travel plan being deferred to a post-NEPA timeframe? How will flow reductions in mainstem Rock Creek impact Harlequin ducks? Harlequin Ducks have been shown to be sensitive to stream flow reductions. Due to their low reproductive output, the loss of even a few pairs will have a significant impact on the population.*

#### **Section 4.12.3.2. Native Ungulates - Mountain Goats**

##### Forest Plan

The Rock Creek project is in conflict with the goal of the 2015 KFP to provide large areas with little human disturbance for species including the mountain goat. The existence of valid mineral rights does not eliminate the obligations of the Forest Service to protect wilderness and native wildlife, including the mountain goat, a management indicator species for alpine habitat.

*The 2015 KFP allocates the CMW to MA 1a. MA 1a is managed to protect wilderness character as defined in the Wilderness Act and as outlined in the Cabinet Mountains Wilderness Management Plan. Desired conditions are: to allow natural processes act as the primary forces affecting the composition, structure, and pattern of vegetation; provide non-motorized and non-mechanized opportunities for exploration, solitude, risk, challenge, and primitive recreation; and provide large remote areas with little human disturbance to contribute habitats for species with large home ranges such as grizzly bear and mountain goats. (P. 1031, Montanore FEIS)*

##### Natural History

Mountain goats occur only in northwestern North America. In Montana, they are native west of the Continental Divide and have been introduced into several mountain ranges east of the Divide. Although goats do not typically venture far from cliffs and broken terrain, which provide escape cover from predators, they do use dense timber and creek bottoms for security and thermal cover against extreme heat, cold and wind. Within their range, mountain goats may be found at any elevation or exposure at any time of year.

Some goats move down in winter to steep cliffs with good snow shedding properties while others move up to windswept ridges to feed on exposed forage.<sup>41</sup>

Mountain goats face threats from numerous sources, and although individually these threats affect only certain populations across their range, combined threats can result in a high impact. Mountain goats have a low reproductive rate, are more sensitive to human disturbance than other ungulates, and may be more sensitive to muscle assertion when fleeing from disturbance. Management plans typically restrict harvest on populations of 50 or fewer animals due to the tentative nature of such small populations.<sup>42</sup>

While the DSEIS does not contain current population size estimates, the Montanore FEIS referred to a 2013 survey by MFWP of 54 goats, suggesting that this population is vulnerable to extirpation. (P. 1112, Montanore FEIS)

*Comment: Estimates of population sizes and descriptions of summer and winter habitat use and movements by mountain goats are outdated. Without accurate estimates of the size of the mountain goat herds in the CMW, it is impossible to document the mine's impacts. Statements regarding stable population numbers should be backed up with current data.*

*According to the FEIS: monitoring would be used to gain an increased understanding of wolverine and mountain goat population trends as a result of mine-related effects and other regional effects and to help ensure prompt detection of declining population trends should they occur. Current monitoring levels would not enable wildlife biologists to detect trends in a timely fashion. 2-151.*

*Historic population numbers were estimated to be 305 goats in the East Cabinets in 1950 (Casebeer, Rognrud and Brandborg 1950) declining to estimates of 56 to 78 in 1980 (Joslin 1980). Populations are currently thought to be stable (pers. comm. Jerry Brown, MFWP, with Sandy Jacobson, June 23, 1997). FEIS 3-103*

*Comment: The conclusions in the SDEIS related to impacts to goats and their habitat cannot be verified without sufficient documentation, not only of the current goat herd sizes, but of movements and habitat use, and habitat quality. The information presented in the 2001 FEIS describing summer and winter habitat use is based on a 1980 study by Joslin. Although mountain goats do not rapidly pioneer to new areas, they can be found at any elevation. The information presented in the FEIS is nearly 40 years old, and based on one study.*

The DSEIS states that wintering habitat is more than one mile from the mill and evaluation adit and would therefore not be affected, but provides no documentation regarding the susceptibility of goats to disturbance as it relates to the distance from that

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<sup>41</sup> Montana Fish Wildlife and Parks brochure, Available at: <http://fwp.mt.gov/hunting/planahunt/huntingGuides/msg/mountainGoatGuideBrochure.html>

<sup>42</sup> BC Ministry of Environment. 2010. Management Plan for the Mountain Goat (*Oreamnos americanus*) in British Columbia.

disturbance. It is also likely that goats inhabiting St. Paul and Chicago Peaks, and the meadows around them, frequent the area near the evaluation adit in winter.

Goats in the East Cabinets occur in three general concentrations, one of which is referred to as the Rock Peak herd. Goats of the Rock Peak herd use a key winter range near Rock Creek Meadows (Figure 3-20). These goats are suspected to move up to 12 miles to summer/transitional ranges. Only a few important winter ranges were identified in Joslin's study. Key summer/transitional range, more abundant than winter range, extends along the Cabinet divide and associated ridges and basins (see Figure 3-20).

Goats observed in drainages on the east side of the Cabinets are likely some of the same goats that use habitat located on the west side, including the Rock Creek Meadows winter range (ibid). Goat use of Saint Paul and Chicago peaks was much reduced during mineral explorations that occurred in the early- to mid-1980s. Current use has apparently recovered from the exploration period (ibid).

As part of the mountain goat study, Joslin further classified winter and summer/transitional ranges as Management Situations 1, 2, or 3 and developed a goat management plan for the Cabinet Mountains (see Figure 3-20). Goat Management Situation 1 is defined as critical habitat with documented current or recent use by goats. Goat Management Situation 1 ranges are most sensitive to habitat manipulation and human activity. Activities in or near these areas should be avoided and if unavoidable should only occur for short durations (Joslin, 1980). FEIS 3-103

The SDEIS states: Mountain goat winter range would not be affected by Alternative V. The increased disturbance at the evaluation adit and mill site would not substantially affect known mountain goat winter range along the cliffs in the East Fork Rock Creek drainage because these sites are more than 1 mile from the winter range. 4-139.

HE to 86% in key summer habitat. No changes to winter HE. The increased disturbance at the mill site and along NFS road #150 under the modified Alternative V would not substantially affect mountain goat populations because these areas are low-quality habitat for this species. (DSEIS 2-140)

Effects on elk, deer, bighorn sheep, and mountain goats from Alternative IV are described on page 4-160 of the 2001 FEIS and have not changed since the 2001 FEIS was issued because habitat conditions have not changed and there have been no modifications to Alternative IV. In addition, mountain goat numbers are stable in the Rock Creek area. (DSEIS 4-140)

*Comments: The EIS must include baseline data on goat herd population sizes and range; document movements, range, and habitat use, and evaluate current quality of available habitat.*

Threats to Mountain goats in and around the CMW

Comments: The Rock Creek project would result in disturbance to mountain goats, which constitutes an indirect habitat loss that affects habitat effectiveness and may affect the health of individuals and the population. Sources of disturbance are construction activities, including the installation of a ventilation adit and fan in the CMW, activities at the mill, an increase in road traffic on Roads 150 and 2741, and a greater use of the CMW and trailheads from the influx of miners and their families. If a helicopter is used in the delivery or installation of the adit and fan, this will cause harm from disturbance that may drive resident goats from the area, as was demonstrated during mineral exploration in the 80's, and is widely documented in the literature. The increased use of Rd. 2741 would result in greater disturbance of goats during the kidding season. Diminished snowpack, resulting from climate change, would make this area increasingly accessible.

In addition to a decrease in habitat effectiveness, the project would result in direct habitat loss and habitat fragmentation. Habitat fragmentation can lead to isolation of herds, reduction in suitable habitat, a loss of connectivity and increased energy expenditure to reach suitable habitat, a reduction in fitness, and increased predation. Alteration of habitat within mountain goat areas may cause animals to abandon an area and use less suitable locations.

Direct loss of habitat from the Rock Creek project would occur, including the habitat in the area of the evaluation adit. If hydrological impacts resulted in the loss of alpine and subalpine meadows, this would constitute the removal of important foraging habitat. Loss of travel corridors in the Rock Creek Drainage would result from an increase in traffic on road in the project area, including Rd. 150.

Increased hunting and poaching pressures from the influx of miners and their families into the area could result in an increase in mortality. This population is extremely vulnerable to human caused mortality.

*Increased mortality risk from indirect increases in human use of the CMW and other areas goats occupy would continue to occur in Alternative V. In order to mitigate for this effect, increased law enforcement, to reduce the risk of increased illegal mortality on the mountain goat herd, would be provided. Increased legal harvest as an indirect effect of increased human development has the potential to affect population numbers as well. In order to mitigate this possibility, increased monitoring to determine population trends would be funded by Sterling. Projected increased human recreational use of the CMW is another potential impact to goats that would be noted by monitoring. Monitoring would enable the appropriate agencies to determine if management actions, such as implementation of wilderness permit systems, hunting bag limit adjustments, or mountain goat reintroductions, are warranted. (p. 4-169 FEIS)*

### Cumulative Impacts

The Rock Creek Project, in combination with the Montanore Project and other proposed mining activity, would result in cumulative impacts to mountain goats and to the Rock Peak herd in particular. These impacts could include displacement, use of less suitable

habitat resulting from displacement, degradation and direct loss of suitable habitat, health affects due to stress, increased predation, increased human caused mortality, and a reduction in reproductive rates, goat herd size, and vigor. None of this has been discussed in any detail.

*Native ungulates could be affected, both beneficially and adversely, by past, present, and reasonably foreseeable activities. Species such as mountain goats, elk, and white-tailed deer would benefit from actions that regulate access to their habitat or improve habitat for grizzly bears such as the Access Amendment, District MVUM operations, and recreational activities would result in increased traffic and human in cumulative impacts when added to the impacts of the Rock Creek Project. (DSEIS p. 4-144)*

*Impacts on the Rock Peak herd would be compounded when impacts from Noranda also are considered. The shifting of animals out of the Rock Creek and Ramsey Creek drainages into the CMW from either side could increase the stress of the displaced animals. It also could increase the use of unaffected summer ranges creating potential conflicts with resident goats in the CMW. (2001 FEIS, S-31)*

Although an acknowledgment of impacts from reasonably foreseeable activities is made in the SDEIS and in the 2001 FEIS, there appears to be no real discussion of what this would mean for mountain goats in the CMW.

The discussion of cumulative impacts in the Montanore FEIS is a little more detailed: *While cumulative disturbance impacts on goats would be mostly short-term, disturbance during project operations, such as noise and human activity, would be long-term. Road access into critical goat habitat is the single biggest threat to goats in the Cabinet Mountains (Joslin 1980), and the Fourth of July proposal would construct a new road to the edge of the CMW and MS-1 habitat. Cumulative long-term disturbance to mountain goats could result in changes in seasonal habitat use, potentially causing goats to shift their use of both summer and winter habitat in Ramsey Creek (Alternative 2B only), and summer ranges in Libby Creek (all combined action alternatives), upper West Fisher Creek and Rock Creek basins. These potential changes in seasonal habitat use could increase the use of unaffected summer ranges creating potential conflicts with resident goats in the CMW. The cumulative disturbance effects of the mine alternatives and other reasonably foreseeable actions could result in reduced reproductive rates and a decrease in population of the Rock Creek herd. Pg. 1120.*

And in the Montanore DEIS: Mineral exploration has occurred and would continue to occur throughout the Cabinet Mountains, *cumulatively displacing goats from suitable habitat or reducing their ability to effectively use the available habitat. Disturbance impacts to mountain goats from the combined action alternatives would be compounded when impacts from other reasonably foreseeable actions are taken into account. The Wayup Mine/Fourth of July Road Access Project, the Rock Creek Project, and the Bear Lakes Access Project would collectively influence about 4,561 acres of MS 1 goat habitat, potentially resulting in this habitat becoming less desirable or less effective for mountain goats. (P. 777)*

*Comments: A detailed analysis of impacts to mountain goats from the cumulative impacts of multiple mining projects and other activities such as tree harvest, road building, gravel operations, and recreational pursuits should be conducted. This analysis should consider a scenario in which construction activities and/or operation phases of the Rock Creek and Montanore mines overlap.*

### Mitigation

Mitigation measures appear to be limited to monitoring and road closures enacted for grizzly bears. The FEIS mentions the closure of Government Mountain Rd. 150 in Alternative V instead of the upper section of Road 2741, Chicago Peak Road, as proposed in Alternative IV. Closure of Chicago Peak Rd. might be more beneficial to mountain goats because they are known to use the Chicago Peak area and the area near the border of the CMW. In addition, because part of Government Mountain Rd. is private, the road cannot be closed to all traffic.

*With respect to impacts on mountain goats, Alternative V would primarily differ from Alternative IV in the **closure of FDR No. 150 on Government Mountain** instead of closure of the upper 1.88 miles of FDR No. 2741, Chicago Peak Road.*

*Road closures in the Government Mountain area planned for grizzly bear security habitat are entirely within Situation (summer transition) 3 habitat and would produce a moderate amount of security benefit to mountain goats because of the low use of that area by goats.*

*The increased use of the area accessed by FDR No. 2741 that is expected from recreation traffic (see the Recreation section) would likely affect some of the movements of mountain goats in the vicinity of the trailhead, and use of the area by goats. FEIS 4-168.*

Monitoring of mountain goats is proposed as mitigation, but the SDEIS acknowledges that baseline data for mountain goats is insufficient to determine impacts once they occur.

*Mountain goats would be monitored for their responses to mine-related impacts. Given the current baseline data for mountain goats, comparisons between pre-mine status with status during mine operations or after mine closure would be difficult; however, information gained from monitoring would be useful in determining population trends, habitat use, and to some extent, mine-related impacts. The monitoring plan would integrate aspects of a mountain goat monitoring plan/study that would be developed by FWP. (p. K-40 DSEIS)*

The DSEIS states that a wildlife mitigation and monitoring plans would be modified using selection criteria for the air-intake ventilation adit site in the CMW that would help minimize impacts to mountain goat habitat. 4-140. What does this mean? Some explanation should be provided.

*Comment: Mitigation and monitoring plans should be revisited once adequate baseline data on population size, habitat use, and habitat quality are collected.*

### Climate Change

Preferred mountain goat habitat is above tree line on rocky slopes and in alpine mountain meadows. Early snowmelts as a result of rising temperatures, will result in shrinking meadow habitat as trees colonize these meadows. A loss of alpine habitat will increase competition for limited resources. Habitat loss from the mine would exacerbate impacts to mountain goats.

*Comment: Include an analysis of the impacts of climate change on mountain goats, and how these impacts would be exacerbated by the mine.*

## **Section 4.13 Threatened and Endangered Species**

### **Bull Trout**

The DSEIS makes the assertion that “[e]levated metal concentrations could cause bull trout to avoid using Rock Creek as a spawning or rearing area.” DSEIS 4-151.

*Comment: The DSEIS must present information and analysis on the effect of these metal concentrations on bull trout persistence in Rock Creek. The DSEIS states that “[t]he potential effects of Alternative V on nutrient conditions and dissolved metals in Rock Creek are discussed in more detail in section 4.11, Aquatic Life and Fisheries,” id., but no relevant discussion of metals impacts on bull trout were found there.*

The SDEIS states that the ongoing fish transport efforts in Rock Creek by Avista may offset any additional barriers to fish passage potentially resulting from the Rock Creek and Montanore Project. (P. 4-164)

*Comment: The SDEIS does not provide any data to support this assertion. Regardless of how many fish are transported up the mainstem Clark Fork, those fish must have somewhere to go. Genetic analysis shows that these bull trout predominately go to the East Fork of Bull River and Rock Creek, yet the adverse effects to these streams could undermine all the AVISTA investment in fish passage to those streams. Furthermore, it is inappropriate to rely on Avista to mitigate the impacts of the Rock Creek Mine and Montanore Mines. The EIS should provide information on how these impacts could effect the existing bull trout recovery effort and Avista Settlement Agreement, and what mitigation measures will be required by RCR to address those impacts.*

The SDEIS states that “possible baseflow reductions resulting from the Rock Creek and Montanore Projects would result in potential loss of bull trout habitat. It is difficult to determine with certainty if the action alternatives would present a risk to bull trout due to the lack of data that would allow prediction of changes to streamflow a reach level and a better understanding of the relationship between streamflow and habitat in the study area.” (p. 4-164)

*Comment: The Montanore FEIS (Joint FEIS, Volume 1, p. 472-473) estimates effects to bull trout and bull trout habitat from the cumulative effects of the two mines, which are not disclosed in the Rock Creek SDEIS. It states that “Assuming the Montanore and Rock*

*Creek projects occur concurrently, they would cumulatively reduce streamflow and aquatic habitat in the Rock Creek, East Fork Bull River, and Bull River watersheds. Maximum effects within the analysis area would occur after both mines ceased operations, assuming they operated and closed simultaneously.” It further states that “The cumulative reductions in streamflow and wetted perimeter in East Fork Rock Creek would result in more substantial decreases in habitat availability for bull trout, westslope cutthroat trout, and macroinvertebrates than with the Montanore Project alone. The cumulative decrease at EFBR-500 would be a 13 percent reduction in low flow. Wetted perimeter was estimated to decrease by 30 percent as a result of the cumulative impacts of the projects on streamflow. When placed into the context of a likely loss of habitat under Montanore alternatives, the cumulative effects would result in additional habitat loss downstream of St. Paul Lake including during the bull trout spawning period.” The cumulative effects section of the SDEIS fails to provide sufficient information to analyze the cumulative effects of the Montanore and Rock Creek mine on bull trout. This information must be collected and analyzed and presented in a NEPA document for public review. Mitigation measures to minimize impacts to fisheries must be provided, and the effectiveness of these mitigation measures provided.*

The SDEIS states that bull trout mitigation measures proposed for the Montanore Project were selected to identify and address factors that are likely limiting bull trout populations within the study area under existing conditions. (SDEIS p. 4-164)

*Comment: The Rock Creek EIS cannot rely on the mitigation measures for the proposed Montanore Mine, which have yet to be finalized, funded or implemented. There is no indication that these mitigation measures will be effective.*

*Overall, for all potentially affected resources, the revised DSEIS must include a full analysis of the effectiveness of all mitigation measures. Simple statements that a mitigation measure will be “highly effective,” or “moderately effective,” without the underlying scientific support and analysis, does not satisfy NEPA. See, e.g., DSEIS Tables 4-13, -14. Further, statements that “long-term effectiveness is unknown” (Table 4-13) are similarly in violation of NEPA.*

#### **4.14 Socioeconomics**

The information contained in the socioeconomics section is inadequate. There is no mention of boom and bust and the negative impacts the mine would have on the long-term economic outlook of Sanders County. The impacts associated with the boom and bust of the shale oil and gas bubble in eastern Montana illustrates the adverse socioeconomics of this type of industrial activity on social services, housing, law enforcement, etc. The DEIS identifies some of these issues, but it hasn't been incorporated or updated in the SDEIS:

Economic and social dependence on resource extraction industries is widely regarded as an economic and social liability because it ties social well-being to declining economic sectors (Baden and O'Brien 1994). (DEIS, 4-126)

The project would be expected to increase labor costs, weaken the sense of community. Impacts to social well-being would be significant. (DEIS, 4-126)

*Comment: The influx of out of the area miners and their families would tax local services and infrastructure. The Hard Rock Impact Plan is completely out of date, and should be revised. Simply looking at mine related jobs, provides a simplistic and inaccurate picture of the socioeconomic impacts.*

#### **Section 4.17 Wilderness**

The Wilderness Act of 1964 describes and defines a wilderness as "in contrast with those areas where man and his works dominate the landscape...an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain (16 U.S.C. §1131(c)(2))." The groundwater drawdown, surface water impacts, ventilation adit and truck traffic make it unlikely that the CMW in the project area will continue to meet these characteristics. While these impacts would be substantial in any context, their occurrence in a wilderness area, and, in some cases, their permanence, makes them especially significant given the expected characteristics of wilderness areas. Given that the Cabinet Mountains Wilderness is the only wilderness area on the Kootenai National Forest and represents only 4% of the forest, its protection is paramount.

*Comment: The DSEIS fails to describe the impacts of the proposed project on natural systems as a result of dewatering of wilderness rivers, streams and groundwater dependent ecosystems, and the adverse effects to the fish and wildlife that these systems support. The DSEIS dismisses impacts to the wilderness stating that, "the Wilderness Act provides and allows surface-disturbing activities that are reasonably incident to mining or processing operations when valid rights have been found to exist." (S-9). What cannot be considered "reasonably incident" are impacts to wilderness streams, lakes, and wetlands through dewatering or subsidence. We are concerned that the frequency of subsidence-related impacts at the Troy mine, coupled with the refusal of the Forest Service to require backfill of tailings that would add a measure of stability, places wilderness lands and water bodies at an unacceptable risk of subsidence. Such impacts to wilderness lakes and streams would be significant as described in the 2001 report by Joe Guerriri.*

#### **Section 4.17.8 Cumulative Impacts**

The EPA estimates that streamflow in 26 miles of rivers and streams will be affected by the proposed Montanore Mine.<sup>43</sup> The Montanore SDEIS, FEIS, and the Biological Opinion identify substantial adverse effects to wilderness rivers and streams, threatened bull trout and permanent changes to the groundwater system that supports groundwater dependent ecosystems.

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<sup>43</sup> U.S. Environmental Protection Agency, Comments on FEIS to U.S. Forest Service, May 29, 2015

*Comment: NEPA defines cumulative effects as the impact on the environment which results from the incremental impact of the action when **added** to other past, present and reasonably foreseeable future actions (40 CFR Section 1508.7) The DSEIS fails to provide analysis of the cumulative impacts of the Montanore and Rock Creek Mines combined on wilderness resources, particularly the results of dewatering on Outstanding Resource Waters, downstream waters, Groundwater Dependent Ecosystems and the aquatic life these resources support, including threatened bull trout. The DSEIS focuses only on where the impacts of the two mines overlap (e.g., East Fork Bull River), but has completely ignored the additive effects on natural systems from the two projects. The additive effects of dewatering from Montanore, which will adversely affect 26 miles of streams, including the East Fork Bull River, East Fork Rock Creek, Rock Creek, Ramsey Creek, Poorman Creek and Libby Creek, with the adverse effects from the Rock Creek Mine, which is predicted to have the greatest impact on East Fork Bull River upstream of St. Paul Lake, North Basin Creek, South Basin Creek, and Chicago Creek. The cumulative impacts of the two projects on Wilderness Resources are substantial and must be articulated in the DSEIS. The DSEIS has not demonstrated that sufficient mitigation measures have been identified or evaluated to protect the natural systems within the Wilderness Act.*

*The DSEIS does not contain an analysis of the cumulative effects on seeps and springs. (P 4-144) states “Potential cumulative effects on seep and spring vegetation from Montanore Project to be discussed when groundwater analysis available.”*

*The DSEIS dismisses cumulative effects to air quality by stating that the effects would be minor and compliance with the Class I and Class II increments at the CMW border is predicted. This is based on the assumption that the Class I airsheds overlap, but no documentation has been provided to support this supposition.*

The DSEIS states that population increases due to the development of both projects would slightly increase demand for recreational opportunities in the region, yet the mines would bring in a large number of contractors, mine workers and their families. Most would use forest service lands, including the wilderness. No current accurate assessment of mine-related population increases actually exists because no new analysis of the available labor pool has been conducted. Regardless, the characterization of recreational demand being increased “slightly” is deceptive.

In reference to the experience of visitors to the CMW, the DSEIS states that apparent naturalness of the area would decrease slightly with increased human use. This is a highly subjective claim, and one many wilderness enthusiasts would dispute.

#### **Section 4.17 Wilderness, Roadless Areas and Wild and Scenic Rivers**

#### **Section 4.22 Unavoidable Adverse Effects**

According to the DSEIS, a Groundwater Dependent Ecosystem (GDE) inventory (see Section 1.6.3.2 and Figure K-4), subject to approval by the Agencies, would include parts

of the Rock Creek, Miller Gulch, Copper Gulch, Chicago Creek, and East Fork Bull River watersheds that are not on private land. All surface water sites would be monitored for flow and water quality monthly, including storm flows (except when prevented by winter conditions), and continuous flow recorders would be operated at key locations in each stream basin. The measurement of baseline lake levels, and water balance/water budget data at Cliff Lake and Copper Lake would begin at this time. A high-elevation weather station would be installed and maintained for use in the lake water balance studies. (p. K-22)

Similarly, the DSEIS proposes to collect data on the location of all domestic wells, water supplies and springs that might be affected by the mine until after the FEIS and ROD are issued. (P. K-22)

“The third-party contractor would also verify the location of all domestic wells, water supplies, and springs with the Department of Natural Resources and Conservation (DNRC) that might be affected by the mine to determine if any new wells or water sources had been filed with DNRC or if any wells had been misidentified or had information regarding them corrected.”

*Comment: The DSEIS does not contain sufficient baseline data or analysis of the impacts to springs, groundwater dependent ecosystem wetlands, fens, riparian areas and other groundwater dependent ecosystems (GDEs) in the area that would be affected by mine operations, such as groundwater drawdown. The DSEIS establishes that groundwater drawdown during and after mining is a significant concern, and therefore we expect that impact to groundwater dependent ecosystems should also be a significant concern. Without monitoring information on GDEs over a long enough period of time to understand natural variability, it is impossible to evaluate the impacts of the various alternatives on important resources, including those within the Wilderness. Similarly, baseline data must be collected for domestic wells and water supplies that might be affected.*

The 3-d model identified the stream reaches that may have the largest predicted changes in baseflow as Chicago Creek, South Basin Creek, North Basin Creek and the East Fork Bull River above St. Paul Lake. (p. 4-194), and states that there would be minor water quantity-related effects on aquatic habitat in Chicago Creek, South Basin Creek, and North Basin Creek. Habitat in these tributaries is less available and of lower quality relative to their overall respective watersheds. Changes in baseflow may directly affect the quantity of aquatic habitat. Baseflow reductions could magnify or create new seasonal migration barriers in stream reaches in the study area. Groundwater drawdown could also decrease the capacity of groundwater to moderate stream temperatures.

*Comment: The SDEIS does not provide sufficient baseline data to characterize these streams, nor to support the statement that the water quantity effects will be minor.*

*The SDEIS should estimate the volume of water that will be consumptively used by the Rock Creek Projects, and the reduction in total water yield from the Cabinet Mountains at the various stages of mine operations.*

## **Section 4.22 Unavoidable Adverse Effects**

### **Section 4.22.8 Aquatics Fisheries**

*Comment: The Biological Opinion for bull trout failed to evaluate the impacts to bull trout resulting from the dewatering of area streams resulting from groundwater drawdown. As a result, this section fails to provide adequate information and analysis on the Unavoidable Adverse Effects to aquatic life and fisheries.*

### **Section 4.22.9 Biodiversity of Wildlife Habitat/Vegetation and Wildlife Species**

*Comment: the SDEIS states that Forest Service sensitive species have been listed since the 2001 FEIS was issued. Baseline data must be provided on the presence of these species in the mine boundaries, and analysis of the potential impacts to these populations of sensitive species.*

According to the Montanore Mine FEIS (p. 425) Mine dewatering and the resulting drawdown of bedrock groundwater may subtly change the water quality of Rock Lake and St. Paul Lake. Reducing the source of deeper groundwater may reduce nutrient concentrations. The reduced nutrient availability may decrease algal and macroinvertebrate production in both lakes, and potentially reduce the fishery in Rock Lake. Data confirming the presence or absence of fish populations in St. Paul Lake were not available in the FWP (2012) database.

The Rock Creek DSEIS (P. 4-49 and 4-55) predicts that groundwater drawdown will also reduce flows into St. Paul Lake. Baseline data on aquatic and invertebrate life in St. Paul Lake is needed, and the EIS should evaluate the potential effects to St. Paul Lake of reduced inflow from the mine and cumulative effects of Rock Creek and Montanore.

As described by Guerrieri and Furniss (2004), “Even though the volume of groundwater inflow to these lakes is a small fraction of the annual hydrologic budget, groundwater inflow can contribute considerable amounts of water and solutes particularly during the short ice-free period when peak biological activity takes place. Mining induced changes in the volume of groundwater inflow could have an effect on the chemical balance and, consequently, the biology of the lakes.”<sup>44</sup> What seems apparent, however, is that during the study periods Rock, Cliff, and Moran Basin Lakes received a major part of the dissolved ion load from inflowing groundwater. In addition, a considerable proportion of the buffering capacity was due to ANC contributed by groundwater. ANC is important for soft water lakes because of their extreme sensitivity to the adverse effects of acid deposition (Story, 1997).

- Biological systems in lakes are defined in part by the chemistry of the lake water. For Rock Lake and Cliff Lakes it has been shown that significant proportion of

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<sup>44</sup> J.T. Guerrieri and G. Furniss, Estimation of groundwater exchange in alpine lakes using non-steady mass-balance methods, *Journal of Hydrology* 297 (2004) 187-208.

the chemical load for use by aquatic organisms is contributed by groundwater. Depletion of groundwater inflows by mining induced changes in hydraulic gradients and groundwater flow paths has the potential to cause a shift in the biological structure of these lakes.<sup>45</sup> In the biologically active summer season, Rock and Cliff Lakes receive a major part of the dissolved load from inflowing groundwater. During the summer and fall of 1999, groundwater contributed 58% of the inflow and 71% of the dissolved solute load to Rock Lake. During the summer and fall of 2000, groundwater contributed 90% of the inflow and 96% of the dissolved solute load to Cliff Lake.<sup>46</sup> “For mountain lakes in the northern Rockies, peak biological activity takes place in August, the time of year when groundwater contributes a large percentage of the nutrient load to the lakes compared to other sources. Compared with solute mass fluxes to Rock Lake from precipitation, groundwater and surface inflow are the principle sources of Ca, Mg, K, Na, SiO<sub>2</sub>, NO<sub>3</sub>, SO<sub>4</sub> and Cl. Surface inflow contributed 37% of the inflow and 25% of the solute load.” (p. 40)

*Comment: What are the potential adverse effects to biological activity in St Paul Lake resulting from a reduction in groundwater inflow? How will the dewatering effects be mitigated? The EIS must demonstrate how these Outstanding Resource Waters will be protected from the nondegradation protections within Montana State Law.*

#### **4.22.10 Threatened and Endangered Species**

Grizzly Bears: See comments herein and comments referenced and attached from Defenders of Wildlife, and from the Sierra Club, Wild Earth Guardians and the Center for Biological Diversity.

Bull Trout: Please see comments herein and comments submitted from Dr. Chris Frissell (attached).

*Comment: A tremendous amount of time and resources has been invested by Avista under its Settlement Agreement for long term FERC relicensing for bull trout recovery efforts in the lower Clark Fork Basin. The EIS fails to analyze the direct, indirect and cumulative effects of the Rock Creek Mine and Montanore Mine on these recovery efforts and the Settlement agreement. How will the adverse effects of streamflow reductions, including loss of habitat, impacts to temperature, loss of groundwater upwellings for spawning, affect the bull trout recovery efforts underway? How will this be mitigated?*

Lynx: See comments referenced and attached from Defenders of Wildlife.

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<sup>45</sup> Guerrieri, Joe. “Rock Creek Project EIS Technical Report: Hydrology and Chemistry of Wilderness Lakes and Evaluation of Impacts from Underground Mining, Cabinet Mountains Wilderness, Montana,” on behalf of Montana Department of Environmental Quality, February 2001.

<sup>46</sup> Id

The SDEIS states that “due to uncertainty associated with mine-related ground and surface water effects and because streamflow-habitat relationships have not been defined for study area streams, potential effects on bull trout cannot be quantified at this time.”

*Comment: Even though it may be difficult to quantify potential effects on bull trout, that doesn't defer the agency's obligation to analyze the potential effects. Some of the difficulties in analyzing potential impacts are a direct result of the lack of baseline data and analysis that has been done for this EIS. Data on existing streamflows and baseflows, synoptic sampling, and habitat analysis could be used to calculate streamflow-habitat relationships, and should be included in this EIS. Similarly, the Montanore EIS used best available science to estimate the effects of dewatering on the overlying streams and lakes. Although as we noted in our comments on Montanore, the Montanore EISs suffer from a number of flaws, however, at a minimum, the Rock Creek EIS must contain the same analysis as Montanore.*

#### **4.24.3.1. Water Quantity**

According to the DSEIS, the use of mine and adit inflows and any water needed for mine operations and resulting reduction in yield would be an irretrievable commitment of resources, in addition to the estimated increase in groundwater storage due to the mine void would be about 27,000 acre-feet (8,797,988,571 gallons).

*Comment: the EIS should specify what the total amount of water loss will be, and the cumulative loss when combined with the Montanore Mine.*

### **APPENDIX K**

Comment: Please also see the comments related to Appendix K from Dr. Kendra Zamzow (attached).

*Comment: Please see the specific comments from Dr. Tom Myers (attached).*

## **1.6 Water Resources Monitoring Plan**

### **Baseline Monitoring**

Appendix K (Section 1.6) describes the conceptual monitoring plan for water resources that may be affected by mine excavation and operations. According to the DSEIS, the objective of the water resource monitoring are to, among other things, “characterize pre-mining hydrologic and water quality conditions,” and “collect sufficient data to quantify any measureable environmental impacts accompanying construction, operation or reclamation of the project; and “provide information to determine required mitigation measures, if needed, to correct any unanticipated impacts encountered and to ensure compliance with applicable regulatory requirements.” (Appendix K, K-18). The DSEIS states that the water resources monitoring program would begin at least 1 year prior to the initiation of evaluation adit construction in the area near the evaluation portal pad and in

the area near the infiltration ponds where surface water or groundwater may be affected by Phase I construction and operations. The program would begin at least 1 year prior to the initiation of Phase II in the Rock Creek, East Fork Bull River, Miller Gulch and Clark Fork River watersheds where surface water or groundwater may be affected by Phase II construction and operation.

According to the DSEIS appendix K, a groundwater dependent ecosystem (GDE) inventory for parts of Rock Creek, Miller Gulch, Copper Gulch Chicago Creek and East Fork Bull River watersheds would be collected after the FEIS/ROD is issued, and 1 year before the evaluation phase. P. K-22 It would also include baseline monitoring to measure lake levels, and generate water balance/water budget data at Cliff Lake and Copper Lake.

The SDEIS states that the GDE inventory would help identify and rank GDEs based on their importance in sustaining critical habitats or species. (K-23). After the inventory report is submitted to the Agencies, the agencies would determine which GDEs would be monitored during subsequent phases.

*Comment: The failure to collect baseline data on water resources, including GDEs, violates NEPA because this information is critical to characterizing the existing environment, understanding the potential impacts of the mine as a result of groundwater drawdown, the range of alternatives, and whether additional fish and wildlife impacts may occur as a result of the loss of these resources. According to the USDA Forest Service, "GDEs encompass many of the regionally-and nationally-significant ecosystems on NFS lands and are critical to management of many threatened and endangered species. In many watersheds, they support a disproportionately large percentage of the total biological diversity relative to their size."<sup>47</sup>*

*Furthermore, one year of data is insufficient to characterize the variation between years. The SDEIS provides no mitigation measures to offset the impacts to water resources, including GDEs, particularly in the Wilderness, if monitoring activities identify impacts as a result of groundwater drawdown. The importance of this data is clear, given the statement by the use of the survey in evaluating "GDEs important in sustaining critical habitats or species." Furthermore, this data is necessary as part of the cumulative effects analysis, and should be combined with the GDE inventory from the proposed Montanore Mine. Because neither mine project has completed baseline data on water resources, including GDEs, or evaluated the potential impacts of groundwater dewatering on these resources, it is impossible to determine what the potential impacts is from one mine, or the cumulative effects of both.*

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<sup>47</sup> U.S. Forest Service, "Groundwater Dependent Ecosystems on National Forest System Lands: Recognizing and Managing a Largely Overlooked Resource," Presented by Christopher Carlson, PhD, National Groundwater Program Leader, USDA Forest Service, [http://www.lic.wisc.edu/glifwc/uvhumw/Presentations/Carlson%20EWR%20pres%20for%20US GS.pdf](http://www.lic.wisc.edu/glifwc/uvhumw/Presentations/Carlson%20EWR%20pres%20for%20US%20GS.pdf) (attached).

### **Section 1.6.3.2.1**

*Comment: Baseline data is needed to characterize spring flows and water quality at all springs and seeps in the area that could be adversely affected by groundwater drawdown.*

### **Section 1.6.3.2.2.**

*Comment: Vegetation surveys on all potentially effected GDEs (including wetlands, fens, and riparian areas) must be included in the EIS to characterize these important resources and evaluate potential impacts.*

According to the DSEIS, a Groundwater Dependent Ecosystem (GDE) inventory (see Section 1.6.3.2 and Figure K-4), subject to approval by the Agencies, would include parts of the Rock Creek, Miller Gulch, Copper Gulch, Chicago Creek, and East Fork Bull River watersheds that are not on private land. All surface water sites would be monitored for flow and water quality monthly, including storm flows (except when prevented by winter conditions), and continuous flow recorders would be operated at key locations in each stream basin. The measurement of baseline lake levels, and water balance/water budget data at Cliff Lake and Copper Lake would begin at this time. A high-elevation weather station would be installed and maintained for use in the lake water balance studies. (p. K-22) Similarly, the DSEIS proposes to collect data on the location of all domestic wells, water supplies and springs that might be affected by the mine until after the FEIS and ROD are issued. (P. K-22)

“The third-party contractor would also verify the location of all domestic wells, water supplies, and springs with the Department of Natural Resources and Conservation (DNRC) that might be affected by the mine to determine if any new wells or water sources had been filed with DNRC or if any wells had been misidentified or had information regarding them corrected. Any new domestic wells or water sources or misidentified wells would need to be sampled to provide baseline data prior to mine construction, if they had not already been sampled. Water supply wells and springs would be sampled quarterly 1 year prior to Phase II to provide baseline data and would include water quality parameters, static water levels in wells, and spring flow rates. All surface water quality samples would be analyzed for the parameters listed in Table K-6, Table K-7, and Table K-8. If data collected under this plan were to be used for compliance purposes for any MPDES permit obtained for the project, minimum limits specified in the MPDES permit must be achieved. Flow measurements would be made using the most accurate site-specific method available and appropriate for the site.” K-22 to -23.

*As noted herein, in order to comply with NEPA, and to ensure compliance with the agency's substantive environmental protection mandates, this critical information and analysis must be done now, as part of the revised DSEIS for public and agency review*

### **1.6.3.2.3. Stream Flows**

Comment: Baseline data should also be collected on streamflows for any stream in the area that could be adversely affected by groundwater drawdown. This should include

using synoptic flow measurements, mapping the gaining reaches of the stream, collecting water chemistry data. This baseline data must be collected for multiple years to gather statistically sufficient information to evaluate impacts, and it must be collected and presented as part of the EIS process.

*Comment: The DSEIS does not contain sufficient baseline data or analysis of the impacts to springs, groundwater dependent ecosystem wetlands, fens, riparian areas and other groundwater dependent ecosystems (GDEs) in the area that would be affected by mine operations, such as groundwater drawdown. The DSEIS establishes that groundwater drawdown during and after mining is a significant concern, and therefore we expect that impact to groundwater dependent ecosystems should also be a significant concern. Without monitoring information on GDEs over a long enough period of time to understand natural variability, it is impossible to evaluate the impacts of the various alternatives on important resources, including those within the Wilderness. Similarly, baseline data must be collected for domestic wells and water supplies that might be affected.*

### **1.6.5 Hydrologic Investigations**

#### **Baseline data on groundwater around infiltration ponds?**

The 3-d model identified the stream reaches that may have the largest predicted changes in baseflow as Chicago Creek, South Basin Creek, North Basin Creek and the East Fork Bull River above St. Paul Lake. (p. 4-194) There would be minor water quantity- related effects on aquatic habitat in Chicago Creek, South Basin Creek, and North Basin Creek. Habitat in these tributaries is less available and of lower quality relative to their overall respective watersheds. Changes in baseflow may directly affect the quantity of aquatic habitat. Baseflow reductions could magnify or create new seasonal migration barriers in stream reaches in the study area. Groundwater drawdown could also decrease the capacity of groundwater to moderate stream temperatures.

*Comment: As described in the Regulatory Framework component of the SDEIS (p. 3-57) “no authorization to degrade may be obtained for state surface waters within a wilderness.” The DSEIS makes clear that degradation of rivers and streams within the Wilderness boundary is predicted as a result of mine dewatering, and thus is unlawful. Further, significant degradation of waters directly downstream from the Wilderness boundary will likely occur, which is also unlawful without the required DEQ review and approval which has yet to occur.*

Comment: The SDEIS should estimate the volume of water that will be consumptively used by the Rock Creek Projects, and the reduction in total water yield from the Cabinet Mountains at the various stages of mine operations.

#### **1.6.10 Monitoring Action Levels and Contingency Action Plan**

The DSEIS states that as part of the monitoring plan, monitoring action levels will be developed for the project. However, the EIS provides no information on what the contingency actions will be.

*Comment: The DSEIS must provide a more detailed monitoring plan that describes contingency actions to demonstrate that water quality, public safety and public health will be protected.*

#### **1.6.10.1.2 Action Levels for Groundwater Flow in the Mine Area**

*Comment: the DSEIS states that if mine and adit inflows greater than 800 gpm occurred over a 2-month period, RCR would notify the Agencies within 5 working days. RCR would then implement excess water contingency plans such as grouting and treatment at the wastewater treatment plant. This plan is too vague and doesn't provide for a timely response. The contingency plan should provide for a maximum level at which they provide immediate response, and a specific plan should be in place for immediate implementation. More importantly, the EIS does not provide for mitigation measures that will ensure protection of water resources within the Wilderness. There is no evidence that grouting, or any other mitigation measure can protect surface resources from degradation.*