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First name: John

Last name: Rygh

Organization:

Title:

Comments: Dear Payette Forest Supervisor Keith Lannom and staff:

I would like to offer the following comments regarding the proposed Stibnite Gold Project. The focus of this particular comment letter is on the reclamation/restoration aspects of the project. As with much of the plan, reclamation details are sparse, so evaluating the success of these actions is impossible at this point. It seems one of the fundamental issues is a clear definition of the term "restoration" by Midas. Couple this with the fact that the Forest Service only requires "reclamation" as part of a mining plan, and one can see that there are already some confusing semantics in play. I won't belabor this point, but one can get a sense of the issue from this succinct article and the links therein.

<http://www.colorado.edu/today/2015/05/07/ecological-restoration-must-be-held-more-robust-standards-says-interdisciplinary-team>

I doubt that Midas is using the term in the classical restoration ecology sense, but they may be proposing actions that are more than those required by FS reclamation regulations. Although this is commendable, it remains incumbent upon the FS to clarify the exact ecological goals, criteria for success, and monitoring requirements that are being proposed for the long-term post-mining landscape in the project area. If the accusation of "greenwashing" of this project is to be avoided, both Midas and the FS better up their game significantly if the term "restoration" is going to be used in any meaningful sense. Of course given the repeal by President Trump of the November 3, 2015 Presidential Memorandum: "Mitigating Impacts on Natural Resources from Development, and Encouraging Related Private Investment" which Midas cites as a guiding document, it's unlikely there will be much motivation coming from the federal side.

The following specific comments are not arranged in any particular order other than trying to address the same issue within each paragraph. Enjoy.

What flood return interval have the TSF and Hanger Flats DRSF diversion channels been designed for? Has sediment production and transport downstream to the remaining Meadow Creek channel been analyzed?

As far as reclamation of the TSF goes, it seems like 18 - 36" of waste rock as a cap would be insufficient depth to construct a channel having a design depth of 2 feet. Even assuming that such a channel had all the appropriate hydraulic design parameters (verify that this is the case) initially, subsequent bedload transport would create localized regions of scour that could penetrate the cap, exposing tailings. This becomes more likely if the design intentionally tries to replicate a riffle/pool structure and includes the placement of flow obstructions (e.g. root wads and boulders specified on p. 14-24) that result in turbulent flow concentrations. There are plenty examples of low-gradient C-type channels in similarly sized watersheds on the Forest that have pools exceeding 6 feet in depth. Although the cap rock may provide a resistant barrier to vertical scour, it would then force lateral instability; has the floodplain width design taken this into account? Are provisions made for at least a minimal hyporheic zone? What is the appropriate particle size distribution for this channel? What source material would be used to provide that distribution? What flood return interval have the channels been designed for? The cap rock could also limit vegetation rooting depth. Would this impair tree colonization? What degree of vegetative shading of the channel is predicted; have models been run? How long would it take to achieve this degree of shading? Should there be a requirement for a less permeable cap material (e.g. compacted clay, geotextile liner, or hybrid product) between the rock cap and the tailings? Are there any regulatory standards for the hydraulic conductivity of tailings caps? A thorough analysis of all the relevant hydrologic and vegetative design factors and their interactions over time following mine closure should be undertaken and provisions made for long-term

retention of sufficient bond money for reclamation maintenance which would invariably be required.

The reclamation of Blowout Creek has some good features, but there may be issues with the proposed surface channel above the French drain. Page F-29 states that the gully side slopes would be laid back to a stable angle however this is not shown on any of the diagrams. If this is not done, the extremely oversteepened slopes would continue to fail and sediment would continue to be transported downstream whenever the surface channel runs. If it is done there would be an enormous amount of material generated (existing slope angles are at 70% and greater in this reach). Where would this be placed? Up to 20 acres of 2:1 - 3:1 slope would need to be revegetated. The reclamation bond should reflect this.

There doesn't seem to be a lot of detail in the reclamation sections regarding soils. It is implied that "growth media" would be created and stockpiled, but exactly what constitutes growth media is not defined, nor are any quality criteria identified. Page 8-29 of the plan identifies borrow sources for soils, but it is unclear whether estimates of the quality (e.g. A horizon percentages, organic matter content, CEC, etc.) or volumes needed for reclamation have been made. Stockpiling methods have not been described. Salvaged soils need to be stored in low windrows to provide conditions conducive to maintaining microbial activity. There seems to be no mention of salvage or creation of hydric soils (such as those identified on p. F-7) for wetland construction. Have soil quality indices been developed for this site to aid in evaluating reclamation success? The FS would do well to employ an approach similar to Blecker, et. al. in their 2012 paper, Development of vegetation based soil quality indices for mineralized terrane in arid and semi-arid regions. Measurement of microbial respiration trends should be included as a measure of reclamation effectiveness; it has been specified in other Payette NF mine reclamation plans for evaluating success.

Midas is welcome to make reclamation bond calculation recommendations (p. 14-37) however it is the responsibility of the FS (or State) to do the final costing. Any estimates received from Midas need to be reviewed in thorough detail for completeness and confirmed or modified as necessary following FS bonding guidelines.

Monitoring for 5 years (p. F-45) may be an insufficient time frame to determine the success of many ecological functions. On the following page monitoring is proposed in perpetuity. So which is it? What happens if reclamation success criteria are not being met during the period after 5 years, and who pays for maintenance after bond money is refunded?

What wetland mitigation performance/success criteria are being used for this project? Are ACOE criteria incorporated? Are there other relevant criteria schemes being used or considered (e.g. USGS, Washington Dept. of Ecology)?

Has the FS completed a groundwater-dependent ecosystem (GDE) inventory for this area? Some relevant baseline data was gathered by Midas, but that is not a complete inventory as per FS protocol. GDE effects of the project are likely to be significant and would need to be analyzed.

Jute erosion matting has not been effective at several sites reclaimed in the past (see FS monitoring reports and photos from previous Midas projects) and should probably be restricted to low slope angle sites.

A few miscellaneous non-reclamation points:

If Midas is going to tout their revegetation efforts as mitigating climate change I would suggest including at least a cursory carbon accounting exercise to evaluate just how much of their increased carbon footprint would be offset by tree planting. What does "stabilize greenhouse gas concentrations at the watershed level" (p. 5-3) mean?

Where would the groundwater from pit dewatering be disposed of, especially if it exceeds contaminant standards? Would treatment be required if discharge to surface water is necessary? How would the dewatering

wells around the Hanger Flats pit avoid dewatering all the up-gradient alluvial aquifers in the Meadow Creek valley? Would this have an effect on GDEs?

Are there provisions for preventing inflow of contaminated groundwater from fault zones that may be crossed by the EFSFSR diversion tunnel? What happens in the event of ungroutable entries?

Has the fate and transport of all milling reagents and reaction products been analyzed, have disposal procedures been developed, and have mitigation measures for any potential deleterious environmental effects been designed?

While Midas makes the claim that they are the only ones who can afford to clean up the site, one wonders if anyone has done even a cursory cost analysis of the alternative of cleaning up the site without additional mining that takes some of the recent advancements in the field of arsenic remediation technology into account.

In conclusion I would have to say that based on the information available so far, the odds that there would be a net improvement in the long-term post-mining water quality and ecological functioning of the site are uncertain at best. It is entirely possible that currently known problems could be exchanged for future unknown (and possibly larger) problems. Proceed with caution.

John Rygh