From: Wilcox, Andrew [mailto:Andrew.Wilcox@mso.umt.edu]
Sent: Friday, October 21, 2011 11:49 PM
To: FS-comments-northern-helena
Subject: Mike Horse

Please find attached my comments on the Mike Horse repository study (these are being submitted on October 21). Let me know if you have any questions.

October 21, 2011

Thank you for the opportunity to comment on the Upper Blackfoot Mining Complex Repository Siting Study, dated 20 September 2011. I am writing to highlight one factor that is not addressed in the Siting Study: the role of the wetlands in the Upper Blackfoot Mining Complex in filtering contaminants. Two wetlands complexes are located along the upper Blackfoot River, downstream of the Mike Horse tailings dam and upstream of Highway 279 (the upper one is downstream of Shave Gulch and the lower one is downstream of Cadotte Creek). Moore et al. (1991) documented substantial differences in metals concentrations upstream of the wetlands, where concentrations are high as a result of proximity to the Mike Horse Mine and the area in the path of the 1975 tailings dam failure, versus downstream of the wetlands. Analysis of metals concentrations in water, sediment, macroinvertebrates, and fish by University of Montana researchers in 2009 and 2010 show the same pattern: a substantial reduction in metals concentrations occurs from upstream to downstream of the wetlands (data collected by UM researchers are posted at: https://sites.google.com/site/umupperblackfoot/). The effect of the two wetland complexes in mediating the downstream transfer of sediment and metals is also discussed by Mason et al. (2009). The wetlands create a natural insurance policy against catastrophic downstream contamination, as was illustrated in the 1975 tailings dam failure.

This filtering effect of the wetlands is relevant to repository siting, because a number of the proposed repositories, including the preferred alternative, are downstream of the UBMC wetlands. In the event of a catastrophic failure of a repository (e.g., as a result of seismicity), materials released from a repository located upstream of the wetlands (e.g., Paymaster, Shave Gulch) would be trapped and filtered by the UBMC wetlands, as they are currently. Materials released in any such event from a repository downstream of the UBMC wetlands (e.g., Section 35) would not, and would therefore have a greater potential to travel downstream the Blackfoot River. Consideration of the costs and benefits of various sites, and associated risk analysis, may wish to incorporate scientific understanding of the role of the UBMC wetlands.

Andrew Wilcox, Assistant Professor, Department of Geosciences, University of Montana

Mason, J., Cahoon, J., Blank, M., Schmitz, D. 2009. Assessing the potential for contaminated sediment resuspension from a mine impacted wetland. Master's Thesis: Department of Civil Engineering, Montana State University. Bozeman, MT.

Moore, J. N., S.N. Luoma, and D. Peters. 1991. Downstream effects of mine effluent on a intermontane riparian system. Can. J. Fish. Aquat. Sci. 48, 222-232.

University of Montana, 2011. UM Upper Blackfoot Project. website. https://sites.google.com/site/umupperblackfoot/