28 January 2013

To: Alabama Surface Mining Commission via Black Warrior Riverkeeper
Re: Lands Unsuitable for Mining Petition

I appreciate this opportunity to provide comments to the Alabama Surface Mining Commission(ASMC) with respect to lands unsuitable for mining. The immediate motivation for these comments is the petition by Black Warrior Riverkeeper (BWRk) to the ASMC to designate lands along the Mulberry Fork in the vicinity of the Birmingham Water Works Board's Mulberry drinking water intake as lands unsuitable for mining. Here I wish to make comments as to whether ASMC can assume that water quality will be protected if the lands are mined.

I am Shane Street, an associate professor of Chemistry at The University of Alabama. In my more than 20 years as a professional scientist I have authored or co-authored more than 40 peer-reviewed publications. I have taught college chemistrycourses at both the undergraduate and graduate level since 1997. In particular, I routinely teach a senior-level course in methods of instrumental analysis which keeps me current on the techniques of chemical analysis and reporting of experimental results. I have served on the Advisory Board of BWRk for about four years.

Recently, I reviewed for BWRk a number of documents related to Alabama Department of Environmental Management's (ADEM) regulation of coal mine water quality effects via National Pollutant Discharge Elimination System (NPDES) permits. Among the documents were BWRk's public comments to ADEM's Chief of Permits and Services Division and ADEM's response letter from September 2012, plus a number of Discharge Monitoring Reports (DMRs, ADEM form 351) from area mines.

Several points made in BWRk's comments letter to ADEM dated 14 September 2012 bear repeating as they indicate significant technical deficiencies in the current regulatory regime adopted by ADEM. For example, it appears that in complying with US Environmental Protection Agency (EPA) requirement for Reasonable Potential Analysis (RPA),ADEM has accepted one-time only measurements both as background before mining and subsequently in effluent samples from outfalls. It is well-recognized among chemists that sampling is a critical factor in accurate analysis.Measurement of single samples, no matter how competently carried out in the lab, does not lead to scientifically meaningful results. What might be even more troubling is that one-time only effluent samples have been taken to be representative of outfalls even when the sample was drawn many miles from the outfall in question. BWRk was quite right to urge ADEM to "require more than one sample to calculate RPA in order to make the calculation statistically both reliable and properly predictive", particularly since such an approach is not overly burdensome with respect to either time or money.

But even if one considers the regulations and their observation as they are rather than as one might wish them to be, significant issues are found. A specific example from the DMRs is instructive. Consider the reporting of the concentration of selenium (Se) from the 005-1 outfall of the Narley mine (NPDES Permit AL0075752, ASMC permit P-3850). The mine is operated

by Best Coal, Inc. of Cullman under ADEM permitting using updated rules from 20 December 2010. In the permit holders' DMRs measured values are given as numbers without any sense of the statistical error involved. Compare this to more professional reports by, for instance, TTL Inc. on toxicity from this outfall from 17 Aug 2011, where the error analysis is given and confidence interval used clearly defined. But let's accept the reports as accurate within whatever limits apply from the relevant EPA method used in the analysis. In the twelve months from January 2011 to January 2012 the monthly average limit (5.0 μg/L) for Se was apparently exceeded ten times. In September 2011 the daily maximumof 20 μg/L was exceeded on the one day selected for the monthly measurement. To be clear, I am not suggesting any wrongdoing on the part of the mine operators or ADEM. Indeed, rather the opposite conclusion should be drawn; that is, *even with proper permitting, conscientious monitoring and reporting, discharges apparently above the regulated limits might persist for long periods of time*.

Now Se occurs naturally in soils and is toxic only in excess, but it makes some organic compounds, like the selenols, which quite literally stink.What if persistent levels were drawn into a drinking water supply unable to handle the load in treatment? What if the effluent contained elements or compounds more problematic than Se? Or, indeed, some material that is not even monitored or regulated in the current regime?

Alabama institutions such as ADEM and ASMC have the responsibility to see that our waters are protected. Failure to exercise due caution here and now will inevitably invite further Federal oversight and rulemaking.

Respectfully,

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