



Alabama Coal Association

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Office of Environmental Information
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Docket (Mail Code: 2822T)

U.S. Environmental Protection Agency

1200 Pennsylvania Ave., N.W.

Washington, D.C. 20460

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Re: **Alabama Coal Association's Comments Regarding "A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams," EPA Docket ID. No. EPA-HQ-ORD 2009-0934**

To Whom it May Concern:

The Alabama Coal Association ("ACA") submits these comments on the March 2010 draft document titled "A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams," ("Benchmark Study") prepared by the U.S. Environmental Protection Agency's ("EPA") National Center for Environmental Assessment.¹ ACA is an association of coal mining and related companies that produce over 90% of the coal in Alabama. ACA's members presently operate thirty-two (32) mining sites, all of which are subject to the requirements of the federal Clean Water Act and hold NPDES permits issued by the Alabama Department of Environmental Management ("ADEM") in coordination with the Alabama Surface Mining Commission ("ASMC"). ACA members provide coal for affordable coal-based electricity and create thousands of high-paying jobs in Alabama. ACA's comments are based, in part, on the professional opinions of Lawrence J. Davenport, Ph.D., and Kevin J. Morse, Ph.D., both of whom are professors of biology at Samford University in Birmingham, Alabama, and experts on aquatic ecosystems in Alabama. A summary of their opinions is attached.

ACA understands EPA has extended the deadline for submitting public comments to August 13, 2010. However, EPA's Science Advisory Board ("SAB") is still scheduled to meet July 20-22, 2010. ACA also understands that only comments received as of July 13, 2010, will be forwarded to the SAB prior to this scheduled meeting. Please forward these comments to the SAB for consideration prior to the scheduled meeting. ACA retains the right to submit additional comments on or before the August 13, 2010 public comment deadline.

¹ Because mountaintop mining and valley filling are not conducted in Alabama, ACA has no comments concerning EPA's separate draft document titled, "The Effects of Mountaintop Mines and Valley Fills on Aquatic Ecosystems of the Central Appalachian Coalfields," which is also currently open to public comment.

ACA has concerns about the Benchmark Study. As a threshold matter, EPA has not presented any justification why new or more stringent water quality standards pertaining to the coal industry are needed at this time. The coal industry, including the coal industry in Alabama, has made substantial progress in treating and managing wastewater associated with coal extraction operations over the past few decades. Aquatic resources and ecosystems have improved significantly over that time, particularly in Alabama. According to ADEM's *2010 Integrated Water Quality Monitoring and Assessment Report*, less than 4% (or 2,891.74 miles) of Alabama's rivers and stream are not meeting their designated uses. Only 103.90 miles of rivers and stream are currently impaired due to active mining operations (only 3.6% of all impaired waters), while 486.58 miles of rivers and stream are impaired due to abandoned pre-law mining sites (16.8% of all impaired waters). A far greater percentage of Alabama's impaired streams and rivers are due to causes wholly unrelated to mining operations—including agriculture, pasture grazing, municipal discharges, and urban runoff. These trends are reflected nationally. There is, therefore, no justifiable reason for EPA to single out mining operations for any new or more stringent water quality standards.

Importantly, the Benchmark Study limits the proposed conductivity benchmark to specific subregions of Kentucky and West Virginia, where field data has been collected, and thus the proposed benchmark will have no applicability for water quality purposes in the State of Alabama. ACA believes it would be inappropriate for EPA to use the West Virginia and Kentucky datasets to develop a conductivity benchmark for Alabama given the significant geologic, climatic, and other differences between these states and Alabama.

ACA also has serious concerns about the methodology employed by EPA in preparing the proposed benchmark for Kentucky and West Virginia. ACA believes the Benchmark Study is flawed for three basic reasons: (1) the study improperly relies upon field data that appears tailored to fit a pre-determined outcome; (2) the study lacks any controlled laboratory-based experiments that could either collaborate or refute the field-based results relied upon; and (3) the study lacks any adequate controls for the numerous factors that can contribute to conductivity.

ACA joins the comments filed by the National Mining Association ("NMA"). The NMA's comments provide a detailed and thorough analysis of EPA's Benchmark Study, including a comparison of the original data sets with the final results. Their analysis raises basic questions about the statistical tools used, especially the uncertainty values. The most obvious flaw in EPA's statistical analysis is in the data set chosen—very few data sets from high conductivity streams were used (as shown in the Benchmark Study's Appendix B on confounding). ACA believes it is inappropriate for a benchmark study of this nature to choose data sets that run approximately 10:1 for low conductivity : high conductivity.

EPA's Benchmark Study also relies on unconvincing field data, rather than on data derived from controlled laboratory experiments. EPA presents no data from controlled laboratory experiments supporting the conclusion that conductivity is toxic to benthic organisms at the proposed benchmark concentration of 300 $\mu\text{S}/\text{cm}$. The field-based procedures used by EPA cannot separate the many components of conductivity. Only controlled laboratory experiments can do so. The Benchmark Study does not adequately attempt to separate these component parts, despite the extensive number of pages in Appendix B devoted to confounding.

Furthermore, only lab-based studies could ever establish a causal relationship between species extirpation and levels of conductivity. Field studies can only show the relative health of different communities of aquatic macroinvertebrates, with conductivity only one of many factors potentially contributing to such health.

As already noted, the presence of many confounding factors is a major flaw of the Benchmark Study. Appendix B presents a lengthy discussion of confounding factors increasing the difficulty of isolating aquatic impacts due to conductivity, rather than to other factors or combinations of factors. However, even this list is incomplete. Confounding factors in this type of study should also include more habitat parameters, including substrate type, Rosgen stream classification, and habitat alterations. ACA also recommends that EPA substitute Total Organic Carbon for Fecal Coliform Counts because the former is a better indicator of organic enrichment (and not just the presence of pathogens).

Lastly, the Benchmark Study focuses on streams where conductivity is dominated by salts SO_4^{-2} and HCO_3^- at circum-neutral to mildly alkaline pH. However, rather than propose water quality benchmarks for salts SO_4^{-2} and HCO_3^- under specific conditions, EPA has proposed a flat benchmark of $300\mu\text{S}/\text{cm}$ for conductivity in portions of West Virginia and Kentucky, regardless of the underlying ionic source of conductivity in particular waterbodies. ACA believes any water quality impacts associated with SO_4^{-2} and HCO_3^- should be limited to those salts, in concentrations proven to be toxic to aquatic organisms in controlled laboratory experiments.

For the foregoing reasons, ACA recommends that EPA forego setting any water quality benchmark for conductivity. Most importantly, there is no demonstrated justification for any new or more stringent water quality standards for mining operations anywhere in Appalachia. Moreover, the Benchmark Study is fundamentally flawed and should not be used for establishing any water quality benchmarks for conductivity. Instead, EPA's National Center for Environmental Assessment should focus on particular ionic compounds, or salts, that may prove toxic to aquatic life. Furthermore, any water quality standards for specific ionic compounds should be set based on data derived from controlled laboratory experiments, rather than from field data.

Best regards,

David Roberson
President
Alabama Coal Association

COMMENTS ON EPA CONDUCTIVITY STUDY

REF: "A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams"; EPA, March 2010

REF: "Comments on 'A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams'"; Norwest Corporation, 29 June 2010

REF: "Memorandum: Review of 'A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams'"; EPA, 11 June 2010

The EPA conductivity study is an attempt to use field data—collected over many years and for many different purposes—to determine a benchmark conductivity level for aquatic macroinvertebrates in the Central Appalachian states. As such, large data sets (from West Virginia and Kentucky) were used to determine a final benchmark of 300 $\mu\text{S}/\text{cm}$.

In our opinion, the EPA study is flawed for these basic reasons: 1) improper use of the original field data, such that the data were carefully selected in order to best fit the current study; 2) lack of any controlled laboratory-based experiments required to refute or corroborate the field-based results; and 3) lack of adequate control for the many factors that contribute to conductivity.

We concur with Norwest Corporation, which has produced a detailed and thorough analysis of the EPA study, including a comparison of the original data sets with the final results. Their analysis raises basic questions about the statistical tools utilized, especially the uncertainty values. To us, the most obvious flaw in the statistical analysis is in the data sets chosen, since very few data sets from high conductivity streams were utilized (as shown in Appendix B on Confounding). We question why a benchmark study would choose data sets that run approximately 10:1 for low conductivity:high conductivity.

Our final comments concentrate on the Alabama situation and the specific "charge" questions contained in the above-referenced Memorandum:

- 1) West Virginia and Kentucky data sets should not be used to develop a conductivity benchmark for Alabama. The three states differ so significantly in their geology, climate and other factors that legitimate scientific comparisons cannot be made. In fact, the EPA study (p 3) states that "this benchmark is limited to two contiguous regions [Ecoregions 69 & 70] with a particular dominant source of salinity [sulfates and bicarbonates]."
- 2) The field-based procedures used by EPA cannot separate the many components of conductivity; only controlled laboratory experiments can do so. Despite the extensive number of pages of Appendix B devoted to Confounding, the EPA study does not adequately separate those components nor answer anticipated criticisms of this deficiency .

- 3) Again, only lab-based studies can establish a causal relationship between species extirpations and levels of conductivity (and separate the many factors that contribute to conductivity). In contrast, field studies can only show the relative health of different communities of aquatic macroinvertebrates, with conductivity as one of many factors contributing to that health.
- 4) The presence of many confounding factors is a major flaw of the EPA study. As stated above, Appendix B is devoted to such factors. In addition to those listed, we would add more habitat parameters, including substrate type, Rosgen stream classification, and habitat alterations. We would also substitute Total Organic Carbon for Fecal Coliform Counts, since the former is a better indicator of organic enrichment (and not just the presence of pathogens).
- 5) The use of uncertainty values and boot-strap analyses are questioned by Norwest Corporation.
- 6) The EPA study (based on field data) produced a benchmark value that is not comparable to a chronic endpoint (based on laboratory data). Because it is not derived from controlled lab experiments, a benchmark value cannot provide the same degree of protection.
- 7) The conductivity benchmark derived from Central Appalachian field data cannot legitimately be applied to situations encountered elsewhere. As cited above, the EPA study itself says so.
- 8) Again, there is no legitimate substitute for controlled lab experiments to determined acceptable pollutant levels. Field-based studies should not be used to determine acceptable levels of conductivity or any other pollutant.

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