ENVIRONMENTAL QUALITY BOARD
CHARLESTON, WEST VIRGINIA

SIERRA CLUB,

Appellant,

v. **Appeal No. 10-34-EQB**

THOMAS L. CLARKE, DIRECTOR DIVISION OF MINING AND RECLAMATION, DEPARTMENT OF ENVIRONMENTAL PROTECTION,

Appellee,

and

PATRIOT MINING COMPANY, INC.,

Intervenor.

SUPPLEMENTAL FINAL ORDER[1]

On September 3, 2010, the Sierra Club ("Appellant") filed the above referenced appeal of West Virginia decision by the Department of Environmental Protection ("WVDEP" and/or "Appellee") to approve National Pollutant Discharge Elimination System ("NPDES") Permit Number WV1017535 Modification Number 9 ("the Permit") on August 9, 2010.

An evidentiary hearing on the matter was held before a court reporter and a quorum of the Environmental Quality Board ("EQB" and/or "Board") on December 14, 15, 16, and 17, 2010. Peter Morgan, Esquire, and Joseph Lovett, Esquire, represented the Sierra Club

[1] On September 20, 2011, Kanawha County Circuit Judge James Stucky ordered this Board to make supplemental findings and conclusions associated with its March 15, 2011 Final Order.

at the hearing. Jennifer Hughes, Esquire, represented the WVDEP. Robert McLusky, Esquire, and James Snyder, Esquire, represented Patriot Mining Company, Inc. ("Intervenor" and/or "Patriot"). Prior to that hearing, the Board granted Appellant's motion for a stay of the permit pending final order of the Board. Bd. Order of 11/18/10.

The Board heard testimony from twelve witnesses during the December hearing: Evan Hansen, Margaret Palmer, Ph.D., Emily Bernhardt, Pd.D., Pat Campbell, Paul Ziemkiewicz, Ph.D., Robert Gensemer, Ph.D., Scott Mandirola, Ronald Hamric, Jessica Yeager, Carys Mitchelmore, Ph.D., Vaughn Miller, Ryan King, Ph.D., and Jeffrey Parsons. Exhibits admitted included: Board's Exhibit 1; Appellant's Exhibits 1-43; Appellee's Exhibits 1-7, and Intervenor's Exhibits 1-15. Ed Snyder, Ph.D., Chairman of the Board, conducted the meeting with other members in attendance: Scott Simonton, Ph.D., James Van Gundy, Ph.D., Ted Armbrecht, and William Gillespie.

At the conclusion of the hearing and after the transcript was received the Board set forth a time frame for the parties to submit proposed findings of fact and conclusions of law for consideration. The Board reviewed the arguments of counsel, statutes, regulations, transcript, and briefs and **REMANDED** the modification for actions consistent with the Final order issued March 25, 2011. WVDEP and Patriot filed a timely appeal of the Board's order and challenged the findings and conclusions associated with conductivity, sulfates, and Total Dissolved Solids ("TDS"). The remainder of the Board's order of March 25, 2011, including the sections related to a reasonable potential analysis for arsenic and set limits for both manganese and selenium, were not challenged and therefore remain in effect.

On September 20, 2011, the Kanawha County Circuit Court ("Court") remanded this Board's Final Order of March 25, 2011, and ordered this Board to file supplemental findings and conclusions related to conductivity, sulfates, and TDS. Notably, the Court also dismissed the appeal from its docket upon remand to this Board.

This Board conducted a hearing on the Court's order and requested the parties to submit briefs interpreting the Court's order. In November, 2011, two members of the Board that participated in the March 25, 2011, decision were replaced by two new members of the Board. Dr. James Van Gundy and Mr. Ted Armbrecht were replaced by Dr. Charles Somerville and Dr. Mitch Blake.

A quorum of the Board, Dr. Snyder, Dr. Simonton, and Mr. Gillespie, all of which participated in preparation and decision dated March 25, 2011, determined that oral argument was not necessary for the Board to file a Supplemental Final Order. On April 12, 2012, counsel for Patriot wrote a letter to the Chairman and members of this Board requesting that the Board remand the modification to the WVDEP to take action consistent with changes in law and policy that have occurred since the Board issued its order in March 2011. Dr. Mitch Blake and Dr. Charles Somerville reviewed the transcripts, records, pleadings, and prior orders of the Board. By a vote of three members to two the Board declines to change its March 25, 2011, decision and reaffirms its March 25, 2011, findings and adopts this supplemental order in support of its prior findings and conclusions. In so doing, the majority of the Board remands the Permit for action consistent with the March 25, 2011, order and this supplemental order. Mr. William Gillespie and Dr. Mitch Blake voted

to remand the modification back to WVDEP without instruction. The minority may submit an opinion at a later date.

STANDARD OF REVIEW

The Board hears appeals of orders issued by Appellee in accordance with W.Va. Code § 22B-1-7. The Board does not afford deference to the Director's decision, but rather, the Board acts independently on the evidence before it. *W.Va. Division of Envtl. Protection v. Kingwood Coal Co.*, 200 W.Va. 734, 745, 490 S.E.2d 823, 834 (1997). Under W.Va. Code § 22B-1-7(g), the Board "shall make and enter a written order affirming, modifying or vacating the order, permit or official action of the chief or secretary, or shall make and enter such order as the chief or secretary should have entered."

STATEMENT OF ISSUES

The issues raised by this appeal of Modification Number 9 of WV/NPDES Permit WV1017535 included:

A. The WVDEP erred by not performing a reasonable potential analysis, and not setting effluent discharge limitations based on this analysis, for specific conductivity, TDS, or sulfate;

B. The WVDEP erred by not performing a reasonable potential analysis, and not setting effluent discharge limitations based on this analysis, for Coal Combustion Waste ("CCW") constituents including but not limited to antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.

C. The WVDEP erred by not performing a reasonable potential analysis, and not setting effluent discharge limitations based on this analysis, for whole effluent toxicity, and

D. The WVDEP erred by not including effluent discharge limitations for manganese for outlet 001.

DISCUSSION

At hearing and in brief, Appellants argued that the Clean Water Act requires WVDEP to include effluent limits in all West Virginia NPDES permits sufficient to ensure compliance with all applicable water quality standards, including both numeric and narrative water quality standards. The Board agrees and finds the process for determining what limits to include in a permit requires WVDEP to conduct an analysis of the reasonable potential for a discharge to cause or contribute to an excursion of a standard. In this case, however, the WVDEP overlooked or discounted information that, had it been considered, would have compelled WVDEP to include effluent limits in the permit for conductivity, sulfate, and TDS in order to prevent violations of West Virginia's narrative water quality standards. WVDEP also overlooked or discounted information that, had it been considered, would have compelled the agency to include effluent limits in the permit for selenium, manganese, and possibly arsenic.

The Board finds that WVDEP may not avoid consideration of narrative water quality standards when issuing discharge permits. The limits WVDEP sets forth in a WV/NPDES permit must ensure compliance with all applicable water quality standards, including

narrative water quality standards. See 33 U.S.C. § 1311(b)(1(A) and (C); 40 C.F.R. § 122.44(a)(1) and (d)(1).

West Virginia's narrative standards prohibit discharges of "[m]aterials in concentrations which are harmful. . . to. . . aquatic life" (47 C.S.R. § 2-3.2.e) or that cause "significant adverse impacts to the . . . biological components of aquatic ecosystems." (47 C.S.R. §§ 2-3.2.i)[2].

The Board finds that a growing body of science has demonstrated that discharges from surface coal mines in Appalachia are strongly correlated with and cause increased levels of conductivity, sulfate, and TDS in water bodies downstream from mines. The science also demonstrates that these discharges cause harm to aquatic life and significant adverse impacts to aquatic ecosystems in these streams.

The Board finds that Appellant demonstrated that discharges from the New Hill West Surface Mine and other similar mines in the Scotts Run watershed contain levels of conductivity, sulfate, and TDS above the limits known to cause harm to aquatic life and significant adverse impacts to aquatic ecosystems. While the majority of the Board sees conductivity as a statewide concern. The Board wants to make clear that this decision of the Board is specific to the Scotts Run watershed and the conductivity levels demonstrated at that site.

[2] The West Virginia Legislature passed legislation requiring WVDEP to promulgate regulations that define how the narrative standard shall be protected. However, the legislation includes a proviso that does not allow the use of measurements that would establish less protective standards or requirements.

FINDINGS OF FACT

All proposed findings submitted by the parties have been considered and reviewed in relation to the adjudicatory record developed in this matter. All argument of counsel, proposed findings of fact and conclusions of law have been considered and reviewed in relation to the aforementioned record, as well as to applicable law. To the extent that the proposed findings of fact, conclusions of law and arguments advanced by the parties are in accordance with these findings of fact, conclusions and legal analysis of the Board and are supported by evidence, they have been adopted in their entirety. To the extent that the proposed findings, conclusions, and arguments are inconsistent therewith, they have been rejected. Certain proposed findings and conclusions have been omitted as not relevant or necessary to a proper decision. To the extent that the testimony of the various witnesses is not in accord with the findings stated herein, it is not credited. The Board adopts its prior findings of fact and conclusions of law and supplements that order with the following:

1. The New Hill West Surface Mine is a surface coal mining facility located in the Scott's Run watershed and operated by the Patriot. Appellants' Ex. 3 at p. 1.

2. The West Virginia Division of Mining and Reclamation, Department of Environmental Protection ("DEP"), issued WV/NPDES Permit WV1017535, Modification No. 9 ("the permit"), to Patriot on August 9, 2010.

3. The site of the New Hill West Surface Mine was partially mined previously. Tr. 12/17/2010, 8:4-9 (Hamric Direct); Intervenor Ex. 1.

4. Modification 9 addresses discharge from four outlets – Outlets 001, 006, 026, and 027 – which discharge to an unnamed tributary of Scotts Run and to Scotts Run, which ultimately flows into the Monongahela River. At. Ex. 3, pp. 1-5. Outlet 001 was originally constructed as part of previous surface mining operations on the site. Tr. 12/17/2010, 11:17-18 (Hamric Direct).

5. The Board finds that under its new guidance, issued by WVDEP two days after this Modification was approved, NPDES permits for surface mines will require twice-per-month effluent monitoring for TDS, specific conductance, and sulfate. WVDEP also requires TDS, conductivity, and sulfate analyses for each outlet used in WET testing.

6. The permit does not contain an enforceable effluent limit for conductivity. *Id.*

7. The permit does not contain an enforceable effluent limit for sulfate. *Id.*

8. The permit does not contain an enforceable effluent limit for TDS. *Id.*

9. The Board held a four-day hearing on December 14, 15, 16, and 17, 2010, at which the parties presented testimonial and documentary evidence.

Conductivity, Sulfate, Total Dissolved Solids:

10. Numerous scientific studies show that streams located below surface mines in West Virginia and other parts of Appalachia experience increased levels of conductivity and TDS due to elevated concentrations of sulfate, calcium, magnesium, and bicarbonate ions. Appellants' Ex. 22 at p. 1; Appellants' Ex. 23 at p. 718.

11. Surface mining in Appalachia fragments and exposes rock and releases high concentrations of sulfate and other ions. Appellants' Ex. 33 at p. 4; Appellants' Ex. 23 at p. 717.

12. Conductivity – also referred to as specific conductance – is a measure of the presence of these ions in discharges or receiving streams. Appellants' Ex. 33 at p. 4.

13. A high correlation between levels of sulfate and levels of conductivity in a waterbody indicate that surface mining is the primary source of the elevated conductivity in that waterbody. Appellants' Ex. 33 at p. 4, 7; Tr. 12/14/2010, 211:8-23 (Palmer Direct); Tr.12/14/2010, 276:8-18, 277:11-24, 278:1-8 (Bernhardt Direct).

14. Numerous scientific studies have documented significant changes in stream macro invertebrate communities directly downstream of surface mining operations and have shown that these declines are caused by several factors including the combined effects of heightened concentrations of ions – including sulfate – as indicated by elevated levels of conductivity and TDS. Appellants' Ex. 33 at p. 4; Appellants' Ex. 22; At. Ex. 23; Tr. 12/14/2010, 218:1- 219:20 (Palmer Direct).

15. Elevated levels of conductivity, sulfate, and TDS associated with mine discharges cause direct impacts to aquatic organisms by acting as a stressor, and by disrupting water and ion balance. Appellants' Ex. 22 at p. 1; Tr.12/14/2010, 305:11- 306:13 (Bernhardt Direct).

16. Dr. Margaret Palmer testified that "conductivity is an extremely robust indicator of water quality problems in these mining regions". Tr. 12/14/10, p. 219.

17. EPA has indicated, including in a comment letter submitted to WVDEP on the draft permit, that levels of TDS should be kept below 500 mg/l in order to avoid biological impairment. Appellants' Ex. 6.

18. Macro invertebrate community composition is a very important component of the health of aquatic ecosystems in West Virginia streams. Tr. 12/14/2010, 246:7- 249:5 (Palmer Direct).

19. Different macro invertebrate genera play very different roles in aquatic ecosystems. Tr. 12/14/2010, 236:13- 237:4 (Palmer Direct).

20. In healthy West Virginia streams, mayflies make up approximately 30% of the insects in the streams (Tr.12/14/2010, 242:12-16 (Palmer Direct); Appellants' Ex. 26); whereas in streams below coal mines with conductivity levels above 500 μS/cm the percentage of mayflies drops to 11% (Tr.1, 247:11-13 (Palmer Direct); Appellants' Ex. 26).

21. At hearing, Dr. Palmer testified that when such a shift occurs, "there's no question" that "the stream will function differently from the way it functioned before you lost the mayflies." Tr.12/14/2010, 247:17-20 (Palmer Direct).

22. A reduction in macro invertebrate genera in stream ecosystems in West Virginia can have major impacts on stream function, including reduced primary production (food creation) and increased sedimentation (Tr. 12/14/2010, 232:5-17, 236:18- 237:4 (Palmer Direct)), which in turn can have a significant impact on higher trophic levels

like birds and fish, as a reduction in their food supply can cause reductions in bird and fish abundance and diversity (Tr. 12/14/2010, 227:13-20 (Palmer Direct)).

23. If too much biodiversity is lost, ecosystem function collapses. Tr. 12/14/2010, 246:7-22, 248:20- 249:5 (Palmer Direct).

24. The Board finds that the disruption of community composition crucial to functioning ecosystems constitutes harm to aquatic life and a significant adverse impact to aquatic ecosystems.

25. Increased levels of conductivity, sulfate, and TDS lead to significant disruptions to macro invertebrate communities, including the extirpation of ecologically important macro invertebrate taxa, and to population shifts toward more pollution-tolerant taxa. Appellants'. Ex. 33; Appellants'. Ex. 23; Tr. 12/14/2010, 245:2- 249:5 (Palmer Direct); Tr. 12/14/2010, 295:17-23 (Bernhardt Direct).

26. The loss of stream macro invertebrate communities, in turn, leads to substantial impacts on fish, amphibian, and bird populations that rely on these communities as a food source. Tr. 12/14/2010, 232:5-17, 233:1-15, 249:23- 250:4 (Palmer Direct); Appellants' Ex. 25.

27. Direct impacts from coal mining associated with elevated levels of conductivity are not restricted to macro invertebrates. An analysis of a data set from Kentucky that includes information on fish taxa, and that was analyzed in the same manner as the West Virginia macro invertebrate data, demonstrates a community level response for

the fish taxa at conductivity levels of approximately 200 µS/cm. Appellants' Ex. 38; Tr. 12/15/2010, 167:4- 168:24 (King Direct).

28. The scientific studies that have addressed the issue have established an "exceptionally strong correlation between both sulfates and conductivity with degradation of aquatic life." Tr. 12/17/2010, 128:23- 129:1 (Palmer Rebuttal).

29. It is a fundamental principle of scientific inquiry that a relationship initially described as a strong correlation will eventually be considered a causal relationship when, as here, that result is supported by multiple lines of evidence. Tr. 12/17/2010, 130:7- 132:14 (Palmer Rebuttal).

30. The consistency of the correlations identified in the research on the relationship between elevated conductivity from mine discharges and impacts to aquatic organisms has been so strong that it has led scientists to conclude that "collectively, there's a considerable amount of evidence that strongly suggests that conductivity associated with mine drainage is causing impairment – biological impairment in streams." Tr. 12/17/2010, 156:3-6 (King Rebuttal).

31. WVDEP considers streams with levels of conductivity above 1,500 µS/cm to be potential sites for golden algae outbreaks. Tr. 12/16/2010, 24:20- 25:4 (Campbell Cross).

32. Despite long-standing and abundant evidence within the WVDEP's watershed database for biological damage (evidenced by low WVSCI scores) in circumneutral to mildly alkaline streams draining surface mines in the West Virginia coalfields, the

WVDEP has made little attempt either to determine the cause of such damage, or to limit it.

33. The Board (EQB) takes note of the fact that WVSCI scores for Scott's Run show that it is currently biologically impaired, yet whole effluent toxicity (WET) testing of the same stream shows it to be non-toxic by that measure. Sierra Club Exhibit 18, Tr. 12/14/2010, 118:10-119:18 (Hansen Direct).

34. The Board finds there is a rift between toxicity information supplied by the historically employed measures of aquatic toxicity and the survival of macroinvertebrates in actual streams. The Board finds that WET testing alone is not necessarily protective of the narrative standard.

35. Statistical analysis of WVDEP's own watershed database by EPA scientists and Appellant's witnesses demonstrated that even small amounts of mining disturbance within a watershed may cause a significant decline in WVSCI scores.

36. Dr. Bernhardt stated, "One of the things that I think is really important here and that was actually really surprising to us when we -- when we did the analyses was that we saw such a strong decline at that lowest level of mining and that you do see a decline as you increase the intensity of mining, but that's relatively minor compared to the jump you get between no mining at all and the first category." Tr. 12/14/10, p. 325.

37. The evidence supports the finding that the mixtures of ionic substances commonly associated with circum-neutral surface mine wastewaters are responsible for some significant portion of the biological damage that is observable in many streams

within the West Virginia coalfields.

38. Dr. Bernhardt testified, "We saw that sulfate and conductivity are incredibly well correlated and they are both very well correlated with significant declines in the diversity of taxa living in streams receiving these effluents." Tr. 12/14/10, p. 277.

39. On the strength of the evidence presented by the Appellants, the Board is convinced that mixed ionic salts, and perhaps particularly sulfates, represent a significant stress to stream communities in the Appalachian Plateaus region of West Virginia at relatively low concentrations and that conductivity is a useful and appropriate measure of these stressors.

40. The Appellant's evidence for biological damage due to surface mine drainage was un-refuted.

41. The Board finds that implementation of permit limits to properly address and protect the narrative criteria will result in protection of the streams and waters from further degradation.

42. The Board was persuaded by testimony in this case that mixed ionic stressors are the cause of the observed biological damage. The Board is convinced that the use of TDS, Sulfate, and conductivity as indicator parameters for such ionic mixtures is a scientifically defensible and practical approach.

43. The most vigorous attack upon the Appellants case for a causal connection between stream conductivity and biological damage came from an Intervenor's witness, Dr. Robert Gensemer of GEI Consultants. Dr. Gensemer maintained that the

confounding factor analysis employed by Dr. Ryan King was flawed, particularly with respect to the consideration of habitat variables as a confounding factor. However, the Board finds that in a subsequent examination of Dr. King by Mr. Morgan, Dr. King convincingly defended the statistical analysis he had used and cast reasonable doubt as to the validity of Dr. Gensemer's criticism. Tr. 12/17/10, p.150.

44. The Board finds that Federal and State Law allows the use of an indicator parameter for mixed ionic stressors.

45. Following 40 CFR 122.44-(d)-1-vi (C), the Board finds that the Appellants have presented a sound scientific argument for the use of conductivity (Specific Conductance) as an indicator parameter for the mixed ionic stressors frequently present in discharges from surface coal mining operations.

46. While WVDEP argues that there must be a single specific and identified chemical substance responsible for violation of the Narrative Standard before a numerical limit may be placed in a permit, 40 CFR 122.44-(d)-1-vi (C)1 states, "(1) The permit identifies which pollutants are intended to be controlled by the use of the effluent limitation." It appears then that a single indicator parameter may be used as representative of more than one pollutant. The Law further states (C)2, "The fact sheet required by 124.56 sets forth the basis for the limit, including a finding that compliance with the effluent limit on the indicator parameter will result in controls on the pollutant of concern which are sufficient to attain and maintain applicable water quality standards;".

47. It should be noted that there are a number of water quality parameters including hardness, alkalinity, TDS, total suspended solids (TSS), biochemical oxygen demand (BOD), and chemical oxygen demand (COD) that measure a mixture of dissimilar substances rather than a single substance.

48. The Board finds that the evidence established that Specific Conductance is a reliable indicator parameter for the ionic stressors at issue in the case.

49. The Board rejects the WVDEP's argument that the science of conductivity measurement is too unsettled. Conductivity, both in the laboratory and in the field is a simple procedure and can be accomplished with lightweight, portable, battery operated devices. Tr. 12/16/10, p.36.

50. Appellee's expert witness in water treatment, Dr. Paul Ziemkiewicz, testified that he analyzed the effect additional mining would be on the TDS and sulfate concentrations in Scott's Run. Tr. 12/16/10, p.86 (Ziemkiewicz testimony).

51. Dr. Ziemkiewicz testified that he calculated the flow and concentrations of TDS and sulfates and determined the effect on the total loading in Scott's Run. An analysis of his calculations indicated that after taking into account "sampling noise" there would not be a difference in the conductivity and sulfate levels in the stream during mining. Tr. 12/16/10, p.90; Appellee Ex. 7).

52. In the Upper Monongahela Watershed, 90 percent of the streams that have a conductivity over 500 have a WVSCI score that is impaired. 12/14/10 Tr., p.299

(Bernhardt testimony). "With conductivities over 300, basically about 65 percent of your streams are classified as impaired." Tr. 12/14/10, p.310 (Bernhardt testimony).

53. The Board finds the fact that EPA's scientists, Dr. Bernhardt's group, and Dr. King's group each analyzed the data from the WVDEP Watershed database employing different methodologies and yet derived an essentially identical number for a protective conductivity standard is a powerful argument for an in-stream conductivity standard of 300 microsiemens/cm. However, the Board sees it as the WVDEP's obligation and duty to develop permit limits that are protective of the receiving stream.

54. The unrefuted testimony of Dr. Bernhardt (Tr. 12/14/10, p. 347) established that even when dealing with a receiving water that is already impaired with respect to WVSCI scores, additional loading of offending pollutant(s) may cause additional damage to the macroinvertebrate community in the affected area and may also extend the area of biological impairment in the downstream direction.

55. The Board finds the testimony by Dr. Palmer (Tr. 12/14/10, p.222) establishes that increased levels of sulfate ion is a reliable signature of surface mining. The testimony also established that elevated conductivity co-occurring with elevated levels of sulfate is more clearly correlated with the biological damage indicated by a decrease in WVSCI scores. While the TDS parameter is highly correlated with conductivity, they do not measure the same thing. TDS measures the actual mass of dissolved solid materials in solution, Conductivity (Specific Conductance) measures

the total ionic activity of the solution. TDS includes both ionic and non-ionic substances while Specific Conductance measures ionized substances only.

56. The Board finds the correlation between levels of sulfate and conductivity in the Upper Monongahela indicates that coal mining is the source of conductivity in this watershed. Appellants' Ex. 29; Tr. 12/14/2010, 292:8- 293:4 (Bernhardt Direct).

57. Conductivity levels measured at monitoring station TS237 in Scotts Run near the mouth of the stream where it enters the Monongahela River between January 2002 and January 2010 range from approximately 500 to 2,000 µS/cm. Appellants' Ex. 16 at p. 1; Tr. 12/14/2010, 112:7-12 (Hansen Direct).

58. Conductivity levels in the effluent from outlet 001, one of the outlets covered by the permit, measured 1,316 µS/cm on April 21, 2007. Appellants' Ex. 17; Tr. 12/14/2010, 115:9-10 (Hansen Direct).

59. Conductivity levels measured at instream monitoring point WVM 6-F-0 just downstream from the New Hill Mine complex between June 2009 and May 2010 ranged from approximately 1,300 to 2,100 µS/cm. Appellants' Ex. 17; Tr. 12/14/2010, 116:11-12 (Hansen Direct).

60. Sulfate levels measured at monitoring station TS237 between January 2002 and January 2010 ranged as high as 1,100 mg/l. Appellants' Ex. 16 at p. 2; Tr. 12/14/2010, 112:15-20 (Hansen Direct).

61. Sulfate levels in the effluent from outlet 001, one of the outlets covered by the permit, measured 390 mg/l on April 21, 2007. Appellants' Ex. 17.

62. Sulfate levels measured at instream monitoring point WVM 6-F-0 just downstream from the New Hill Mine complex between June 2009 and May 2010 ranged from approximately 670 to 1170 mg/l. Appellants' Ex. 17.

63. TDS levels measured at monitoring station TS237 between January 2002 and January 2010 range from approximately 250 to 1,600 mg/l. Appellants' Ex. 16 at p. 3; Tr. 12/14/2010, 113:2-6 (Hansen Direct).

64. TDS levels in the effluent from outlet 001, one of the outlets covered by the permit, measured 908 mg/l on April 21, 2007. Appellants' Ex. 17.

65. TDS levels measured at instream monitoring point WVM 6-F-0 just downstream from the New Hill Mine complex between June 2009 and May 2010 ranged from approximately 1,060 to 1,740 mg/l. Appellants' Ex. 17.

66. Water quality and macro invertebrate data from sites in the Upper Monongahela watershed indicate that macro invertebrate community health in this region has declined in areas with high conductivity and high sulfate. Appellants' Exs. 30, 31, 32; Tr. 12/14/2010, 293:17- 295:23 (Bernhardt Direct).

67. Benthic macro invertebrate data from Scotts Run demonstrates that certain tributaries upstream from recent mining activities, including tributaries upstream from the New Hill West Surface Mine, host a wider diversity of macro invertebrates, including several sensitive genera, than areas downstream of recent surface mining. Tr. 12/17/2010, 158:14 - 160:13 (King Rebuttal).

68. There are no barriers to the repopulation of downstream areas by the upstream communities should levels of conductivity, sulfate, and TDS in the downstream areas be brought back below levels that are harmful to these communities. Tr. 12/17/2010, 160:24- 161:1 (King Rebuttal).

69. New discharges that contribute to and perpetuate elevated levels of conductivity, sulfate, and TDS prevent the repopulation of stream areas by diverse assemblages of native macro invertebrates and the reestablishment of healthy aquatic ecosystems. Tr. 12/17/2010, 160:44 - 161:1 (King Rebuttal).

CONCLUSIONS OF LAW

Standard of Review/Burden of Proof:

1. The Board hears appeals of orders issued by Appellee in accordance with W. Va. Code § 22B-1-7.

2. The Board does not afford deference to the Director's decision, but rather, the Board acts independently on the evidence before it. *W. Va. Division of Envtl. Protection v. Kingwood Coal Co.,* 200 W. Va. 734, 745, 490 S.E.2d 823, 834 (1997).

3. Under W. Va. Code § 22B-1-7(g), the Board "shall make and enter a written order affirming, modifying or vacating the order, permit or official action of the chief or secretary, or shall make and enter such order as the chief or secretary should have entered."

4. To prevail in this appeal, Appellant must raise an issue with sufficient evidence to support a finding that the Appellee's decision was incorrect. *Wetzel County Solid*

Waste Auth. V. Chief, Office of Waste Management, Div. of Envtl. Protection, Civil Action No. 95-AA-3 (Circuit Court of Kanawha County, 1999).

5. If Appellant does so, then the burden shifts to the Appellee to produce evidence demonstrating that its decision was sound, regardless of Appellant's evidence. *Id.* Appellant then has an opportunity to show that the evidence produced by the Appellee is pre-textual or otherwise deficient. *Id.*

Sufficiency of the Permit to Ensure Protection of State Water Quality Standards:

6. The Board finds the permit is unlawful because it fails to include enforceable effluent limits sufficient to ensure protection of West Virginia's narrative and numeric water quality standards.

7. The CWA and its implementing regulations require that the limits WVDEP sets forth in an NPDES permit must ensure compliance with all applicable water quality standards, including narrative water quality standards. *See* 33 U.S.C. § 1311(b)(1)(A) and (C);40 C.F.R. § 122.44(a)(1) and (d)(1).

8. The WV/NPDES rules for coal mining facilities specifically apply and carry out this federal requirement, stating "The discharge or discharges covered by a WV/NPDES permit are to be of such quality so as not to cause violation of applicable water quality standards adopted by the Department of Environmental Protection, Title 47, Series 2." 47 C.S.R. § 30-5.1.f.

9. The U.S. Court of Appeals for the District of Columbia Circuit has observed, "the rubber hits the road when the state-created standards are used as the basis for specific

effluent limitations in NPDES permits." *American Paper Institute, Inc. v. U.S. E.P.A.*, 996 F.2d 346, 350 (D.C. Cir. 1993).

10. The effluent limits in a WV/NPDES permit "must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which [DEP] determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." 40 C.F.R. § 122.44(d)(1)(I).

11. West Virginia's narrative standards prohibit discharges of "[m]aterials in concentrations which are harmful . . . to . . . aquatic life" (47 C.S.R. § 2-3.2.e) or that cause "significant adverse impacts to the . . . biological components of aquatic ecosystems." (47 C.S.R. §§ 2-3.2.i).

12. The permit does not contain effluent limits sufficient to ensure compliance with the West Virginia standard prohibiting discharges of materials in concentrations which are harmful to aquatic life. 47 C.S.R. § 2-3.2.e.

13. The permit does not contain effluent limits sufficient to ensure compliance with the West Virginia standard prohibiting discharges that cause significant adverse impacts to the biological components of aquatic ecosystems. 47 C.S.R. § 2-3.2.i.

Limits on Conductivity, Sulfate, and Total Dissolved Solids:

14. West Virginia's water quality standards do not include numeric standards for conductivity, sulfate, or TDS.

15. For pollutants or pollutant parameters for which the state has not promulgated a numeric standard, WVDEP must conduct a reasonable potential analysis to determine whether that pollutant or pollutant parameter will cause, have the reasonable potential to cause, or contribute to an excursion above a narrative standard. 40 C.F.R. § 122.44(d)(1)(I).

16. If a reasonable potential exists for an excursion above a narrative standard, WVDEP must establish effluent limits for that pollutant. 40 C.F.R. § 122.44(d)(1)(vi).

17. The process for establishing permit-specific effluent limits to ensure compliance with narrative standards is distinct from the process for establishing generally applicable numeric standards, and "does not supplant – either formally or functionally – the CWA's basic statutory framework for the creation of water quality standards; rather, it provides alternative mechanisms through which *previously adopted* water quality standards containing narrative criteria may be applied to create effective limitations on effluent emissions." *American Paper Institute*, 996 F.2d at 351 (emphasis in original).

18. Because high levels of conductivity cause conditions that violate state narrative water quality standards, because the discharge from surface coal mining facilities similar to the New Hill West Surface Mine are known to contain high conductivity levels, and because of scientific data establishing that discharges such as those proposed by the New Hill West Mine will lead to conductivity levels in the higher range than background in un-impacted streams, WVDEP should have concluded that the discharge of effluent from the New Hill West Surface Mine authorized by the

permit had the reasonable potential to cause or contribute to an excursion above a narrative water quality standard.

19. WVDEP erred when it failed to conduct such a reasonable potential analysis, and when it failed to include effluent limits for conductivity in the permit.

20. Because high levels of sulfate violate state narrative water quality standards and the discharge from surface coal mining facilities similar to the New Hill West Surface Mine have been demonstrated to have higher sulfate levels than background streams, and because instream monitoring in Scotts Run indicates that the stream sulfate levels exceed background levels of un-impacted streams, WVDEP should have concluded that the discharge of effluent from the New Hill West Surface Mine authorized by the permit had the reasonable potential to cause or contribute to an excursion above a narrative water quality standard.

21. WVDEP erred when it failed to conduct such a reasonable potential analysis, and when it failed to include effluent limits for sulfate in the permit.

22. Because high levels of TDS cause conditions that violate state narrative water quality standards, because the discharge from surface coal mining facilities similar to the New Hill West Surface Mine are known to exceed TDS levels of background levels of un-impacted streams, because actual discharges from at least one outlet covered by the permit have exceeded TDS levels at higher levels, and because instream monitoring in Scotts Run indicates that the stream already exceeds TDS levels of un-impacted streams, WVDEP should have concluded that the discharge of effluent

from the New Hill West Surface Mine authorized by the permit had the reasonable potential to cause or contribute to an excursion above a narrative water quality standard.

23. WVDEP erred when it failed to conduct such a reasonable potential analysis, and when it failed to include effluent limits for TDS in the permit.

24. The inclusion in the permit of twice monthly report-only monitoring requirements for conductivity, sulfate, and TDS does not excuse these errors because these monitoring requirements are not enforceable effluent limits.

CONCLUSION

The majority of the Board finds that the mining operation has the opportunity and potential to improve water quality. The majority of the Board directs that WVDEP use the EPA Guidance, coupled with Dr. Ziemkiewicz's calculated yields of solids, sulfate, and conductivity from the New West Hill site as a roadmap toward setting effective conductivity limits on the New West Hill permit.

Because Scott's Run is currently biologically impaired, no significant additional ionic loading of the stream should be permitted. If Dr. Ziemkiewicz's calculations (12/16/10 Tr. p.90) are accurate, no significant additional ionic loading would occur. The Board urges the WVDEP to use Dr. Ziemkiewicz's calculations as a basis for setting numerical permit limits for sulfate and conductivity. In-stream values for these parameters measured downstream of the outfall(s) should not exceed the values immediately upstream of the outfall(s) by more than 2 percent.

The Board finds there is a strong positive correlation between conductivity and diminished macro-invertebrate community health. While this decision is permit specific, the Board understands that head water stream communities may require a more strict conductivity standard than streams of higher stream order such as Scotts Run.

The Board finds that WVDEP erred in issuing the Permit without conducting a reasonable potential analyses and without including effluent limits necessary to ensure compliance with the state narrative and numeric water quality standards.

The majority of the Board **REMANDS** this permit Modification Number 9 to the WVDEP to modify the Permit to take action consistent with the written order of this Board in March 2011 and this supplemental order. The majority of the Board **REMANDS** this permit Modification Number 9 to WVDEP to modify the permit to require a reasonable potential analyses to be conducted for Conductivity, Sulfate, and TDS.

The majority of the Board finds that there is evidence of impairment for conductivity of Scotts Run according to the WVDEP's use of the WV Stream Condition Index. The Board **REMANDS** the permit Modification Number 9 to WVDEP for modification to require appropriate and enforceable limits for conductivity, sulfate, and TDS.

ORDERED and **ENTERED** this 30th day of July, 2012.

Edward M. Snyder, Chairman