

ATTACHMENT "A"

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March 26, 2010

Mr. Jason Bostic  
West Virginia Coal Association  
260 Association Drive  
Charleston WV 25311

**RE: Narrative Water Quality Standards**

Dear Mr. Bostic:

The West Virginia Coal Association ("WVCA") members have been the subject of ongoing efforts by the United States Environmental Protection Agency ("EPA") to impose new interpretations of existing federal law, and to impose its own interpretations of state laws. It has focused in particular on applying water quality laws to changes in benthic macroinvertebrate communities in streams. The EPA has attempted to require numerous permitting restrictions on both NPDES and § 404 permits based on its new conclusions that increased conductivity is the cause of the change in the macroinvertebrate (bug) community, which it has concluded to be a significant adverse impact on water quality and a violation of narrative water quality standards.

The EPA's efforts, to our knowledge, have been singularly focused on coal mining. It remains to be seen whether its new efforts will also stop or hinder industrial and wastewater discharges, earth-moving, storm water discharges, and other development in West Virginia, but the impacts to West Virginia coal mining are already occurring.

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Due to this course of events, and at your request, we have worked in coordination with the West Virginia Coal Association to evaluate the legal, technical and policy background for application of narrative water quality standards such as those included in the West Virginia Water Quality Standards Rule, and to evaluate appropriate interpretation and implementation of narrative standards in West Virginia in compliance with State statutes and rules, and consistent with applicable federal laws and guidance.

As a result of that extensive work, we present the attached proposed policy document to you for your review and use. We believe that it addresses the interpretation and implementation of West Virginia's narrative criteria to coal mining activities in a comprehensive and legally sound manner. The document calls for extensive chemical and biological monitoring on a watershed scale as part of all coal mining WV/NPDES permits, and would actually require much more extensive in-stream evaluation than is currently required or carried out by the WVDEP as part of its own water quality programs. Nevertheless, we believe that the document represents a "balance" and is consistent with the mandate for "reasonable standards of purity and quality" called for in the West Virginia Water Pollution Control Act.

We are please to have had the opportunity to assist on this matter. Please contact either of us if you have questions.

Sincerely,



Allyn G. Turner



Michael C. Castle

### Michael C. Castle

Mr. Castle is president of Strategic Solutions, LLC in Hurricane, WV. He holds a B.S. in Mining Engineering from University of Kentucky, an M.S. in Environmental Science from West Virginia Graduate College, an MBA from Northern Kentucky University, and a J.D. from Salmon P. Chase College of Law, Northern Kentucky University. He has more than twenty-five years of progressive experience in all areas of business operations, with a focus on the coal industry. His private industry background includes various positions including engineer, surface mine foreman, surface mine superintendent, operations manager, company president, small business owner/operator, legal counsel, associate general counsel and director of regulatory affairs, and environmental and business consultant. During his private industry career, he has developed experience in management, administration, operations, sales, engineering, environmental engineering and compliance, regulatory compliance and policy, environmental science and planning, administrative and environmental law, project development, project management, project evaluation, strategic planning, budgeting, cost containment, and company restructuring.

Many of the positions held have involved working with the science, technical, environmental, and regulatory compliance aspects of various projects and operations and has required working with administrative and regulatory agencies such as the U.S. Environmental Protection Agency, U.S. Mine Safety and Health Administration, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, West Virginia Department of Natural Resources, West Virginia Department of Environmental Protection, and other similar state agencies in Kentucky and Virginia. He has developed expertise in many of the environmental and regulatory laws included the CWA, SMCRA, NEPA, RCRA, and the APA. In addition to private industry, he has also held positions in the government sector including serving as the Associate Regional Administrator for Region III of EPA; the Commissioner of the West Virginia Bureau of the Environment, a cabinet level position, where he was responsible for the implementation and enforcement of all regulatory programs administered by the Division of Environmental Protection including the state versions of the CWA, SMCRA, RCRA, CAA, and other programs; and as an intern with the Office of Surface Mining where he worked closely with attorneys and senior officials in developing policy and legal strategy relating to the "Bragg" litigation and mountaintop mining issues. He has taught environmental law, as an adjunct professor, for Marshall University's graduate program and is a member of the Kentucky Bar. His most rewarding accomplishment is serving his country as a U.S. Army veteran and later as an officer in the Kentucky National Guard.

Allyn G. Turner

Ms. Turner is a member of the law firm of Spilman Thomas & Battle, PLLC's Charleston, West Virginia office and heads the firm's Environmental Practice Group. She has broad legal and regulatory experience in environmental issues. Ms. Turner has over nineteen years of experience in environmental matters, including work on CWA, NEPA, SDWA, CERCLA, RCRA, SMCRA and EPCRA matters and state environmental matters.

Ms. Turner previously served as Director of the West Virginia Department of Environmental Protection's Division of Water and Waste Management (formerly the Office of Water) from 2000 to 2005. She also served as counsel to the agency as Manager of its Office of Legal Services from 1998 to 2000. In that role, she focused on representation of the Office of Water, and handled civil, administrative and other matters on behalf of the agency. In 2002-2003, Ms. Turner worked for the United States Environmental Protection Agency's (on assignment from the WVDEP) Office of Water as a state representative assisting in the development of water program goals and targets for EPA's Strategic Plan.

Ms. Turner has both regulatory and private practice experience working with the United States Environmental Protection Agency, United States Army Corps of Engineers, United States Fish and Wildlife Service, West Virginia Department of Environmental Protection, West Virginia Department of Natural Resources, West Virginia Conservation Agency.

She represents clients in federal and state courts, and state administrative boards. Her environmental practice focuses on litigation, permitting, compliance, enforcement, and regulatory issues.

Ms. Turner earned her bachelor's degree in Environmental Sciences from the University of Virginia and her J.D. from the Wake Forest University School of Law. She is a native of Riner, Virginia.

## PROPOSED:

### Policy Statement and Implementation Guidance for Mining NPDES Permits

#### Narrative Criteria for the Protection of Fish and Other Aquatic Life 47 CSR 2, sections 3.2.e. and 3.2.i.

#### EXECUTIVE SUMMARY

This Policy and Guidance (hereinafter "Policy") is intended to assist in the implementation of the narrative criteria that relate specifically to the protection of fish and other aquatic life. See 47 CSR 2-3.2.e. and 3.2.i (the "narrative criteria").<sup>1</sup> This Policy is designed for use in regulating mining activities and shall be applied in conjunction with applications for a new West Virginia National Pollutant Discharge Elimination System ("WV/NPDES") permit or for a WV/NPDES permit renewal.

As set forth herein, the West Virginia Department of Environmental Protection ("WVDEP") will require permit applicants to determine whether mining activities may cause or materially contribute to a violation of the narrative criteria through the following steps:

1. Establish a "baseline" chemical, biological and habitat condition through chemical sampling, a biological survey, and habitat assessment,<sup>2</sup> using approved assessment methodologies.
2. Implement a monitoring plan, as approved by WVDEP, to determine impacts to fish and other aquatic life as a result of permitted discharge(s).
3. If the required monitoring demonstrates that the Fish and Other Aquatic Life designated use is not being attained, further steps will be required to determine the cause of such conditions and the permittee will be required to address any significant adverse impact (i.e., the failure to protect fish and other aquatic life as set forth herein) caused or materially contributed by the permitted discharge(s). To the extent that the

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<sup>1</sup> This Policy does not address other narrative criteria, including the prohibition against industrial or other wastes causing visible floating or settleable solids, scum, foam, oily slicks, sludge deposits, odors, harmful concentrations of bacteria, visible color, or discharges that require an unreasonable degree of treatment for the production of potable water. See 47 CSR 2-3.a, b, c, d, f, g, and h. Further, while the West Virginia's narrative toxic criteria in 3.2.e are addressed here, the narrative toxic criteria were designed for use "as the basis for establishing chemical-specific limits for waste discharges where a specific pollutant can be identified as causing or contributing to the toxicity and the State has not adopted chemical-specific numeric criteria." USEPA, *Water Quality Standards Handbook: Second Edition*, EPA 823-B-94-005a (August 1994) at 3-24. Although 47 CSR 30 addresses the establishment of criteria for such pollutants for the protection of aquatic life, the WVDEP believes that the most appropriate application of 3.2.e. is as expressed in the *Water Quality Standards Handbook*.

<sup>2</sup> EPA has recognized the "intricate relationship between the biosurvey and the habitat assessment," stating that "[b]iosurveys should be routinely coupled with . . . an objective assessment of habitat quality." *Id.*

monitoring and analyses conducted pursuant to this Policy demonstrate that the permitted discharge(s) cause or materially contributed to any significant adverse impacts, then effluent limitations will be imposed to ensure protection of the narrative criteria.<sup>3</sup>

## STATEMENT OF POLICY

It is West Virginia's public policy to "maintain reasonable standards of purity and quality of the water of the state consistent with (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, aquatic and plant life; and (3) the expansion of employment opportunities, maintenance and expansion of agriculture and the provision of a permanent foundation for healthy industrial development." W. Va. Code 22-11-1(a).

To help restore and maintain the biological integrity of state waters and as part of implementing the state's narrative water quality standards, it is the policy of the WVDEP that biological and habitat assessment methods shall be employed in conjunction with chemical-specific analyses and toxicity testing, if required, to evaluate the attainment or nonattainment of designated uses in State waters.<sup>4</sup>

## STATUTORY AND REGULATORY BASIS

Through the federal Clean Water Act ("CWA"), Congress established a national goal that, "wherever attainable," water quality should be achieved to "provide[] for the protection and propagation of fish, shellfish, and wildlife and provide[] for recreation in and on the water." 33 U.S.C. § 1251(a)(2). Likewise, the West Virginia Water Pollution Control Act ("WVWPCA"), W. Va. Code § 22-11-1 *et seq.*, includes provisions to restore and maintain the chemical, physical and biological health of the state's waters.

West Virginia has received federally delegated authority to implement the state's program for the protection of water quality. WVDEP has been charged with the responsibility to administer West Virginia's water quality program. This authority includes the development and adoption of state water quality standards. West Virginia's water quality standards have been approved by both the West Virginia Legislature and the federal United States Environmental Protection Agency ("EPA").

As set forth in the CWA and federal regulations, a water quality standard "defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 CFR § 131.2.

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<sup>3</sup> If necessary, effluent limitations will be imposed in accordance with either (a) 40 C.F.R. § 122.44(d)(1)(vi)(A) and 47 CSR 2-9, as appropriate, or (b) 40 C.F.R. § 122.44(d)(1)(v).

<sup>4</sup> The protection of fish and other aquatic life as discussed herein would result in the attainment of the "propagation of fish and other aquatic life" designated use, and failure to protect the "propagation of fish and other aquatic life" would result in a failure to attain the designated use, or "nonattainment."

## Designated Uses

All waters must be protected such that they attain compliance with their respective designated uses, and water quality standards are established to protect those uses. Consistent with these goals and obligations under the CWA and WVWPCA, WVDEP has designated all waters of the state, at a minimum, for the Propagation and Maintenance of Fish and Other Aquatic Life (Category B) and for Water Contact Recreation (Category C), unless specifically noted otherwise. 47 CSR 2-6.1. Waters classified as Category B include warm water fishery streams (Category B1), trout waters (Category B2) and wetlands (Category B4). 47 CSR 2-6.3. These designated uses are protected through numeric<sup>5</sup> and narrative water quality criteria, as implemented through the WV/NPDES permitting process.

## Narrative Water Quality Criteria

In addition to protection of designated uses through the promulgation of numeric criteria for specific pollutants, designated uses are also protected through application of narrative statements relating to water quality, or "narrative criteria." West Virginia's narrative criteria are set forth in 47 CSR 2-3, entitled "Conditions Not Allowable In State Waters." Two of these narrative criteria relate specifically to the protection of aquatic life:

No sewage, industrial wastes or other wastes present in any waters of the state shall cause or materially contribute to any of the following conditions thereof:

\* \* \* \*

3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life.

\* \* \* \*

3.2.i. Any other condition ... which adversely alters the integrity of waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

47 CSR 2-3.2.e and 3.2.i.

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<sup>5</sup> Numeric standards are established by a defined process that requires approval by both the West Virginia Legislature and the EPA. This process results in a defined number or range of numbers that establish a legal endpoint for purposes of permitting and regulatory actions.

## Protection of Fish and Other Aquatic Life

Neither EPA's regulations nor West Virginia's water quality standards define "aquatic life" or "protection of aquatic life." EPA guidance states that an aquatic community is "[a]n association of interacting populations of aquatic organisms in a given waterbody or habitat."<sup>6</sup> The CWA, on the other hand, requires that where attainable water quality should "provide[] for the protection and propagation of fish, shellfish, and wildlife and provide[] for recreation in and on the water. 33 U.S.C. § 1251(a)(2).

WVDEP recognizes that human activity of all sorts impacts waterbody habitat and water quality. It is the State's role to balance water quality protections with expected and desired human activities. WVDEP is statutorily obligated to apply and enforce West Virginia's water quality program to "maintain reasonable standards of purity and quality of the water of the state consistent with (1) public health and public enjoyment thereof; (2) the propagation and protection of animal, bird, fish, aquatic and plant life; and (3) the expansion of employment opportunities, maintenance and expansion of agriculture and the provision of a permanent foundation for healthy industrial development." W. Va. Code 22-11-1(a).

Consistent with the provisions of the federal CWA, the WWPCA, and the supporting agency regulations, WVDEP has determined that the Fish and Other Aquatic Life designated use is protected, and the requirements of the narrative criteria are met, when a stream (a) supports a balanced aquatic community that is diverse in species composition; and (b) contains appropriate trophic levels of fish (in streams with sufficient flows to support fish populations); and (c) the aquatic community is not composed only of pollution tolerant species, or the aquatic community is composed of benthic invertebrate assemblages sufficient to perform the biological functions necessary to support fish communities within the assessed reach (or, if the assessed reach has insufficient flows to support a fish community, in those downstream reaches where fish are present).<sup>7</sup>

This interpretation is consistent with state and federal law,<sup>8</sup> and will serve as the basis for implementation of the narrative criteria through the evaluation of various components and attributes of the larger aquatic community.<sup>9</sup>

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<sup>6</sup> See Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (May 1991), adopted by EPA as a Final Policy in June 1991.

<sup>7</sup> Note that some streams are naturally use-limited streams, such as a non-flowing stream that would not be expected to support any fish community even in its natural, undisturbed state. In such case, assessment of the stream channel habitat, and benthic macroinvertebrate community should be the primary focus in determining whether aquatic life uses, if any, are protected.

<sup>8</sup> EPA has defined an aquatic community as "[a]n association of interrelating populations of aquatic organisms in a given waterbody or habitat." Consideration must be given to the particular waterbody or habitat being assessed.

<sup>9</sup> See EPA's Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (May 1991), which indicates that biosurveys cannot fully characterize an entire aquatic community and its many attributes, and accordingly suggests that "State standards should contain biological criteria that consider various components (e.g., algae, invertebrates, fish) and attributes (measures of structure and/or function) of the larger aquatic community." WVDEP's Policy and interpretation is consistent with this recommendation.



## FRAMEWORK FOR INTERPRETATION

Point source discharges of pollutants into waters cannot occur except as authorized by WVDEP through the issuance of a WV/NPDES permit. Numeric criteria are used as the basis for the development of individual WV/NPDES effluent limits consistent with West Virginia's rules and applicable federal rules and guidance (e.g., *Technical Support Document for Water Quality-based Toxics Control, U.S. EPA NPDES Permit Writers' Manual*). Compliance with West Virginia's narrative criteria is a requirement of all WV/NPDES permits.

As explained in the U.S. EPA *NPDES Permit Writers' Manual*, EPA-833-B-96-003 (December 1996), as well as EPA's *Policy on the Use of Biological Assessments and Criteria in the Water Quality Program* (May 1991), there are three approaches to water quality-based toxics control: (1) chemical-specific analyses, (2) toxicity testing methods, and (3) biological criteria. In West Virginia, no numeric biocriteria have been developed and adopted through rulemaking to determine a specific waterbody's attainment of its designated uses. Instead, West Virginia's water quality standards include narrative criteria that address toxicity to fish and aquatic life. WVDEP shall use this Policy, including the agency interpretations herein, to implement these narrative criteria. See Appendix A for further detail.<sup>10</sup>

In determining whether a proposed regulated activity may cause or materially contribute to a violation of the narrative criteria, WV/NPDES permittees and/or permit applicants (collectively, "permittees") will be required to evaluate potential toxicants to fish and other aquatic life through first establishing site-specific baseline conditions, including water chemistry, fish, macroinvertebrate assemblages, and habitat. Specifically, each permittee will work with the agency to (a) establish a "baseline" biological condition through a biological survey using approved assessment methodologies, (b) implement a monitoring plan to determine impacts to fish and other aquatic life as a result of its permitted discharge(s), and (c) if the required monitoring demonstrates that the Fish and Other Aquatic Life designated use is not being attained, take additional steps to determine the cause of nonattainment and address any nonattainment caused or materially contributed to by its permitted discharge(s). Each of these steps is set forth below in greater detail.

### Biological Assessments

All biological assessments undertaken pursuant to this Policy must evaluate the following three components of a stream segment: (1) fish, where sufficient flow is available to support a fish community, (2) benthic macroinvertebrates, and (3) habitat.

Biological assessments must be conducted through the use of the following biological assessment tools, as set forth below: (1) approved<sup>11</sup> habitat assessment tools, (2) approved fish assessment tools, (3) the WVSCI or other approved benthic assessment tools,<sup>12</sup> and (4) any

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<sup>10</sup> All appendices are incorporated by reference and in full as part of this Policy.

<sup>11</sup> For purposes of this Policy, an "approved" assessment methodology means any bioassessment tool that has been approved and adopted for use either by USEPA or by an individual state agency for purposes of assessing biological integrity.

<sup>12</sup> For example, the Index of Biological Integrity ("IBI").

other approved assessment tools or methods needed to assess any special conditions (e.g., wetlands). Multiple biological assessment tools or methodologies have been developed and utilized by state and federal agencies for the purpose of evaluating the biological condition of a water segment. The WVSCI is one such assessment methodology, and was designed specifically as a multi-metric assessment tool for wadeable (i.e., flowing) streams. Currently, WVDEP uses the WVSCI to make stream impairment determinations, and USEPA has recognized the WVSCI as a tool to assist in applying narrative criteria. In addition to the WVSCI, other biological assessment tools include USEPA's Rapid Bioassessment Protocols ("RBP") and one or more modules or protocols developed for USEPA's Environmental Monitoring and Assessment Program ("EMAP"). Compliance with the narrative criteria, as well as assessment of an individual discharger's reasonable potential to violate the narrative criteria, can be evaluated through use of one or a combination of these and other similar approved assessment tools, together with chemical-specific monitoring and, if necessary, toxicity testing designed to determine the source of any significant adverse impact on the biological community.

Multiple assessment tools must be used to establish baseline conditions and to evaluate whether the narrative criteria are being met. For example, the WVSCI does not evaluate habitat. Moreover, because the WVSCI was developed using primarily third order B- and C-type West Virginia streams<sup>13</sup> as reference conditions, it is not appropriate for the evaluation of extremely high-gradient (i.e., Aa- and A-type) streams, nor is it designed for use in non-flowing streams. Other assessment tools must be used, either separately or in conjunction with the WVSCI, for effective implementation of these narrative criteria.

The following guidelines shall be used in selecting assessment methodologies and developing site-specific monitoring plans:

1. Appropriate EMAP protocols or other approved methodologies designed specifically for use in non-flowing streams should be used to assess ephemeral and intermittent streams, regardless of whether or not the streams are flowing at the time of the assessment. This approach will allow for the consistent use of bioassessment tools during periods of flow and periods of non-flow, which will provide a more meaningful evaluation of relative biological integrity over time.
2. Applicants must assess both in-stream and habitat elements of flowing streams, and stream channel habitat elements of non-flowing streams.
3. The WVSCI should never be used as an in-stream assessment tool for Aa- and A-type streams. Use of the WVSCI shall be limited to riffle habitat with gravel: cobble substrate.

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<sup>13</sup> References to "stream types" relate to hydrogeomorphic stream classifications. West Virginia first and second order headwater streams are typically classified as Aa and A, and gradually turn into B-type streams. Typically, B-type streams are fairly straight, moderately sloped, and connect Aa and A streams to typically third-order meandering perennial C-type streams. See Rosgen, "Applied River Morphology" (1996).

4. Assessment of fish should be included for all flowing streams (where sufficient flow is available to support a fish community) to ensure that multiple components of the aquatic community are evaluated; an assessment of benthic invertebrates should never be the sole survey tool used to determine compliance with sections 3.2.e and 3.2.i or the attainment or nonattainment of the Fish or Other Aquatic Life designated use.
5. Adverse impacts shown through biological assessment may be attributable to water chemistry, to habitat, or to both, or to other circumstances such as weather or land use changes. Monitoring plans should strive to determine whether and the extent to which adverse impacts are related to land uses, weather, or non-channel habitat, as opposed to regulated discharges.

**NOTE:** In light of the scope of the CWA's NPDES program, WVDEP's implementation of its narrative criteria to protect against unacceptable impacts to fish and other aquatic life necessarily will focus primarily on the potential for such impacts to result from point source discharges that are subject to regulation under a WV/NPDES permit. The agency also will identify and consider nonpoint sources that may cause or materially contribute to unacceptable impacts to fish and other aquatic life. Importantly, biosurveys can indicate only the presence or absence of a biological impact; they cannot directly identify the stress agents causing an identified impact.<sup>14</sup>

## **IMPLEMENTATION STEPS**

### **Step 1: Development of Monitoring Plan - Chemical, Physical and Biological Monitoring**

#### **A. Monitoring Locations and Frequencies**

The permittee shall develop a monitoring plan ("Plan") that must be submitted to WVDEP for approval<sup>15</sup> in conjunction with the issuance or reissuance of its WV/NPDES permit.

The Plan must establish a schedule for conducting biological assessments and chemical-specific monitoring consistent with the requirements of this Section. The assessment/monitoring locations set forth in the Plan should be selected based on a watershed-scale approach.

The Plan must include a monitoring design to determine impacts to fish and other aquatic life as a result of the permitted discharge(s). Such monitoring will include biological assessment, sampling for a chemical-specific indicator(s), and, in certain circumstances, toxicity testing. At a minimum, all biological assessments undertaken pursuant to this Policy

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<sup>14</sup> See Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (May 1991), adopted by EPA as a Final Policy in June 1991.

<sup>15</sup> Any Plan established in accordance with this Policy shall be implemented pursuant to and in satisfaction of requirements under the State's WV/NPDES program, but may also be used to satisfy other regulatory requirements to the extent the data to be collected is applicable and/or relevant (e.g., SMCRA water monitoring).

must evaluate the following three components of a stream segment: (1) fish, where sufficient flow is available to support a fish community, (2) benthic macroinvertebrates, and (3) habitat.<sup>16</sup>

1. The Plan shall specify a monitoring location designated as the Base Monitoring Station (“BMS”). This location will be selected such that the monitoring data will reflect the cumulative biological and chemical impacts of all upstream activities, including the impacts of the project. The BMS shall always be selected at a point downstream where flows are sufficient to support a fish community. The Plan shall specify the elevation, latitude and longitude of the BMS. In addition, the Plan may include Supplemental Base Monitoring Stations (“SBMSs”) located for the purpose of isolating the potential impacts of the project from other known or regulated impacts or discharges.<sup>17</sup> The Plan shall specify the elevation, latitude and longitude of any SBMSs.
  - a. Water chemistry samples shall be collected for establishing baseline conditions (*see* Baseline section, below), and thereafter at the BMS and any SBMSs twice monthly.
  - b. The Plan must also develop a schedule for conducting biological assessments at the BMS and any SBMSs. Biological assessments at the BMS and any SBMSs must be conducted to establish baseline conditions (*see* Baseline section, below), and, at a minimum, semi-annually thereafter. Biological assessments must reflect biological conditions during at least two seasons (with no sampling between November and February) in accordance with applicable sampling guidelines.<sup>18</sup> The applicant must select appropriate methods or protocols in its Plan for bioassessments as required in the Biological Assessments section above.
  - c. The Plan must require reporting to WVDEP at least semi-annually. Reports must include the results of the required bioassessments at the BMS and any SBMSs. The permittee shall submit the analytical results of the required bi-monthly chemical-specific monitoring and any other supplemental monitoring to WVDEP on a quarterly basis. Any Whole Effluent Toxicity (“WET”) testing results must be submitted to WVDEP within thirty (30) days of receipt of the results.
2. The Plan must also identify multiple Satellite Monitoring Stations (“SMSs”) upstream of the BMS and any SBMSs, to be selected as follows for each discharge point associated with the project:

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<sup>16</sup> The WVDEP recognizes that it has heretofore conducted assessments for CWA 303(d) listing purposes using only the WVSCI, but adopts the process and policy set forth herein for narrative criteria implementation.

<sup>17</sup> In the event there is a significant length of stream between the BMS and SMSs that does not have sufficient flow or habitat to support a fish community, the WVDEP may require one additional SBMS further up the stream reach.

<sup>18</sup> Sampling should be done in the same seasons in subsequent years for consistency, to the extent practicable.

- a. A SMS in the receiving stream located at the further of the following: (A) approximately 200 meters downstream of the discharge point or (B) at the furthest downstream location from the discharge point that is upstream of any intervening tributaries. The SMS should be downstream of riprap and other disturbance and located within a relatively natural and intact riparian zone.
  - b. A SMS in the receiving stream located downstream of the first intervening tributary. This station may serve as a SMS for multiple project discharge points, depending on the location of each discharge point.
  - c. Additional SMSs may be selected as appropriate to reflect the condition of the larger watershed.
  - d. The Plan shall specify the elevation, latitude and longitude of all SMSs.
  - e. When establishing baseline conditions, the permittee shall conduct chemical and biological sampling at the SMSs at the same frequency as the BMS and any SBMSs.
  - f. Chemical and biological sampling must be conducted as specified below when biological assessments conducted at the BMS demonstrate nonattainment of the Fish and Other Aquatic Life designated use. Results of sampling at the Satellite Monitoring Station (other than baseline sampling data) must be submitted within thirty (30) days of the sampling event.
3. The Plan must require monitoring consistent with this Policy for the full WV/NPDES permit term, to begin promptly after completion of baseline monitoring (even if this requires monitoring prior to permit issuance and activation).
  4. An example of appropriate monitoring locations is attached to this document as Figure B.

## **B. Monitoring Plan Guidelines**

This Section sets forth guidelines, in addition to the ongoing semi-annual monitoring described in section A above, for the implementation of in-stream chemical and biological monitoring both before (i.e., baseline) and during the WV/NPDES permit term. Adherence to these requirements will allow WVDEP to evaluate the effectiveness of water quality controls and to assess potential downstream impacts to water quality that may occur during the term of the permit.

## 1. Chemical Monitoring at Monitoring Stations

- a. Parameters. The permittee should perform in-stream monitoring for the following parameters:

<u>Parameter</u>	<u>Test Method</u> <sup>19</sup>
Stream Flow, cubic feet per second	
Temperature, degrees Celsius	SM 2550B
Specific conductance, uS/cm	EPA Method 120.1
Total Dissolved Solids, mg/l	EPA Method 160.1
Sulfates, mg/l	EPA Method 300.0
Chlorides, mg/l	EPA Method 300.0
Alkalinity, as CaCO <sub>3</sub> , mg/l	SM 2320B
Total Dissolved Aluminum mg/l	EPA Method 200.8
Total Iron, mg/l	EPA Method 200.8
Total Manganese, mg/l	EPA Method 200.8
Total Selenium, ug/l	EPA Method 200.8
Hardness, mg/l (as CaCO <sub>3</sub> )	SM 2340B
pH, Standard Units	SM 4500-H+ B

- b. Sample Type. Grab samples should be taken whenever possible.
- c. Conditions for Taking Samples. Samples should be collected consistently with BWQ protocol.
- d. Test Methods. All analyses should be done using methods specified in 40 C.F.R. Part 136; specific low-level methods for metals should be selected consistent with the permit.

## 2. Timing of Biological Monitoring at Monitoring Stations

Sampling should be avoided during periods of excessive precipitation and scouring floods. No biological monitoring shall occur between November and February.

### Step 2: Establishing a Baseline Condition

Using the guidelines set forth above, the permittee must establish a site-specific "baseline" by conducting a biological survey<sup>20</sup> using specific assessment tools consistent with

<sup>19</sup> This list is not exhaustive; the agency may specify other EPA approved methods as appropriate.

<sup>20</sup> EPA guidance states that a "biological survey" "[c]onsists of collecting, processing, and analyzing a representative portion of the resident aquatic community to determine the community structure and function." Policy on the Use of Biological Assessments and Criteria in the Water Quality Program (May 1991), adopted by EPA as a Final Policy in June 1991.

the Biological Assessments section of this Policy. This biological survey should be conducted on a watershed scale at the BMS and any SBMSs.<sup>21</sup> The primary purpose of establishing this baseline is to support watershed-scale chemical and biological monitoring.<sup>22</sup>

In establishing a baseline condition for a specific permitted site, the permittee must collect biological data from at least two seasons (e.g., spring, summer or fall).<sup>23</sup> Chemical-specific baseline data must be collected at the same sites where biological assessments are conducted, and must include at least 12 qualifying sampling events per location, consistent with BWQ protocols for frequency and sampling conditions. Chemical samples should always be collected simultaneously with the required biological surveys where possible (which would be included as part of the 12 or more baseline sampling events).

### Step 3: Selection of In-stream Screening Measure

There has been considerable discussion<sup>24</sup> regarding the use of the WVSCI and specific conductance (or “conductivity”) as potential measurement standards for determining whether a stream is biologically impaired and/or whether a discharge will cause or materially contribute to a violation of the State’s narrative water quality standards.<sup>25</sup> WVDEP recognizes that both the WVSCI and conductivity are indirect measurement tools that can be employed as part of an assessment of the aquatic ecosystem and water quality, respectively, and has considered this

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<sup>21</sup> WVDEP is supportive of watershed-based assessment, management and controls. A watershed-based approach will enable WVDEP to better understand conditions across differing stream types and habitats, as well as conditions associated with multiple discharges in a single watershed. Accordingly, baseline assessment and monitoring pursuant to this Policy should be accomplished using a watershed-based approach. As WVDEP has concluded, “[i]t is essential to consider these downstream impacts when developing and implementing water quality protection and restoration actions.” WVDEP website for Watershed Protection, *available at* <http://www.dep.wv.gov/WWE/watershed/Pages/default.aspx> (accessed January 2010).

<sup>22</sup> The WVDEP recognizes that the time required to conduct baseline sampling for submittal with an application for a new or renewal may pose difficulties, and will therefore work with applicants during the first six months after issuance of this Policy to allow for baseline evaluation and Plan development during permit review or as a permit term or condition. Further, any permittee or applicant with a pending 404 permit application at the time of issuance of this Policy will be asked to submit a baseline development and monitoring plan consistent with this Policy within 60 days as a permit modification.

<sup>23</sup> A single-season biological survey and habitat assessment may be appropriate where the permitted discharge is seasonal, short-term, or non-continuous and anticipated to occur only under certain conditions. Such factors should be considered on a case-by-case basis.

<sup>24</sup> Information relevant to this discussion would include but not be limited to communication with EPA and the public, comments received, available data and literature, and existing criteria and studies (or the absence of studies) available to support any water quality criteria for conductivity.

<sup>25</sup> Conductivity is a measurement of a water’s ionic activity and content. Conductivity values can differ greatly between watersheds and within a single watershed due to the geological characteristics of those watersheds. Additionally, conductivity within a watershed can be altered by the course of anthropogenic sources such as point source and non-point source discharges.

West Virginia has not established a numeric water quality standard for conductivity. As of the date of this Policy, USEPA likewise has not established recommended criteria for conductivity. No Region III States have adopted numeric criteria for conductivity, likely due to the highly variable nature of the factors that affect conductivity levels and because a direct causal relationship between conductivity and the attainment of designated uses has not been demonstrated sufficiently. Due to concerns expressed by USEPA regarding conductivity as a potential cause of water quality concerns, however, WVDEP has incorporated conductivity monitoring into this Policy.

discussion in the development of this Policy, including data generated by WVDEP's Watershed Assessment Program.

WVDEP further recognizes that no numeric criteria have been established for conductivity in West Virginia, and concludes that insufficient information is available to justify the development of numeric criteria for conductivity to use as the basis for the agency's interpretation or implementation of West Virginia's narrative criteria in a manner consistent with applicable state and federal rules.

An appropriate in-stream screening measure ("ISM") will be used to establish an evolving, site-specific chemical "trigger" for conducting additional biological assessments during the course of the WV/NPDES permit term to verify a stream segment's continued attainment with the Fish and Other Aquatic Life designated use. Conductivity shall be used as the default ISM, unless specific information related to an individual project supports the selection of a different parameter. The ISM will apply at the Base Monitoring Station, as set forth below. A threshold screening value for the ISM will be established initially at the ninety-fifth (95<sup>th</sup>) percentile of all baseline sampling values of the ISM, and this value will serve as the "trigger level" for undertaking additional sampling and assessment. This threshold screening value will thereafter be adjusted as appropriate based on the results of ongoing monitoring, using the ninety-fifth (95<sup>th</sup>) percentile of all baseline and ongoing monitoring values of the ISM, plus one standard deviation, each time a semi-annual bioassessment of the BMS is satisfactory.

#### **Step 4: Ongoing Monitoring During the Permit Term**

- A. Ongoing semi-annual biological and chemical-specific monitoring is required and shall be conducted in accordance with the terms of the Plan for the full term of the WV/NPDES permit. However, additional sampling requirements (and other obligations) may be required pursuant to this Section based on observed levels of the ISM at the BMS.
- B. If a required semi-annual biological assessment conducted at the BMS pursuant to the Plan demonstrates that the Category B (Fish and Other Aquatic Life) **designated use is not being attained**,<sup>26</sup> then the permittee must conduct a follow-up biological assessment immediately to verify such nonattainment. If the results of this follow-up biological assessment confirm that the Category B (Fish and Other Aquatic Life) designated use is not being attained at the BMS, then the permittee shall initiate stream reconnaissance and conduct an ambient toxicity test at the BMS and any SBMSs in accordance with Section (D)(2), below.
- C. If the average monthly value of the ISM remains **below the threshold screening value** (i.e., the ninety-fifth (95<sup>th</sup>) percentile of all baseline sampling values), then the permittee will continue its regular biological and chemical-specific sampling regime in accordance with the Plan.

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<sup>26</sup> Attainment of the Fish and Other Aquatic Life designated use discussed here refers to protection of the Fish and Other Aquatic Life use as specified in this Policy.



D. If the average of the ISM increases **above the threshold screening value** (i.e., the ninety-fifth (95th) percentile of all baseline sampling values) for two consecutive months, then the permittee must conduct an additional biological assessment at the BMS and any SBMSs within thirty (30) days. If seasonality and/or weather-related constraints prevent the completion of this biological assessment within this 30-day timeframe, the biological assessment must be conducted as soon as practicable. This bioassessment will be in addition to the semi-annual bioassessments required under the Plan. In conducting this bioassessment, a biologist must exercise Best Professional Judgment to determine whether fish and other aquatic life designated uses are being protected (i.e., attained) at the BMS using the policy and guidelines herein.

1. If the bioassessment at the BMS demonstrates that the fish and other aquatic life **designated use is being attained**,<sup>27</sup> then the threshold screening value for the ISM will be revised by adjusting the threshold to reflect the ninety-fifth (95th) percentile of all baseline sampling values, plus one standard deviation. After revising the threshold screening value, monitoring will resume and this process will be repeated if the average of samples collected for two consecutive months of the ISM collected at the Base Monitoring Station exceeds this revised threshold.<sup>28</sup>
2. If the bioassessments at the BMS and any SBMSs demonstrate that the fish and other aquatic life **designated use is not being attained**, then the permittee must implement additional steps designed to identify the source of any such impact.<sup>29</sup> Additional steps to be taken are as follows:
  - a. The permittee shall initiate stream reconnaissance of the reaches upstream of the BMS and any SBMSs to identify any potential physical- or habitat-related causes of nonattainment and conduct an ambient toxicity test at the BMS and any SBMSs in accordance with subparagraph (B) below. To the extent that the permittee can identify physical- and habitat-related sources of biological impact and provided that ambient toxicity testing eliminates water chemistry as a cause of nonattainment,<sup>30</sup> the threshold screening value for the ISM will be increased in accordance with section (D)(1), above.

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<sup>27</sup> This procedure will also apply if a semi-annual bioassessment conducted pursuant to the permittee's Plan demonstrates that fish and other aquatic life designated uses are not being attained at the Base Monitoring Site.

<sup>28</sup> The baseline data serves as the basis for the threshold screening value for the ISM. Each time this sequence is repeated, with the bioassessment showing that the Fish and Other Aquatic Life designated use are being attained, the threshold screening level will be adjusted by one standard deviation.

<sup>29</sup> USEPA's *Water Quality Standards Handbook* (2d ed. 1995) notes that "[w]hen water quality impairments are detected using biological criteria, they can only be applied in a regulatory setting if the cause for impairment can be identified."

<sup>30</sup> EPA recognizes that WET testing "is one way we implement the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts." See <http://www.epa.gov/waterscience/methods/wet/>. Ambient toxicity testing in this context should likewise be an appropriate tool to determine chemical toxicity of stream water (including the impact of upstream effluent) to the resident biological community.

b. Ambient toxicity testing:

- i. If the results of this ambient toxicity testing show that the established effect level is not exceeded (i.e., a satisfactory or “pass” result), then water chemistry will be eliminated as the cause of the adverse biological impacts. The permittee will continue to evaluate other potential sources of the observed biological impacts in accordance with its stream reconnaissance and subparagraph (a), above.
- ii. If the results of this ambient toxicity testing demonstrate that the established effect level is exceeded in-stream, then the permittee shall conduct ambient toxicity testing at its SMSs to evaluate potential water chemistry impacts upstream of the BMS and any SBMSs.
  - A. If the results of the ambient toxicity testing at the Satellite Monitoring Station(s) indicate that the established effect level is not exceeded, then the permittee must evaluate the watershed and identify any physical- and habitat-related source(s) of the observed biological impact. The permittee may resume its monitoring in accordance with its Plan.
  - B. If the results of the ambient toxicity testing at the Satellite Monitoring Station(s) indicate that the established effect level is exceeded, then the permittee must conduct whole effluent toxicity (“WET”) testing at the project’s discharge points<sup>31</sup> consistent with EPA methods.
    1. If the WET testing results do not exceed the established effect level (i.e., a “pass” result), then the permittee’s effluent may be eliminated as the source of the observed biological impacts. The permittee shall evaluate the watershed and identify any physical- and habitat-related source(s) of the observed biological impact and may resume monitoring pursuant to its Plan.
    2. If the WET testing results do exceed the established effect level, then WVDEP will find that the permittee has exhibited a reasonable potential to cause or materially contribute to a violation of sections 3.2.e and 3.2.i of West Virginia’s narrative water quality criteria. Accordingly, the permittee will be required to identify toxic parameters associated with its effluent. Appropriate effluent limitations will be developed in accordance with 40 C.F.R. § 122.44(d)(1)(vi)(A) and 47 CSR 2-9, as appropriate. If the individual pollutants of concern cannot be identified for purposes of establishing chemical-specific effluent limitations in accordance with 40 C.F.R. §

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<sup>31</sup> This step applies only to those discharge points associated with the Satellite Monitoring Stations where the project’s effluent “toxicity” exceeds the established effect level.

122.44(d)(1)(vi) after the permittee has conducted speciation of the effluent, then WVDEP will establish appropriate WET limitations pursuant to 40 C.F.R. § 122.44(d)(1)(v). The permittee's WV/NPDES permit will be modified to incorporate these limitations.

- E. Figure A outlines the individual steps in this analysis (below).
- F. If unique circumstances arise outside of the steps outlined above, the permittee and WVDEP must work promptly to address concerns using an adaptive management approach. Further, an adaptive management approach may be useful in developing compliance strategies where new limits are added to the permit as a result of narrative criteria implementation.

FIGURE A

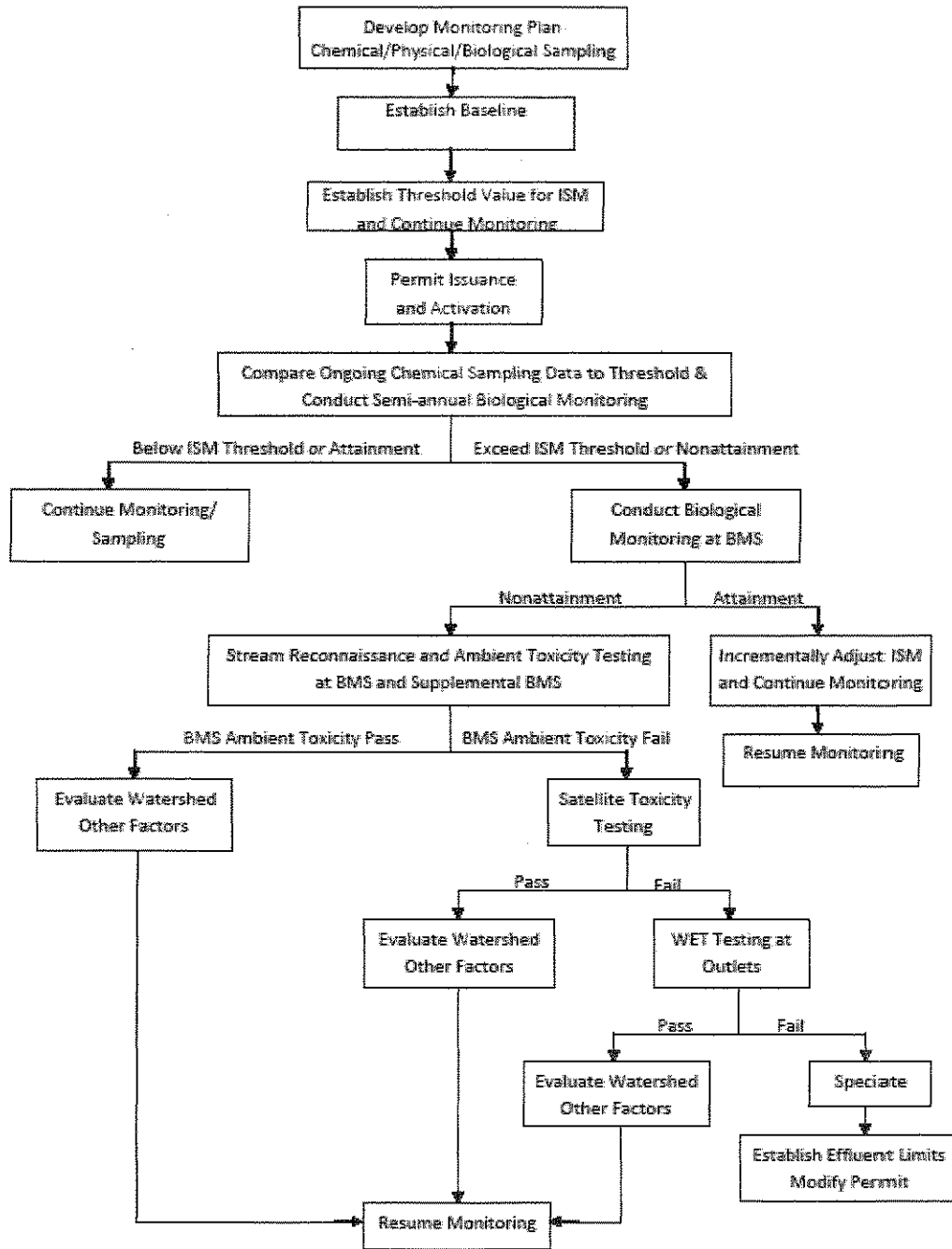
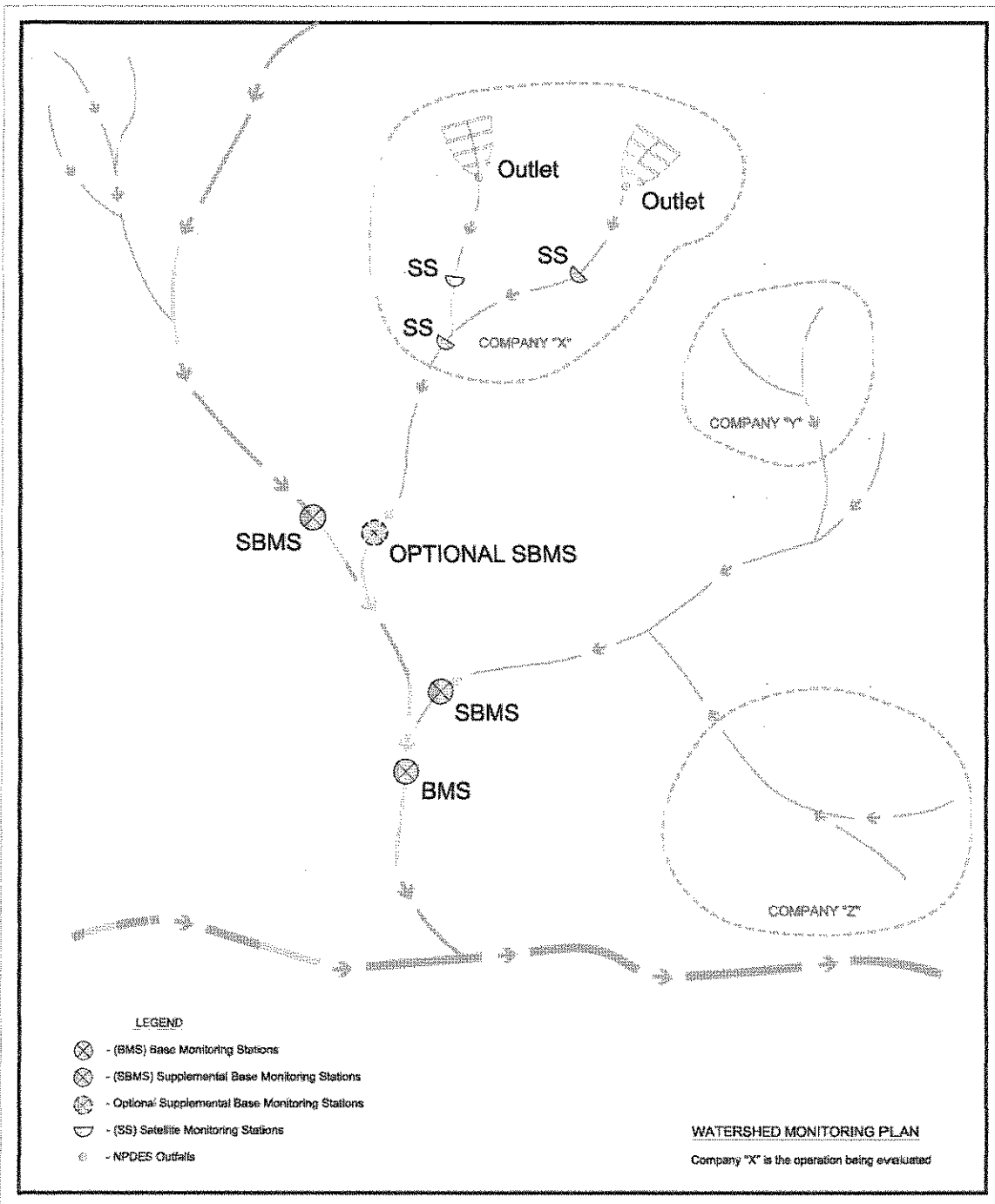


FIGURE B



## APPENDIX A

### INTERPRETIVE STATEMENTS

In evaluating whether a WV/NPDES discharge complies with the narrative criteria, WVDEP recognizes and will use the following interpretation of existing laws and rules as part of this Policy:

1. The WVWPCA recognizes that water quality protection must be reasonably balanced per that Act's public policy, and that human-caused impacts will occur.
2. Section 3.2.i of West Virginia's narrative criteria prohibits wastes in the water that will significantly adversely impact the chemical, physical, biological, or hydrologic components of the aquatic ecosystem. Accordingly, to violate this narrative standard, measured impacts to a waterbody must be (a) adverse, (b) significant, and (c) resulting from a discharge of wastes.
3. Section 3.2.e of West Virginia's narrative criteria prohibits the presence of materials in waters of the State "in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life." These narrative "toxics" criteria were designed for use the basis for establishing chemical-specific limits for waste discharges where a specific pollutant can be identified as causing or contributing to the toxicity and the State has not adopted chemical-specific numeric criteria." USEPA, *Water Quality Standards Handbook: Second Edition*, EPA 823-B-94-005a (August 1994) at 3-24. WVDEP should construe this provision consistent with the *Handbook*. Further, it must construe this provision in the context of and in conjunction with 47 CSR 2-3.2.i. To avoid rendering the more specific language of section 3.2.i superfluous, therefore, WVDEP

interprets section 3.2.e's prohibition on materials that are "harmful" to aquatic life to prohibit discharges that have a "significant adverse impact," consistent with section 3.2.i.

4. Streams and wetlands are dynamic systems. Measurable changes within a waterbody would be expected to occur in a stream system, even without human influence.  
  
Changes in an aquatic ecosystem, whether natural or attributable to human activity, are not necessarily adverse or significant.
5. Based on the terms of sections 3.2.e and 3.2.i, WVDEP concludes that not all changes in an aquatic ecosystem are adverse, that not all adverse impacts are significant, and that whether or not a significant adverse impact has occurred must be determined based on assessment of the aquatic ecosystem.
6. The protection of fish and other aquatic life as discussed herein would result in the attainment of the "propagation of fish and other aquatic life" designated use, and failure to protect the "propagation of fish and other aquatic life" would result in a failure to attain the designated use, or "nonattainment."
7. Attainment or nonattainment of compliance with water quality criteria should not be determined based on a single sampling event. Likewise, the determination of whether a stream impact is the result of a regulated discharge, or whether a stream impact from a regulated discharge is significantly adverse, cannot be based on a single sampling event or water chemistry analysis.
8. This Policy sets forth a reasonable approach to determining whether the Fish and Other Aquatic Life designated use is protected and whether a discharge has a reasonable potential to violate the narrative water quality standards. The determination of whether a waste discharged to a waterbody causes a significant adverse effect on the aquatic

ecosystem will be measured using WVDEP's interpretation of sections 3.2.e and 3.2.i as set forth herein.



## APPENDIX B

### DEFINITIONS

**Ambient Toxicity:** Measured by a laboratory toxicity test conducted using ambient water from a waterbody.

**Aquatic Community:** An association of interacting populations of aquatic organisms in a given waterbody or habitat.

**Attainment:** The protection of fish and other aquatic life as defined herein would result in the attainment of the “propagation of fish and other aquatic life” designated use.

**Biological Assessment (or Bioassessment):** An evaluation of the biological condition of a waterbody using biological surveys and other direct measurements of resident biota in surface waters. For purposes of this Policy, all biological assessments should evaluate both benthic macroinvertebrates and fish populations (where sufficient flows exist to support fish communities) and should include habitat assessments as defined below.

**Biological Criteria (or Biocriteria):** Numerical values or narrative expressions that describe the reference biological integrity of aquatic communities inhabiting waters designated for the protection of fish and other aquatic life.

**Biological Integrity:** Functionally defined as the condition of the aquatic community inhabiting unimpaired waterbodies of a specified habitat as measured by community structure and function.

**Biological Survey (or Biosurvey):** Consists of collecting, processing and analyzing a representative portion of the resident aquatic community to determine community structure and function.

**BMS:** Base Monitoring Station.

**Diverse or Diversity:** The variation of life forms in a given biome or ecosystem, the variety and abundance of species, or the presence of many different types of living organisms. An aquatic community is diverse in species composition where a variety of species is present across trophic levels and where the species present in the aquatic community is sufficient to perform the biological functions necessary to support fish communities within the assessed reach.

**Habitat Assessment:** An evaluation of the physical characteristics and condition of a waterbody (example parameters include the variety and quality of substrate, hydrological regime, key environmental parameters and surrounding land use).

**ISM:** In-stream Screening Measure.

**Nonattainment:** Failure to protect the “propagation of fish and other aquatic life” as defined herein would result in a failure to attain the “propagation of fish and other aquatic life” designated use, or “nonattainment.”

**SBMS:** Supplemental Base Monitoring Station.

**SMS:** Satellite Monitoring Station.

**Threshold Screening Value:** The ninety-fifth (95<sup>th</sup>) percentile of all baseline sampling values of the ISM initially, to be used as the “trigger level” of the ISM for purposes of determining the need for additional sampling and assessment. This threshold screening value may thereafter be adjusted using the ninety-fifth (95<sup>th</sup>) percentile of all baseline and ongoing monitoring values of the ISM, plus one standard deviation.

**Whole Effluent Toxicity (“WET”):** The total toxic effect of an effluent measured directly with a toxicity test.