WEST VIRGINIA
SECRETARY OF STATE
JOE MANCHIN, III
ADMINISTRATIVE LAW DIVISION

Form #1

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OFFICE WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF A PUBLIC HEARING ON A PROPOSED RULE

AGENCY: WV Environmental Quality Board TITLE NUMBER: 46

RULE TYPE: Legislative Rule CITE AUTHORITY: 22B-3-4

AMENDMENT TO AN EXISTING RULE: YES X NO ___

IF YES, SERIES NUMBER OF RULE BEING AMENDED: One

TITLE OF RULE BEING AMENDED: Requirements Governing Water Quality Standards

IF NO, SERIES NUMBER OF RULE BEING PROPOSED: ___

TITLE OF RULE BEING PROPOSED: ___

DATE OF PUBLIC HEARING: June 18, 2003 TIME: 7:00 p.m.

LOCATION OF PUBLIC HEARING: 1615 Washington Street, E.
2nd Floor Conference Room
Charleston, WV 25311

COMMENTS LIMITED TO: ORAL ___, WRITTEN ___, BOTH X

COMMENTS MAY ALSO BE MAILED TO THE FOLLOWING ADDRESS:

WV Environmental Quality Board
1615 Washington St., E., Suite 301
Charleston, WV 25311-2126

*Written Comments must be received by 5:00 p.m. on Monday June 23, 2003.

The Department requests that persons wishing to make comments at the hearing make an effort to submit written comments in order to facilitate the review of these comments.

The issues to be heard shall be limited to the proposed rule.

ATTACH A **BRIEF** SUMMARY OF YOUR PROPOSAL

Stephanie R Timmermeyer

Authorized Signature

$19.50

46 CSR 1
Requirements Governing Water Quality Standards
May 19, 2003

Summary of Proposed Changes

Section 46-1-2 – Definitions. Updated definitions reflecting reorganization of WV Department of Environmental Protection; updated reference to Code of Federal Regulations (CFR).

Section 46 – 4. Antidegradation Policy.
Clerical revisions

Section 46-1-5. Mixing Zones.
§ 5.2.b. – clarified applicable alternatives in USEPA's Technical Support Document for use in developing zones of initial dilution;
§ 5.2.k. – Expanded documentation of mixing zone compliance with all provisions of section 5.2.b – 5.2.g. and section 5.2.h.2; a few clerical revisions throughout section;

Section 46-1-6. Water Use Categories
Deleted references to appendices which are proposed for removal.
§ 6.6. – revised for consistency with other designated use categories

Section 46-1-7. West Virginia Waters
§ 7.1. Deleted sections 7.1.a. – 7.1.e. which outline the Major River Basins and their Alphanumeric System. Retained the reference to "Key to West Virginia Stream Systems and Major Tributaries (1956), which is the source for the deleted language.

§7.2.a.2. Revised Weirton Steel Corporation's exemption from the "1/2 mile rule" by limiting the application of the exemption to only the Category A criterion for iron; extending it to March 1, 2010, with a reporting requirement in 2007; and outlining monitoring and reporting requirements.

§7.2.b. Revised this exemption section to allow for applications for "natural background" exemptions to apply to trout waters. Note that before such exemption is granted, an application must be filed and approved by the Board, and is subject to notice and comment requirements of the state Administrative Procedures Act.

§7.2.c.5. This natural background exemption from dissolved oxygen for the upper Blackwater River is proposed to be moved to section 7.2.d.9.1; with minor clerical revisions.

§7.2.d.14.1. Historic removal of categories A (public water supply) and E (water supply industrial) from tributaries of the Youghiogheny River in West Virginia which flow into Maryland, are proposed to be reinstated to those tributaries.

§7.2.d.16.2. The variance from numeric criteria on Harmon Creek is revised, based on requests from Weirton Steel Corporation, to delete the alternate criterion for zinc – which will cause the statewide criteria for zinc to be in place. Section revised to update the effective date and to remove some reporting requirements.

§7.2.d.19.3. Site-specific criteria for chloride proposed on Ward Hollow of Davis Creek, based on request from Union Carbide Corporation. The proposed alternate value for Category A and Category B1 is 310 mg/liter. The statewide criterion for chloride for Category A is 250 mg/l; for Category B1 – chronic is 230 mg/liter.

Section 46-1-8. Specific Water Quality Criteria
Clerical corrections and updates to existing references

Section 46-1-9. Establishment of Safe Concentration Values
Clerical corrections and updates to existing references

Appendix A List of Category B-2 – Trout Waters.
List updated to add streams recommended by the WV Division of Natural Resources.

Appendix B – List of Category A Waters
Appendix deleted

Appendix C – List of Category E-3 Power Production Waters
Appendix deleted

Appendix D – List of Category C – Water Contact Recreation Waters
Appendix deleted

Appendix E, Table 1
Numeric criteria in table updated and revised to correspond to USEPA's National Recommended Water Quality Criteria: 2002. **See attached tables for specific revisions.**

Appendix E, Table 2
Conversion factors for mercury added to this table.

46 CSR 1
Requirements Governing Water Quality Standards
May 19, 2003

Statement of Circumstances Requiring Proposed Amendments

The federal Clean Water Act requires states to review their Water Quality Standards every three years. The Environmental Quality Board completed the last triennial review of the standards (46 CSR 1 – "Requirements Governing Water Quality Standards") in 2000 and submitted the revisions for consideration in the 2002 legislative session. The revisions proposed herein are the results of the triennial review conducted by the Board pursuant to this federal requirement.

The Board provided notice in July, 2002 of the scheduled triennial review and solicited comments from interested parties regarding appropriate changes to the rule. The Board considered all of the comments received in adopting the revisions proposed in this filing.

46 CSR 1
Requirements Governing Water Quality Standards
May 19, 2003

Notice of Additional Areas of Consideration

In addition to the revisions proposed herein, the Board is also considering additional revisions to the rule. We are interested in receiving comments and suggestions regarding the following provisions:

Section 8.1.a. The Board has proposed updating the date on the reference to 40 CFR 136 - Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act, as amended, June 15, 1990, and replacing it with the currently effective date of July 1, 2002. The Board is interested in receiving comments on another option to revise this section - that of deleting the date and making reference, instead to "the most recent effective version".

Section 8.32.2. Turbidity. The numeric criterion for turbidity states that the criterion shall not apply to, among other things, activities where an approved Federal or State Surface Mining permit is in effect. The Board is considering a recommendation received proposing the removal of this exemption for surface mining activities from the turbidity criterion.

Section 9.2.a. The Board is considering a request to adopt the Great Lakes Initiative standard for determining whether a substance is bioaccumulative.

APPENDIX B

FISCAL NOTE FOR PROPOSED RULES

Rule Title: Requirements Governing Water Quality Standards

Type of Rule: X Legislative _____ Interpretive _____ Procedural

Agency: WV Environmental Quality Board

Address: 1615 Washington St., E.
Suite 301
Charleston, WV 25311-2126

1. Effect of Proposed rule:

N/A

	ANNUAL		FISCAL YEAR		
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTER
ESTIMATED TOTAL COST					
PERSONAL SERVICES					
CURRENT EXPENSE					
REPAIRS & ALTERATIONS					
EQUIPMENT					
OTHER					

2. Explanation of Above Estimates:

N/A

3. Objectives of These Rules:
The proposed revisions reflect updates identified during the federally mandated triennial review of the Water Quality Standards rule.

Rule Title: Requirements Governing Water Quality Standards

4. Explanation of Overall Economic Impact of Proposed Rule:

   A. Economic Impact on State Government:

      None Anticipated

   B. Economic Impact on Political Subdivisions; Specific Industries; Specific Groups of Citizens:

      None Anticipated

   C. Economic Impact on Citizens/Public at Large.

      None Anticipated

Date: May 19, 2003

Signature of Agency Head or Authorized Representative:

TITLE 46
LEGISLATIVE RULE
ENVIRONMENTAL QUALITY BOARD

SERIES 1
REQUIREMENTS GOVERNING WATER QUALITY STANDARDS

§46-1-1. General.

1.1. Scope. -- These rules establish requirements governing the discharge or deposit of sewage, industrial wastes and other wastes into the waters of the state and establish water quality standards for the waters of the State standing or flowing over the surface of the State. It is declared to be the public policy of the State of West Virginia 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, and other 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. (See W. Va. Code §22-11-2.)

1.2. Authority. -- W. Va. Code §22B-3-4.

1.3. Filing Date. --

1.4. Effective Date. --

§46-1-2. Definitions.

The following definitions in addition to those set forth in W. Va. Code §22-11-3, shall apply to these rules unless otherwise specified herein, or unless the context in which used clearly requires a different meaning:

2.1. "Board" is the Environmental Quality Board.

~~2.2. "Chief" is the Chief of the Office of Water Resources of the West Virginia Division of Environmental Protection.~~

~~2.3.~~ 2.2. "Conventional treatment" is the treatment of water as approved by the West Virginia Bureau for Public Health to assure that the water is safe for human consumption.

~~2.4.~~ 2.3. "Cumulative" means a pollutant which increases in concentration in an organism by successive additions at different times or in different ways (bio-accumulation).

~~2.5.~~ 2.4. "Designated uses" are those uses specified in water quality standards for each water body or segment whether ~~or not~~ they are being attained. (See sections 6.2 - 6.6, herein)

~~2.6.~~ 2.5. "Director" is the ~~Director of the West Virginia Division of Environmental Protection~~. Director of the Division of Water and Waste Managment of the West Virginia Department of Environmental Protection.

~~2.7.~~ 2.6. "Dissolved metal" is operationally defined as that portion of metal which passes through a 0.45 micron filter.

~~2.8.~~ 2.7. "Existing uses" are those uses actually attained in a water body on or after November 28, 1975, whether or not they are included in the water quality standards.

~~2.9.~~ 2.8. The "Federal Act" means the Clean Water Act (also known as the Federal Water Pollution Control Act) 33 U.S.C. § 1251 - 1387.

~~2.10.~~ 2.9. "High quality waters" are those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses.

~~2.11.~~ 2.10. "Intermittent streams" are streams which have no flow during sustained periods of no precipitation and which do not support aquatic life whose life history requires residence in flowing waters or pools for a continuous period of at least six (6) months.

~~2.12.~~ 2.11. "Outstanding national resource waters" are those waters whose unique character, ecological or recreational value or pristine nature constitutes a valuable national or State resource.

~~2.13.~~ 2.12. "Natural" or "naturally occurring" values or "natural temperature" shall mean for all of the waters of the state:

~~2.13.a.~~ 2.12.a. Those water quality values which exist unaffected by -- or unaffected as a consequence of -- any water use by any person; and

~~2.13.b.~~ 2.12.b. Those water quality values which exist unaffected by the discharge, or direct or indirect deposit of, any solid, liquid or gaseous substance from any point source or non-point source.

~~2.14.~~ 2.13. "Non-point source" shall mean any source other than a point source from which pollutants may reach the waters of the state.

~~2.15.~~ 2.14. "Persistent" shall mean a pollutant and its transformation products which under natural conditions degrade slowly in an aquatic environment.

~~2.16.~~ 2.15. "Point source" shall mean any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

~~2.17.~~ 2.16. "Representative important species of aquatic life" shall mean those species of aquatic life whose protection and propagation will assure the sustained presence of a balanced aquatic community. Such species are representative in the sense that maintenance of water quality criteria will assure both the natural completion of the species' life cycles and the overall protection and sustained propagation of the balanced aquatic community.

~~2.18.~~ 2.17. The "State Act" or "State Law" shall mean the West Virginia Water Pollution Control Act, W. Va. Code §22-11-1.

2.18. "Secretary" is the Secretary of the Department of Environmental Protection.

2.19. "Total recoverable" refers to the digestion procedure for certain heavy metals as referenced in 40 CFR 136, as amended ~~June 15, 1990~~ July 1, 2001, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.

2.20. "Trout waters" are streams or stream segments which sustain year-round trout populations. Excluded are those streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

2.21. "Waters of special concern" are those waters occurring in the categories outlined in section 4.1.c. of the antidegradation policy. This designation provides an intermediate level of antidegradation protection between high quality waters and outstanding national resource waters.

2.22. "Water quality criteria" shall mean levels of parameters or stream conditions that are required to be maintained by these regulations. Criteria may be expressed as a constituent concentration, levels, or narrative statement, representing a quality of water that supports a designated use or uses.

2.23. "Water quality standards" means the combination of water uses to be protected and the water quality criteria to be maintained by these rules.

2.24. "Wetlands" are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

2.25. "Wet weather streams" are streams that flow only in direct response to precipitation or whose channels are at all times above the water table.

§46-1-3. Conditions Not Allowable In State Waters.

3.1. Certain characteristics of sewage, industrial wastes and other wastes cause pollution and are objectionable in all waters of the state. Therefore, the Environmental Quality Board does hereby proclaim that the following general conditions are not to be allowed in any of the waters of the state.

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

3.2.a. Distinctly visible floating or settleable solids, suspended solids, scum, foam or oily slicks;

3.2.b. Deposits or sludge banks on the bottom;

3.2.c. Odors in the vicinity of the waters;

3.2.d. Taste or odor that would adversely affect the designated uses of the affected waters. USEPA's organoleptic effect criteria may be used when applicable;

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

3.2.f. Distinctly visible color;

3.2.g. Concentrations of bacteria which may impair or interfere with the designated uses of the affected waters;

3.2.h. Requiring an unreasonable degree of treatment for the production of potable water by modern water treatment processes as commonly employed; and

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

§46-1-4. Antidegradation Policy.

4.1. It is the policy of the ~~State~~ state of West Virginia that the waters of the state shall be maintained and protected as follows:

4.1.a. Tier 1 Protection. Existing water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether ~~or not~~ they are included as designated uses within these water quality standards.

4.1.b. Tier 2 Protection. The existing high quality waters of the state must be maintained at their existing high quality unless it is determined after satisfaction of the intergovernmental coordination of the state's continuing planning process and opportunity for public comment and hearing that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. If limited degradation is allowed, it shall not result in injury or interference with existing stream water uses or in violation of state or federal water quality criteria that describe the base levels necessary to sustain the national water quality goal uses of protection and propagation of fish, shellfish and wildlife and recreating in and on the water.

In addition, the Board and the ~~Director~~ Secretary shall assure that all new and existing point sources shall achieve the highest established statutory and regulatory requirements applicable to them and shall assure the achievement of cost-effective and reasonable best management practices (BMPs) for non-point source control. If BMPs are demonstrated to be inadequate to reduce or minimize water quality impacts, the ~~Director~~ Secretary may require that more appropriate BMPs be developed and applied.

4.1.b.1. High quality waters are those waters meeting the definition at section ~~2.10~~ 2.9 herein.

4.1.b.2. High quality waters may include but are not limited to the following:

4.1.b.2.A. Streams designated by the West Virginia Legislature under the West Virginia Natural Stream Preservation Act, pursuant to W. Va. Code §22-13-5; and

4.1.b.2.B. Streams listed in West Virginia High Quality Streams, Fifth Edition, prepared by the Wildlife Resources Division, Department of Natural Resources (1986).

4.1.b.2.C. Streams or stream segments which receive annual stockings of trout but which do not support year-round trout populations.

4.1.c. Tier 2.5 Protection. Waters of special concern include all of those waters listed in 60 C.S.R.

5, Appendix A. Waters of special concern may include, but are not limited to naturally reproducing trout streams, federally designated rivers under the "Wild and Scenic Rivers Act," 16 U. S.C. §§ 1271 et seq., waters in state parks and forests, waters in ~~National~~ national parks and forests, waters designated under the "National Parks and Recreation Act of 1978," and waters with unique or exceptional aesthetic, ecological, or recreational value. Waters may be nominated for inclusion in this category by any interested party or by the Board on its own initiative.

4.1.d. Tier 3 Protection. In all cases, waters which constitute an outstanding national resource shall be maintained and protected and improved where necessary. Outstanding national resource waters include, but are not limited to, all streams and rivers within the boundaries of Wilderness Areas designated by "The Wilderness Act" (16 U.S.C. §1131 et seq.) within the ~~State~~ state.

Additional waters may be nominated for inclusion in ~~that~~ this category by any interested party or by the Board on its own initiative. To designate a nominated water as an outstanding national resource water, the Board shall follow the public notice and hearing provisions as provided in 46 C.S.R. 6.

4.1.e. All applicable requirements of section 316(a) of the Federal Act shall apply to modifications of the temperature water quality criteria provided for in these rules.

§46-1-5. Mixing Zones.

5.1. In the permit review and planning process or upon the request of a permit applicant or permittee, the ~~Chief~~ Director may establish on a case-by-case basis an appropriate mixing zone.

5.2. The following guidelines and conditions are applicable to all mixing zones:

5.2.a. The ~~Chief~~ Director will assign, on a case-by-case basis, definable geometric limits for mixing zones for a discharge or a pollutant or pollutants within a discharge. Applicable limits shall include, but may not be limited to, the linear distances from the point of discharge, surface area involvement, volume of receiving water, and shall take into account other nearby mixing zones. Mixing zones shall take into account the mixing conditions in the receiving stream (i.e: whether complete or incomplete mixing conditions exist). Mixing zones will not be allowed until applicable limits are assigned by the ~~Chief~~ Director in accordance with this section.

5.2.b. Concentrations of pollutants which exceed the acute criteria for protection of aquatic life set forth in Appendix E, Table 1 shall not exist at any point within an assigned mixing zone or in the discharge itself unless a zone of initial dilution is assigned. A zone of initial dilution may be assigned on a case-by-case basis at the discretion of the ~~Chief~~ Director. The zone of initial dilution is the area within the mixing zone where initial dilution of the effluent with the receiving water occurs, and where the concentration of the effluent will be its greatest in the water column. Where a zone of initial dilution is assigned by the ~~Chief~~ Director, the size of the zone shall be determined using ~~one of the four alternatives~~ alternatives 2 through 4 outlined in section 4.3.3 of US EPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001 PB91-127415, March 1991). Concentrations of pollutants shall not exceed the acute criteria at the edge of the assigned zone of initial dilution. Chronic criteria for the protection of aquatic life may be exceeded within the mixing zone but shall be met at the edge of the assigned mixing zone.

5.2.c. Concentrations of pollutants which exceed the criteria for the protection of human health set forth in Appendix E, Table 1 shall not be allowed at any point unless a mixing zone has been assigned by the ~~Chief~~ Director after consultation with the Commissioner of the West Virginia Bureau for Public Health.

Human health criteria may be exceeded within an assigned mixing zone, but shall be met at the edge of the assigned mixing zone. Mixing zones for human health criteria shall be sized to prevent significant human health risks and shall be developed using reasonable assumptions about exposure pathways. In assessing the potential human health risks of establishing a mixing zone upstream from a drinking water intake, the ~~Chief~~ Director shall consider the cumulative effects of multiple discharges and mixing zones on the drinking water intake. No mixing zone for human health criteria shall be established on a stream which has a seven (7) day, ten (10) year return frequency of 5 cfs or less.

5.2.d. Mixing zones, including zones of initial dilution, shall not interfere with fish spawning or nursery areas or fish migration routes; shall not overlap public water supply intakes or bathing areas; cause lethality to or preclude the free passage of fish or other aquatic life; nor harm any threatened or endangered species, as listed in the "Federal Endangered Species Act", 15 U.S.C. § §1531 et seq.

5.2.e. The mixing zone shall not exceed one-third (1/3) of the width of the receiving stream, and in no case shall the mixing zone exceed one-half (1/2) of the cross-sectional area of the receiving stream.

5.2.f. In lakes and other surface impoundments, the volume of a mixing zone shall not affect in excess of ten (10) percent of the volume of that portion of the receiving waters available for mixing.

5.2.g. A mixing zone shall be limited to an area or volume which will not adversely alter the existing or designated uses of the receiving water, nor be so large as to adversely affect the integrity of the water body.

5.2.h. Mixing zones shall not:

5.2.h.1. Be used for, or considered as, a substitute for technology-based requirements of the Federal Act and other applicable state and federal laws.

5.2.h.2. Extend downstream at any time a distance more than five times the width of the receiving watercourse at the point of discharge.

5.2.h.3. Cause or contribute to any of the conditions prohibited in section 3, herein.

5.2.h.4. Be granted where instream waste concentration of a discharge is greater than 80%.

5.2.h.5. Overlap one another.

5.2.h.6. Overlap any one-half 1/2 mile zone described in ~~section~~ §7.2.a.2 herein.

5.2.i. In the case of thermal discharges, a successful demonstration conducted under ~~section~~ §316(a) of the Federal Act shall constitute compliance with all provisions of this section.

5.2.j. The ~~Chief~~ Director may waive the requirements of subsections 5.2.e and 5.2.h.2 above if a discharger provides an acceptable demonstration of:

5.2.j.1. Information defining the actual boundaries of the mixing zone in question; and

5.2.j.2. Information and data proving no violation of subsections 5.2.d and 5.2.g above by the mixing zone in question.

5.2.k. Upon implementation of a mixing zone in a permit, the permittee shall provide documentation that demonstrates to the satisfaction of the ~~Chief~~ Director that the mixing zone is in compliance with the provisions outlined in subsections 5.2.b, 5.2.c, 5.2.d, 5.2.e, 5.2.f, 5.2.g and 5.2.h.2, herein.

5.2.l. In order to facilitate a determination or assessment of a mixing zone pursuant to this section, the ~~Chief~~ Director may require a permit applicant or permittee to submit such information as deemed necessary.

§46-1-6. Water Use Categories.

6.1. These rules establish general Water Use Categories and Water Quality Standards for the waters of the ~~State~~ state. Unless otherwise designated by these rules, at a minimum all waters of the State are designated for the Propagation and Maintenance of Fish and Other Aquatic Life (Category B) and for Water Contact Recreation (Category C) consistent with Federal Act goals. Incidental utilization for whatever purpose may or may not constitute a justification for assignment of a water use category to a particular stream segment.

6.1.a. Waste assimilation and transport are not recognized as designated uses. The classification of the waters must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation.

Subcategories of a use may be adopted and appropriate criteria set to reflect varying needs of such subcategories of uses, for example to differentiate between trout water and other waters.

6.1.b. At a minimum, uses are deemed attainable if they can be achieved by the imposition of effluent limits required under section 301(b) and section 306 of the Federal Act and use of cost-effective and reasonable best management practices for non-point source control. Seasonal uses may be adopted as an alternative to reclassifying a water body or segment thereof to uses requiring less stringent water quality criteria. If seasonal uses are adopted, water quality criteria will be adjusted to reflect the seasonal uses; however, such criteria shall not preclude the attainment and maintenance of a more protective use in another season. A designated use which is not an existing use may be removed, or subcategories of a use may be established if it can be demonstrated that attaining the designated use is not feasible because:

6.1.b.1. Application of effluent limitations for existing sources more stringent than those required pursuant to section 301 (b) and section 306 of the Federal Act in order to attain the existing designated use would result in substantial and widespread adverse economic and social impact; or

6.1.b.2. Naturally-occurring pollutant concentrations prevent the attainment of the use; or

6.1.b.3. Natural, ephemeral, intermittent or low flow conditions of water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges to enable uses to be met; or

6.1.b.4. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

6.1.b.5. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such

modification in a way that would result in the attainment of the use; or

6.1.b.6. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

6.1.c. The ~~State~~ state shall take into consideration the quality of downstream waters and shall assure that its water quality standards provide for the attainment of the water quality standards of downstream waters.

6.1.d. In establishing a less restrictive use or uses, or subcategory of use or uses, and the water quality criteria based upon such uses, the Board shall follow the requirements for revision of water quality standards as required by W. Va. Code §22B-3-4 and section 303 of the Federal Act and the regulations thereunder. Any revision of water quality standards shall be made with the concurrence of USEPA. The Board's administrative procedural regulations for applying for less restrictive uses or criteria shall be followed.

6.2. Category A -- Water Supply, Public. — - This category is used to describe waters which, after conventional treatment, are used for human consumption. This category includes streams on which the following are located:

6.2.a. All community domestic water supply systems;

6.2.b. All non-community domestic water supply systems, (i.e. hospitals, schools, etc.);

6.2.c. All private domestic water systems;

6.2.d. All other surface water intakes where the water is used for human consumption. (~~See Appendix B for partial listing of Category A waters; see~~ See section 7.2.a.2, herein for additional requirements for Category A waters.) The manganese human health criteria shall not apply where the discharge point of the manganese is located more than five miles upstream from a known drinking water source.

6.3. Category B -- Propagation and maintenance of fish and other aquatic life. --

This category includes:

6.3.a. Category B1 -- Warm water fishery streams. -- Streams or stream segments which contain populations composed of all warm water aquatic life.

6.3.b. Category B2 -- Trout Waters. -- As defined in section 2.20, herein (See Appendix A for a representative list.)

6.3.c. Category B4 -- Wetlands. -- As defined in section 2.24, herein; certain numeric stream criteria may not be appropriate for application to wetlands (see Appendix E, Table 1).

6.4. Category C -- Water contact recreation. -- This category includes swimming, fishing, water skiing and certain types of pleasure boating such as sailing in very small craft and outboard motor boats. ~~(See Appendix D for a representative list of category C waters.)~~

6.5. Category D. -- Agriculture and wildlife uses:

6.5.a. Category D1 -- Irrigation. -- This category includes all stream segments used for irrigation.

6.5.b. Category D2 -- Livestock watering. -- This category includes all stream segments used for livestock watering.

6.5.c. Category D3 -- Wildlife. -- This category includes all stream segments and wetlands used by wildlife.

6.6. Category E -- Water supply industrial, water transport, cooling and power. -- This category includes streams and stream segments used for cooling water, industrial water supply, power production, commercial and pleasure vessel activity, except those small craft included in Category C.

6.6.a. Category E1 -- Water Transport. -- This category includes all stream segments modified for water transport and having permanently maintained navigation aides.

6.6.b. Category E2 -- Cooling Water. -- This category includes all stream segments having one (1) or more users for industrial cooling.

6.6.c. Category E3 -- Power production. -- This category includes all stream segments extending from a point 500 feet upstream from the intake to a point one half (1/2) mile below the wastewater discharge point. ~~(See Appendix C for representative list.)~~

6.6.d. Category E4 -- Industrial. -- This category is used to describe all stream segments with one (1) or more industrial users. It does not include water for cooling.

§46-1-7. West Virginia Waters.

7.1. Major River Basins and their Alphanumeric System. All streams and their tributaries in West Virginia shall be individually identified using an alphanumeric system as identified in the "Key to West Virginia Stream Systems and Major Tributaries" (1956) as published by the Conservation Commission of West Virginia and revised by the West Virginia Department of Natural Resources, Division of Wildlife (1985).

~~7.1.a. J - James River Basin. All tributaries to the West Virginia - Virginia State line.~~

~~7.1.b. P - Potomac River Basin. All tributaries of the main stem of the Potomac River to the West Virginia - Maryland - Virginia State line to the confluence of the North Branch and the South Branch of the Potomac River and all tributaries arising in West Virginia excluding the major tributaries hereinafter designated:~~

~~7.1.b.1. S - Shenandoah River and all its tributaries arising in West Virginia to the West Virginia - Virginia State line.~~

~~7.1.b.2. PC - Cacapon River and all its tributaries.~~

~~7.1.b.3. PSB - South Branch and all its tributaries.~~

~~7.1.b.4. PNB - North Branch and all tributaries to the North Branch arising in West Virginia.~~

~~7.1.c. M - Monongahela River Basin. The Monongahela River Basin main stem and all its tributaries excluding the following major tributaries which are designated as follows:~~

~~7.1.c.1. MC - Cheat River and all its tributaries except those listed below:~~

~~7.1.c.1.A. MCB - Blackwater River and all its tributaries.~~

~~7.1.c.2. MW - West Fork River and all its tributaries.~~

~~7.1.c.3. MT - Tygart River and all its tributaries except those listed below:~~

~~7.1.c.3.A. MTB - Buckhannon River and all its tributaries.~~

~~7.1.c.3.B. MTM - Middle Fork River and all its tributaries.~~

~~7.1.c.4. MY - Youghigheny River and all its tributaries to the West Virginia - Maryland State line.~~

~~7.1.d. O Zone 1 - Ohio River - Main Stem. The main stem of the Ohio River from the Ohio - Pennsylvania - West Virginia state line to the Ohio - Kentucky - West Virginia State line.~~

~~7.1.e. O Zone 2 - Ohio River - Tributaries. All tributaries of the Ohio River excluding the following major tributaries:~~

~~7.1.e.1. LK - Little Kanawha River. The Little Kanawha River and all its tributaries excluding the following major tributary which is designated as follows:~~

~~7.1.e.1.A. LKH - Hughes River and all its tributaries.~~

~~7.1.e.2. K - Kanawha River Zone 1. The main stem of the Kanawha River from mile point 0, at its confluence with the Ohio River, to mile point 72 near Diamond, West Virginia.~~

~~7.1.e.3. K - Kanawha River Zone 2. The main stem of the Kanawha River from mile point 72 near Diamond, West Virginia and all its tributaries from mile point 0 to the headwaters excluding the following major tributaries which are designated as follows:~~

~~7.1.e.3.A. KP - Pocatalico River and all its tributaries.~~

~~7.1.e.3.B. KC - Coal River and all its tributaries.~~

~~7.1.e.3.C. KE - Elk River and all its tributaries.~~

~~7.1.e.3.D. KG - Gauley River. The Gauley River and all its tributaries excluding the following major tributaries which are designated as follows:~~

~~7.1.e.3.D.1. KG-19 - Meadow River and all its tributaries.~~

~~7.1.e.3.D.2. KG-34 - Cherry River and all its tributaries.~~

~~7.1.e.3.D.3. KGC - Cranberry River and all its tributaries.~~

~~7.1.e.3.D.4. KGW - Williams River and all its tributaries.~~

~~7.1.e.3.E. KN - New River. The New River from its confluence with the Gauley River to the Virginia - West Virginia State line and all tributaries excluding the following major tributaries which are designated as follows:~~

~~7.1.e.3.E.1. KNG - Greenbrier River and all its tributaries.~~

~~7.1.e.3.E.2. KNB - Bluestone River and all its tributaries.~~

~~7.1.e.3.E.3. KN-60 - East River and all its tributaries.~~

~~7.1.e.3.E.4. K(L)-81-(1) - Bluestone Lake.~~

~~7.1.e.4. OG - Guyandotte River. The Guyandotte River and all its tributaries excluding the following major tributary which is designated as follows:~~

~~7.1.e.4.1. OGM - Mud River and all its tributaries.~~

~~7.1.e.5. BS - Big Sandy River. The Big Sandy River to the Kentucky - Virginia - West Virginia State lines and all its tributaries arising in West Virginia excluding the following major tributary which is designated as follows:~~

~~7.1.e.5.1 BST - Tug Fork and all its tributaries.~~

7.2. Applicability of Water Quality Standards. The following shall apply at all times unless a specific exception is granted in this section:

7.2.a. Water Use Categories as described in section 6, herein.

7.2.a.1. Based on meeting those Section 6 definitions, tributaries or stream segments may be classified for one or more Water Use Categories. When more than one use exists, they shall be protected by criteria for the use category requiring the most stringent protection.

7.2.a.2. Each segment extending upstream from the intake of a water supply public (Water Use Category A), for a distance of one half (1/2) mile or to the headwater, must be protected by prohibiting the discharge of any pollutants in excess of the concentrations designated for this Water Use Category in section 8, herein. In addition, within that one half (1/2) mile zone, the ~~Chief~~ Director may establish for any discharge, effluent limitations for the protection of human health that require additional removal of pollutants than would otherwise be provided by this rule. (If a watershed is not significantly larger than this zone above the intake, the water supply section may include the entire upstream watershed to its headwaters.) ~~Until September 1, 2004, the one-half mile zone described in this section shall not apply to the Ohio River main channel (between Brown's Island and the left descending bank) between river mile points 61.0 and 63.5.~~ Until September 1, 2010, or until action by the Environmental Quality Board to revise this provision, whichever comes first, the one-half mile zone described in this section shall not apply to the Ohio River main

channel (between Brown's Island and the left descending bank) between river mile points 61.0 and 63.5 for the Category A criterion for iron as set forth in section 8 herein. Weirton Steel Corporation shall conduct monthly monitoring of the treated water at its drinking water plant for iron and submit the results of such monitoring to the West Virginia Bureau for Public Health and the Division of Water and Waste Management of the West Virginia Department of Environmental Protection. In addition, Weirton Steel Corporation shall submit a written report regarding the status of its drinking water plant and the issues pertaining thereto to the Environmental Quality Board on or before March 1, 2007.

7.2.b. In the absence of any special application or contrary provision, water quality standards shall apply at all times when flows are equal to or greater than the minimum mean seven (7) consecutive day drought flow with a ten (10) year return frequency (7Q10). NOTE: With the exception of section ~~7.2.c.5~~ ***(Note: section 7.2.c.5 moved to section 7.2.d.9.1)*** 7.2.c.4 listed herein exceptions do not apply to trout waters nor to the requirements of section 3, herein.

7.2.c. Exceptions: Numeric water quality standards shall not apply: (See ~~section~~ § 7.2.d, herein, for site-specific revisions)

7.2.c.1. When the flow is less than 7Q10;

7.2.c.2. In wet weather streams (or intermittent streams, when they are dry or have no measurable flow): Provided, That the existing and designated uses of downstream waters are not adversely affected;

7.2.c.3. In any assigned zone of initial dilution of any mixing zone where a zone of initial dilution is required by ~~section~~ §5.2.b herein, or in any assigned mixing zone for human health criteria or aquatic life criteria for which a zone of initial dilution is not assigned; In zones of initial dilution and certain mixing zones: Provided, That all requirements described in section 5 herein shall apply to all zones of initial dilution and all mixing zones;

7.2.c.4. Where, on the basis of natural conditions, the Board has established a site-specific aquatic life water quality criterion that modifies a water quality criterion set out in Appendix E, Table 1 of this rule. Where a natural condition of a waterbody is demonstrated to be of lower quality than a water quality criterion for the use classes and subclasses in section 6 of this rule, the Board, in its discretion, may establish a site-specific water quality criterion for aquatic life. This alternate criterion may only serve as the chronic criterion established for that parameter. This alternate criterion must be met at end of pipe. Where the Board decides to establish a site-specific water quality criterion for aquatic life, the natural condition constitutes the applicable water quality criterion. A site-specific criterion for natural conditions may only be established through the legislative rulemaking process in accordance with W. Va. Code §§29A-3-1 et seq. and must satisfy the public participation requirements set forth at 40 C.F.R. 131.20 and 40 C.F.R. Part 25. Site-specific criteria for natural conditions may be established only for aquatic life criteria. A public notice, hearing and comment period is required before site-specific criteria for natural conditions are established.

Upon application or on its own initiative, the Board will determine whether a natural condition of a waterbody should be approved as a site-specific water quality criterion. Before it approves a site-specific water quality criterion for a natural condition, the Board must find that the natural condition will fully protect existing and designated uses and ensure the protection of aquatic life. If a natural condition of a waterbody varies with time, the natural condition will be determined to be the actual natural condition of the waterbody measured prior to or concurrent with discharge or operation. The Board will, in its discretion, determine a natural condition for one or more seasonal or shorter periods to reflect variable ambient conditions; and

require additional or continuing monitoring of natural conditions.

An application for a site-specific criterion to be established on the basis of natural conditions shall be filed with the Board and shall include the following information:

7.2.c.4.A. A U.S.G.S. 7.5 minute map showing the stream segment affected and showing all existing discharge points and any proposed discharge point;

7.2.c.4.B. The alphanumeric code of the affected stream, if known;

7.2.c.4.C. Water quality data for the stream or stream segment. Where adequate data are unavailable, additional studies may be required by the Board;

7.2.c.4.D. General land uses (e.g. mining, agricultural, recreation, residential, commercial, industrial, etc.) as well as specific land uses adjacent to the waters for the affected segment or stream;

7.2.c.4.E. The existing and designated uses of the receiving waters into which the segment in question discharges and the location where those downstream uses begin to occur;

7.2.c.4.F. General physical characteristics of the stream segment, including, but not limited to width, depth, bottom composition and slope;

7.2.c.4.G. Conclusive information and data of the source of the natural condition that causes the stream to exceed the water quality standard for the criterion at issue;

7.2.c.4.H. The average flow rate in the segment and the amount of flow at a designated control point and a statement regarding whether the flow of the stream is ephemeral, intermittent or perennial;

7.2.c.4.I. An assessment of aquatic life in the stream or stream segment in question and in the adjacent upstream and downstream segments; and

7.2.c.4.J. Any additional information or data that the Board deems necessary to make a decision on the application.

~~7.2.c.5. For the upper Blackwater River from the mouth of Yellow Creek to a point 5.1 miles upstream, when flow is less than 7Q10. Naturally occurring values for Dissolved Oxygen as established by data collected by the dischargers within this reach and reviewed by the Board and Division of Environmental Protection shall be the applicable criteria.~~ ***(Note, this language moved to section 7.2.d.9.1.)***

7.2.d. Site-specific applicability of water use categories and water quality criteria - State-wide water quality standards shall apply except where site-specific numeric criteria, variances or use removals have been approved following application and hearing, as provided in 46 C.S.R. 6. (See section 8.3 and section 8.4, herein) The following are approved site-specific criteria, variances and use reclassifications:

7.2.d.1. James River Basin- (Reserved)

7.2.d.2. Potomac River Basin

7.2.d.2.1. Except that a site-specific numeric criterion for aluminum, not to exceed 500 ug/l, shall apply to the section of Opequon Creek from Turkey Run to the Potomac River.

7.2.d.3. Shenandoah River - (Reserved)

7.2.d.4. Cacapon River - (Reserved)

7.2.d.5. South Branch - (Reserved)

7.2.d.6. North Branch

7.2.d.6.1 Except that the Stony River downstream from the limit of the thermal mixing zone (as established by Board Order of 11/20/75) for the Mount Storm Lake wastewater treatment facility to its confluence with the North Branch of the Potomac River is exempt from the 5°F above natural temperature rise; however, the maximum temperature outside the mixing zone shall not exceed 87°F at any time during the months of May through November and not exceed 73°F at any time during the months of December through April. This exception shall apply until the successful completion of a study conducted pursuant to section 316(a) of the Federal Act or December 31, 1998, whichever comes first.

7.2.d.7. Monongahela River Basin

7.2.d.7.1. Except that flow in the main stem of the Monongahela River, as regulated by the Tygart Reservoir, operated by the U. S. Army Corps of Engineers, is based on a minimum flow of 345 cfs at Lock and Dam No. 8, river mile point 90.8. This exception does not apply to tributaries of the Monongahela River.

7.2.d.8. Cheat River

7.2.d.8.1. Except that in the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run's confluence with the Cheat River, a site-specific numeric criterion for iron of 3.5 mg/l shall apply and the following frequency and duration requirements shall apply to the chronic numeric criterion for selenium (5ug/l): the four-day average concentration shall not be exceeded more than three times every three years (36 months), on average. Further, the following site-specific numeric criteria shall apply to Fly Ash Run of Daugherty Run: acute numeric criterion for aluminum: 888.5 ug/l and manganese: 5 mg/l.

7.2.d.9. Blackwater River - The Blackwater River below Davis, West Virginia shall be classified as a trout water, Category B2.

7.2.d.9.1. For the upper Blackwater River from the mouth of Yellow Creek to a point 5.1 miles upstream, when flow is less than 7Q10, naturally occurring values for dissolved oxygen as established by data collected by the dischargers within this reach and reviewed by the Board and Department of Environmental Protection shall be the applicable criteria.

7.2.d.10. West Fork River - (Reserved)

7.2.d.11. Tygart River - (Reserved)

7.2.d.12. Buckhannon River - (Reserved)

7.2.d.13. Middle Fork River - (Reserved)

7.2.d.14. Youghiogheny River

~~7.2.d.14.1. Water Use Categories A and E are excluded from the tributaries of the Youghiogheny River in West Virginia which flow into Maryland.~~

7.2.d.15. Ohio River Main Stem - (Reserved)

7.2.d.16. Ohio River Tributaries

7.2.d.16.1. Except that site-specific numeric criteria shall apply to the stretch of Conners Run (0-77-A), a tributary of Fish Creek, from its mouth to the discharge from Conner Run impoundment, which shall not have the Water Use Category A and may contain selenium not to exceed 62 ug/1; and iron not to exceed 3.5 mg/1 as a monthly average and 7 mg/1 as a daily maximum.

7.2.d.16.2. Except that a socio-economic variance shall apply to that segment of Harmon Creek (0-97) from its confluence with the Ohio River to a point 2.2 miles upstream, which shall not have water use Category A designation, and which shall have the following instream criteria: Lead 14 ug/l, Daily Maximum, ~~Zinc 181 ug/l, Daily Maximum~~, Temperature 100 degree F ~~(monitored per Footnote 12 of the permit)~~; Iron 4.0 mg/l, Monthly Average and 8.0 mg/l, Daily Maximum ~~(monitored per Footnote 12 of the permit)~~. ~~Provided, however, that the criteria for Lead, Zinc, Temperature and Iron shall not apply; and instead the state-wide criteria for these parameters shall apply, unless: Weirton Steel Corporation (1) submits to the Office of Water Resources on or before January 31, 2001 a report setting forth the water quality of the discharge from Outlet 004 for these parameters during calendar year 2000; (2) offers further proposals for any appropriate reductions in the above excepted levels; (3) provides any appropriate additional engineering analysis of potential alternatives for reducing further the concentrations of said parameters in the discharge toward achieving statewide criteria; and (4) continues to submit to the Office of Water Resources on a semi-annual basis;~~ Weirton Steel Corporation shall continue to submit to the Division of Water and Waste Managment of the West Virginia Department of Environmental Protection, on an annual basis summary reports on the water quality of the discharge from Outlet 004 and the efforts made by Weirton Steel Corporation during the ~~prior six (6) months~~ previous year to improve the quality of said discharge. ~~Additionally Weirton Steel must determine the water quality of Harmon Creek both immediately upstream of and below the discharge of outlet 004 at the Con Rail Bridge by sampling for Flow, pH, Total and Dissolved Lead, Total and Dissolved Zinc, Iron, Fluoride, Temperature, Turbidity, Oil and Grease and Hardness on at least a monthly basis and submit the results to the Office of Water Resources with the semi-annual report.~~ These exceptions shall be in effect until action by the Environmental Quality Board to revise such exceptions or until ~~June 29, 2004~~ July 1, 2007, whichever comes first.

7.2.d.17. Little Kanawha River - (Reserved)

7.2.d.18. Hughes River - (Reserved)

7.2.d.19. Kanawha River Zone 1 - Main Stem

7.2.d.19.1 For the Kanawha River main stem, Zone 1, Water Use Category A shall not apply; and

7.2.d.19.2. The minimum flow shall be 1,960 cfs at the Charleston gauge.

7.2.d.19.3. In Ward Hollow of Davis Creek, the following site-specific numeric criterion for chloride shall apply for Category A and Category B1 (chronic aquatic life protection): 310 mg/liter.

7.2.d.20. Kanawha River Zone 2 and Tributaries

7.2.d.20.1. For the main stem of the Kanawha River only, the minimum flow shall be 1,896 cfs at mile point 72.

7.2.d.20.2. Except the stretch between the mouth of Little Scary Creek (K-31) and the Little Scary impoundment shall not have Water Use Category A. The following site-specific numeric criteria shall apply to that section: selenium not to exceed 62 ug/1 and copper not to exceed 105 ug/1 as a daily maximum nor 49 ug/1 as a 4-day average.

7.2.d.20.3. Except for Simmons Creek (K-54) from its mouth to a point 1200 feet upstream to which the following site-specific numeric criteria shall apply: a maximum daily temperature not to exceed 38°C (100°F) nor a monthly average temperature to exceed 34°C. This exception shall apply until the successful completion of a study conducted pursuant to section 316(a) of the Federal Act or May 30, 1998, whichever comes first.

7.2.d.21. Pocatalico River - (Reserved)

7.2.d.22. Coal River - (Reserved)

7.2.d.23. Elk River - (Reserved)

7.2.d.24. Gauley River - (Reserved)

7.2.d.25. Meadow River - (Reserved)

7.2.d.26. Cherry River - (Reserved)

7.2.d.27. Cranberry River - (Reserved)

7.2.d.28. Williams River - (Reserved)

7.2.d.29. New River - (Reserved)

7.2.d.30. Greenbrier River - (Reserved)

7.2.d.31. Bluestone River - (Reserved)

7.2.d.32. Bluestone Lake - (Reserved)

7.2.d.33. East River - (Reserved)

7.2.d.34. Guyandotte River - (Reserved)

7.2.d.35. Mud River - (Reserved)

7.2.d.36. Big Sandy River - (Reserved)

7.2.d.37. Tug Fork River - (Reserved)

§46-1-8. Specific Water Quality Criteria.

8.1. Charts of specific water quality criteria are included in Appendix E, Table 1.

8.1.a. Specific state (i.e. total, total recoverable, dissolved, valence, etc.) of any parameter to be analyzed shall follow 40 CFR 136, Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act, as amended, ~~June 15, 1990~~ July 1, 2001. (See also 47 C.S.R. 10, section 7.3 - National Pollutant Discharge Elimination System (NPDES) Program.)

8.1.b. Compliance with aquatic life water quality criteria expressed as dissolved metal shall be determined based on dissolved metals concentrations.

8.1.b.1. The aquatic life criteria for all metals listed in Appendix E, Table 2 shall be converted to a dissolved concentration by multiplying each numerical value or criterion equation from Appendix E, Table 1 by the appropriate conversion factor (CF) from Appendix E, Table 2.

8.1.b.2. Permit limits based on dissolved metal water quality criteria shall be prepared in accordance with the ~~U.S. EPA~~ USEPA document "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion, USEPA 823-B-96-007, June 1996.

8.1.b.3. NPDES permit applicants may petition the ~~Office~~ Director of the Division of Waste and Water Resources of the ~~Division~~ Department of Environmental Protection ~~(OWR)~~ to develop a site-specific translator consistent with the provisions in this section. The ~~OWR~~ Director may, on a case-by-case basis require an applicant applying for a translator to conduct appropriate sediment monitoring through SEM/AVS ratio, bioassay or other approved methods to evaluate effluent limits that prevent toxicity to aquatic life.

8.1.c. An "X" or numerical value in the use columns of Appendix E, Table 1 shall represent the applicable criteria.

8.1.d. Charts of water quality criteria in Appendix E, Table 1 shall be applied in accordance with ~~major stream and use applications~~ water use categories and West Virginia waters, outlined in sections 6 and 7, ~~herein~~ respectively.

8.2. Criteria for Toxicants

8.2.a. Toxicants which are carcinogenic have human health criteria (Water Use Categories A and C) based upon an estimated risk level of one additional cancer case per one million persons (10^{-6}) and are indicated in Appendix E, Table 1 with an endnote ([b]).

8.2.b. A final determination on the critical design flow for carcinogens is not made in this rule, in order to permit further review and study of that issue. Following the conclusion of such review and study, the Legislature may again take up the authorization of this rule for purposes of addressing the critical design flow for carcinogens: Provided, That until such time as the review and study of the issue is concluded or until such time as the Legislature may again take up the authorization of this rule, the regulatory requirements for determining effluent limits for carcinogens shall remain as they were on the date this rule was proposed.

8.3. Variances from Specific Water Quality Criteria. A variance from numeric criteria may be granted to a discharger if it can be demonstrated that the conditions outlined in subsections ~~6.1.b.A-F~~ 6.1.b.1 - 6.1.b.6 herein, limit the attainment of one or more specific water quality criteria. Variances shall apply only to the discharger to whom they are granted and shall be reviewed by the Board at least every three years. In granting a variance, the requirements for revision of water quality standards in 46 CSR 6 shall be followed.

8.4. Site-specific numeric criteria. The Board may establish numeric criteria different from those set forth in Appendix E, Table 1 for a stream or stream segment upon a demonstration that existing numeric criteria are either over-protective or under-protective of the aquatic life residing in the stream or stream segment. A site-specific numeric criterion will be established only where the numeric criterion will be fully protective of the aquatic life and the existing and designated uses in the stream or stream segment. The site-specific numeric criterion may be established by conducting a Water Effect Ratio study pursuant to the procedures outlined in USEPA's "Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994); other methods may be used with prior approval by the Board. In adopting site-specific numeric criteria, the requirements for revision of water quality standards set forth in 46 CSR 6 shall be followed.

§46-1-9. Establishment Of Safe Concentration Values.

When a specific water quality standard has not been established by these rules and there is a discharge or proposed discharge into waters of the ~~State~~ state, the use of which has been designated a Category B1, B2, ~~B3~~ or B4, such discharge may be regulated by the ~~Chief~~ Director where necessary to protect ~~State~~ state waters through establishment of a safe concentration value as follows:

9.1. Establishment of a safe concentration value shall be based upon data obtained from relevant aquatic field studies, standard bioassay test data which exists in substantial available scientific literature, or data obtained from specific tests utilizing one (1) or more representative important species of aquatic life designated on a case-by-case basis by the ~~Chief~~ Director and conducted in a water environment which is equal to or closely approximates that of the natural quality of the receiving waters.

9.2. In those cases where it has been determined that there is insufficient available data to establish a safe concentration value for a pollutant, the safe concentration value shall be determined by applying the appropriate application factor as set forth below to the 96-hour LC 50 value. Except where the ~~Chief~~ Director determines, based upon substantial available scientific data that an alternate application factor exists for a pollutant, the following appropriate application factors shall be used in the determination of safe concentration values:

9.2.a. Concentrations of pollutants or combinations of pollutants that are not persistent and not cumulative shall not exceed 0.10 (1/10) of the 96-hour LC 50.

9.2.b. Concentrations of pollutants or combinations of pollutants that are persistent or cumulative shall not exceed 0.01 (1/100) of the 96-hour LC 50.

9.3. Persons seeking issuance of a permit pursuant to these rules authorizing the discharge of a pollutant for which a safe concentration value is to be established using special bioassay tests pursuant to subsection 9.1 of this section shall perform such testing as approved by the ~~Chief~~ Director and shall submit all of the following in writing to the ~~Chief~~ Director:

9.3.a. A plan proposing the bioassay testing to be performed.

9.3.b. Such periodic progress reports of the testing as may be required by the ~~Chief~~ Director.

9.3.c. A report of the completed results of such testing including, but not limited to, all data obtained during the course of testing, and all calculations made in the recording, collection, interpretation and evaluation of such data.

9.4. Bioassay testing shall be conducted in accordance with methodologies outlined in the following documents: "USEPA Office of Research and Development Series Publication, Methods for Measuring the Acute Toxicity" (USEPA/600/4-90/027F, August 1993, 4th Edition) or "Short Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" ~~(EPA/600/4-89/001), March 1989~~ (EPA-600-4-91-002), July 1994; Standard Methods for the Examination of Water and Wastewater (18th Edition); or "ASTM Practice E 729-88 for Conducting Acute Toxicity Tests with Fishes, Macroinvertebrates and Amphibians" as published in Volume 11.04 of the 1988 Annual Book of ASTM Standards. Test waters shall be reconstituted according to recommendations and methodologies specified in the previously cited references or methodologies approved in writing by the ~~Chief~~ Director.

APPENDIX A
CATEGORY B-2 - TROUT WATERS

This list contains known trout waters and is not intended to exclude any waters which meet the definition in Section 2.20.

River Basin	County	Stream
James River		
J-1-A	Mercer	Ewin Run
J-3	Monroe	Cove Creek
J-1-C	Monroe	North Fork of Potts Creek
J	Monroe	South Fork Potts Creek
Potomac River		
P	Berkeley	Opequon Creek
P	"Berkeley	Tuscarora Creek (Above Martinsburg)
P	"Berkeley	Middle Creek (Above Route 30 Bridge)
P	"Berkeley	Mill Creek
P	"Berkeley	Hartland Run
P	"Berkeley	Mill Run
P	"Berkeley	Tillance Creek
P	Berkely-Morgan	Meadow Branch
P	Jefferson	Town Run
P	"Jefferson	Rocky Marsh Run
P	Morgan	Meadow Branch
PS	Jefferson	Flowing Springs Run (Above Halltown)
PS	"Jefferson	Cattail Run
PS	"Jefferson	Evitt's Run
PS	"Jefferson	Big Bullskin Run
PS	"Jefferson	Long Marsh Run
PC	Hampshire	Cold Stream
PC	"Hampshire	Edwards Run and Impoundment
PC	"Hampshire	Dillons Run
PC-17	Hampshire	Hawk Run of Cacapon
PC	Hardy	Lost River
PC-24-H	Hardy	Lower Cove Run of Lost River
PC	"Hardy	Camp Branch
PC	"Hardy	Lower Cove Run
PC	"Hardy	Moores Run
PC	"Hardy	North River (Above Rio)
PC	"Hardy	Waites Run
PC	"Hardy	Trout Run
PC-23	Hardy	Trout Run of Cacapon
PC	"Hardy	Trout Pond (Impoundment)
PC	"Hardy	Warden Lake (Impoundment)
PC	"Hardy	Rock Cliff Lake (Impoundment)
PSB-28-A-1	Grant	Big Run of Jordan Run
PSB-28-E	Grant	High Ridge Run of North Fork
PSB-28-A-2	Grant	Laurel Run of Jordan
PSB	Grant	North Fork Lunice Creek
PSB-29	Grant	Redman Run

PSB-28-B	Grant	Samuel Run of North Fork
PSB	"Grant	South Fork Lunice Creek
PSB	"Grant	South Mill Creek (Above Hiser)
PSB	Grant	South Mill Creek
PSB	"Grant	Spring Run
PSB-25-C-2	Grant	Sring run of South Mill
PSB	Grant-Pendleton	North Fork South Branch
PSB	Grant-Pendleton	South Branch of Potomac River
PSB	Hampshire	Mill Creek
PSB	"Hampshire	Mill Run
PSB-13	Hampshire	Mill Run of South Branch
PSB-21-F	Hardy	Dumpling Creek
PSB-28-EE-2-A	Pendleton	Back Run of Sawmill Branch
PSB-28-R	Pendleton	Blizzard Run
PSB-28-S	Pendleton	Brier Gap Run
PSB-32	Pendleton	Briggs Run of South Branch
PSB-28-C	Pendleton	Broad Run of North Fork
PSB-28-K-1	Pendleton	Brushy Run of Seneca Creek
PSB-28-EE-4	Pendleton	Elk Run of Big Run
PSB	Pendleton	Hawes Run (Impoundment)
PSB-28-K-3	Pendleton	Horsecamp Run of Seneca Creek
PSB	Pendleton	Laurel Fork of North Fork
PSB-28-T	Pendleton	Laurel Run of North Fork
PSB	"Pendleton	Little Fork
PSB-28-GG-2-A	Pendleton	Little Low Place Hollow of Laurel Fork
PSB-28-K-2-B	Pendleton	Long Run of Roaring Creek
PSB-28-I	Pendleton	Powdermill Run of North
PSB-33	Pendleton	Reeds Creek
PSB-28-K-2	Pendleton	Roaring Creek of Seneca Creek
PSB-21-K	Pendleton	Rough Run of South Branch
PSB-28-GG-1	Pendleton	Sams Run of Laurel Fork
PSB-28-EE-2	Pendleton	Sawmill Branch of Big Run
PSB	"Pendleton	South Branch (Above North Fork)
PSB-28-K	"Pendleton	~~Sencna~~ Seneca Creek
PSB-28-K-4	Pendleton	Strader Run of Seneca Creek
PSB-28-K-6	Pendleton	Whites Run of Seneca Creek
(??)	Pendleton	Upper Gulf Run of Whites Run
PSB-28-EE-3	Pendleton	Teter Camp Run of Big Run
PSB-47	Pendleton	Thorn Creek
PSB	"Pendleton	Laurel Fork
PSB-28-G	Pendleton	Laurel Fork of North Fork - to VA line
PSB-28-GG-2	Pendleton	Vance Run of Laurel Fork
PSB-28-K-3-B	Pendleton	Wamsley Run
PSB-28-I-1	Pendleton	Wilson Run of Kettle Creek
PSB	"Pendleton	Big Run
PSB-28-EE	Pendleton	Big Run of North Fork
PNB-18	Grant	Difficult Run of North Branch
PNB	Grant	North Fork of Lunice Creek
PNB	Grant	North Fork of Patterson Creek
PNB	Grant	Stony River
(??)	Grant	Wilsonia Run of North Branch
PNB-16-B	Grant	Wycroff Run of Abrams Creek
PNB-15-A	Mineral	Cranberry Run of Deep Creek Run
PNB-15	Mineral	Deep Run of North Branch

PNB-14	Mineral	Howell Run of North Branch
PNB	Mineral	North Fork Patterson Creek
PNB	"Mineral	Fort Ashby (Impoundment)
PNB	"Mineral	New Creek
PNB	"Mineral	New Creek Dam 14 (Impoundment)
PNB	"Mineral	Mill Creek (Above Markwood)
PNB	Pendleton	North Branch of Potomac
(??)	Grant	Johnnycake Run of Wycroff Run
S-9-A	Hardy	Capon Run

Ohio River

O	Hancock	North Fork of Kings Creek
O	Ohio	Middle Wheeling Creek

Monongahela River

M	Monongalia-Marion	Whiteday Creek (Above Smithtown)
M	Preston	Boyds Run
M	Preston	Cherry Run of Little Sandy
M	Preston	Fields Creek
M	Preston	Hog Run of Little Sandy
M	Preston	Laurel Run of Big Sandy
M	Preston-Taylor-Monongalia	Laurel Run of Threeforks
MC	Monongalia	Morgan Run
MC	"Monongalia	Coopers Rock (Impoundment)
MC	"Monongalia	Blaney Hollow
MC	Preston	Big Sandy
MC	Preston	Laurel Run
MC-60-J	"Preston	Elsey Run
MC-33-A	Preston	Flag Run of Buffalo Creek
MC	Preston	Little Sandy
MC-12-B-6	Preston	Mill Run of Little Sandy
MC	Preston	Muddy Creek
MC	Preston	Piney Run of Little Sandy
MC	Preston	Saltlick Creek
MC-36	Preston	Wolf Creek
MC-54-K	Preston/Tucker	Twelvemile Run of Clover
MC-41	Preston/Tucker	Long Run
MC	"Preston/Tucker	Saltlick Creek
MC	"Preston/Tucker	Buffalo Creek
MC	"Preston/Tucker	Wolf Creek
MC-60-O-1	Randolph	Big Run of Red Creek
MC-60-T-8	Randolph	Big Run of Gandy
(No code)	Randolph	Big Run of Gandy (above the sinks)
(No code)	Randolph	Devers Run of Gandy
MC-60-K-6	Randolph	Baker Camp Run
MC	Randolph	Camp Five Run
MC-60-K-15	Randolph	Daniels Creek
MC	Randolph	Dry Fork
MC	"Randolph	Dry Fork (Above Otter Creek)
MC-60-K-4	Randolph	Five Lick
MC-60	Randolph	Flatrock Run
MC	"Randolph	Glady Fork
MC-60-T-9	Randolph	Grants Branch

MC-60-Q	Randolph	Horsecamp Run
MC	"Randolph	Laurel Fork
MC	Randolph	Laurel Fork of Dry Fork
MC-60-T-1	Randolph	Lower Two Spring
MC	Randolph	Gandy Creek
MC	"Randolph	Gandy Creek (Above Whitmer)
MC-60	Randolph	Gandy Creek (Headwaters) above sinks
MC	"Randolph	East Fork Glady Fork (Above C & P Compressor Station)
MC-60-K-17	Randolph	East Fork of Glady
MC-60-K-11	Randolph	McCray Creek
MC-60-T-10	Randolph	Narrow Ridge Run
MC-60-K-2	Randolph	Panther Camp Run
MC	Randolph	Shavers Fork (Above Little Black Fork)
MC-60-P	Randolph	Spruce Run
MC-60-T-6	Randolph	Taylor Run
MC-60-K-1	"Randolph	Three Spring Run
MC-45	Randolph	Tobes Run
MC-60-R	Randolph	Tory Camp Run
MC	"Randolph	Spruce Knob Lake (Impoundment)
MC-60-T-3	Randolph	Swallow Rock
MC-60-T-2	Randolph	Upper Two Spring
MC-60-T-11	Randolph	Warner Run
MC-60-K-16	Randolph	West Fork of Glady - exclude lower 2 miles
MC-60-K-5	Randolph	Woodford Run
MC(?)	Tucker	Aarons Run of Pheasant Run
MC-60-L	Tucker	Big Run of Dry Fork
MC	Tucker	Canoe Run
MC	Tucker	Clover Run
MC-55	Tucker	Dry Run
MC	"Tucker	Elklick Run
MC-60-C	Tucker	Elklick Run of Black Fork
MC-60-J	Tucker	Elklick Run of Dry Fork
MC-60-O-3	Tucker	Gandy Run of Red Creek
MC-54-D	Tucker	Hile Run of Horseshoe Run
MC-51-B	Tucker	Indian Run
MC-54-I	Tucker	Leadmine Run of Horseshoe
MC-51-C	Tucker	Left Fork of Clover Run
MC-54-E	Tucker	Lick Drain
MC-54-G	Tucker	Maxwell Run of Horseshoe
MC	"Tucker	Maxwell Run
MC-54-A	Tucker	Mike Run of Horseshoe
MC-56	Tucker	Mill Run of Cheat River
MC-60-1	Tucker	Mill Run of Dry Fork
MC	Tucker	Mill Run of Left Fork of Clover
MC-52	Tucker	Minear Run of Cheat
MC	Tucker	Red Creek
MC-60-G	Tucker	Red Run
MC-46-B	Tucker	Right Fork of Bull Run
MC-51-A	Tucker	Right Fork of Clover Run
MC	"Tucker	Red Creek
MC-18	Tucker	Roaring Creek of Cheat R. except lower 2 mi.
MC-60-D-10	Tucker	Sand Run
MC	"Tucker	Slip Hill Mill Branch
MC	"Tucker	Thomas Park (Impoundment)

MC-54-H	Tucker	Thunderstruck Run of Horseshoe
MC(?)	Tucker	Two Spring Run of Glady Fork
MC-57	Tucker	Wolf Run of Cheat River
MC-51-D	Tucker	Valley Fork
MC-60-D-11	Tucker	Yoakum Run
MC	"Tucker	Blackwater River (Above Davis)
MC	"Tucker	Blackwater River (Below Davis) (insert date adopted)
MC-60-D	Tucker	Blackwater River (Lower Section) - State Park Bridge downstream to mouth of North Branch
MC-54	Tucker/Preston	Horseshoe Run (Headwaters) to Leadmine
MC	"Tucker/Preston	Horseshoe Run
MC	Tucker-Randolph	Shavers Fork
(No Code)	Pocahontas	Oats Run of Shavers Fork
MCS-55	Pocahontas	Second Fork
MCS-54	Randolph	Beaver Creek
MCS-47	Randolph	Blister Run
MCS-57	Randolph	Black Run
MCS-14	Randolph	Clifton Run
MCS-50	Randolph	First Fork
MCS-48	Randolph	Fish Hatchery Run
MCS-33	Randolph	Fishing Hawk
MCS-43	Randolph	Glade Run
MCS-16	Randolph	Johns Run
MCS-49	Randolph	Lambert Run
MCS-13	Randolph	Little Black Fork
MCS-12	Randolph	Little Laurel Run
MCS-9	Randolph	Nail Run
MCS-15	Randolph	Rattlesnake Run
MCS-46	Randolph	Red Run of Shavers Fork
MCS-22-A	Randolph	Stalnaker Run
MCS-40	Randolph	Whitmeadow Run
MCS-22	Randolph	Taylor Run
MCS-40	Randolph	Yokum Run
MCS	Randolph-Pocahontas	Shavers Fork (Headwaters) above Old Spruce
MCS	Tucker	Jobs Run
MCS-5	Tucker	Laurel Run of Shavers Fork
MCS-3-A	Tucker	South Branch of Haddix Run
MCS-7	Tucker	Stonelick Run
MW	Harrison	Dog Run (Pond)
MW	Lewis	Stonecoal
MT	Barbour	Brushy Fork (Above Valley Furnace)
MT	"Barbour	Teter Creek Lake (Impoundment)
MT	"Barbour	Mill Run
MT-23-F	Barbour	Mill Run of Teter Creek
MT-23-H	Barbour	Mill Run of Teter Creek
MT-38	Barbour	Zebs Creek
MT-18-E-5-B	Preston	Frog Run
MT	Preston	Roaring Creek (Above Little Lick Branch)
MT	Randolph	Tygart River (Above Huttonsville)
MT-66-C	Randolph	Back Fork of Riffle Creek
MT-47	Randolph	Beaver Creek
MT-68	Randolph	Becky Creek from secondary Rt 56 bridge upstream

MT-68-A	Randolph	Big Branch of Becky Creek
MT	"Randolph	Big Run
MT-81	Randolph	Big Run of Tygart
MT-73	Randolph	Clay Run
MT-77	Randolph	Conley Run
MT-74	"Randolph	Elkwater Fork
MT	Randolph	Files Creek
MT-50	Randolph	Files Creek (Rt. FK-MT-50-A) from compressor station upstream
MT-50-B	Randolph	Left Fork of Files Creek
MT-50-A-1	Randolph	Limekiln Run
MT-74-B	Randolph	Limekiln Run of Elkwater
MT-80	Randolph	Logan Run
MT-44	Randolph	Mathais Run
MT-66-B	Randolph	McGee Run
MT-64-E	Randolph	Meatbox Run
MT-33	Randolph	Middle Form (Upper) above Cassity
MT-64	Randolph	Mill Creek upstream at end of Co. Rt. 46/4
MT-74	Randolph	Mowry Run
MT-64-F	Randolph	Potatohole Fork
MT-67	Randolph	Rafe Run
MT-78	Randolph	Ralston Run
MT-66	Randolph	Riffle Creek - above McGee Run
MT-61	Randolph	Shavers Run
MT-75	Randolph	Stewart Run
MT-79	Randolph	Windy Run
MT-64-C	Randolph	Glade Run
MT-72	Randolph	Hamilton
MT-45-C	Randolph	Right Fork of Chenoweth Creek
MT	Taylor-Barbour	Tygart Lake Tailwaters (Above Route 119 Bridge)
MT	Upshur	Buckhannon River
MT	Upshur	Right Fork of Middle Fork
MT	Upshur-Randolph	Left Fork Buckhannon
MT	Upshur-Randolph	Right Fork of Buckhannon
MTB-32-H	Randolph	Beech Run
MTB-31-I	Randolph	Devil Fork
MTB-32	Randolph	Left Fork of Buckhannon (Upper) upstream of Star Bridge
MTB-31	Randolph	Right Fork of Buckhannon (Head) above Pickens
(No Code)	Randolph	Millstone Run Right Fork of Files Creek
MTB-31-C	Upshur	Alec Run
MTB-28	Upshur	Big Run of Buckhannon - about DLM drain
MTB	Upshur	Buckhannon River (Above Beans Mill)
MTB	Upshur	French Creek
MTB-32-E	Upshur	Lick Run
MTB-31-D	Upshur	Millsite Run
MTB-27	Upshur	Panther Fork (headwaters) - from 2 miles above Co. Rt. 32
MTB-31-B	Upshur	Reger Run
MTB-25-A	Upshur	Right Fork of Tenmile Creek - except lower ½ mile
MTB-32-D	Upshur-Randolph	Bearcamp Run
MTB	Upshur-Randolph	Left Fork Right Fork

MTB	Upshur-Randolph-Lewis	Right Fork Buckhannon River
MTM-26	Randolph	Birch Fork of Middle Fork
MTM-16	Randolph	Cassity Fork (Upper) - above Mulberry
(No Code)	Randolph	Panther Run of Cassity Fork (Upper) except lower 1/4 mile
MTM-28	Randolph	Kittle Run
MTM-23	Randolph	Laurel Branch
MTM-22	Randolph	Laurel Run of Middle Fork
MTM-13	Randolph	Long Run
MTM	Randolph	Middle Fork River (Above Cassity)
MTM-27	Randolph	Mitchell Lick Fork
MTM-21	Randolph	Pleasants Run
MTM-25	Randolph	Schoolcraft Run
MTM-24-A	Randolph	Spice Run
MTM-24	Randolph	Sugar Run
MTM	Upshur	Jenks Fork
MTN	Upshur	Right Fork Middle Fork River
MTM	Upshur	Right Fork Middle Fork - above Hemlock
MTM-11-D	Upshur-Randolph	Jackson Fork
MY	Preston	Maple Run
MY	Preston	Rhine Creek
MY	Preston	Snowy Creek
MY	Preston	Youghiogheny River
No Code	Pocahontas	Sutton Run of North Fork of Deer Creek
No Code	Randolph	Rocky Run of Birch Fork
No Code	Webster	Right Fork of Turkey Creek of Gauley

Little Kanawha River

LK	Upshur	Left Fork-Right Fork Little Kanawha River)
LK	Upshur	Getout Run
LK	Upshur-Lewis	Little Kanawha River (Above Wildcat)

Kanawha River

K	Fayette	Falls Creek
K-76	Fayette	Loop Creek
K	Upshur	Left Fork of Right Fork Little Kanawha
KC	Raleigh	Clear Fork
KE	??	Groves Creek
KE	Braxton	Camp Creek
KE	Braxton	Sutton Reservoir
KE	"Braxton	Sutton Lake Tailwaters (Above Route 38/5 Bridge)
KE	Braxton	Wolf Creek
KE-50-I	Clay	Rockcamp Run
KE	Clay	Blue Knob Creek
KE	Clay	Strange Creek
KE-76-O	Nicholas	Poplar Creek
KE-76	Nicholas	Tug Fork
KE-138	Pocahontas	Big Spring Fork
KE-24-E-2	Pocahontas	Big Run of Elk
KE-139-B	Pocahontas	Crooked Fork
KE-138-B	Pocahontas	Cup Run
KE-133	Pocahontas	Dry Branch
KE	Pocahontas	Elk River (Slaty Fork Section)

KE-137	Pocahontas	Laurel Run of Elk
KE-136	Pocahontas	Props Run
KE-139	Pocahontas	Slaty Fork
KE	Pocahontas-Randolph	Elk River
KE-130	Randolph	Chimney Rock Run
KE-129	Randolph	Valley Fork
KE	Randolph-Webster	Right Fork of Leatherwood
KE	Webster	Back Fork
KE	Webster	Back Fork of Elk
KE-127	Webster	Big Run of Elk
KE	"Webster	Desert Fork
KE-98-B-16	Webster	Desert Fork (Headwaters) above Roaring Run
KE-98-C-14	"Webster	Fall Run
KE	Webster	Laurel Creek (Erbacon)
KE	"Webster	Laurel Fork
KE-98-C-11	Webster	Laurel Fork of Left Fork of Holly
KE	"Webster	Left Fork Holly River
KE-98-C	Webster	Left Fork of Holly (Headwaters upstream of Rt 20 Bridge
KE	"Webster	Sugar Creek
KE-111-K	Webster	Sugar Creek (Headwaters) above Little Sugar
KE-111-K-2	Webster	Little Sugar Creek
KE	"Webster	Elk River (Above Webster Springs)
KE-118	Webster-Randolph	Bergoo Creek
KC-31-B	Boone	Hopkins Fork
KC	Raleigh	Stephens Lake (Impoundment)
KC	"Raleigh	Marsh Fork (Above Sundial)
KG-19-A	Fayette	Dogwood Creek
KG	Fayette	Glade Creek
KG-19-1	Fayette	Brackens Creek
KG	Fayette	Wolf Creek
No code	Fayette	Surbaugh Creek
KG-34-H-14	Greenbrier	Bear Run
KG-34-G-8	Greenbrier	Becky Run
KG-34-E-8	Greenbrier	Beech Run
KG-34-G-13	Greenbrier	Big Run of South Fork of Cherry
KG-34-F-2	Greenbrier	Improvement Branch
KG	Greenbrier	Big Clear Creek
KG-34-G-2	Greenbrier	Briery Run
KG-34-H-5	Greenbrier	Coats Run
KG-34-G-10	Greenbrier	Cold Knob Fork
KG-34-E-13	Greenbrier	Cold Spring Branch
KG-34-G-5	Greenbrier	Elklick Run
KG	"Greenbrier	Little Clear Creek and Laurel Run
KG	"Greenbrier	Meadow Creek
KG-19-U-1	Greenbrier	Brown Creek
KG-34-E-9	Greenbrier	Hogcamp Run
KG-19-U-2-D	Greenbrier	Job Knob Branch
KG-19-V-7	Greenbrier	Kuhn Branch
KG-34-E	Greenbrier	Laurel Creek (Headwaters) from McMillion Run upstream
KG-34-E-11	Greenbrier	Middle Branch
KG-19-U-2-C	Greenbrier	Old Field Branch
KG-34-G-6	Greenbrier	Rocky Run

KG-19-U-3	Greenbrier	Sam Creek
KG-34-G	Greenbrier	South Fork of Cherry(Headwaters) downstream to Rocky Run
KG	Greenbrier	Summit Lake (Impoundment)
KG	Greenbrier-Nicholas	Laurel Creek
KG	Greenbrier-Nicholas	Hominey Creek
KG	Greenbrier-Nicholas	South Fork Cherry River
KG	Nicholas	Summersville Reservoir (Impoundment)
KG	"Nicholas	Summersville Tailwaters (Above Collison Creek)
KG	Nicholas	Deer Creek
KG	Nicholas	Hominy Creek
KG	"Nicholas	Anglins Creek
KG-19-G	Nicholas	Anglins Creek (Headwaters) - 41/9 bridge upstream
KG-26-K	Nicholas	Brushy Creek
KG-24-E-2	Nicholas	Brushy Meadow Creek
KG	Nicholas	Collison Creek
KG-32-J	Nicholas	Cranenest Run
KG-24-E	Nicholas	Grassy Creek
KG-24	Nicholas	Hominey Creek (Middle)
KG-24	Nicholas	Hominey Creek (Lower)
KG-24	Nicholas	Hominey Creek (Upper)
KG-24-J	Nicholas	Price Fork
KG	Nicholas	Cherry River
KG-20	Nicholas	Collison Creek
KG	Nicholas	Deer Creek
KG	Nicholas	Panther Creek
KG	Nicholas	Peters Creek
KG-34	Nicholas-Greenbrier	North Fork of Cherry
KG34-F	Nicholas-Greenbrier	Little Laurel Creek
KG	Nicholas-Greenbrier	North Fork of Cherry
KG-34-H-4	Nicholas-Randolph	Hunters Run
KG	"Nicholas-"Randolph	North Fork Cherry River
(No Code)	Pocahontas	Darnell Run of North Fork of Cherry
KG	Pocahontas-Webster	Williams River
KG	Pocahontas-Webster-Nicholas	Cranberry River
KG	Randolph	Gauley River (Headwaters) above Jerryville
KG-74	Randolph	North Fork of Gauley
KG-6	Randolph	Rich Creek
KG-72	Randolph-Pocahontas	Middle Fork of Gauley
KG	Randolph-Webster	Gauley River (Above Moust Coal Tipple)
KG-45	Webster	Big Laurel Fork
KG-59	Webster	Big Run of Gauley
KG-70	Webster	Big Run of Gauley
KG-61	Webster	Hughes Run
KG-58	Webster	Laurel Creek of Gauley
KG-57	Webster	Miller Mill Run
KG-67	Webster	Straight Creek of Gauley
KG-60	Webster	Turkey Creek
KG-65	Webster	Williams Camp Run
KGC-4-A	Nicholas	Little Barrenshe
KGC-3	Nicholas	Jakeman Run
KGC-4	Pocahontas	Barrenshe Run
KGC	Pocahontas	South Fork Cranberry River

(No code)	Pocahontas	Hawthorne Run or Jeffery Run of Big Spring Fork
KGC	Pocahontas-Webster-Nicholas	Cranberry River
KGC-24	Pocahontas-Webster-Nicholas	North Fork of Cranberry (Only the C&R Area)
KGC-19	Randolph	Dogway Fork
KGC-9	Webster	Aldrich Run
KGC-8	Webster	Foxtree Run
KGC-15	Webster	Hanging Rock Branch
KGC-7	Webster-Nicholas	Bee Run
KGW-26	Pocahontas	Black Mountain Run
KGW-25	Pocahontas	Day Run
KGW-20-A	Pocahontas	Lick Creek
KGW-22	Pocahontas	Little Laurel Creek
KGW-27	Pocahontas	Mountain Lick Run
KGW-21	Pocahontas	Sugar Creek
KGW-20	Pocahontas	Tea Creek
KGW	Pocahontas	Williams River above Day Run Campground
KGW	Pocahontas-Webster	Williams River (Above Dyer)
KGW-10	"Pocahontas-Webster	Middle Fork of Williams
KGW	Webster	Craig Run
KGW-2	Webster	Jonathan Run
KGW-9	Webster	Lick Branch
KGW-3	Webster	Sawyer Run
KGW-4	Webster	Spice Run
KGW-8	Webster	White Oak Fork
KN-23	Fayette	Buffalo Creek
KN-27-C	Fayette	Chestnut Knob Fork of Laurel
KN	Fayette	Glade Creek of Manns
KN-27	Fayette	Laurel Creek of New River
KN	Fayette	Mill Creek
KN	"Fayette	Laurel Creek (Above Cotton Hill)
KN	Fayette	Dunloup Creek (Downstream from Harvey Sewage Treatment Plant)
KN	Mercer	East River (Above Kelleysville)
KN	"Mercer	Pigeon Creek
KN-61	Monroe	Rich Creek
KN-51-O	"Monroe	Turkey Creek
KN	Monroe	Laurel Creek
KN	Raleigh	Glade Creek
KN	Raleigh	Glade Creek of New River
KN	Raleigh	Beaver Creek
KN	Raleigh	Dunloup Creek
KN-29-E	Raleigh	Pinch Creek
KN-26	Raleigh	Piney Creek
KN-26-B	Raleigh	Fat Creek
KN	Summers	Meadow Creek
KNB-30	Mercer	Crane Creek
KNB-12-B	Mercer	Laurel Creek (Bluestone)
KNB-3	Summers	Little Bluestone
KNG	Greenbrier	Culverson Creek
KNG(S)-2-B	Greenbrier	Flynn Creek
KNG	Greenbrier	Hughart Creek
KNG	"Greenbrier	Milligan Creek

KNG	Greenbrier	North Fork Anthony Creek
KNG	"Greenbrier	Spring Creek
KNG	"Greenbrier	Anthony Creek (Above Big Draft)
KNG(S)-3-A	Greenbrier	Burns Run
KNG-28-Q-2	Greenbrier	Twomile Run
KNG(S)-1	Greenbrier	Milligan Creek - upstream of old Rt. 60
KNG-(S)-3-C-1	Greenbrier	Roaring Creek
KNG	Greenbrier-Monroe	Second Creek (Rt. 219 Bridge to Nickell's Mill)
KNG-23	Greenbrier-Monroe	Second Creek - a 2 mile section around Rodgers Mill (Fly Fishing Only section)
KNG	Monroe	Kitchen Creek (Above Gap Mills)
KNG-53-G	Pocahontas	Barclay Run
KNG	Pocahontas	Beaver Creek
KNG-68-A-5	Pocahontas	Black Run
KNG-79-C-2	Pocahontas	Club House Run
KNG-53-H	Pocahontas	Douthat Creek
KNG	Pocahontas	East Fork of Greenbrier
KNG-68-A-6	Pocahontas	Elleber Run
KNG-79-B	Pocahontas	Fill Run
KNG-68-A-6	Pocahontas	Griffin Run
KNG-78-A	Pocahontas	Johns Run
KNG-60	Pocahontas	Laurel Run of Greenbrier
KNG-70	Pocahontas	Leatherbark Run
KNG	Pocahontas	Locust Creek
KNG-78-H-1	Pocahontas	Long Run
KNG-78-H	Pocahontas	Poca Run
KNG-23-C	Pocahontas	Red Run of South Fork of Cranberry
KNG	Pocahontas	Watoga Lake
KNG	"Pocahontas	Beaver Creek
KNG	"Pocahontas	Knapp's Creek
KNG	"Pocahontas	Hills Creek
KNG	"Pocahontas	North Fork Deer Creek (Above Route 28/5)
KNG-68-A	Pocahontas	North Fork of Deer Creek - FS bridge below Sutton Run
KNG	"Pocahontas	Deer Creek
KNG-66-D	Pocahontas	Shock Run
KNG	"Pocahontas	Sitlington Creek
KNG-79-C-1	Pocahontas	Spanoak
KNG	"Pocahontas	Stoney Creek
KNG-49	"Pocahontas	Swago Creek
KNG	Pocahontas	Tacker Fork
KNG	Pocahontas	Thorny Creek
KNG-74	Pocahontas	Trout Run of Greenbrier
KNG	"Pocahontas	Buffalo Fork (Impoundment)
KNG	"Pocahontas	Seneca (Impoundment)
KNG	"Pocahontas	Greenbrier River (Above Hosterman)
KNG-78	Pocahontas	East Fork - Greenbrier River (Head)-above Abes Run
KNG	"Pocahontas	West Fork-Greenbrier River (Above the impoundment at the tannery)
KNG-79	Pocahontas	West Fork of Greenbrier (Head) above Wildell
KNG	Pocahontas	West Fork Greenbrier

KNG	"Pocahontas	Little River-East Fork
KNG-78-C	Pocahontas	Little River of East Fork (Head) downstream to Buffalo Fork
KNG	"Pocahontas	Little River-West Fork
KNG-79-C	Pocahontas	Little River of West Fork (Head) first low water bridge
KNG-78-G	"Pocahontas	Five Mile Run
KNG-78-K	"Pocahontas	Mullenax Run
KNG-78-L	"Pocahontas	Abes Run
No Code	Randolph	White Run of East Fork of Glady
KNB	Mercer	Marsh Fork
KNB	"Mercer	Camp Creek
OG	Wyoming	Pinnacle creek

Tug Fork of Big Sandy River

BST	McDowell	Dry Fork (Above Canebrake)
BST	McDowell	Dry Fork of Tug
BST-99	McDowell	Elkhorn Creek - downstream to North Fork
BST	McDowell	Elkhorn Creek
BST-70-W	McDowell	Jacob Fork

~~APPENDIX B~~

~~This list contains known waters used as public water supplies and is not intended to exclude any waters as described in section 6.2, herein.~~

~~River Basin~~	~~County~~	~~Operating Company~~	~~Source~~
~~Shenandoah River~~			
~~S~~	~~Jefferson~~	~~Charlestown Water~~	~~Shenandoah River~~
~~Potomac River~~			
~~P~~	~~Jefferson~~	~~3-M Company~~	~~Turkey Run~~
~~P~~	~~"~~	~~Shepherdstown Water~~	~~Potomac River~~
~~P~~	~~"~~	~~Harpers Ferry Water~~	~~Elk Run~~
~~P~~	~~Berkeley~~	~~DuPont Potomac River Works~~	~~Potomac River~~
~~P~~	~~"~~	~~Berkeley County PSD~~	~~Le Feure Spring~~
~~P~~	~~"~~	~~Opequon PSD~~	~~Quarry Spring~~
~~P~~	~~"~~	~~Hedgesville PSD~~	~~Speck Spring~~
~~P~~	~~Morgan~~	~~Paw Paw Water~~	~~Potomac River~~
~~PSB~~	~~Hampshire~~	~~Romney Water~~	~~South Branch Potomac River~~
~~PSB~~	~~"~~	~~Peterkin Conference Center~~	~~Mill Run~~
~~PSB~~	~~Hardy~~	~~Moorefield Municipal Water~~	~~South Fork River~~
~~PSB~~	~~Pendleton~~	~~U.S. Naval Radio Sta.~~	~~South Fork River~~
~~PSB~~	~~"~~	~~Circleville Water Inc.~~	~~North Fork of South Branch, Potomac River~~
~~PSB~~	~~Grant~~	~~Mountain Top PSD~~	~~Mill Creek, Impoundment~~
~~PSB~~	~~"~~	~~Petersburg Municipal Water~~	~~South Branch, Potomac River~~
~~PNB~~	~~Grant~~	~~Island Creek Coal~~	~~Impoundment~~
~~PNB~~	~~Mineral~~	~~Piedmont Municipal Water~~	~~Savage River, Maryland~~
~~PNB~~	~~"~~	~~Keyser Water~~	~~New Creek~~
~~PNB~~	~~"~~	~~Fort Ashby PSD~~	~~Lake~~
~~Monongahela River~~			
~~M~~	~~Monongalia~~	~~Morgantown Water Comm.~~	~~Colburn Creek & Monongahela River~~
~~M~~	~~"~~	~~Morgantown Ordinance Works~~	~~Monongahela River~~
~~M~~	~~Preston~~	~~Preston County PSD~~	~~Deckers Creek~~
~~M~~	~~Monongalia~~	~~Blacksville # 1 Mine~~	~~Impoundment~~
~~M~~	~~"~~	~~Loveridge Mine~~	~~Impoundment~~
~~M~~	~~"~~	~~Consolidation Coal Co.~~	~~Impoundment~~

M	Preston	Mason Town Water	Block Run
MC	Preston	Fibair Inc.	Impoundment
MC	Monongalia	Cheat Neck PSD	Cheat Lake
MC	"	Lakeview County Club	Cheat Lake-Lake Lynn
MC	"	Union District PSD	Cheat Lake-Lake Lynn
MC	"	Cooper's Rock State Park	Impoundment
MC	Preston	Kingwood Water	Cheat River
MC	"	Hopemount State Hosp.	Snowy Creek
MC	"	Rowlesburg Water	Keyser Run & Cheat River
MC	"	Albright	Cheat River
MC	Tucker	Parsons Water	Shavers & Elk Lick Fork
MC	"	Thomas Municipal	Thomas Reservoir
MC	"	Hamrick PSD	Dry Fork
MC	"	Douglas Water System	Long Run
MC	"	Davis Water	Blackwater River
MC	"	Hambleton Water System	Roaring Creek
MC	"	Canaan Valley State Park	Blackwater River
MC	Pocahontas	Cheat Mt. Sewer	Shavers Lake
MC	"	Snowshoe Co. Water	Shavers Fork
MC	Randolph	Womelsdorf Water	Yokum Run
MW	Harrison	Lumberport Water	Jones Run
MW	"	Clarksburg Water Bd.	West Fork River
MW	"	Bridgeport Mun. Water	Deecons & Hinkle Creek
MW	"	Salem Water Board	Dog Run
MW	"	West Milford Water	West Fork River
MW	Lewis	W.V. Water-Weston District	West Fork River
MW	"	Jackson's Mill Camp	Impoundment
MW	"	West Fork River PSD	West Fork River
MW	"	Kennedy Compresssor Station	West Fork River
MW	"	Jane Lew Water Comm.	Hackers Creek
MW	Harrison	Bel-Meadow Country Club	Lake
MW	"	Harrison Power Station	West Fork River
MW	"	Oakdale Portal	Impoundment
MW	"	Robinson Port	Impoundment
MT	Marion	Fairmont Water Comm.	Tygart River
MT	"	Mannington Water	Impoundment
MT	"	Monongah Water Works	Tygart River
MT	"	Eastern Assoc. Coal Corp	Impoundment
MT	"	Four States Water	Impoundment
MT	Harrison	Shinnston Water Dept.	Tygart River
MT	Taylor	Grafton Water	Tygart River-Lake

MT		Barbour	Philippi Water	Tygart River
MT		"	Bethlehem Mines Corp.	Impoundment
MT		"	Belington Water Works	Tygart River & Mill Run Lake
MT		Randolph	Elkins Municipal Water	Tygart River
MT		"	Beverly Water	Tygart river
MT		"	Valley Water	Tygart River
MT		"	Huttonsville Medium Security Prison	Tygart River
MT		"	Mill Creek Water	Mill Creek
MTB		Upshur	Buckhannon Water Board	Buckhannon River

Ohio River

O	Zone 1	Hancock	Chester Water & Sewer	Ohio River
O	"	Brooke	City of Weirton	Ohio River
O	"	"	Weirton Steel Division	Ohio River
O	"	Ohio	Wheeling Water	Ohio River
O	"	Tyler	Sistersville Mun. Water	Ohio River
O	"	Pleasants	Pleasants Power Station	Ohio River
O	"	Cabel	Huntington Water Corp.	Ohio River
O	"	Marshall	Mobay Chemical Co.	Ohio River
O	"	Wood	E. I. DuPont	Ohio River
O	Zone 2	Marshall	meron Water	Glass House Hollow
O	"	"	New Urindahana Water	Wheeling Creek System
O	"	Wetzel	Pine Grove Water	North Fork, Fishing Creek
O	"	Marshall	Consolidated Coal Co.	Impoundment
O	"	Tyler	Middlebourne Water	Middle Island Creek
O	"	Doddridge	West Union Mun. Water	Middle Island Creek
O	"	Mason	Hidden Valley Country	Lake/Impoundment
O	"	Jackson	Ripley Water	Mill Creek
O	"	Wayne	Wayne Municipal Water	Twelve Pole Creek
O	"	"	East Lynn Lake	East Lynn Lake
O	Zone 2	Wayne	Monterey Coal Co.	Impoundment

Little Kanawha

LK		Wood	Claywood Park PSD	Little Kanawha River
LK		Calhoun	Grantsville Mun. Water	Little Kanawha River
LK		Gilmer	Glenville Utility	Little Kanawha River
LK		"	Consolidated Gas Compressor	Steer Creek
LK		Braxton	Burnsville Water Works	Little Kanawha River
LK		Roane	Spencer Water	Spring Creek Mile Tree Reservoir
LK		Wirt	Elizabeth Water	Little Kanawha River
LKH		Ritchie	Cairo Water	North Fork Hughes River
LKH		"	Harrisville Water	North Fork Hughes River

LKH	"	Pennsboro Water	North Fork Hughes River

Kanawha River

K	Putnam	Buffalo Water	Cross Creek
K	"	Winfield Water	Poplar Fork & Crooked Creek
K	"	South Putnam PSD	Poplar Fork & Crooked Creek
K	Kanawha	Cedar Grove Water	Kanawha River
K	"	Pratt Water	Kanawha River
K	Fayette	Armstrong PSD PO-K1-CO-EL	Kanawha River & Gum Hollow
K	"	Kanawha Water Co.-	Unnamed Tributary Kanawha Beards Fork River
K	Kanawha	Midland Trail School	Impoundment
K	"	Cedar Coal Co.	Impoundment
K	Fayette	Elkem Metals Co.	Kanawha River
K	"	Deepwater PSD	Kanawha River
K	"	Kanawha Falls PSD	Kanawha River
K	"	W.V. Water-Montgomery	Kanawha River

Pocatalico River

KP	Kanawha	Sissonville PSD	Pocatalico River
KP	Roane	Walton PSD	Silcott Fork Dam

Coal River

KC	Kanawha	St. Albans Water	Coal River
KC	"	Washington PSD	Coal River
KC	Lincoln	Lincoln PSD	Coal River
KC	Boone	Coal River PSD	Coal River
KC	"	Whitesville PSD	Coal River
KC	Raleigh	Armco Mine 10	Marsh Fork
KC	"	Armco Steel-Monte. Stickney	Coal River
KC	Raleigh	Peabody Coal	Coal River
KC	"	Stephens Lake Park	Lake Stephens
KC	Boone	W.V. Water-Madison Dist.	Little Coal River
KC	"	Van PSD	Pond Fork
KC	Raleigh	Consol. Coal Co.	Workmans Creek
KC	Boone	Water Ways Park	Coal River

Elk River

KE	Kanawha	Clendenin Water	Elk River
KE	"	W.V. Water-Kanawha Valley District	Elk River
KE	Kanawha	Pinch PSD	Elk River
KE	Clay	Clay Waterworks	Elk River
KE	"	Procious PSD	Elk River
KE	Braxton	Flatwoods-Canoe Run PSD	Elk River

KE	"	Sugar Creek PSD	Elk River
KE	"	W.V. Water-Gassaway Dist.	Elk River
KE	"	W.V. Water-Sutton Dist.	Elk River
KE	Webster	W.V. Water-Webster Springs	Elk River
KE	"	Holly River State Park	Holly River

Gauley River

KG	Nicholas	Craigsville PSD	Gauley River
KG	"	Summersville Water	Impoundment/ Muddlety Creek
KG	"	Nettie-Leivasy PSD	Jim Branch
KG	Webster	Cowen PSD	Gauley River
KG	Nicholas	Wilderness PSD	Anglins Creek & Meadow River
KG	"	Richwood Water	North Fork Cherry River

New River

KN	Fayette	Ames Heights Water	Mill Creek
KN	"	Mt. Hope Water	Impounded Mine (Surface)
KN	"	Ansted Municipal Water	Mill Creek
KN	"	Fayette Co. Park	Impoundment
KN	"	New River Gorge Campground	Impoundment
KN	"	Fayetteville Water	Wolfe Creek
KN	Raleigh	Beckley Water	Glade Creek
KN	"	Westmoreland Coal Co.	Farley Branch

Bluestone River

KNB	Summers	Jumping Branch-Nimitz	Mt. Valley Lake
KNB	"	Bluestone Conf. Center	Bluestone Lake
KNB	"	Pipestem State Park	Impoundment
KNB	Mercer	Town of Athens	Impoundment
KNB	"	Bluewell PSD	Impoundment
KNB	"	Bramwell Water	Impoundment
KNB	"	Green Valley-Glenwood PSD	Bailey Reservoir
KNB	"	Kelly's Tank	Spring
KNB	"	W.V. Water Princeton	Impoundment/ Brusch Creek
KNB	"	Lashmeet PSD	Impoundment
KNB	"	Pinnacle Water Assoc.	Mine
KNB	"	W.V. Water Bluefield	Impoundment

Greenbrier River

KNG	Summers	W.V. Water Hinton	Greenbrier River & New River
KNG	"	Big Bend PSD	Greenbrier River
KNG	Greenbrier	Alderson Water Dept.	Greenbrier River
KNG	"	Ronceverte Water	Greenbrier River
KNG	"	Lewisburg Water	Greenbrier River

KNG	Pocahontas	Denmar State Hospital Water	Greenbrier River
KNG	"	City of Marlinton Water	Knapp Creek
KNG	"	Cass Scenic Railroad	Leatherbark Creek
KNG	"	Upper Greenbrier PSD	Greenbrier River
KNG	"	The Hermitage	Greenbrier River

Guyandotte River

OG	Cabell	Salt Rock PSD	Guyandotte River
OG	Lincoln	West Hamlin Water	Guyandotte River
OG	Logan	Logan Water Board	Guyandotte River
OG	"	Man Water Works	Guyandotte River
OG	"	Buffalo Creek PSD	Buffalo Creek/ Mine/Wells
OG	Logan	Chapmanville	Guyandotte River
OG	"	Logan PSD	Whitman Creek/ Guyandotte River
OG	Mingo	Gilbert Water	Guyandotte River
OG	Wyoming	Oceana Water	Laurel Fork
OG	"	Glen Rogers PSD	Impoundment
OG	"	Pineville Water	Pinnacle Creek/ Guyandotte River
OG	Raleigh	Raleigh Co. PSD-Amigo	Tommy Creek
OMG	Cabell	Milton Water Works	Guyandotte River
OMG	"	Culloden PSD	Indian Fork Creek
OMG	Putnam	Hurricane Municipal Water	Impoundment
OMG	"	Lake Washington PSD	Lake Washington

Big Sandy River

BS	Wayne	Kenova Municipal Water	Big Sandy River
BS	"	Fort Gay Water	Tug Fork
BST	Mingo	Kermit Water	Tug Fork
BST	"	Matewan Water	Tug Fork
BST	"	A & H Coal Co., Inc.	Impoundment
BST	"	Williamson Water	Impoundment
BST	McDowell	City of Welch	Impoundment/Wells
BST	"	City of Gary	Impoundment/Mine

~~APPENDIX C~~

~~CATEGORY E-3 - POWER PRODUCTION~~

~~This list contains known power production facilities and is not intended to exclude any waters as described in section 6.6.c, herein.~~

~~River Basin~~	~~County~~	~~Station Name~~	~~Operating Company~~
~~Monongahela River~~			
~~M~~	~~Monongalia~~	~~Fort Martin Power Station~~	~~Monongahela Power~~
~~M~~	~~Marion~~	~~Rivesville Station~~	~~Monongahela Power~~
~~MC~~	~~Preston~~	~~Albright Station~~	~~Monongahela Power~~
~~Potomac~~	~~Grant~~	~~Mt. Storm Power Station~~	~~Virginia Electric & Power Company~~
~~Ohio River~~			
~~O Zone 1~~	~~Wetzel~~	~~Hannibal (Hydro)~~	~~Ohio Power~~
~~O " "~~	~~Marshall~~	~~Kammer~~	~~Ohio Power~~
~~O " "~~	~~"~~	~~Mitchell~~	~~Ohio Power~~
~~O " "~~	~~Pleasants~~	~~Pleasants Station~~	~~Monongahela Power~~
~~O " "~~	~~"~~	~~Willow Island Station~~	~~Monongahela Power~~
~~O " "~~	~~Mason~~	~~Phillip Sporn Plant~~	~~Central Operating (AEP)~~
~~O " "~~	~~"~~	~~Racine (Hydro)~~	~~Ohio Power~~
~~O " "~~	~~"~~	~~Mountaineer~~	~~Appalachian Power Co.~~
~~K~~	~~Putnam~~	~~Winfield (Hydro)~~	~~Appalachian Power Co.~~
~~K~~	~~Kanawha~~	~~Marmet (Hydro)~~	~~Appalachian Power Co.~~
~~K~~	~~"~~	~~London (Hydro)~~	~~Appalachian Power Co.~~
~~K~~	~~"~~	~~Kanawha River~~	~~Appalachian Power Co.~~
~~K~~	~~"~~	~~John E. Amos~~	~~Appalachian Power Co.~~

APPENDIX D

CATEGORY C - WATER CONTACT RECREATION

This list contains waters known to be used for water contact recreation and is not intended to exclude any waters as described in section 6.4, herein.

River Basin	Stream Code	Stream	County
Shenandoah	S	Shenandoah River	Jefferson
Potomac	P	Potomac River	Jefferson
	P	" "	Hampshire
	P	" "	Berkeley
	P	" "	Morgan
	P-9	Sleepy Creek & Meadow Branch	Berkeley
	P-9-G-1	North Fork of Indian Run	Morgan
South Branch	PSB	South Branch of Potomac River	Hampshire
	PSB	" "	Hardy
	PSB	" "	Grant
	PSB-21-X	Hawes Run	Pendleton
	PSB-25-C-2	Spring Run	Grant
	PSB-28	North Fork South Branch Potomac River	Grant
North Branch	PNB	North Branch of Potomac River	Mineral
	PNB-4-EE	North Fork Patterson Creek	Grant
	PNB-7-H	Linton Creek	Grant
	PNB-17	Stoney River-Mt. Storm Lake	Grant
	PC	Cacapon River	Hampshire
Monongalia			
Cheat	MC	Cheat Lake/Cheat river	Monongalia/Preston
	MC	Alpine Lake	Preston
	MC-6	Coopers Rock Lake/ Quarry Run	Monongalia
	MC-12	Big Sandy Creek	Preston
	MSC	Shavers Fork	Randolph
	MTN	Middle Fork River	Barbour/Randolph/ Upshur
	MW	West Fork River	Harrison
	MW-18	Stonecoal Creek/ Stonecoal Lake	Lewis

~~Ohio~~	~~O~~	~~Ohio River~~	~~Brooke/Cabell/ Hancock/Jackson/ Marshall/Mason/ Ohio/Pleasants/ Tyler/Wayne/ Wood/Wetzel~~
	~~O-2-H~~	~~Beech Fork of Twelvepole Creek/Beech Fork Lake~~	~~Wayne~~
	~~O-2-Q~~	~~East Fork of Twelvepole Creek/East Lynn Lake~~	~~Wayne~~
	~~O-3~~	~~Fourpole Creek~~	~~Cabell~~
	~~O-21~~	~~Old Town Creek/ McClintic Ponds~~	~~Mason~~
	~~OMI~~	~~Middle Island Creek/ Crystal Lake~~	~~Doddridge~~
	~~OG~~	~~Guyandotte River~~	~~Cabell~~
	~~OG~~	~~Guyandotte River/ R. D. Bailey Lake~~	~~Wyoming~~
	~~OGM~~	~~Mud River~~	~~Cabell~~
~~Little Kanawha~~	~~LK~~	~~Little Kanawha River/ Burnsville Lake~~	~~Braxton~~
~~Kanawha~~	~~K~~	~~Kanawha River~~	~~Fayette/Kanawha/ Mason/Putnam~~
	~~K-1~~	~~Unnamed Tributary Krodel Lake~~	~~Mason~~
	~~KC~~	~~Coal River~~	~~Kanawha~~
	~~KC-45-Q~~	~~Stephens Branch/ Lake Stephens~~	~~Raleigh~~
	~~KE~~	~~Elk River~~	~~Kanawha/Clay/ Braxton/Webster/ Randolph~~
	~~KE~~	~~Sutton lake~~	~~Braxton~~
	~~KN~~	~~New River~~	~~Fayette/Raleigh/ Summers~~
	~~KN-26-F~~	~~Little Beaver Creek~~	~~Raleigh~~
	~~KNG~~	~~Greenbrier River~~	~~Greenbrier/Pocahontas/ Summers~~
	~~KNG-23-E-1~~	~~Little Devil Creek/ Moncove Lake~~	~~Monroe~~
	~~KNG-28~~	~~Anthony Creek~~	~~Greenbrier~~
	~~KNG-28-P~~	~~Meadow Creek/ Lake Sherwood~~	~~Greenbrier~~

~~KNB~~	~~Bluestone River/ Bluestone Lake~~	~~Summers~~
~~KG~~	~~Gauley River~~	~~Webster~~
~~KG~~	~~Gauley River/ Summersville Lake~~	~~Nicholas~~
~~KGW~~	~~Williams River~~	~~Webster~~

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.1 Dissolved Aluminum (ug/l) Not to exceed:	750xCF[5]	– 87xCF[5]	- 750xCF[5]	87xCF[5]			
8.2 Ammonia (ug/l): Un-ionized ammonia (UA) shall be determined from values of total ammonia-N, pH and temperature according to the following equation: UA = 1.2(total ammonia-N) / 1+10$^{(pka-pH)}$ where pka = 0.0902 + 2730/(273.2 + T) and T = temperature (°C) The concentration of un-ionized ammonia (NH3) shall not exceed 50 ug/l.		—		—		50	
8.2.1 Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Water[n] from USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, December 1999)	– X	X	X	X			
8.3 Antimony (ug/l) Not to exceed:					4300	14	
8.4 Arsenic[n] (ug/l) Not to exceed:					50	50 –	100

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.4.1 Dissolved Trivalent Arsenic Not to exceed:	360 x CF[5]	190 x CF[5]	360 x CF[5]	190 x CF[5]	-		
8.5 Barium (mg/l) Not to exceed:						1.0	
8.6 Beryllium (ug/l)	130		130			.0077	
8.7 Cadmium (ug/l) Hardness (mg/l $CaCO_3$) Soluble Cd 0 - 35 1.0 36 - 75 2.0 76 - 150 5.0 > 150 10.0						X	
8.7.1 Not to exceed 10 ug/l in the Ohio River (O Zone 1) main stem (see section 7.1.d, herein)						– X	
8.7.3 The four-day average concentration of dissolved cadmium shall not exceed the value determined by the following equation: $Cd = e^{(0.7852[\ln(\text{hardness})]-3.490)} \times CF$[5]		X		X			
8.7.4 The one-hour average concentration of dissolved cadmium shall not exceed the value determined by the following equation: $Cd = e^{(1.128[\ln(\text{hardness})]-3.828)} \times CF$[5]	X		X				
8.8 Chloride (mg/l) Not to exceed:	860	230	860	230	250	250	

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.9.1 Chromium, dissolved hexavalent (ug/l). Not to exceed:~~	~~16 x CF[5]~~	~~11 x CF[5]~~	~~16 x CF[5]~~	~~7.2 x CF[5]~~		~~50~~	
~~8.9.2 Chromium, trivalent (ug/l) The one-hour average concentration of dissolved trivalent chromium shall not exceed the value determined by the following equation: exp{0.8190[ln(hardness)]+3.7256} x (CF[5])~~	~~X~~		~~X~~				
~~8.9.3 The four-day average concentration of dissolved trivalent chromium shall not exceed the value determined by the following concentration: exp{0.8190[ln(hardness)]+0.6848}x (CF[5]).~~		~~X~~		~~X~~			
~~8.10 Copper (ug/l) Not to exceed:~~						~~1000~~	
~~8.10.1 The four-day average concentration of dissolved copper shall not exceed the value determined by the following equation[7]: $Cu = e^{(0.8545[\ln(hardness)]+1.465)} \times CF$[5]~~		~~X~~		~~X~~			
~~8.10.2 The one-hour average concentration of dissolved copper shall not exceed the value determined by the following equation[7]: $Cu = e^{(0.9422[\ln(hardness)]+1.464)} \times CF$[5]~~	~~X~~	–	~~X~~	-	–	–	
~~8.11 Cyanide (ug/l) (As free cyanide HCN+CN[-]) Not to exceed:~~	~~22~~	– ~~5.0~~	~~22~~	~~5.0~~	~~5.0~~	~~5.0~~	

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.12 Dissolved Oxygen[5]: not less than 5 mg/l at any time.~~	~~X~~				~~X~~	~~X~~	~~X~~
~~8.12.1 Kanawha River main stem, Zone 1 - Not less than 4.0 mg/l at any time.~~	~~X~~						
~~8.12.2 Ohio River main stem - the average concentration shall not be less than 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or place outside any established mixing zone - provided that a minimum of 5.0 mg/l at any time is maintained during the April 15-June 15 spawning season.~~	~~X~~						
~~8.12.3 Not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.~~			~~X~~				
~~8.13 Fecal Coliform: Maximum allowable level of fecal coliform content for Primary Contact Recreation (either MPN or MF) shall not exceed 200/100 ml as a monthly geometric mean based on not less than 5 samples per month, nor to exceed 400/100 ml in more than ten percent of all samples taken during the month.~~					~~X~~	~~X~~	

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.13.1 Ohio River main stem (zone 1) - During the non-recreational season (November through April only) the maximum allowable level of fecal coliform for the Ohio River (either MPN or MF) shall not exceed 2000/100 ml as a monthly geometric mean based on not less than 5 samples per month.~~					~~X~~	~~-~~	
~~8.14 Fluoride (mg/l) Not to exceed:~~						~~– 1.4~~	
~~8.14.1 Not to exceed 2.0 for category D uses.~~						~~–~~	~~X~~
~~8.15 Iron[5] (mg/l) Not to exceed:~~		~~– 1.5~~		~~- 0.5~~		~~- 1.5~~	
~~8.16 Lead (ug/l) Not to exceed:~~						~~— 50~~	
~~8.16.1 The four-day average concentration of dissolved lead shall not exceed the value determined by the following equation[5]:~~ ~~$Pb = e^{(1.273[ln(hardness)]-4.705)} \times CF^{5}$~~		~~X~~		~~X~~			

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.16.2 The one-hour average concentration of dissolved lead shall not exceed the value determined by the following equation[7]: $Pb = e^{(1.273[ln(hardness)]-1.46)} \times CF^5$	X	–	X	–			
8.17 Manganese (mg/l) (see §6.2.d) Not to exceed:						1.0	
8.18 Mercury The total organism body burden of any aquatic species shall not exceed 0.5 ug/g as methylmercury.		—		— -	0.5	0.5	
8.18.1 Total mercury in any unfiltered water sample shall not exceed (ug/l):	- 2.4		2.4		- 0.15	0.14	
8.18.2 Methylmercury (water column) Not to exceed (ug/l):		.012		.012			
8.19 Nickel (ug/l) Not to exceed:				— —	4600	- 510	
8.19.1 The four-day average concentration of dissolved nickel shall not exceed the value determined by the following equation[7]: $Ni = e^{(0.846[ln(hardness)]+1.1645)} \times CF^5$		X		X			

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.19.2 The one-hour average concentration of dissolved nickel shall not exceed the value determined by the following equation[7]: $Ni = e^{(0.846[ln(hardness)]+3.361)} \times CF^{5}$	— X	–	— X			—	
8.20 Nitrate (as Nitrate-N) (mg/l)						10	
8.21 Nitrite (as Nitrite-N) (mg/l) Not to exceed:	— 1.0		— .060				
8.22 Organics							
Chlordane[6] (ng/l)	2400	4.3	2400	4.3	0.46	0.46	0.46
DDT[6] (ng/l)	1100	1.0	1100	1.0	0.024	0.024	0.024
Aldrin[6] (ng/l)	3.0		3.0		0.071	0.071	0.071
Dieldrin[6] (ng/l)	2500	1.9	2500	1.9	0.071	0.071	0.071
Endrin (ng/l)	180	2.3	180	2.3	2.3	2.3	2.3
Toxaphene[6] (ng/l)	730	0.2	730	0.2	0.73	0.73	0.73
PCB[6] (ng/l)		14.0		14.0	0.045	0.044	0.045
Methoxychlor (ug/l)		0.03		0.03	0.03	0.03	0.03
Dioxin (2,3,7,8-TCDD)[6] (pg/l)					0.014	0.013	0.014
Acrylonitrile[6] (ug/l)					0.66	0.059	
Benzene[6] (ug/l)		-			71	0.66	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		ALL OTHER USES
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
1,2-dichlorobenzene (mg/l)					17	2.7	
1,3-dichlorobenzene (mg/l)					2.6	0.4	
1,4-dichlorobenzene (mg/l)					2.6	0.4	
2,4-dinitrotoluene[b] (ug/l)					9.1	0.11	
Hexachlorobenzene[b] (ng/l)					0.77	0.72	
Carbon tetrachloride[b] (ug/l)					4.4	0.25	
Chloroform[b] (ug/l)					470	5.7	
Halomethanes (ug/l)					15.7	0.19	
1,2-dichloroethane[b] (ug/l)					99	0.035	
1,1,1-trichloroethane[b] (mg/l)						12	
1,1,2,2-tetrachloroethane (ug/l)					11	0.17	
1,1-dichloroethylene[b] (ug/l)					3.2	0.03	
Trichloroethylene[b] (ug/l)					81	2.7	
Tetrachloroethylene[b] (ug/l)					8.85	0.8	
Toluene[b] (mg/l)					200	6.8	
Polynuclear Aromatic Hydrocarbons (PAH)[b] (ug/l)					0.031	.0028	
Phthalate esters (ug/l)		3.0		3.0			

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~Vinyl chloride[b] (chloroethene)(ug/l)~~					~~525~~	~~2.0~~	
~~alpa-BHC (alpha- Hexachloro-cyclohexane)[b] (ug/l)~~					~~0.013~~	~~.0039~~	
~~beta-BHC(beta- Hexachloro-cyclohexane)[b] (ug/l)~~					~~0.046~~	~~0.014~~	
~~gamma-BHC (gamma- Hexachloro-cyclohexane)[b] (ug/l)~~	~~2.0~~	~~0.08~~	~~2.0~~	~~0.08~~	~~0.063~~	~~0.019~~	
~~Chlorobenzene (mg/l)~~					~~21~~	~~0.68~~	
~~Ethylbenzene (mg/l)~~					~~29~~	~~3.1~~	
~~Heptachlor[b] (ng/l)~~	~~520~~	~~3.8~~	~~520~~	~~3.8~~	~~0.21~~	~~0.21~~	
~~2-methyl-4,6-Dinitrophenol (ug/l)~~					~~765~~	~~13.4~~	
~~Fluoranthene (ug/l)~~					~~370~~	~~300~~	
~~8.22.1 The organic chemicals listed in §8.22 shall not exceed the specified water quality criteria. When the specified criteria are less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, where applicable.~~							

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.23 pH[5] No values below 6.0 nor above 9.0. Higher values due to photosynthetic activity may be tolerated.~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~
~~8.24 Phenolic Materials~~	~~—~~		~~—~~			~~—~~	
~~8.24.1 Phenol (ug/l) Not to exceed:~~	~~—~~				~~4,600,000~~	~~21,000~~	
~~8.24.2 2-Chlorophenol (ug/l) Not to exceed:~~					~~400~~	~~120~~	
~~8.24.3 2,4-Dichlorophenol (ug/l) Not to exceed:~~					~~790~~	~~93~~	
~~8.24.4 2,4-Dimethylphenol (ug/l) Not to exceed:~~					~~2300~~	~~540~~	
~~8.24.5 2,4-Dinitrophenol (ug/l) Not to exceed:~~					~~14,000~~	~~70~~	
~~8.24.6 Pentachlorophenol[n] (ug/l)~~					~~8.2~~	~~0.28~~	
~~8.24.6.a The one-hour average concentration of pentachlorophenol shall not exceed the value determined by the following equation: exp(1.005(pH)-4.869)~~	~~X~~		~~X~~				
~~8.24.6.b The 4-day average concentration of pentachlorophenol shall not exceed the value determined by the following equation: exp(1.005(pH)-5.134).~~		~~X~~		~~X~~			

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.24.7 2,4,6 Trichlorophenol[n] (ug/l) Not to exceed:~~					~~6.5~~	~~2.1~~	
~~8.25 Radioactivity: Gross Beta activity not to exceed 1000 picocuries per liter (pCi/l), nor shall activity from dissolved strontium-90 exceed 10 pCi/l, nor shall activity from dissolved alpha emitters exceed 3 pCi/l.~~	~~X~~		~~X~~		~~X~~	~~X~~	~~X~~
~~8.25.1 Gross total alpha particle activity (including radium-226 but excluding radon and uranium shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed 5pCi/l, provided that the specific determination of radium-226 and radium-228 are not required if dissolved particle activity does not exceed 5pCi/l; the concentration of tritium shall not exceed 20,000 pCi/l; the concentration of total strontium-90 shall not exceed 8 pCi/l in the Ohio River main stem.~~	~~X~~		~~X~~		~~X~~	~~X~~	~~X~~
~~8.26 Selenium (ug/l) Not to exceed:~~	~~20~~	~~5~~	~~20~~	~~5~~		~~10~~	

APPENDIX E, TABLE 1

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2				
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]	C[3]	A[4]	ALL OTHER USES
8.27 Silver (ug/l) Hardness Silver 0-50 1 51-100 4 101-200 12 >201 24				X		X	
8.27.1 0-50 1 51-100 4 101-200 12 201-400 24 401-500 30 501-600 43		X					
8.27.2 The one-hour average concentration of dissolved silver shall not exceed the value determined by the following equation: $Ag=e^{(1.72[ln(hardness)]-6.52)} \times CF^5$	X		X				

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.28 Temperature~~ ~~Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87°F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.~~	~~X~~						
~~8.28.1 For the Kanawha River Main Stem (K-1):~~ ~~Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 90°F in any case.~~	~~—~~ ~~X~~						

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.28.2 For the Bluestone R (KNB), Bluestone Lake (KN-60) East River (KNE), New River (KN), Gauley R. (KG) and Greenbrier River (KNG): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 81°F at any time during the months of May through November and not to exceed 73°F at any time during December through April.~~			~~—~~ ~~X~~				
~~8.28.3 No heated effluents will be discharged in the vicinity of spawning areas. The maximum temperatures for cold waters are expressed in the following table:~~ ~~Daily Mean °F / Hourly Max °F~~ ~~Oct-Apr 50 / 55~~ ~~Sep-May 58 / 62~~ ~~Jun-Aug 66 / 70~~			~~—~~ ~~X~~				

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.28.4 For Ohio River Main Stem (01) (see section 7.1.d, herein):~~ ~~Period Inst.~~ ~~Dates Ave. Max.~~ ~~Jan 1-31 45°F 50°F~~ ~~February 45 50~~ ~~March 1-15 51 56~~ ~~March 16-31 54 59~~ ~~April 1-15 58 64~~ ~~April 16-30 64 69~~ ~~May 1-15 68 73~~ ~~May 16-31 75 80~~ ~~June 1-15 80 85~~ ~~June 16-30 83 87~~ ~~July 1-31 84 89~~ ~~August 1-31 84 89~~ ~~Sept 1-15 84 87~~ ~~Sept 16-30 82 86~~ ~~Oct 1-15 77 82~~ ~~Oct 16-31 72 77~~ ~~Nov 1-30 67 72~~ ~~Dec 1-31 52 57~~	~~X~~						
~~8.29 Thallium (ug/l)~~					~~6.3~~	~~1.7~~	
~~8.30 Threshold odor[5]~~ ~~Not to exceed a threshold odor number of 8 at 104°F as a daily average.~~		~~X~~		~~X~~	~~X~~	~~X~~	

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.31 Total Residual Chlorine (ug/l - measured by amperometric or equivalent method) Not to exceed:~~	~~19~~	~~11~~				-	
~~8.31.1 No chlorinated discharge allowed~~			~~X~~				
~~8.32 Turbidity~~ ~~No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU's over background turbidity when the background is 50 NTU or less, or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs.~~							
~~This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbing activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.~~		~~X~~		~~X~~	~~X~~	~~X~~	

~~APPENDIX E, TABLE 1~~

~~PARAMETER~~	~~USE DESIGNATION~~						
	~~AQUATIC LIFE~~				~~HUMAN HEALTH~~		~~ALL OTHER USES~~
	~~B1, B4~~		~~B2~~		~~C[3]~~	~~A[4]~~	
	~~ACUTE[1]~~	~~CHRON[2]~~	~~ACUTE[1]~~	~~CHRON[2]~~			
~~8.32.1 This rule shall not apply to those activities at which Best Management Practices in accordance with the State's adopted 208 Water Quality Management Plan are being utilized, maintained and completed on a site-specific basis as determined by the appropriate 208 cooperative or an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to Trout Waters.~~		~~X~~			~~X~~	~~X~~	
~~8.33 Zinc (ug/l)~~ ~~The four-day average concentration of dissolved zinc shall not exceed the value determined by the following equation[3]:~~ ~~$Zn = e^{(0.8473[\ln(\text{hardness})]+0.7614)} \times CF$[5]~~		~~X~~		~~X~~			
~~8.33.1 The one-hour average concentration of dissolved zinc shall not exceed the value determined by the following equation[3]:~~ ~~$Zn = e^{(0.8473[\ln(\text{hardness})]+0.8604)} \times CF$[5]~~	~~X~~		~~X~~				

~~1 One hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.~~

~~2 Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.~~

~~3 These criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted.~~

~~4 These criteria have been calculated to protect human health from toxic effects through drinking water and fish consumption, unless otherwise noted.~~

~~5 The appropriate Conversion Factor (CF) is a value used as a multiplier to derive the dissolved aquatic life criterion is found in Appendix E, Table 2.~~

~~a Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use is this equation shall not be less than 25 mg/l, even if the actual ambient hardness is less than 25 mg/l. The maximum hardness value for use in this equation shall not exceed 400 mg/l even if the actual hardness is greater than 400 mg/l.~~

~~b Known or suspected carcinogen. Human health standards are for a risk level of 10^{-6}.~~

~~c May not be applicable to wetlands (B4) - site-specific criteria are desirable.~~

~~d The early life stage equation in the National Criterion shall be used to establish chronic criteria throughout the state unless the applicant demonstrates that no early life stages of fish occur in the affected water(s).~~

~~APPENDIX E~~
~~TABLE 2~~

~~Conversion Factors~~

~~Metal~~	~~Acute~~	~~Chronic~~
~~Aluminum~~	~~1.000~~	~~1.000~~
~~Arsenic (III)~~	~~1.000~~	~~1.000~~
~~Cadmium~~	~~1.136672-[(ln hardness)(0.041838)]~~	~~1.101672-[(ln hardness)(0.041838)]~~
~~Chromium (III)~~	~~0.316~~	~~0.860~~
~~Chromium(VI)~~	~~0.982~~	~~0.962~~
~~Copper~~	~~0.960~~	~~0.960~~
~~Lead~~	~~1.46203-[(ln hardness)(0.145712)]~~	~~1.46203-[(ln hardness)(0.145712)]~~
~~Nickel~~	~~0.998~~	~~0.997~~
~~Silver~~	~~0.85~~	~~N/A~~
~~Zinc~~	~~0.978~~	~~0.986~~

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
1	Acenaphthene	83329					670	990
2	Acrolein	107028					190	290
3	Acrylonitrile [b]	107131					0.051	0.25
4	Aldrin [b]	309002	3.0		3.0		0.000049	0.000050
5	Aluminum (dissolved)	7429905	750xCF[5]	87xCF[5]	750xCF[5]	87xCF[5]		
6	Ammonia: Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Water[d] from USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, December 1999).	7664417	X	X	X	X		
7	Anthracene	120127					8,300	40,000
8	Antimony	7440360					5.6	640
9.a	Arsenic [b]	7440382	340	150	340	150	10	10

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
9.b	Arsenic (dissolved trivalent)		360 X CF[5]	190 X CF[5]	360 X CF[5]	190 X CF[5]		
10	Asbestos	1332214					7 million fibers/l	
11	Barium	7440393					1000	
12	Benzene [b]	71432					2.2	51
13	Benzidine [b]	92875					0.000086	0.00020
14	Benzo(a)Anthracene [b]	56553					0.0038	0.018
15	Benzo(a)Pyrene [b]	50328					0.0038	0.018
16	Benzo(b)Fluoranthene [b]	205992					0.0038	0.018
17	Benzo(k)Fluoranthene [b]	207089					0.0038	0.018
18	Beryllium	7440417					4	
19	alpha-BHC (alpha-Hexachloro-cyclohexane) [b]	319846					0.0026	0.0049
20	beta-BHC (beta-Hexachloro-cyclohexane) [b]	319857					0.0091	0.017

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
21	gamma-BHC (gamma-Hexachloro-cyclohexane) (Lindane) [b]	58899	0.95	0.08	0.95	0.08	0.019	0.063
22	Bis(2-Chloroethyl)Ether [b]	111444					0.030	0.53
23	Bis(2-Chloroisopropyl)Ether	108601					1,400	65,000
24	Bis(2-Ethylhexyl) Phthalate[x] [b]	117817					1.2	2.2
25	Bromoform [b]	75252					4.3	140
26	Butylbenzyl Phthalate[w]	85687					1,500	1,900
27.a	Cadmium (ug/l) Hardness (mg/l $CaCO_3$) Soluble Cd 0 - 35 1.0 36 - 75 2.0 76 - 150 5.0 ≥ 150 10.0	7440439					X	

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
27.b	Cadmium (dissolved): the four-day average concentration shall not exceed the value determined by the following equation: $Cd=e^{(0.7852[\ln(hardness)]-3.490)} X CF^{5}$	7440439		X		X		
27.c	Cadmium (dissolved): the one-hour average concentration of dissolved cadmium shall not exceed the value determined by the following equation: $Cd=e^{(1.28[\ln(hardness)]-3.828)} X CF^{5}$	7440439	X		X			
28	Carbon Tetrachloride [b]	56235					0.23	1.6
29	Chlordane [b]	57749	2.4	0.0043	2.4	0.0043	0.00080	0.00081
30	Chloride	16887006	860,000	230,000	860,000	230,000	250,000	250,000

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
31.a	Chlorine: (Total Residual Chlorine - measured by amperometric or equivalent method)	7782505	19	11				
31.b	Chlorine: Total Residual Chlorine: No chlorinated discharge allowed	7782505			X	X		
32	Chlorobenzene	108907					680	21,000
33	Chlorodibromomethane [b]	124481					0.40	13
34	Chloroform [b]	67663					5.7	470
35	2-Chloronaphthalene	91587					1,000	1,600
36	2-Chlorophenol	95578					81	150
37	Chlorophenoxy Herbicide (2,4-D)	94757					100	
38	Chlorophenoxy Herbicide (2,4,5-TP)	93721					10	
39	Chloropyrifos	2921882	0.083	0.041	0.083	0.041		

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
40.a	Chromium III: The one-hour average concentration of dissolved trivalent chromium shall not exceed the value determined by the following equation: exp{0.8190[ln(hardness)]+ 3.7256} x (CF^5)	16065831	X		X			
40.b	Chromium III: The four-day average concentration of dissolved trivalent chromium shall not exceed the value determined by the following concentration: exp{0.8190[ln(hardness)]+ 0.6848}x (CF^5).	16065831		X		X		
41	Chromium VI (dissolved)	18540299	16 x CF^5	11 x CF^5	16 x CF^5	7.2 x CF^5	50	
42	Chrysene [b]	218019					0.0038	0.018
43.a	Copper	7440508	13	9.0	13	9.0	1300	

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
43.b	Copper: The four-day average concentration of dissolved copper shall not exceed the value determined by the following equation[a]: $Cu = e^{(0.8545[\ln(hardness)]-1.465)} \times CF$[5]	7440508		X		X		
43.c	Copper: The one-hour average concentration of dissolved copper shall not exceed the value determined by the following equation [a]: $Cu = e^{(0.9422[\ln(hardness)]-1.464)} \times CF$[5]	7440508	X		X			
44	Cyanide (As free cyanide $HCN+CN^-$)	57125	22	5.0	22	5.0	5.0	5.0
45	4,4'-DDD [b]	72548					0.00031	0.00031
46	4,4'-DDE [b]	72559					0.00022	0.00022
47	4,4'-DDT [b]	50293	1.1	0.001	1.1	0.001	0.00022	0.00022

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
48	Demeton	8065483		0.1				
49	Dibenzo(a,h)Anthracene [b]	53703					0.0038	0.018
50	1,2-Dichlorobenzene	95501					2,700	17,000
51	1,3-Dichlorobenzene	541731					320	960
52	1,4-Dichlorobenzene	106467					400	2,600
53	3,3'-Dichlorobenzidine [b]	91941					0.021	0.028
54	Dichlorobromomethane [b]	75274					0.55	17
55	1,2-Dichloroethane [b]	107062					0.38	37
56	1,1-Dichloroethylene [b]	75354					0.03	3.2
57	2,4-Dichlorophenol	120832					77	290
58	1,2-Dichloropropane [b]	78875					0.50	15
59	1,3-Dichloropropene	542756					10	1,700
60	Dieldrin [b]	60571	0.24	0.056	0.24	0.056	0.000052	0.000054
61	Diethyl Phthalate[w]	84662					17,000	44,000
62	2,4-Dimethylphenol	105679					380	850

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
63	Dimethyl Phthalate[w]	131113					270,000	1,100,000
64	Di-n-Butyl Phthalate[w]	84742					2,000	4,500
65	2,4-Dinitrophenol	51285					69	5,300
66	Dinitrophenols	25550587					69	5300
67	2,4-Dinitrotoluene [b]	121142					0.11	3.4
68	1,2-Diphenylhydrazine [b]	122667					0.036	0.20
69	alpha-Endosulfan	959988	0.22	0.056	0.22	0.056	62	89
70	beta-Endosulfan	33213659	0.22	0.056	0.22	0.056	62	89
71	Endosulfan Sulfate	1031078					62	89
72	Endrin	72208	0.086	0.036	0.086	0.036	0.76	0.81
73	Endrin Aldehyde	7421934					0.29	0.30
74	Ether, Bis(Chloromethyl)[b]	542881					0.00010	0.00029
75	Ethylbenzene	100414					3,100	29,000

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
76.a	Fecal Coliform: Maximum allowable level content for Primary Contac Recreation (either MPN or MF) shall not exceed 200/100 ml as a monthly geometric mean based on not less than 5 samples per month; nor to exceed 400/100 ml in more than ten percent of all samples taken during the month. If a sample tested for fecal coliform shows noncompliance with the provisions of this section, then further testing of the sample for *Escheria Coli* can be allowed to determine compliance. If E. Coli testing indicates that the sample meets EPA's recommended criteria[e] this will suffice for meeting the criterion.						X	X

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
76.b	Fecal Coliform - Ohio River main stem (Zone 1): During the non-recreational season (November through April only) the maximum allowable level of fecal coliform for the Ohio River (either MPN or MF) shall not exceed 2000/100 ml as a monthly geometric mean based on not less than 5 samples per month.							X
77	Fluoranthene	206440					130	140
78	Fluorene	86737					1,100	5,300
79	Fluoride (2.0 for Category D Use)						1,400	
80	Guthion	86500		0.01				
81	Halomethanes						0.19	15.7
82	Heptachlor [b]	76448	0.52	0.0038	0.52	0.0038	0.000079	0.000079

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
83	Heptachlor Epoxide [b]	1024573	0.52	0.0038	0.52	0.0038	0.000039	0.000039
84	Hexachlorobenzene [b]	118741					0.00028	0.00029
85	Hexachlorobutadiene [b]	87683					0.44	18
86	Hexachlorocyclo-hexane-Technical	319868					0.0123	0.0414
87	Hexachlorocyclo-pentadiene	77474					240	17,000
88	Hexachloroethane [b]	67721					1.4	3.3
89	Ideno(1,2,3-cd)Pyrene [b]	193395					0.0038	0.018
90	Iron [c]	7439896		1500		500	1500	
91	Isophorone [b]	78591					35	960
92,a	Lead	7439921					15	15

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
92.b	Lead: The four-day average concentration of dissolved lead shall not exceed the value determined by the following equation [a, f]: $Pb = e^{(1.273[\ln(\text{hardness})]-4.705)} \times CF$[5]	7439921		X		X		
92.c	Lead: The one-hour average concentration of dissolved lead shall not exceed the value determined by the following equation [a,f]: $Pb = e^{(1.273[\ln(\text{hardness})]-1.46)} \times CF$[5]	7439921	X		X			
93	Malathion	121755		0.1				
94	Manganese (see § 6.2.d)						1000	
95.a	Mercury - dissolved	7439976	1.4	0.77	1.4	0.77		

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
95.b	Total mercury in any unfiltered water sample shall not exceed (ug/l):	7439976					0.14	0.15
95.c	Mercury -total organism body burden of appropriate aquatic species shall not exceed 0.5 ug/g as methyl mercury.						0.5	0.5
96	Methoxychlor	72435		0.03		0.03	0.03	0.03
97	Methyl Bromide	74839					47	1,500
98	Methylene Chloride [b]	75092					4.6	590
99	2-Methyl-4,6-Dinitrophenol	534521					13	280
100	Mirex	2385855		0.001		0.001		
101.a	Nickel	7440020	470	52	470	52	610	4600

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
101.b	Nickel: The four-day average concentration of dissolved nickel shall not exceed the value determined by the following equation [a]: $Ni = e^{(0.846[\ln(hardness)]+1.1645)} \times CF$[5]	7440020		X		X		
101.c	Nickel: The one-hour average concentration of dissolved nickel shall not exceed the value determined by the following equation [a]: $Ni = e^{(0.846[\ln(hardness)]+3.361)} \times CF$[5]	7440020	X		X		—	
102	Nitrate (as Nitrate-N)	14797558					10,000	
103	Nitrobenzene	98953					17	690
104	Nitrosamines						0.0008	1.24
105	Nitrosodibutylamine, N [b]	924163					0.0063	0.22
106	Nitrosodiethylamine,N [b]	55185					0.0008	1.24

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
107	N-Nitrosodimethylamine [b]	62759					0.00069	3.0
108	N-Nitrosodi-n-Propylamine [b]	621647					0.0050	0.51
109	N-Nitrosodiphenylamine [b]	86306					3.3	6.0
110	Nitrosopyrrolidine,N [b]	930552					0.016	34
111	Odor [c]: Not to exceed a threshold odor number of 8 at 104^{0}F as a daily average			X		X	X	X
112.a	Oxygen[c] - dissolved: not less than 5 mg/l at any time	7782447	X	X			X	X
112.b	Oxygen - dissolved, Kanawha River main stem, Zone 1: not less than 4.0 mg/l at any time	7782447	X	X				

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
112.c	Oxygen - dissolved, Ohio River main stem: the average concentration shall not be less than 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or place outside any established mixing zone - provided that a minimum of 5.0 mg/l at any time is maintained during the April 15 - June 15 spawning season		X	X				
112.d	Oxygen: not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.				X	X		
113	Parathion	56382	0.065	0.013	0.065	0.013		
114	Pentachlorobenzene	608935					1.4	1.5

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1.B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
115.	Pentachlorophenol [b] (The acute values were determined using a pH of 7.8 in the following equation: exp(1.005(pH)-4.869). The chronic values were determined using a pH of 7.8 in the following equation: exp(1.005(pH)-5.134).	87865	19	15	19	15	0.27	3.0
116	pH[c]		6.0 - 9.0.	6.0 - 9.0.	6.0 - 9.0.	6.0 - 9.0.	5.0 - 9.0	6.0 - 9.0.
117	Phenol	108952					21,000	1,700,000
118	Phthalate esters			3.0		3.0		
119	Polychlorinated Biphenyls (PCBs)[b]			0.014		0.014	0.000044	0.000045
120	Polynuclear Aromatic Hydrocarbons (PAH)[b]						0.0028	0.031
121	Pyrene	129000					830	4,000

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
122.a	Radionuclides: Beta particle and photon activity (formerly man-made radionuclides): 4 mrem Gross alpha particle activity: 15 pCi/L Combined Radium 226 & 228 Radon: 300 pCi/L Uranium: 20 ug/L						X	X

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
123.b	Radionuclides: In the Ohio River main stem: Gross total alpha particle activity (including radium-226 but excluding radon and uranium) shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed 4pCi/l; the concentration of total gross beta particle activity shall not exceed 50 pCi/L; the concentration of total strontium-90 shall not exceed 8 pCi/l.						X	X
124	Selenium (total recoverable)	7782492	20	5.0[g]	20	5.0[g]	50	4200

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
125.a	Silver Hardness Silver 0-50 1 51-100 4 101-200 12 >201 24	7440224				X	X	
125.b	Silver 0-50 1 51-100 4 101-200 12 201-400 24 401-500 30 501-600 43	7440224		X				
125.c	Silver: the one-hour average concentration of dissolved silver shall not exceed the value determined by the following equation: $Ag=e^{(1.72[\ln(hardness)]-6.52)} \times CF$[5]	7440224	X		X			

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
126	Solids Dissolved and Salinity						250,000	
127	Sulfide-Hydrogen Sulfide	7783064		2.0		2.0		
128	2,3,7,8 - TCDD (Dioxin)[b]	1746016					5.0E-9	5.1E-9
129.a	Temperature: Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87 °F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the		X	X				

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
	temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.						
129.b	Temperature: For the Kanawha River Main Stem (K-1): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 90°F in any case.		X	X			

129.c	Temperature: For the Bluestone R (KNB), Bluestone Lake (KN-60) East River (KNE), New River (KN), Gauley R. (KG) and Greenbrier River (KNG): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 81°F at any time during the months of May through November and not to exceed 73°F at any time during December through April.				X	X		
129.d	Temperature: No heated effluents will be discharged in the vicinity of spawning areas. The maximum temperatures for trout waters are expressed in the following table: Daily Mean / Hourly Max Oct. thru April 50 / 55 Sept. and May 58 / 62 June thru Aug. 66 / 70				X	X		

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
129.e	Temperature: For Ohio River Main Stem (01) (see section 7.1.d. herein): Period Inst. Dates Ave. Max. Jan 1-31 45°F 50°F February 45 50 March 1-15 51 56 March 16-31 54 59 April 1-15 58 64 April 16-30 64 69 May 1-15 68 73 May 16-31 75 80 June 1-15 80 85 June 16-30 83 87 July 1-31 84 89 August 1-31 84 89 Sept 1-15 84 87 Sept 16-30 82 86 Oct 1-15 77 82 Oct 16-31 72 77 Nov 1-30 67 72 Dec 1-31 52 57		X	X				

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
130	Tetrachlorobenzene,1,2,4,5 -	95943					0.97	1.1
131	1,1,2,2-Tetrachloroethane [b]	79345					0.17	4.0
132	Tetrachloroethylene [b]	127184					0.69	3.3
133	Thallium	7440280					1.7	6.3
134	Toluene [b]	108883					6,800	200,000
135	Toxaphene [b]	8001352	0.73	0.0002	0.73	0.0002	0.00028	0.00028
136	1,2-Trans-Dichloroethylene	156605					700	140,000
137	Tributyltin (TBT)	---	0.46	0.063				
138	1,2,4-Trichlorobenzene	120821					260	940
139	1,1,1-Trichloroethane [b]	71556					12,000	
140	1,1,2-Trichloroethane [b]	79005					0.59	16
141	Trichloroethylene [b]	79016					2.5	30
142	Trichlorophenol, 2,4,5-	95954					1,800	3,600
143	2,4,6-Trichlorophenol [b]	88062					1.4	2.4

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
144.a	Turbidity: No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU's over background turbidity when the background is 50 NTU or less, or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs.							

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
144.b	Turbidity: This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbing activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.			X		X	X	X

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
144.c	Turbidity: This rule shall not apply to those activities at which Best Management Practices in accordance with the State's adopted Nonpoint Source Management Plan are being utilized, maintained and completed on a site-specific basis or at which an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to Trout Waters.			X			X	X
145	Vinyl Chloride [b]	75014					2.0	525
146.a	Zinc: The four-day average concentration of dissolved zinc shall not exceed the value determined by the following equation [a]: $Zn = e^{(0.8473[\ln(\text{hardness})]+0.7614)} \times CF$[5]	7440666		X		X		

APPENDIX E TABLE 1

	PARAMETER	CAS	USE DESIGNATION					
			AQUATIC LIFE				HUMAN HEALTH	
			B1,B4		B2			
			ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]
146.b	Zinc: The one-hour average concentration of dissolved zinc shall not exceed the value determined by the following equation [a]: $Zn = e^{(0.8473[\ln(\text{hardness})]+0.8604)} \times CF$[5]		X		X			

End Notes:

1 One-hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
2 Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.
3 These criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted.
4 These criteria have been calculated to protect human health from toxic effects through drinking water and fish consumption, unless otherwise noted.
5 The appropriate Conversion Factor (CF) is a value used as a multiplier to derive the dissolved aquatic life criterion is found in Appendix E.
a Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use in this equation shall not be less than 25 mg/l, even if the actual ambient hardness is less than 25 mg/l. The maximum hardness value for use in this equation shall not exceed 400 mg/l even if the actual hardness is greater than 400 mg/l.
b Known or suspected carcinogen. Human health standards are for a risk level of 10^{-6}.
c May not be applicable to wetlands (B4)- site-specific criteria are desirable.
d The early life stage present equation in the National Criterion shall be used to establish chronic criteria throughout the state unless the applicant demonstrates that no early life stages of fish occur in the affected waters(s).
e Based on a statistically sufficient number of samples (generally not less than 5 samples equally spaced over a 30-day period), the geometric mean of the indicated

APPENDIX E TABLE 1

PARAMETER	CAS	USE DESIGNATION					
		AQUATIC LIFE				HUMAN HEALTH	
		B1,B4		B2			
		ACUTE[1]	CHRONIC[2]	ACUTE[1]	CHRONIC[2]	A[4]	C[3]

bacterial densities should not exceed 126 per 100 ml. No sample should exceed a one sided confidence limit (C.L.) calculated using the following: as guidance:

designated bathing beach	75% C.L.
moderate use for bathing	82% C.L.
light use for bathing	90% C.L.
infrequent use for bathing	95% C.L.

based on a site-specific log standard deviation, or if site data are insufficient to establish a log standard deviation, then using 0.4 as the log standard deviation for both indicators.

f. For example, where hardness equals 100 mg/L, the corresponding aquatic life values for lead are 65 ug/l for acute and 2.5 ug/l for chronic.

g. This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor 0.996 that was used in the Great Lakes Initiative to convert this to a value that is expressed in terms of dissolved metal.

APPENDIX E
TABLE 2

Conversion Factors

Metal	Acute	Chronic
Aluminum	1.000	1.000
Arsenic(III)	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium (III)	0.316	0.860
Chromium (VI)	0.982	0.962
Copper	0.960	0.960
Lead	1.46203-[(1n hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Mercury	0.85	0.85
Nickel	0.998	0.997
Silver	0.85	N/A
Zinc	0.978	0.986

ENVIRONMENTAL QUALITY BOARD

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Memorandum

To: Interested Parties
From: Environmental Quality Board
Date: May 20, 2003
Re: Proposed revisions to Water Quality Standards rule (46 CSR 1 – "Requirements Governing Water Quality Standards")

Appendix E, Table 1 of the proposed rule includes revisions to numeric criteria for a number of parameters as well as inclusion of a number of new parameters. Two tables are included in the proposed rule. The first version is a strike-through version showing all existing provisions to be deleted; the other is the new table as proposed – showing all parameters and corresponding criteria underlined.

The table and list attached to this memorandum are provided as an explanation of the revisions. The attached Table 1 indicates the revisions to the table (not including new parameters), by strikethrough and underline; and the attached list includes the new parameters and corresponding criteria (from EPA's National Recommended Water Quality Criteria, 2002) proposed to be added to Appendix E, Table 1.

If you have questions regarding these documents, you may contact the Board's staff at (304)558-4002.

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2				
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]	C[3]	A[4]	~~ALL OTHER USES~~
8.1 Dissolved Aluminum (ug/l) ~~Not to exceed~~:	750xCF[5]	87xCF[5]	750xCF[5]	87xCF[5]			
~~8.2 Ammonia (ug/l):~~ ~~Un-ionized ammonia (UA) shall be determined from values of total ammonia-N, pH and temperature according to the following equation:~~ ~~$UA = \frac{1.2(\text{total ammonia-N})}{1+10^{(pka-pH)}}$~~ ~~where pka = 0.0902 + 2730/(273.2 + T) and T = temperature (°C)~~ ~~The concentration of un-ionized ammonia (NH3) shall not exceed 50 ug/l.~~						~~50~~	
8.2.1 Ammonia. Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Water[d] from USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014, December 1999)	X	X	X	X			
8.3 Antimony (ug/l) ~~Not to exceed:~~					640 ~~4300~~	5.6 ~~14~~	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2				
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]	C[3]	A[4]	~~ALL OTHER USES~~
8.4 Arsenic[b] (ug/l) ~~Not to exceed:~~	340	150	340	150	10 ~~50~~	10 ~~50~~	~~100~~
8.4.1 Dissolved Trivalent Arsenic ~~Not to exceed~~:	360 x CF[5]	190 x CF[5]	360 x CF[5]	190 x CF[5]			
8.5 Barium (~~mg/l~~) ~~Not to exceed~~:						1000 ~~1.0~~	
8.6 Beryllium (ug/l)	~~130~~		~~130~~			~~.0077~~ 4	
8.7 Cadmium (ug/l) Hardness (mg/l $CaCO_3$) — Soluble Cd 0 - 35 — 1.0 36 - 75 — 2.0 76 - 150 — 5.0 > 150 — 10.0						X	
~~8.7.1 Not to exceed 10 ug/l in the Ohio River (O Zone 1) main stem (see section 7.1.d, herein)~~						— ~~X~~	
8.7.3 The four-day average concentration of dissolved cadmium shall not exceed the value determined by the following equation: $Cd = e^{(0.7852[\ln(\text{hardness})]-3.490)} \times CF^5$		X		X			

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.7.4 The one-hour average concentration of dissolved cadmium shall not exceed the value determined by the following equation: $Cd = e^{(1.128[\ln(hardness)]-3.828)} \times CF^5$	X		X				
8.8 Chloride (~~mg/l~~) ~~Not to exceed~~:	860,000 ~~860~~	230,000 ~~230~~	860,000 ~~860~~	230,000 ~~230~~	250,000 ~~250~~	250,000 ~~250~~	
8.9.1 Chromium, dissolved hexavalent (ug/l): ~~Not to exceed~~:	16 x CF^5	11 x CF^5	16 x CF^5	7.2 x CF^5		50	
8.9.2 Chromium, trivalent (ug/l) The one-hour average concentration of dissolved trivalent chromium shall not exceed the value determined by the following equation: $\exp\{0.8190[\ln(hardness)]+3.7256\} \times (CF^5)$	X		X				
8.9.3 The four-day average concentration of dissolved trivalent chromium shall not exceed the value determined by the following concentration: $\exp\{0.8190[\ln(hardness)]+0.6848\} \times (CF^5)$.		X		X			
8.10 Copper (ug/l) ~~Not to exceed~~:	13	9.0	13	9.0		~~1000~~ 1300	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.10.1 The four-day average concentration of dissolved copper shall not exceed the value determined by the following equation[a]: $Cu = e^{(0.8545[\ln(\text{hardness})]-1.465)} \times CF^5$		X		X			
8.10.2 The one-hour average concentration of dissolved copper shall not exceed the value determined by the following equation[a]: $Cu = e^{(0.9422[\ln(\text{hardness})]-1.464)} \times CF^5$	X		X				
8.11 Cyanide (ug/l) (As free cyanide $HCN+CN^-$) ~~Not to exceed:~~	22	5.0	22	5.0	5.0	5.0	
8.12 Dissolved Oxygen[c]: not less than 5 mg/l at any time.	X				X	X	~~X~~
8.12.1 Kanawha River main stem, Zone 1 - Not less than 4.0 mg/l at any time.	X						
8.12.2 Ohio River main stem - the average concentration shall not be less than 5.0 mg/l per calendar day and shall not be less than 4.0 mg/l at any time or place outside any established mixing zone - provided that a minimum of 5.0 mg/l at any time is maintained during the April 15-June 15 spawning season.	X						

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.12.3 Not less than 7.0 mg/l in spawning areas and in no case less than 6.0 mg/l at any time.			X				
8.13 Fecal Coliform: Maximum allowable level of fecal coliform content for Primary Contact Recreation (either MPN or MF) shall not exceed 200/100 ml as a monthly geometric mean based on not less than 5 samples per month; nor to exceed 400/100 ml in more than ten percent of all samples taken during the month. If a sample tested for fecal coliform shows noncompliance with the provisions of this section, then further testing of the sample for *Escheria Coli* can be allowed to determine compliance. If E. Coli testing indicates that the sample meets EPA's recommended criteria[e] this will suffice for meeting the criterion.					X	X	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		~~ALL OTHER USES~~
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.13.1 Ohio River main stem (zone 1) - During the non-recreational season (November through April only) the maximum allowable level of fecal coliform for the Ohio River (either MPN or MF) shall not exceed 2000/100 ml as a monthly geometric mean based on not less than 5 samples per month.					X		
8.14 Fluoride ~~(mg/l)~~ ~~Not to exceed:~~ (2.0 for Category D Use)						1,400 ~~1.4~~	
~~8.14.1 Not to exceed 2.0 for category D uses.~~							~~2.0 for category D uses~~
8.15 Iron[c] (~~mg/l~~) ~~Not to exceed:~~		1,500 ~~1.5~~		500 ~~0.5~~		1,500 ~~1.5~~	
8.16 Lead (ug/l) ~~Not to exceed:~~					15	15 ~~50~~	
8.16.1 The four-day average concentration of dissolved lead shall not exceed the value determined by the following equation[a,f]: $Pb = e^{(1.273[\ln(\text{hardness})]-4.705)} \times CF^{5}$		X		X			

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.16.2 The one-hour average concentration of dissolved lead shall not exceed the value determined by the following equation[a,f]: $Pb = e^{(1.273[\ln(hardness)]-1.46)} \times CF^5$	X		X				
8.17 Manganese (~~mg/l~~) (see §6.2.d) ~~Not to exceed:~~						1,000 ~~1.0~~	
8.18 Mercury The total organism body burden of ~~any~~ appropriate aquatic species shall not exceed 0.5 ug/g as methylmercury.					0.5	0.5	
8.18.1 Total mercury in any unfiltered water sample shall not exceed (ug/l):	~~2.4~~		~~2.4~~		0.15	0.14	
~~8.18.2 Methylmercury (water column) Not to exceed (ug/l):~~		~~.012~~		~~.012~~			
Mercury (ug/l) - dissolved Conversion factor:	1.4	0.77	1.4	0.77			
8.19 Nickel (ug/l) ~~Not to exceed~~:	470	52	470	52	4600	610 ~~510~~	
8.19.1 The four-day average concentration of dissolved nickel shall not exceed the value determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+1.1645)} \times CF^5$		X		X			

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		~~ALL OTHER USES~~
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.19.2 The one-hour average concentration of dissolved nickel shall not exceed the value determined by the following equation[a]: $Ni = e^{(0.846[\ln(hardness)]+3.361)} \times CF$[5]	X		X				
8.20 Nitrate (as Nitrate-N) (~~mg/l~~)						10,000 ~~10~~	
~~8.21 Nitrite (as Nitrite N) (mg/l) Not to exceed:~~	~~1.0~~		~~.060~~				
8.22 Organics							
Chlordane[b] (~~ng/l~~)	2.4 ~~2400~~	0.0043 ~~4.3~~	2.4 ~~2400~~	0.0043 ~~4.3~~	0.00081 ~~0.46~~	0.00080 ~~0.46~~	~~0.46~~
4,4'- DDT[b] (~~ng/l~~)	1.1 ~~1100~~	0.001 ~~1.0~~	1.1 ~~1100~~	0.001 ~~1.0~~	0.00022 ~~0.024~~	0.00022 ~~0.024~~	~~0.024~~
Aldrin[b] (~~ng/l~~)	3.0		3.0		0.000050 ~~0.071~~	0.000049 ~~0.071~~	~~0.071~~
Dieldrin[b] (~~ng/l~~)	0.24 ~~2500~~	0.056 ~~1.9~~	0.24 ~~2500~~	0.056 ~~1.9~~	0.000054 ~~0.071~~	0.000052 ~~0.071~~	~~0.071~~
Endrin (~~ng/l~~)	0.086 ~~180~~	0.036 ~~2.3~~	0.086 ~~180~~	0.036 ~~2.3~~	0.81 ~~2.3~~	0.76 ~~2.3~~	~~2.3~~
Toxaphene[b] (~~ng/l~~)	0.73 ~~730~~	0.0002 ~~0.2~~	0.73 ~~730~~	0.0002 ~~0.2~~	0.00028 ~~0.73~~	0.00028 ~~0.73~~	~~0.73~~

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
PCB[b] (~~ng/l~~)		0.014 ~~14.0~~		0.014 ~~14.0~~	0.000045 ~~0.045~~	0.000044 ~~0.044~~	~~0.000045~~ ~~0.045~~
Methoxychlor (ug/l)		0.03		0.03	0.03	0.03	~~0.03~~
Dioxin (2,3,7,8- TCDD)[b] (~~pg/l~~)					5.1E-9 ~~0.014~~	5.0E-9 ~~0.013~~	~~0.014~~
Acrylonitrile[b] (ug/l)					0.25 ~~0.66~~	0.051 ~~0.059~~	
Benzene[b] (ug/l)					51 ~~71~~	2.2 ~~0.66~~	
1,2-dichlorobenzene (~~mg/l~~)					17,000 ~~17~~	2,700 ~~2.7~~	
1,3-dichlorobenzene (~~mg/l~~)					960 ~~2.6~~	320 ~~0.4~~	
1,4-dichlorobenzene (~~mg/l~~)					2,600 ~~2.6~~	400 ~~0.4~~	
2,4-dinitrotoluene[b] (ug/l)					3.4 ~~9.1~~	0.11	
Hexachlorobenzene[b] (~~ng/l~~)					0.00029 ~~0.77~~	0.00028 ~~0.72~~	
Carbon tetrachloride[b] (ug/l)					1.6 ~~4.4~~	0.23 ~~0.25~~	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
Chloroform[b] (ug/l)					470	5.7	
Halomethanes (ug/l)					15.7	0.19	
1,2-dichloroethane[b] (ug/l)					37 ~~99~~	0.38 ~~0.035~~	
1,1,1- trichloroethane[b] (~~mg/l~~)						12,000 ~~12~~	
1,1,2,2-tetrachloroethane (ug/l)					4.0 ~~11~~	0.17	
1,1-dichloroethylene[b] (ug/l)					3.2	0.03	
Trichloroethylene[b] (ug/l)					30.0 ~~81~~	2.5 ~~2.7~~	
Tetrachloroethylene[b] (ug/l)					3.3 ~~8.85~~	0.69 ~~0.8~~	
Toluene[b] (~~mg/l~~)					200,000 ~~200~~	6,800 ~~6.8~~	
Polynuclear Aromatic Hydrocarbons (PAH)[b] (ug/l)					0.031	.0028	
Phthalate esters (ug/l)		3.0		3.0			
Vinyl chloride[b] (chloroethene)(ug/l)					525	2.0	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			~~ALL OTHER USES~~
~~alpa~~ alpha-BHC (alpha- Hexachloro-cyclohexane)[b] ~~(ug/l)~~					0.0049 ~~0.013~~	0.0026 ~~.0039~~	
beta-BHC(beta- Hexachloro-cyclohexane)[b] (ug/l)					0.017 ~~0.046~~	0.0091 ~~0.014~~	
gamma-BHC (gamma- Hexachloro-cyclohexane)[b] (Lindane) (ug/l)	0.95 ~~2.0~~	0.08	0.95 ~~2.0~~	0.08	0.063	0.019	
Chlorobenzene (~~mg/l~~)					21,000 ~~21~~	680 ~~0.68~~	
Ethylbenzene (~~mg/l~~)					29,000 ~~29~~	3,100 ~~3.1~~	
Heptachlor[b] (~~ng/l~~)	0.52 ~~520~~	0.0038 ~~3.8~~	0.52 ~~520~~	0.0038 ~~3.8~~	0.000079 ~~0.21~~	0.000079 ~~0.21~~	
2-methyl-4,6-Dinitrophenol (ug/l)					280 ~~765~~	13 ~~13.4~~	
Fluoranthene (ug/l)					140 ~~370~~	130 ~~300~~	
~~8.22.1 The organic chemicals listed in §8.22 shall not exceed the specified water quality criteria. When the specified criteria are less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, where applicable.~~							

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2				
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]	C[3]	A[4]	~~ALL OTHER USES~~
8.23 pH[c] ~~No values below 6.0 nor above 9.0. Higher values due to photosynthetic activity may be tolerated.~~	~~No values below~~ 6.0~~-~~ ~~nor above~~ 9.0. X	~~No values below~~ 6.0~~-~~ ~~nor above~~ 9.0. X	~~No values below~~ 6.0~~-~~ ~~nor above~~ 9.0. X	~~No values below~~ 6.0~~-~~ ~~nor above~~ 9.0. X	~~No values below~~ 6.0~~-~~ ~~nor above~~ 9.0. X	~~No values below~~ 5.0~~-~~ ~~nor above~~ 9.0 X	~~No values below 6.0 nor above 9.0.~~ ~~X~~
~~8.24 Phenolic Materials~~							
8.24.1 Phenol (ug/l) ~~Not to exceed~~:					1,700,000 ~~4,600,000~~	21,000	
8.24.2 2-Chlorophenol (ug/l) ~~Not to exceed~~:					150 ~~400~~	81 ~~120~~	
8.24.3 2,4-Dichlorophenol (ug/l) ~~Not to exceed:~~					290 ~~790~~	77 ~~93~~	
8.24.4 2,4-Dimethylphenol (ug/l) ~~Not to exceed:~~					850 ~~2300~~	380 ~~540~~	
8.24.5 2,4-Dinitrophenol (ug/l) ~~Not to exceed:~~					5,300 ~~14,000~~	69 ~~70~~	
8.24.6 Pentachlorophenol[b] (ug/l)	19	15	19	15	3.0 ~~8.2~~	0.27 ~~0.28~~	
8.24.6.a The one-hour average concentration of pentachlorophenol shall not exceed the value determined by the following equation: exp(1.005(pH)-4.869)	X		X				

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		~~ALL OTHER USES~~
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.24.6.b The 4-day average concentration of pentachlorophenol shall not exceed the value determined by the following equation: exp(1.005(pH)-5.134).		X		X			
8.24.7 2,4,6-Trichlorophenol[b] (ug/l) ~~Not to exceed:~~					2.4 ~~6.5~~	1.4 ~~2.1~~	
8.25 ~~Radioactivity~~ Radionuclides : ~~Gross Beta activity not to exceed 1000 picocuries per liter (pCi/l), nor shall activity from dissolved strontium-90 exceed 10 pCi/l, nor shall activity from dissolved alpha emitters exceed 3 pCi/l.~~ Beta particle and photon activity (formerly man-made radionuclides): 4 mrem Gross alpha particle activity: 15 pCi/L Combined Radium 226 & 228 Radon: 300 pCi/L Uranium: 20 ug/L	~~X~~		~~X~~		X	X	~~X~~

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.25.1 Radionuclides: In the Ohio River main stem: Gross total alpha particle activity (including radium-226 but excluding radon and uranium) shall not exceed 15 pCi/l and combined radium-226 and radium-228 shall not exceed ~~5~~ 4pCi/l; ~~provided that the specific determination of radium-226 and radium-228 are not required if dissolved particle activity does not exceed 5pCi/l; the concentration of tritium shall not exceed 20,000 pCi/l;~~ the concentration of total gross beta particle activity shall not exceed 50 pCi/L; the concentration of total strontium-90 shall not exceed 8 pCi/l ~~in the Ohio River main stem~~.	~~X~~		~~X~~		X	X	~~X~~
8.26 Selenium (ug/l) (total recoverable) ~~Not to exceed:~~	20	5.0[g]	20	5.0[g]	4200	~~10~~ 50	
8.27 Silver (ug/l) Hardness / Silver 0-50 / 1 51-100 / 4 101-200 / 12 >201 / 24				X		X	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		~~ALL OTHER USES~~
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.27.1 0-50 1 51-100 4 101-200 12 201-400 24 401-500 30 501-600 43		X					
8.27.2 The one-hour average concentration of dissolved silver shall not exceed the value determined by the following equation: $Ag=e^{(1.72[\ln(hardness)]-6.52)} \times CF$[5]	X		X				

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.28 Temperature Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 87°F at any time during months of May through November and not to exceed 73°F at any time during the months of December through April. During any month of the year, heat should not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3°F by the addition of heat of artificial origin. The normal daily and seasonable temperature fluctuations that existed before the addition of heat due to other natural causes should be maintained.	X						
8.28.1 For the Kanawha River Main Stem (K-1): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 90°F in any case.	X						

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.28.2 For the Bluestone R (KNB), Bluestone Lake (KN-60) East River (KNE), New River (KN), Gauley R. (KG) and Greenbrier River (KNG): Temperature rise shall be limited to no more than 5°F above natural temperature, not to exceed 81°F at any time during the months of May through November and not to exceed 73°F at any time during December through April.			X				
8.28.3 No heated effluents will be discharged in the vicinity of spawning areas. The maximum temperatures for cold waters are expressed in the following table: Daily Mean °F / Hourly Max °F Oct-thru Apr 50 / 55 Sept - and May 58 / 62 Jun– thru Aug 66 / 70			X				

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		~~ALL OTHER USES~~
	B1, B4		B2		C[3]	A[4]	
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.28.4 For Ohio River Main Stem (01) (see section 7.1.d, herein): Dates — Period Ave. — Inst. Max. Jan 1-31 45°F 50°F February 45 50 March 1-15 51 56 March 16-31 54 59 April 1-15 58 64 April 16-30 64 69 May 1-15 68 73 May 16-31 75 80 June 1-15 80 85 June 16-30 83 87 July 1-31 84 89 August 1-31 84 89 Sept 1-15 84 87 Sept 16-30 82 86 Oct 1-15 77 82 Oct 16-31 72 77 Nov 1-30 67 72 Dec 1-31 52 57	X						
8.29 Thallium (ug/l)					6.3	1.7	
8.30 Threshold odor[c] Not to exceed a threshold odor number of 8 at 104°F as a daily average.		X		X	X	X	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.31 Total Residual Chlorine (ug/l - measured by amperometric or equivalent method) ~~Not to exceed~~:	19	11					
8.31.1 No chlorinated discharge allowed			X				
8.32 Turbidity No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU's over background turbidity when the background is 50 NTU or less, or have more than a 10% increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTUs.							
This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbing activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.		X		X	X	X	

PARAMETER	USE DESIGNATION						
	AQUATIC LIFE				HUMAN HEALTH		
	B1, B4		B2		C[3]	A[4]	~~ALL OTHER USES~~
	ACUTE[1]	CHRON[2]	ACUTE[1]	CHRON[2]			
8.32.1 This rule shall not apply to those activities at which Best Management Practices in accordance with the State's adopted ~~208 Water Quality Management Plan~~ Nonpoint Source Management Plan are being utilized, maintained and completed on a site-specific basis ~~as determined by the appropriate 208 cooperative~~ or at which an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to Trout Waters.		X			X	X	
8.33 Zinc (ug/l) The four-day average concentration of dissolved zinc shall not exceed the value determined by the following equation[a]: $Zn = e^{(0.8473[\ln(\text{hardness})]+0.7614)} \times CF^5$		X		X			
8.33.1 The one-hour average concentration of dissolved zinc shall not exceed the value determined by the following equation[a]: $Zn = e^{(0.8473[\ln(\text{hardness})]+0.8604)} \times CF^5$	X		X				

1 One hour average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.

2 Four-day average concentration not to be exceeded more than once every three years on the average, unless otherwise noted.

3 These criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted.

4 These criteria have been calculated to protect human health from toxic effects through drinking water and fish consumption, unless otherwise noted.

5 The appropriate Conversion Factor (CF) is a value used as a multiplier to derive the dissolved aquatic life criterion is found in Appendix E, Table 2.

a Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use is this equation shall not be less than 25 mg/l, even if the actual ambient hardness is less than 25 mg/l. The maximum hardness value for use in this equation shall not exceed 400 mg.l even if the actual hardness is greater than 400 mg/l.

b Known or suspected carcinogen. Human health standards are for a risk level of 10^{-6}.

c May not be applicable to wetlands (B4) - site-specific criteria are desirable.

d The early life stage present equation in the National Criterion shall be used to establish chronic criteria throughout the state unless the applicant demonstrates that no early life stages of fish occur in the affected water(s).

e Based on a statistically sufficient number of samples (generally not less than 5 samples equally spaced over a 30-day period), the geometric mean of the indicated bacterial densities should not exceed 126 per 100 ml. No sample should exceed a one sided confidence limit (C.L.) calculated using the following: as guidance:

designated bathing beach	75% C.L.
moderate use for bathing	82% C.L.
light use for bathing	90% C.L.
infrequent use for bathing	95% C.L.

based on a site-specific log standard deviation, or if site data are insufficient to establish a log standard deviation, then using 0.4 as the log standard deviation for both indicators.

f. For example, where hardness equals 100 mg/L, the corresponding aquatic life values for lead are 65 ug/l for acute and 2.5 ug/l for chronic.

g. This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor 0.996 that was used in the Great Lakes Initiative to convert this to a value that is expressed in terms of dissolved metal.

NEW POLLUTANTS ADDED TO WQS RULE

POLLUTANT	ACUTE	CHRONIC	CAT. A	CAT. C
Acenaphthene			670	990
Acrolein			190	290
Anthracene			8,300	40,000
Asbestos			7million fibers/L	
Benzidine			0.000086	0.00020
Benzo(a)Anthracene			0.0038	0.018
Benzo(a)Pyrene			0.0038	0.018
Benzo(b)Fluoranthene			0.0038	0.018
Benzo(k)Fluroanthene			0.0038	0.018
Bis(2-Chloroethyl)Ether			0.030	0.53
Bis(2-Chloroisopropyl)Ether			1,400	65,000
Bis(2-Ethylhexyl)Phthalatex			1.2	2.2
Bromoform			4.3	140
Butylbenzyl PhthalateW			1500	1,900
Chlorodibromomethane			0.40	13
2-Chloronaphthalene			1,000	1,600
Chlorophenoxy Herbicide (2,4,5-TP)			10	
Chlorophenoxy Herbicide (2,4-D)			100	
Chloropyifos	0.083	0.041		
Chrysene			0.0038	0.018
4,4'DDD			0.00031	0.00031

POLLUTANT	ACUTE	CHRONIC	CAT. A	CAT. C
4,4'-DDE			0.00022	0.00022
Demeton		0.1		
Dibenzo(a,h)Anthracene			0.0038	0.018
3,3'-Dichlorobenzidine			0.021	0.028
Dichlorobromomethane			0.55	17
1,2-Dichloropropane			0.50	15
1,3-Dichloropropene			10	1,700
Diethyl Phthalate W			17,000	44,000
Dimethyl Phthalate W			270,000	1,100,000
Di-n-Butyl Phthalate W			2,000	4,500
Dinitrophenols			69	5,300
2,4-Dinitrotoluene			0.11	3.4
1,2-Diphenylhydrazine			0.036	0.20
alpha-Endosulfan	0.22	0.056	62	89
beta-Endosulfan	0.22	0.056	62	89
Endosulfan Sulfate			62	89
Endrin Aldehyde			0.29	0.30
Ether, Bis(Chloromethyl)			0.00010	0.00029
Fluorene			1,100	5,300
Guthion		0.01		
Heptachlor Epoxide	0.52	0.0038	0.000039	0.000039
Hexachlorobutadiene			0.44	18
Hexachlorocyclo-hexane-Technical			0.0123	0.0414
Hexachlorocyclopentadiene			240	17,000
Hexachloroethane			1.4	3.3

POLLUTANT	ACUTE	CHRONIC	CAT. A	CAT. C
Ideno(1,2,3-cd)Pyrene			0.0038	0.018
Isophorone			35	960
Malathion		0.1		
Methyl Bromide			47	1,500
Methylene Chloride			4.6	590
Mirex		0.001		
Nitrobenzene			17	690
Nitrosamines			0.0008	1.24
Nitrosodibutylamine,N			0.0063	0.22
Nitrosodiethylamine,N			0.0008	1.24
N-Nitrosodimethylamine			0.00069	3.0
N-Nitrosodi-n-Propylamine			0.0050	0.51
N-Nitrosodiphenylamine			3.3	6.0
Nitrosopyrrolidine,N			0.016	34
Parathion	0.065	0.013		
Pentachlorobenzene			1.4	1.5
Pyrene			830	4,000
Solids Dissolved and Salinity			250,000	
Sulfide-Hydrogen Sulfide		2.0		
Tetrachlorobenzene,1,2,4,5-			0.97	1.1
1,2-Trans-Dichloroethylene			700	140,000
Tributyltin(TBT)	0.46	0.063		
1,2,4 – Trichlorobenzene			260	940
1,1,2-Trichloroethane			0.59	16
Trichlorophenol,2,4,5-			1,800	3,600

POLLUTANT	ACUTE	CHRONIC	CAT. A	CAT. C
2,4,6-Trichlorophenol			1.4	2.4