**TITLE 47**

**LEGISLATIVE RULE**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**WATER RESOURCES**

**SERIES 2**

**REQUIREMENTS GOVERNING WATER QUALITY STANDARDS**

**§47-2-1. General.**

1.1. Scope. -- This rule establishes requirements governing the discharge or deposit of sewage, industrial wastes, and other wastes into the waters of the state and establishes 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 §§ 22-11-4(a)(16); 22-11-7b.

1.3. Filing Date. -- ~~April 26, 2019~~

1.4. Effective Date. -- ~~May 26, 2019~~

**§47-2-2. 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. "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.

2.2. Lakes

2.2a. “Cool water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of cool water fish species or support cool water fish species, such as walleye and trout. “Cool water lakes” do not include those waters that receive stockings of trout, but that do not support year-round trout populations. (*See*, Appendix F for a representative list.)

2.2.b. “Warm water lakes” are lentic water bodies that have a summer hydraulic residence time greater than 14 days, and are either managed by the West Virginia Division of Natural Resources for the support of warm water fish species or support warm water fish species, such as bass and catfish.

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).

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

2.5. "Dissolved metal" is that portion of metal which passes through a 0.45 micron filter.

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

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

2.8. "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.

2.9. "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 for a continuous period of at least six (6) months.

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

2.11. "Natural" or "naturally occurring" values or "natural temperature" means, for all of the waters of the State:

2.11.a. Those water quality values which exist unaffected by, or unaffected as a consequence of, any water use by any person; and

2.11.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.

2.12. "Non-point source" means any source other than a point source from which pollutants may reach the waters of the state.

2.13. "Persistent" means a pollutant and its transformation products which, under natural conditions, degrade slowly in an aquatic environment.

2.14. "Point source" means 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.

2.15. "Representative important species of aquatic life" means 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.

2.16. “Secretary” means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W. Va. Code §§ 22-1-6 or 22-1-8.

2.17. The "State Act" or "State Law" means the West Virginia Water Pollution Control Act, W. Va. Code § 22-11-1, et seq.

2.18. "Total recoverable" refers to the digestion procedure for certain heavy metals as referenced in 40 CFR 136, as amended May 18, 2012, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act.

2.19. "Trout waters" are waters which sustain year-round trout populations. Excluded are those waters which receive annual stockings of trout but which do not support year-round trout populations.

2.20. "Water quality criteria" means levels of parameters or stream conditions that are required to be maintained by this rule. Criteria may be expressed as a constituent concentration, levels, or narrative statement representing a quality of water that supports a designated use or uses.

2.21. "Water quality standards" means the combination of water uses to be protected and the water quality criteria to be maintained by this rule.

2.22. "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.

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

**§47-2-3. 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 secretary 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;

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. Algae blooms or 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, including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

**§47-2-4. Antidegradation Policy.**

4.1. It is the policy of the 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 a water 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 the secretary determines, after satisfaction of the intergovernmental coordination of the State’s continuing planning process as outlined in the Legislative Rule entitled “Antidegradation Implementation Procedures”, 60CSR5, 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 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 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 2.8 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, Sixth Edition, prepared by the Wildlife Resources Section of the Division of Natural Resources (2011).

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 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.; all Federally designated rivers under the “Wild and Scenic Rivers Act”, 16 U.S.C. § 1271, et seq.; all streams and other bodies of water in State Parks which are high quality waters or naturally reproducing trout streams; waters in National Parks and Forests which are high quality waters or naturally reproducing trout streams; waters designated under the “National Parks and Recreation Act of 1978”, 16 U.S.C § 461, et seq.; and pursuant to the rule entitled “Antidegredation Implementation Procedures,” 60CSR5, those waters whose unique character, ecological or recreational value, or pristine nature constitutes a valuable national or state resource.

Additional waters may be nominated for inclusion in that category by any interested party or by the secretary on the secretary’s own initiative. To designate a nominated water as an outstanding national resource water, the secretary shall follow the public notice and hearing provisions as provided in the Procedural Rule Governing Site Specific Revisions to Water Quality Standards, 46CSR6.

4.1.d. 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.

**§47-2-5. Mixing Zones.**

5.1. In the permit review and planning process or upon the request of a permit applicant or permittee, the secretary 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 secretary 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 are not limited to, the linear distances from the point of discharge, surface area involvement, and 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 secretary 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 secretary. 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 secretary, the size of the zone shall be determined using one of the four alternatives 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 secretary 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 secretary 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 five (5) cubic feet per second (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; kill 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 percent (10%) 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.

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 State or 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 the instream waste concentration of a discharge is greater than 80%.

5.2.h.5. Overlap one another, except that the secretary may allow mixing zones for human health criteria to overlap, if the overlapping mixing zones comply with all guidelines and conditions of subsection 5.2 herein.

5.2.h.6. Overlap any half-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 secretary may waive the requirements of subdivision 5.2.e and paragraph 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 subdivisions 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 secretary that the mixing zone is in compliance with the provisions outlined in subdivisions 5.2.b, 5.2.c, 5.2.e, and paragraph 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 secretary may require a permit applicant or permittee to submit such information as he or she deems necessary.

**§47-2-6. Water Use Categories**.

6.1. This section establishes general Water Use Categories and Water Quality Standards for the waters of the State. Unless otherwise designated by this rule, 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 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 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, 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 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 secretary shall follow the requirements for revision of water quality standards as required by W. Va. Code § 22-11-7b and section 303 of the Federal Act and the regulations thereunder. Any revision of water quality standards shall be made with the concurrence of the U.S. EPA. The secretary and the applicant shall follow the Procedural Rule Governing Site Specific Revisions to Water Quality Standards, 46CSR6.

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 waters 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 and paragraph 7.2.a.2, herein for additional requirements for Category A waters.) The manganese human health criterion shall only apply within the five-mile zone immediately upstream above a known public or private water supply used for human consumption.

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 2.19 herein (*see*, Appendix A for a representative list.)

6.3.c. Category B4 -- Wetlands. -- As defined in section 2.22 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.)

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 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 aids.

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.

**§47-2-7. 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 the stream codes developed by the Department and available on the Department’s website.

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.

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 - Youghiogheny 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, designated as 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, designated as 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, designated as 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 secretary 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.) The one-half (1/2) 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 and mile points 70 and 71. All mixing zone regulations found in section 5 of this rule will apply except for subdivision 5.2.h.6. Whether a mixing zone is appropriate and the proper size of such zone would need to be considered on a site-specific basis in accordance with the U.S. EPA approved West Virginia mixing zone regulations in section 5 above.

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 paragraph 7.2.c.5 below, 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 stream, when they are dry or have no measurable flow), so long as 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 subdivision 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 or in zones of initial dilution and certain mixing zones, except 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 secretary 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 water 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 secretary, in the secretary’s 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 secretary 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 are required before site-specific criteria for natural conditions are established.

Upon application or on the secretary’s own initiative, the secretary will determine whether a natural condition of a water should be approved as a site-specific water quality criterion. Before he or she approves a site-specific water quality criterion for a natural condition, the secretary 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 water varies with time, the natural condition will be determined to be the actual natural condition of the water measured prior to or concurrent with discharge or operation. The secretary will, in the secretary’s 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 secretary and shall include the following information:

7.2.c.4.A. A Unites States Geological Survey (USGS) 7.5 minute map showing the stream segment affected and showing all existing discharge points and 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 isunavailable, the secretary may require additional studies

7.2.c.4.D. General land uses (e.g. mining, agricultural, recreational, 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 secretary 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 and approved by the secretary shall be the applicable criteria.

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 46CSR6 and subsections 8.4 and 8.5 below. The following are approved site-specific criteria, variances, and use reclassifications:

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

7.2.d.2. Potomac River

7.2.d.2.1. 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 - (Reserved)

7.2.d.7. Monongahela River – Flow in the main stem of the Monongahela River, as regulated by the Tygart and Stonewall Jackson Reservoirs, operated by the U.S. Army Corps of Engineers, is based on a minimum flow of 425 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. 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 (5 µg/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 µg/l and manganese: 5 mg/l. For both the unnamed tributary of Daugherty Run, approximately one mile upstream of Daugherty Run’s confluence with the Cheat River, and Fly Ash Run, Water Use Category A shall not apply.

7.2.d.8.2. A variance pursuant 46CSR6, based on human-caused conditions which prohibit the full attainment of any designated use and cannot be immediately remedied, shall apply to the Division of Land Restoration’s Office of Special Reclamation’s discharges into Martin Creek of Preston County and its tributaries, including Glade Run, Fickey Run, and their unnamed tributaries. The following existing conditions will serve as instream interim criteria while this variance is in place: pH range of 3.2-9.0, 10 mg/L total iron, and 15 mg/L dissolved aluminum. Alternative restoration measures, as described in the variance application submitted by the Division of Land Restoration’s Office of Special Reclamation, shall be used to achieve significant improvements to existing conditions in these waters during the variance period. Conditions will be evaluated during each triennial review throughout the variance period. This variance shall remain in effect until action by the secretary to revise the variance or until July 1, 2025, whichever comes first.

7.2.d.9. Blackwater River - (Reserved)

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

7.2.d.11. Tygart River -

7.2.d.11.1. A variance pursuant to 46CSR6, based on human-caused conditions which prohibit the full attainment of any designated use and cannot be immediately remedied, shall apply to the Division of Land Restoration’s Office of Special Reclamation’s discharges into Maple Run, Left Fork Little Sandy Creek, and their unnamed tributaries. The following existing conditions will serve as instream interim criteria while this variance is in place: For Maple Run, pH range of 3.3-9.0, 2 mg/L total iron, and 12 mg/L dissolved aluminum; for Left Fork Little Sandy Creek, pH range of 2.5-9.0, 14 mg/L total iron, and 33 mg/L dissolved aluminum. Alternative restoration measures, as described in the variance application submitted by the Division of Land Restoration’s Office of Special Reclamation, shall be used to achieve significant improvements to existing conditions in these waters during the variance period. Conditions will be evaluated and reported upon during each triennial review throughout the variance period. This variance shall remain in effect until action by the secretary to revise the variance or until July 1, 2025, whichever comes first.

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

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

7.2.d.14. Youghiogheny River - (Reserved)

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

7.2.d.16. Ohio River Tributaries -

7.2.d.16.1. 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 µg/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.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, the minimum flow shall be 1,960 cfs at the Charleston gauge.

~~7.2.d.19.2. Pursuant to 46 CSR 6, a Copper Water Effect Ratio (WER) of 5.62 shall be applied to The Sanitary Board of the City of Charleston, West Virginia, wastewater treatment plant discharge of total recoverable copper to Kanawha River, Zone 1.~~

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. 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 µg/1 and copper not to exceed 105 µg/1 as a daily maximum or 49 µg/1 as a four-day average.

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 –

7.2.d.29.1. In Marr Branch, a tributary of the New River, a site-specific dissolved zinc criteria defined by the equation CMC=CCC=e0.8541\*ln(hardness)+1.151 x CF shall apply for both chronic and acute exposures

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 -

7.2.d.34.1. Pats Branch from its confluence with the Guyandotte River to a point 1000 feet upstream shall not have Water Use Category A and Category D1 designation.

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

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

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

**§47-2-8. 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 and May 18, 2012, 47CSR10, and “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 document "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion, EPA 823-B-96-007 June 1996.

8.1.b.3. NPDES permit applicants may petition the secretary to develop a site-specific translator consistent with the provisions in this section. The secretary 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, sections 6 and 7, herein.

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. The critical design flow for human health criteria effluent limits shall be the long-term harmonic mean flow.

8.3. Criteria for Nutrients

8.3.a. Lakes

8.3.a.1. This subsection establishes nutrient criteria designed to protect Water Use Categories B and C. The following cool water nutrient criteria shall apply to cool water lakes. (*See* Appendix F for a representative list.) The following warm water nutrient criteria shall apply to all other lakes with a summer residence time greater than 14 days.

8.3.a.2. Total phosphorus shall not exceed 40 µg/l for warm water lakes and 30 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1 to October 31. Chlorophyll-a shall not exceed 20 µg/l for warm water lakes and 10 µg/l for cool water lakes based on an average of four or more samples collected during the period May 1 to October 31. In lieu of total phosphorus and/or chlorophyll-a sampling, impairment may be evidenced at any time by noncompliance with subsection 3.2 above, as determined by the secretary.

8.4. 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 paragraphs 6.1.b.1 through 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 secretary at least every three years. In granting a variance, the secretary shall follow the requirements for revision of water quality standards in46CSR6.

8.5. Site-specific numeric criteria. The secretary 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. In adopting site-specific numeric criteria, the requirements for revision of water quality standards set forth in 46 CSR 6 shall be followed, unless developed pursuant to subdivision 8.5.a herein.

8.5.a. A site-specific numeric criterion may be established as part of the NPDES permitting process using any of the following established methods: a Water Effect Ratio study pursuant to the procedures described in U.S. EPA’s "Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals" (February 1994); the Streamlined Water-Effect Ratio Procedure for Discharges of Copper (March 2001); a Biotic Ligand Model analysis pursuant to the procedures described in U.S. EPA’s “Aquatic Life Ambient Freshwater Quality Criteria – Copper” (February 2007).

~~8.6. On or before April 1, 2020, the Secretary shall propose updates to the numeric human health criteria found in Appendix E., subsection 8.23. Organics and subsection 8.25 Phenolic Materials to be presented to the 2021 Legislative Session. The Secretary shall allow for submission of proposed human health criteria until October 1, 2019, and for public comment and agency review for an appropriate time thereafter.~~

8.6. The Secretary shall appoint a work group consisting of DEP employees (one of whom shall serve as a chairperson) and the DEP Environmental Protection Advisory Council. The work group will meet monthly from June 2020 to May 2021 to research and review remaining numeric human health criteria found in Appendix E, subsection 8.23 Organics and subsection 8.25 Phenolic Materials, in order to make a recommendation to the Secretary for the proposal of additional updates to the numeric human health criteria, if necessary, to be presented to the 2022 Legislative Session.

**§47-2-9. Establishment Of Safe Concentration Values.**

When a specific water quality standard has not been established by this rule and there is a discharge or proposed discharge into waters of the State, the use of which has been designated a Category B1, B2, B3 or B4, such discharge may be regulated by the secretary where necessary to protect 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 secretary 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 secretary 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 this rule 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 shall perform such testing as approved by the secretary and shall submit all of the following in writing to the secretary:

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 secretary.

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 test procedures outlined in 40 C.F.R. § 136, as amended, or other methodologies approved by the secretary.

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 2.19.

River Basin County Stream

James River

J Monroe South Fork Potts Creek

Potomac River

P Jefferson Town Run

P " Rocky Marsh Run

P Berkeley Opequon Creek

P " Tuscarora Creek (Above Martinsburg)

P " Middle Creek (Above Route 30 Bridge)

P " Mill Creek

P " Hartland Run

P " Mill Run

P " Tillance Creek

P Morgan Meadow Branch

PS Jefferson Flowing Springs Run (Above Halltown)

PS " Cattail Run

PS " Evitt's Run

PS " Big Bullskin Run

PS " Long Marsh Run

PC Hampshire Cold Stream

PC " Edwards Run and Impoundment

PC " Dillons Run

PC Hardy Lost River

PC " Camp Branch

PC " Lower Cove Run

PC " Moores Run

PC " North River (Above Rio)

PC " Waites Run

PC " Trout Run

PC " Trout Pond (Impoundment)

PC " Warden Lake (Impoundment)

PC " Rock Cliff Lake (Impoundment)

PSB Hampshire Mill Creek

PSB " Mill Run

PSB Hardy Dumpling Creek

PSB Grant-Pendleton North Fork South Branch

PSB Grant North Fork Lunice Creek

PSB " South Fork Lunice Creek

PSB " South Mill Creek (Above Hiser)

PSB " Spring Run

PSB Pendleton Hawes Run (Impoundment)

PSB " Little Fork

PSB " South Branch (Above North Fork)

River Basin County Stream

Potomac River

PSB Pendleton Senena Creek

PSB " Laurel Fork

PSB " Big Run

PNB Mineral North Fork Patterson Creek

PNB " Fort Ashby (Impoundment)

PNB " New Creek

PNB " New Creek Dam 14 (Impoundment)

PNB " Mill Creek (Above Markwood)

Monongahela River

M Monongalia-Marion Whiteday Creek (Above Smithtown)

MC Monongalia Morgan Run

MC " Coopers Rock (Impoundment)

MC " Blaney Hollow

MC Preston Laurel Run

MC " Elsey Run

MC " Saltlick Creek

MC " Buffalo Creek

MC " Wolf Creek

MC Tucker Clover Run

MC " Elklick Run

MC " Horseshoe Run

MC " Maxwell Run

MC " Red Creek

MC " Slip Hill Mill Branch

MC " Thomas Park (Impoundment)

MC " Blackwater River (Above Davis)

MC " Blackwater River (Below Davis)

MC Randolph Camp Five Run

MC " Dry Fork (Above Otter Creek)

MC " Glady Fork

MC " Laurel Fork

MC " Gandy Creek (Above Whitmer)

MC " East Fork Glady Fork (Above C & P Compressor

Station)

MC Randolph Shavers Fork (Above Little Black Fork)

MC " Three Spring Run

MC " Spruce Knob Lake (Impoundment)

MW Harrison Dog Run (Pond)

MW Lewis Stonecoal

MT Barbour Brushy Fork (Above Valley Furnace)

MT " Teter Creek Lake (Impoundment)

MT " Mill Run

MT Taylor-Barbour Tygart Lake Tailwaters (Above Route 119

Bridge)

MT Preston Roaring Creek (Above Little Lick Branch)

MT Randolph Tygart River (Above Huttonsville)

MT " Elkwater Fork

River Basin County Stream

Monongahela River

MT Randolph Big Run

MTB Upshur-Randolph-Lewis Right Fork Buckhannon River

MTB Upshur Buckhannon River (Above Beans Mill)

MTB Upshur French Creek

MTB Upshur-Randolph Left Fork Right Fork

MTN Upshur Right Fork Middle Fork River

MTM Randolph Middle Fork River (Above Cassity)

MY Preston Rhine Creek

Little Kanawha River

LK Upshur Left Fork-Right Fork Little Kanawha River

LK Upshur-Lewis Little Kanawha River (Above Wildcat)

Kanawha River

KE Braxton Sutton Reservoir

KE " Sutton Lake Tailwaters (Above Route 38/5

Bridge)

KE Webster Back Fork

KE " Desert Fork

KE " Fall Run

KE " Laurel Fork

KE " Left Fork Holly River

KE " Sugar Creek

KE " Elk River (Above Webster Springs)

KC Raleigh Stephens Lake (Impoundment)

KC " Marsh Fork (Above Sundial)

KG Nicholas Summersville Reservoir (Impoundment)

KG " Summersville Tailwaters (Above Collison

Creek)

KG Nicholas Deer Creek

KG Randolph-Webster Gauley River (Above Moust Coal Tipple)

KG Fayette Glade Creek

KG Nicholas Hominy Creek

KG " Anglins Creek

KG Greenbrier Big Clear Creek

KG " Little Clear Creek and Laurel Run

KG " Meadow Creek

KG Fayette Wolf Creek

KG Nicholas Cherry River

KG Greenbrier-Nicholas Laurel Creek

KG " " North Fork Cherry River

KG Greenbrier Summit Lake (Impoundment)

KG Greenbrier-Nicholas South Fork Cherry River

River Basin County Stream

Kanawha River

KGC Pocahontas-Webster- Cranberry River

Nicholas

KGC Pocahontas South Fork Cranberry River

KGW Pocahontas Tea Creek

KGW Pocahontas-Webster Williams River (Above Dyer)

KN Raleigh Glade Creek

KN Summers Meadow Creek

KN Fayette Mill Creek

KN " Laurel Creek (Above Cotton Hill)

KN Raleigh Pinch Creek

KN Monroe Rich Creek

KN " Turkey Creek

KN Fayette Dunloup Creek (Downstream from Harvey

Sewage Treatment Plant)

KN Mercer East River (Above Kelleysville)

KN " Pigeon Creek

KN Monroe Laurel Creek

KNG Monroe Kitchen Creek (Above Gap Mills)

KNG Greenbrier Culverson Creek

KNG " Milligan Creek

KNG Greenbrier-Monroe Second Creek (Rt. 219 Bridge to Nickell's Mill)

KNG Greenbrier North Fork Anthony Creek

KNG " Spring Creek

KNG " Anthony Creek (Above Big Draft)

KNG Pocahontas Watoga Lake

KNG " Beaver Creek

KNG " Knapp's Creek

KNG " Hills Creek

KNG " North Fork Deer Creek (Above Route 28/5)

KNG " Deer Creek

KNG " Sitlington Creek

KNG " Stoney Creek

KNG " Swago Creek

KNG " Buffalo Fork (Impoundment)

KNG " Seneca (Impoundment)

KNG " Greenbrier River (Above Hosterman)

KNG " West Fork-Greenbrier River (Above the

impoundment at the tannery)

KNG " Little River-East Fork

KNG " Little River-West Fork

KNG " Five Mile Run

KNG " Mullenax Run

KNG " Abes Run

KNB Mercer Marsh Fork

KNB " Camp Creek

OG Wyoming Pinnacle creek

BST McDowell Dry Fork (Above Canebrake)

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 Potomac River

Works

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 Mill Run

Center

PSB Hardy Moorefield Municipal South Fork River

Water

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 South Branch, Potomac

Water River

PNB Grant Island Creek Coal Impoundment

PNB Mineral Piedmont Municipal Savage River, Maryland

Water

PNB " Keyser Water New Creek

PNB " Fort Ashby PSD Lake

Monongahela River

M Monongalia Morgantown Water Comm. Colburn Creek & Monongahela

River

M " Morgantown Ordinance Monongahela River

Works

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

River Basin County Operating Company Source

Monongahela River

MC Monongalia Union Districk PSD Cheat Lake-Lake Lynn

MC " Cooper's Rock State Park Impoundment

MC Preston Kingwood Water Cheat River

MC Preston 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 Blackwater River Park

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 West Fork River

District

MW " Jackson's Mill Camp Impoundment

MW " West Fork River PSD West Fork River

MW " Kennedy Compresssor West Fork River

Station

MW " Jane Lew Water Comm. Hackers Creek

MW Harrison Bel-Meadow Country Lake

Club

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 Phillippi 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 Tygart River

Security Prison

MT " Mill Creek Water Mill Creek

MTB Upshur Buckhannon Water Board Buckhannon River

River Basin County Operating Company Source

Ohio River

O Zone 1 Hancock Chester Water & Sewer Ohio River

O " Brooke City of Weirton Ohio River

O Zone 1 Brooke 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 " Cabell 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 " " 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 Steer Creek

Compressor

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

K Kanawha Midland Trail School Impoundment

K " Cedar Coal Co. Impoundment

K Fayette Elkem Metals Co. Kanawha River

K Fayette Deepwater PSD Kanawha River

River Basin County Operating Company Source

Kanawha River

K Fayette 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-Montc. Coal River

Stickney

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 Elk River

Valley District

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

KN Fayette Ames Heights Water Mill Creek

KN " Mt. Hope Water Impounded Mine (Surface)

KN Fayette Ansted Municipal Water Mill Creek

River Basin County Operating Company Source

New River

KN Fayette 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 Greenbrier River

Water

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 Wyoming Pineville Water Pinnacle Creek

OG Raleigh Raleigh Co. PSD-Amigo Tommy Creek

OMG Cabell Milton Water Works Guyandotte River

OMG " Culloden PSD Indian Fork Creek

River Basin County Operating Company Source

Guyandotte River

OMG Putnam Hurricane Municipal Water Impoundment

OMG Putnam 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 & Berkeley

Meadow Branch

P-9-G-1 North Fork of Morgan

Indian Run

South Branch PSB South Branch of Hampshire

Potomac River

PSB " " Hardy

PSB " " Grant

PSB-21-X Hawes Run Pendleton

PSB-25-C-2 Spring Run Grant

PSB-28 North Fork South Branch Grant

Potomac River

North Branch PNB North Branch of Mineral

Potomac River

PNB-4-EE North Fork Grant

Patterson Creek

PNB-7-H Linton Creek Grant

PNB-17 Stoney River-Mt. Storm Grant

Lake

PC Cacapon River Hampshire

Monongalia

Cheat MC Cheat Lake/Cheat river Monongalia/Preston

MC Alpine Lake Preston

MC-6 Coopers Rock Lake/ Monongalia

Quarry Run

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/ Lewis

Stonecoal Lake

River Basin Stream Code Stream County

Ohio O Ohio River Brooke/Cabell/

Hancock/Jackson/

Marshall/Mason/Ohio/

Pleasants/Tyler/

Wayne/Wood/Wetzel

O-2-H Beech Fork of Wayne

Twelvepole Creek/Beech

Fork Lake

O-2-Q East Fork of Wayne

Twelvepole Creek/East

Lynn Lake

O-3 Fourpole Creek Cabell

O-21 Old Town Creek/ Mason

McClintic Ponds

OMI Middle Island Creek/ Doddridge

Crystal Lake

OG Guyandotte River Cabell

OG Guyandotte River/ Wyoming

R. D. Bailey Lake

OGM Mud River Cabell

Little Kanawha LK Little Kanawha River/ Braxton

Burnsville Lake

Kanawha K Kanawha River Fayette/Kanawha/

Mason/Putnam

K-1 Unnamed Tributary Mason

Krodel Lake

KC Coal River Kanawha

KC-45-Q Stephens Branch/ Raleigh

Lake Stephens

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/ Monroe

Moncove Lake

KNG-28 Anthony Creek Greenbrier

KNG-28-P Meadow Creek/ Greenbrier

Lake Sherwood

River Basin Stream Code Stream County

KNB Bluestone River/ Summers

Bluestone Lake

KG Gauley River Webster

Kanawha KG Gauley River/ Nicholas

Summersville Lake

KGW Williams River Webster

| **APPENDIX E, TABLE 1** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PARAMETER | USE DESIGNATION | | | | | | |
| AQUATIC LIFE | | | | HUMAN HEALTH | | ALL OTHER  USES |
| B1, B4 | | B2 | | C³ | A4 |
| ACUTE1 | CHRON2 | ACUTE1 | CHRON2 |
|  |  |  |  |  |  |  |  |
| 8.1 Dissolved Aluminum (ug/l)  For water with pH <6.5 or >9.0 | 750xCF5 | 750xCF5 | 750xCF5 | 87xCF5 |  |  |  |
| 8.1.1 Dissolved Aluminum (ug/l)  For water with pH ≥ 6.5 and ≤ 9.0, the four-day average concentration of dissolved aluminum determined by the following equatione:  Al = e(1.3695[ln(hardness)]+0.9121) x CF5 |  | X |  | X |  |  |  |
| 8.1.2 Dissolved Aluminum (ug/l)  For water with pH ≥ 6.5 and ≤ 9.0, the one-hour average concentration of dissolved aluminum determined by the following equatione:  Al = e(1.3695[ln(hardness)]+1.8268) x CF5 | X |  | X |  |  |  |  |
| 8.2. Acute and chronic aquatic life criteria for ammonia shall be determined using the National Criterion for Ammonia in Fresh Waterd 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) |  |  |  |  | 4300 | 14 |  |
| 8.4 Arsenic (ug/l) |  |  |  |  | 10 | 10 | 100 |
| 8.4.1 Dissolved Trivalent Arsenic (ug/l) | 340 | 150 | 340 | 150 |  |  |  |
| 8.5 Barium (mg/l) |  |  |  |  |  | 1.0 |  |
| 8.6 Beryllium (ug/l) | 130 |  | 130 |  |  | 4.0 |  |
| 8.7 Cadmium (ug/l)  Hardness Soluble Cd  (mg/l CaCO3)  0 - 35 1.0  36 - 75 2.0  76 - 150 5.0  > 150 10.0 |  |  |  |  |  | X |  |
| 8.7.1 10 ug/l in the Ohio River (O Zone 1) main stem (see section 7.1.d, herein) |  |  |  |  |  | X |  |
| 8.7.2 The four-day average concentration of dissolved cadmium determined by the following equation:  Cd = e(0.7409[ln(hardness)]-4.719) x CF5 |  | X |  | X |  |  |  |
| 8.7.3 The one-hour average concentration of dissolved cadmium determined by the following equation:  Cd = e(1.0166[ln(hardness)]-3.924) x CF5 | X |  | X |  |  |  |  |
| 8.8 Chloride (mg/l) | 860 | 230 | 860 | 230 | 250 | 250 |  |
| 8.9.1 Chromium, dissolved hexavalent (ug/l): | 16 | 11 | 16 | 7.2 |  | 50 |  |
| 8.9.2 Chromium, trivalent (ug/l) The one-hour average concentration of dissolved trivalent chromium determined by the following equation:  CrIII = e(0.8190[ln(hardness)]+3.7256) x CF5 | X |  | X |  |  |  |  |
| 8.9.3 The four-day average concentration of dissolved trivalent chromium determined by the following concentration:  CrIII = e(0.8190[ln(hardness)]+0.6848) x CF5 |  | X |  | X |  |  |  |
| 8.10 Copper (ug/l) |  |  |  |  |  | 1000 |  |
| 8.10.1 The four-day average concentration of dissolved copper determined by the following equationa:  Cu = e(0.8545[ln(hardness)]-1.702) x CF5 |  | X |  | X |  |  |  |
| 8.10.2 The one-hour average concentration of dissolved copper determined by the following equationa:  Cu = e(0.9422[ln(hardness)]-1.700) x CF5 | X |  | X |  |  |  |  |
| 8.11. Cyanide (ug/l)  (As free cyanide HCN+CN-) | 22 | 5.0 | 22 | 5.0 | 5.0 | 5.0 |  |
| 8.12 Dissolved Oxygenc: not less than 5 mg/l at any time. | X | |  |  | X | X | X |
| 8.12.1 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 | |  |  |  |  |  |
| 8.12.2 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 Water 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 |  |
| 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 | X |  |
| 8.14 Fluoride (mg/l) |  |  |  |  |  | 1.4 |  |
| 8.14.1 Not to exceed 2.0 for category D1 uses. |  |  |  |  |  |  | X |
| 8.15 Ironc (mg/l) |  | 1.5 |  | 1.0 |  | 1.5 |  |
| 8.16 Lead (ug/l) |  |  |  |  |  | 50 |  |
| 8.16.1 The four-day average concentration of dissolved lead determined by the following equationa:  Pb = e(1.273[ln(hardness)]-4.705)x CF5 |  | X |  | X |  |  |  |
| 8.16.2 The one-hour average concentration of dissolved lead determined by the following equationa:  Pb = e(1.273[ln(hardness)]-1.46) x CF5 | X |  | X |  |  |  |  |
| 8.17 Manganese (mg/l) ( see §6.2.d) |  |  |  |  |  | 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 (ug/l): | 2.4 |  | 2.4 |  | 0.15 | 0.14 |  |
| 8.18.2 Methylmercury (water column) (ug/l): |  | .012 |  | .012 |  |  |  |
| Nickel (ug/l) |  |  |  |  | 4600 | 510 |  |
| 8.19.1 The four-day average concentration of dissolved nickel determined by the following equationa:  Ni = e(0.846[ln(hardness)]+0.0584) x CF5 |  | X |  | X |  |  |  |
| 8.19.2 The one-hour average concentration of dissolved nickel determined by the following equationa:  Ni = e(0.846[ln(hardness)]+2.255) x CF5 | X |  | X |  |  |  |  |
| 8.20 Nitrate (as Nitrate-N) (mg/l) |  |  |  |  |  | 10 |  |
| 8.21 Nitrite (as Nitrite-N) (mg/l) | 1.0 | | .060 | |  |  |  |
| 8.22 Nutrients |  |  |  |  |  |  |  |
| Chlorophyll –a (µg/l) (see §47-2-8.3) |  |  |  |  |  |  |  |
| Total Phosphorus (µg/l) (see §47-2-8.3) |  |  |  |  |  |  |  |
| 8.23 Organics |  |  |  |  |  |  |  |
| Acenaphthene (ug/l) |  |  |  |  | 990 | 670 |  |
| Acrylonitrileb (ug/l) |  |  |  |  | ~~0. 66~~ 7.0 | ~~0.059~~ 0.061 |  |
| Aldrinb (ng/l) | 3.0 |  | 3.0 |  | 0.071 | 0.071 | 0.071 |
| alpa-BHC (alpha- Hexachloro-  cyclohexane)b (ug/l) |  |  |  |  | 0.013 | .0039 |  |
| Anthracene (ug/l) |  |  |  |  | 40,000 | 8,300 |  |
| Benzeneb (ug/l) |  |  |  |  | 51 | 0.66 |  |
| Benzo(a) Anthraceneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| Benzo(a) Pyreneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| Benzo(b) Fluorantheneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| Benzo(k) Fluorantheneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| beta-BHC(beta- Hexachloro-  cyclohexane)b (ug/l) |  |  |  |  | 0.046 | 0.014 |  |
| Bromoformb (ug/l) |  |  |  |  | ~~140~~ 120 | ~~4.3~~ 7.0 |  |
| Carbon tetrachlorideb (ug/l) |  |  |  |  | ~~4.4~~ 5 | ~~0.25~~ 0.4 |  |
| Chlordaneb (ng/l) | 2400 | 4.3 | 2400 | 4.3 | 0.46 | 0.46 | 0.46 |
| Chlorobenzene (mg/l) |  |  |  |  | 21 | 0.68 |  |
| Chloroformb (ug/l) |  |  |  |  | ~~470~~ 2,000 | ~~5.7~~ 60 |  |
| Chryseneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| DDTb (ng/l) | 1100 | 1.0 | 1100 | 1.0 | 0.024 | 0.024 | 0.024 |
| Dibenzo(a,h)Anthraceneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| Dichlorobromomethaneb (ug/l) |  |  |  |  | ~~17~~ 27 | ~~0.55~~ 0.95 |  |
| Dieldrinb (ng/l) | 2500 | 1.9 | 2500 | 1.9 | 0.071 | 0.071 | 0.071 |
| Dioxin (2,3,7,8- TCDD)b (pg/l) |  |  |  |  | 0.014 | 0.013 | 0.014 |
| Endrin (ng/l) | 180 | 2.3 | 180 | 2.3 | ~~2.3~~ 30 | ~~2.3~~ 30 | ~~2.3~~ 30 |
| Ethylbenzene (mg/l) |  |  |  |  | 29 | 3.1 |  |
| Fluoranthene (ug/l) |  |  |  |  | 370 | 300 |  |
| Fluorene (ug/l) |  |  |  |  | 5300 | 1100 |  |
| gamma-BHC (gamma- Hexachloro-  cyclohexane)b (ug/l) | 2.0 | 0.08 | 2.0 | 0.08 | 0.063 | 0.019 |  |
| Heptachlorb (ng/l) | 520 | 3.8 | 520 | 3.8 | 0.21 | 0.21 |  |
| Hexachlorobenzeneb (ng/l) |  |  |  |  | 0.77 | 0.72 |  |
| Indeno(1,2,3-cd)Pyreneb (ug/l) |  |  |  |  | 0.018 | 0.0038 |  |
| Methoxychlor (ug/l) |  | 0.03 |  | 0.03 | 0.03 | 0.03 | 0.03 |
| Methyl Bromide (ug/l) |  |  |  |  | 1500 | 47 |  |
| Methylene Chlorideb (ug/l) |  |  |  |  | ~~590~~ 1,000 | ~~4.6~~ 20 |  |
| PCBb (ng/l) |  | 14.0 |  | 14.0 | 0.045 | 0.044 | 0.045 |
| Phthalate esters6 (ug/l) |  | 3.0 |  | 3.0 |  |  |  |
| Pyrene (ug/l) |  |  |  |  | 4000 | 830 |  |
| Tetrachloroethyleneb (ug/l) |  |  |  |  | ~~8.85~~ 29 | ~~0.8~~ 10 |  |
| Tolueneb (mg/l) |  |  |  |  | ~~200~~ 0.52 | ~~6.8~~ 0.057 |  |
| Toxapheneb (ng/l) | 730 | 0.2 | 730 | 0.2 | ~~0.73~~ 0.71 | ~~0.73~~ 0.70 | ~~0.73~~ 0.71 |
| Trichloroethyleneb (ug/l) |  |  |  |  | ~~81~~ 7 | ~~2.7~~ 0.6 |  |
| Vinyl chlorideb (chloroethene) (ug/l) |  |  |  |  | ~~525~~ 1.6 | ~~2.0~~ 0.022 |  |
| 1,1,1- trichloroethaneb (mg/l) |  |  |  |  | 200 | ~~12~~ 10 |  |
| 1,1,2,2-tetrachloroethane (ug/l) |  |  |  |  | ~~11~~ 3 | ~~0.17~~ 0.2 |  |
| 1,1-dichloroethyleneb (ug/l) |  |  |  |  | ~~3.2~~ 20,000 | ~~0.03~~ 300 |  |
| 1,2-dichlorobenzene (mg/l) |  |  |  |  | 17 | 2.7 |  |
| 1,2-dichloroethaneb (ug/l) |  |  |  |  | ~~99~~ 650 | ~~0.035~~ 9.9 |  |
| 1,3-dichlorobenzene (mg/l) |  |  |  |  | ~~2.6~~ 0.010 | ~~0.4~~ 0.007 |  |
| 1,4-dichlorobenzene (mg/l) |  |  |  |  | ~~2.6~~ 0.90 | ~~0.4~~ 0.30 |  |
| 2,4-dinitrotolueneb (ug/l) |  |  |  |  | ~~9.1~~ 1.7 | ~~0.11~~ 0.049 |  |
| 2-Chloronaphthalene (ug/l) |  |  |  |  | 1600 | 1000 |  |
| 2-methyl-4,6-Dinitrophenol (ug/l) |  |  |  |  | ~~765~~ 30 | ~~13.4~~ 2 |  |
| 8.23.1  When the specified criteria for organic chemicals listed in §8.23 are less than the practical laboratory quantification level, instream values will be calculated from discharge concentrations and flow rates, where applicable. |  |  |  |  |  |  |  |
| 8.24 pHc  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 |
| 8.25 Phenolic Materials |  |  |  |  |  |  |  |
| 8.25.1 Phenol (ug/l) |  |  |  |  | ~~4,600,000~~ 300,000 | ~~21,000~~ 4,000 |  |
| 8.25.2 2-Chlorophenol (ug/l) |  |  |  |  | ~~400~~ 800 | ~~120~~ 30 |  |
| 8.25.3 2,4-Dichlorophenol (ug/l) |  |  |  |  | 790 | 93 |  |
| 8.25.4 2,4-Dimethylphenol (ug/l) |  |  |  |  | ~~2300~~ 3,000 | ~~540~~ 100 |  |
| 8.25.5 2,4-Dinitrophenol (ug/l) |  |  |  |  | ~~14,000~~ 300 | ~~70~~ 10 |  |
| 8.25.6 Pentachlorophenolb (ug/l) |  |  |  |  | 8.2 | 0.28 |  |
| 8.25.6.a The one-hour average concentration of pentachlorophenol determined by the following equation: exp(1.005(pH)-4.869) | X |  | X |  |  |  |  |
| 8.25.6.b The 4-day average concentration of pentachlorophenol determined by the following equation:  exp(1.005(pH)-5.134). |  | X |  | X |  |  |  |
| 8.25.7 2,4,6-Trichlorophenolb (ug/l) |  |  |  |  | 6.5 | 2.1 |  |
| 8.26 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 |
| 8.26.1  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 |
| 8.27 Selenium (ug/l) Water Column Concentration f |  | 5 |  | 5 |  | 50 |  |
| 8.27.1 Selenium (ug/g) g (based on instantaneous measurement)  8.0 ug/g Fish Whole-Body Concentration  or  11.3 ug/g Fish Muscle (skinless, boneless filet) |  | X |  | X |  |  |  |
| 8.27.2 Selenium (ug/g) Fish Egg/Ovary Concentration h (based on instantaneous measurement) |  | 15.8 |  | 15.8 |  |  |  |
| 8.28 Silver (ug/l)  Hardness Silver  0-50 1  51-100 4  101-200 12  >201 24 |  |  |  | X |  | X |  |
| 8.28.1  0-50 1  51-100 4  101-200 12  201-400 24  401-500 30  501-600 43 |  | X |  |  |  |  |  |
| 8.28.2 The one-hour average concentration of dissolved silver determined by the following equation:  Ag=e(1.72[ln(hardness)]-6.59) x CF5 | X |  | X |  |  |  |  |
| 8.29 Temperature  Temperature rise shall be limited to no more than 5oF above natural temperature, not to exceed 87oF at any time during months of May through November and not to exceed 73oF 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 5oF above natural temperature. In lakes and reservoirs, the temperature of the epilimnion should not be raised more than 3oF 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 | |  |  |  |  |  |
| 8.29.1 For the Kanawha River Main Stem (K-1):  Temperature rise shall be limited to no more than 5oF above natural temperature, not to exceed 90oF in any case. | X | |  |  |  |  |  |
| 8.29.2 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 Hourly  Mean oF Max oF  Oct-Apr 50 55  Sep~~-~~&May 58 62  Jun-Aug 66 70 |  |  | X | |  |  |  |
| 8.29.3 For Ohio River Main Stem (01) (see section 7.1.d, herein):  Period Inst.  Dates Ave. Max.  Jan 1-31 45oF 50oF  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 | |  |  |  |  |  |
| 8.30 Thallium (ug/l) |  |  |  |  | 6.3 | 1.7 |  |
| 8.31 Threshold odorc  Not to exceed a threshold odor number of 8 at 104oF as a daily average. |  | X |  | X | X | X |  |
| 8.32 Total Residual Chlorine (ug/l - measured by amperometric or equivalent method) | 19 | 11 |  |  |  |  |  |
| 8.32.1 No chlorinated discharge allowed |  |  | X | |  |  |  |
| 8.33 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 |  |
| 8.33.1 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 |  |
| 8.34 Zinc (ug/l)  The four-day average concentration of dissolved zinc determined by the following equationa:  Zn = e(0.8473[ln(hardness)]+0.884) x CF5 |  | X |  | X |  |  |  |
| 8.34.1 The one-hour average concentration of dissolved zinc determined by the following equationa:  Zn = e(0.8473[ln(hardness)]+0.884) x CF5 | 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. Annual geometric mean concentration not to be exceeded, unless otherwise noted.

4 These criteria have been calculated to protect human health from toxic and/or organoleptic effects through drinking water and fish consumption, unless otherwise noted. Annual geometric mean concentration not to be exceeded, 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.

6 Phthalate esters are determined by the summation of the concentrations of Butylbenzyl Phthalate, Diethyl Phthalate, Dimethyl Phthalate, Di-n-Butyl Phthalate and Di-n-Octyl Phthalate.

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 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 Hardness as calcium carbonate (mg/l). The minimum hardness allowed for use in this equation shall not be less than 26 mg/l, even if the actual ambient hardness is less than 26 mg/l. The maximum hardness value for use in this equation shall not exceed 200 mg/l even if the actual hardness is greater than 200 mg/l.

f Water column values take precedence over fish tissue values when new inputs of selenium occur in waters previously unimpacted by selenium, until equilibrium is reached between the water column and fish tissue.

g Overrides any water column concentration when water concentrations and either fish whole body or fish muscle (skinless, boneless filet)are measured, except in situations described in footnote f

h Overrides any fish whole-body, fish muscle (skinless, boneless filet), or water column concentration when fish egg/ovary concentrations are measured, except in situations described in footnote f

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 F

**COOL WATER LAKES**

This list contains lakes to be managed for cool water fisheries and is not intended to exclude any waters which meet the definition in Section 2.2.

River Basin County Lake

Potomac River

PC Hardy Lost River Trout Pond (Impoundment)

PC Hardy Lost River Rock Cliff Lake (Impoundment)

PSB Pendleton Hawes Run (Impoundment)

PNB Mineral New Creek Dam 14(Impoundment)

Monongahela River

MC Monongalia Coopers Rock (Impoundment)

MC Monongalia Cheat Lake

MC Tucker Thomas Park (Impoundment)

MC Randolph Spruce Knob Lake (Impoundment)

MT Taylor Tygart Lake

MW Lewis Stonecoal Lake

Kanawha River

KC Raleigh Stephens Lake (Impoundment)

KG Nicholas Summersville Reservoir (Impoundment)

KG Greenbrier Summit Lake (Impoundment)

KNG Pocahontas Watoga Lake

KNG Pocahontas Buffalo Fork (Impoundment)

KNG Pocahontas Seneca (Impoundment)

KCG Pocahontas Handley Pond

Guyandotte River

OG Wyoming/Mingo RD Bailey Lake