



## Certification Page Regular and Emergency Rules

Revised June 2013

**Emergency Rules** (After completing all of Sections 1 and 2, proceed to Section 5 below)

**Regular Rules**

<b>1. General Information</b>			
a. Agency/Board Name Wyoming Department of Environmental Quality			
b. Agency/Board Address 122 West 25th Street, Herschler Building		c. City Cheyenne	d. Zip Code 82002
e. Name of Contact Person Lindsay Patterson		f. Contact Telephone Number 307-777-7079	
g. Contact Email Address Lindsay.Patterson@wyo.gov		h. Adoption Date July 11, 2013	
i. Program Water Quality			
<b>2. Rule Type and Information:</b> For each chapter listed, indicate if the rule is New, Amended, or Repealed.			
If "New," provide the Enrolled Act numbers and years enacted:			
c. Provide the Chapter Number, Short Title, and Rule Type of Each Chapter being Created/Amended/Repealed <i>(Please use the Additional Rule Information form for more than 10 chapters, and attach it to this certification)</i>			
Chapter Number: 1	Short Title: Wyoming Surface Water Quality Standards	<input type="checkbox"/> New	<input checked="" type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
Chapter Number:	Short Title:	<input type="checkbox"/> New	<input type="checkbox"/> Amended <input type="checkbox"/> Repealed
d. <input checked="" type="checkbox"/> The Statement of Reasons is attached to this certification.			
e. If applicable, describe the <b>emergency</b> which requires promulgation of these rules without providing notice or an opportunity for a public hearing:			

**3. State Government Notice of Intended Rulemaking**

a. Date on which the Notice of Intent containing all of the information required by W.S. 16-3-103(a) was filed with the <b>Secretary of State</b> :	May 13, 2013
b. Date on which the Notice of Intent and proposed rules in strike and underscore format and a clean copy were provided to the <b>Legislative Service Office</b> :	May 13, 2013
c. Date on which the Notice of Intent and proposed rules in strike and underscore format and a clean copy were provided to the <b>Attorney General</b> :	May 13, 2013

**4. Public Notice of Intended Rulemaking**

a. Notice was mailed 45 days in advance to all persons who made a timely request for advance notice. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
b. A public hearing was held on the proposed rules. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

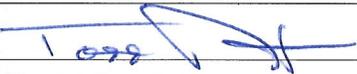
If "Yes:"	Date: July 11, 2013	Time: 9:00 AM	City: Cheyenne	Location: B63, Herschler Bldg 122 West 25th Street Cheyenne, WY 82002
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**5. Final Filing of Rules**

a. Date on which the Certification Page with original signatures and final rules were sent to the <b>Attorney General's Office for the Governor's signature</b> :	July 15, 2013
b. Date on which final rules were sent to the <b>Legislative Service Office</b> :	July 15, 2013
c. Date on which a PDF of the final rules was electronically sent to the <b>Secretary of State</b> :	July 15, 2013

**6. Agency/Board Certification**

The undersigned certifies that the foregoing information is correct.

Signature of Authorized Individual <i>(Blue ink as per Rules on Rules, Section 7)</i>	
Printed Name of Signatory	Todd Parfitt
Signatory Title	Director
Date of Signature	7/15/13

**7. Governor's Certification**

I have reviewed these rules and determined that they:

1. Are within the scope of the statutory authority delegated to the adopting agency;
2. Appear to be within the scope of the legislative purpose of the statutory authority; and, if emergency rules,
3. Are necessary and that I concur in the finding that they are an emergency.

Therefore, I approve the same.

Governor's Signature	
Date of Signature	

**Attorney General:** 1. Statement of Reasons; 2. Original Certification Page; 3. Summary of Comments (regular rules); 4. Hard copy of rules: clean and strike/underscore; and 5. Memo to Governor documenting emergency (for emergency rules only).

**LSO:** 1. Statement of Reasons; 2. Copy of Certification Page; 3. Summary of Comments (regular rules); 4. Hard copy of rules: clean and strike/underscore; 5. Electronic copy of rules: clean and strike/underscore; and 6. Memo to Governor documenting emergency (for emergency rules only).

**SOS:** 1. PDF of clean copy of rules; and 2. Hard copy of Certification Page as delivered by the AG.

**BEFORE THE  
ENVIRONMENTAL QUALITY COUNCIL  
STATE OF WYOMING**

IN THE MATTER OF WATER            )  
QUALITY RULES AND                 )  
REGULATIONS, CHAPTER 1,         )  
WYOMING SURFACE WATER         )  
QUALITY STANDARDS                )

**STATEMENT OF PRINCIPAL REASONS**

**Background**

The Environmental Quality Council, pursuant to the authority vested in it by Wyoming Statutes 35-11-112(a)(i), is adopting revisions to Chapter 1 of the Wyoming Water Quality Rules and Regulations. These changes are being proposed pursuant to Wyoming Statutes 35-11-302(a)(i). Chapter 1 contains the water quality standards for surface waters in the state and includes water classifications and designated uses.

Section 303(c) of the Clean Water Act provides states, tribes and territories with the primary authority and responsibility to establish water quality standards for waters of the U.S. within their respective jurisdictions. In Wyoming, the surface water quality standards are administered by the Wyoming Department of Environmental Quality, Water Quality Division (WDEQ/WQD) and are contained in Chapter 1 of the Wyoming Water Quality Rules and Regulations. Water quality standards must be reviewed at least once every three years, known as a triennial review, at which time existing standards can be modified and new standards adopted as necessary.

In addition to the standards, the *Implementation Policies for Antidegradation, Mixing Zones and Dilution Allowances, Turbidity and Use Attainability Analysis* are revised as necessary to accommodate changes in the rules. The policies are not in themselves rules or regulations, but have been developed to provide additional detail and guidance on the procedures used to interpret and implement Chapter 1. Following adoption by the state, the standards and *Implementation Policies* are submitted to the Environmental Protection Agency (EPA) for review to determine whether they meet the goals and requirements of the Clean Water Act.

**Purpose and Intent of Proposed Revisions**

The proposed revisions are intended to protect and maintain the designated uses of waters of the state and achieve the goals of the Environmental Quality and Clean Water Acts. These goals are accomplished by designating uses on waters, setting appropriate water quality criteria to protect designated uses, and implementing an antidegradation policy to maintain the quality of waters whose background quality is better than the criteria outlined in the standards.

Specifically, these rules are being revised to meet the triennial review requirements of the Clean Water Act, maintain Wyoming's primacy for delegated programs of the Clean Water Act, resolve Environmental Protection Agency (EPA) disapprovals from the last rule making, update numeric criteria for priority and non-priority pollutants, revise the duration of the *E. coli* criteria and correct a number of omissions, errors or inconsistencies that have been identified since the most recent revision.

**Compliance with Federal Regulations (W.S. 16-3-103(a)(i)(F))**

The rule revisions are proposed to comply with the federal regulations regarding the adoption of state water quality standards, specifically those contained in 40 CFR Part 131, which require the designation of water uses, the establishment of numeric and/or narrative water quality criteria sufficient to protect the water's designated uses and the implementation of antidegradation procedures. These rule changes are designed to meet the minimum requirements of federal laws and regulations.

**Proposed Revisions to Chapter 1 of the Water Quality Rules and Regulations:**

**General**

When referring to specific classes of Wyoming surface waters, "class" or "classes" of surface waters were changed to "Class" or "Classes" for consistency.

References to "Federal Clean Water Act", "federal Clean Water Act" and "Federal Act" in Sections 2(b), 3, 25(f), 33(b)(vi), 34(a) and 34(b) were changed to "Clean Water Act" for consistency.

In instances where the first letters of "Use Attainability Analysis" were capitalized, they were changed to lower case, as in "use attainability analysis", to be consistent with the definition in Section 2(b) and use of the term in the Code of Federal Regulations (CFRs). These are located in Sections 4(e), 33(b), 33(c) and 34.

The first mention of "administrator" in Section 8(b) was changed to "Water Quality Administrator (administrator)" and all subsequent references to the "Water Quality

Administrator” or “Water Quality administrator” in the document were changed to “administrator” for consistency with the Environmental Quality Act. These are located in Sections 33(b), 33(c), 34 and 36.

The first mention of “Department of Environmental Quality” in Section 2(b)(li) was followed by (department) and each subsequent reference to the “Department of Environmental Quality” was replaced with “department” for consistency with the Environmental Quality Act. These are located in Sections 4(e), 8(a), 21(f)(iv), 21(f)(v) and 21(f)(vi), Appendix A (b)(ii)(A), Appendix A (b)(ii)(B) and Appendix B footnote 14.

The first mention of “Environmental Quality Council” in Section 4(a) was followed by (council) and each subsequent reference to the “Environmental Quality Council” was replaced with “council” for consistency with the Environmental Quality Act. These are located in Sections 4(e), 33(a), 33(b), 33(c) and 34(b).

#### **Section 1. Authority.**

The acronym “W.S.” was defined as “Wyoming Statutes” in the text to provide clarification for readers unfamiliar with the statutes cited. W.S. 35-11-101 through 1507 was updated to W.S. 35-11-101 through 35-11-1803 to be consistent with the definition of the Environmental Quality Act in W.S. 35-11-103(a)(xiii). A reference to the definition of the Environmental Quality Act, W.S. 35-11-103(a)(xiii), was added to provide clarification for readers unfamiliar with the Environmental Quality Act.

#### **Section 2. Definitions.**

In (a) and (b), the word “section” was removed and replaced with “W.S.” to be consistent with other references to Wyoming Statutes within the document.

Definitions not used in the text were removed from Section 2(a) and Section 2(b). These include 2(a)(i), compensatory mitigation; 2(a)(vii), assimilative capacity; 2(b)(xiv), effluent dominated water; and 2(b)(xxxiii), nanograms per liter (ng/L). Numbering of the remaining definitions and references was adjusted accordingly.

The definitions of “aquatic life” was modified to include aquatic invasive species and now reads “means fish, invertebrates, amphibians and other flora and fauna which inhabit waters of the state at some stage in their life cycles. Aquatic life does not include human pathogen or insect pests, aquatic invasive species or other organisms which may be considered ‘undesirable’ by the Wyoming Game and Fish Department or U.S. Fish and Wildlife Service within their appropriate jurisdictions.”

In the definitions of “cold water game fish”, “*E. coli*”, “game fish” and “warm water game fish”, references to “Genus” and “Species” were changed from upper case to lower case to be consistent with convention. References to multiple genera were corrected from “genus” to “genera.” The genus for walleye and sauger was changed from “*Stizostedion*” to “*Sander*” to reflect changes in nomenclature. The genus “*Ptyodictis*” was removed from the definition of “game fish” and “warm water game fish” because flathead catfish do not occur in Wyoming.

The portion of the definition of “effluent dependent water” that read “that would be ephemeral without the presence of permitted effluent” was changed to “with insufficient natural flow to support aquatic life” because water bodies other than those that are “ephemeral” may lack sufficient natural hydrology to be classified as effluent dependent through the use attainability analysis process. The important concept for effluent dependent waters is that without the effluent, there would be insignificant aquatic life.

The additional parentheses present between (b)(xx) and b(xxi) was removed.

The date cited in the definition of “Federal Act” was updated from “June 21, 2001” to “November 27, 2002,” to reflect the most recent amendments to the Federal Water Pollution Control Act (Clean Water Act).

The abbreviation for micrograms per liter was revised from “mg/L” to “µg/L.”

The term “measurable effects” was removed from the definitions of “natural”, “natural biotic community” and “natural water quality” because the term is synonymous with “measurable influence” that is also included in each of the definitions.

Reference to “Chapter 18” within the definition of “storm water” was removed, as Chapter 18 is no longer in use.

The definition of “undesirable aquatic life” was updated to include “aquatic invasive species” and now reads “means organisms generally associated with degraded or eutrophic conditions. These may include the following organisms where they have replaced members of the natural biotic community: insect pests, aquatic invasive species or other organisms which may be considered ‘undesirable’ by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions”

### **Section 3. Water Uses.**

Language in (a) was modified from “irrigation or stock watering” to “irrigation and/or livestock watering” to reflect situations where a water body is used for both irrigation and livestock uses.

The description of the fisheries designated use (Section 3(b)) was modified to include “cold water game fish,” “warm water game fish” and “aquatic invasive species”. The description now reads “The fisheries use includes water quality, habitat conditions, spawning and nursery areas, and food sources necessary to sustain populations of cold water game fish, warm water game fish and nongame fish. This use does not include the protection of aquatic invasive species or other fish which may be considered ‘undesirable’ by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.”

The sentence, “The recreation designated use includes primary contact recreation and secondary contact recreation subcategories” was added to 3(e) for clarification purposes.

The description of the aquatic life other than fish designated use (Section 3(g)) was modified to include aquatic invasive species and now reads “This use does not include the protection of human pathogens, insect pests, aquatic invasive species or other organisms which may be considered ‘undesirable’ by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.”

### **Section 4. Surface Water Classes and Uses.**

The wording of Class 2, Fisheries and Drinking Water, in 4(b) was changed from “known to support fish or drinking water supplies” to “known to support fish and/or drinking water supplies” to reflect the fact that some categories of Class 2 waters are designated for both fish and drinking water uses, rather than one or the other.

The sentence, “New information made available to the department may be cause to amend the classifications,” found in 4(e) was removed because the sentence is redundant with information previously stated in the paragraph.

### **Section 5. Standards Enforcement.**

The title of the implementation policies document was capitalized, italicized and revised to include “and Dilution Allowances.” Other references to documents or databases that were either underlined or in quotations were italicized for consistency.

**Section 7. Class 1 Waters.**

Language used in (a) was changed from “paragraph (b)” to “Section 7(b) of these regulations” for clarification.

**Section 9. Mixing Zones.**

“Acute aquatic life values” and “chronic aquatic life values” were changed to “aquatic life acute values” and “aquatic life chronic values” to be consistent with Appendix B.

The reference to the “Mixing Zone and Dilution Allowances Policy” was revised to “*Mixing Zones and Dilution Allowances Implementation Policy*” to be consistent with the title in the implementation policies document.

**Section 10. Testing Procedures.**

The sentence “The analytical technique for total uranium (as U) shall be the fluorometric method as referenced in Methods for Determination of Radioactive Substances in Water and Fluvial Sediments, Techniques of Water – Resource Investigations of the U.S. Geological Survey, Book 5, chapter A-5, pp. 83 – 92” was removed because additional methods for determining total uranium have been updated since this reference was first included in Chapter 1 in 1979.

The paragraph “Numeric criteria included in the standards represent levels necessary to protect designated uses and do not necessarily reflect detection limits that can be achieved using standard analytical techniques. Standard analytical techniques are considered during development of discharge permits and evaluation of water quality data. Sampling entities should consult with the department to determine reporting limit needs to ensure that adequate testing procedures and reporting limits are requested from the laboratory” was added for clarification purposes.

**Section 11. Flow Conditions.**

The sentence “Whatever method is selected for a specific situation, application of the standards will conform to the magnitude, frequency, and duration provisions as described in these regulations” was modified to “For all methods, application of the standards will conform to the magnitude, duration and frequency provisions described in these regulations” and moved below (a)(iii).

## **Section 18. Human Health.**

The wording of this section was changed from “human health values for ‘Fish and Drinking Water’” and “human health values ‘Fish Only’” to “Human Health Consumption of Fish and Drinking Water values” and “Human Health Consumption of Fish values,” respectively, to be consistent with the revised headings in Appendix B.

The second sentence in the second paragraph was revised from “In such cases, human health values may be determined by use of the site-specific procedures outlined in the references listed in Appendix E of these regulations” to “In such cases, human health values may be established using the site-specific procedures outlined in the references listed in Appendix E or other scientifically defensible methods.” This revision was included to specify that site-specific criteria can be developed using methods other than those listed in Appendix E.

## **Section 20. Agricultural Water Supply.**

The sentence “The procedures used to implement this section are described in the ‘Agricultural Use Implementation Policy’” was removed, as the *Agricultural Use Implementation Policy* was removed from the Implementation Policies document. This policy was never intended to serve as the final agricultural use policy.

## **Section 21. Protection of Aquatic Life.**

The order of the Classes of water in (a)(i) were changed from “Class 1, 2A, 2B, 2AB and 2C” to “Class 1, 2AB, 2A, 2B and 2C” to be consistent with the order in which the classes of waters are typically listed.

“2D” was added to (a)(ii) to reflect the addition of effluent dependent waters during the last triennial review. The narrative ammonia criteria associated with Class 2D and 3D waters is intended to protect effluent dependent aquatic life from future discharges that may be permitted on the same drainage.

The sentence in (b), “These standards apply to all Class 1, 2A, 2B, 2AB, 2C, 3A, 3B and 3C waters,” was changed to “These standards apply to all Class 1, 2 and 3 waters,” to include effluent dependent waters, which are Classes 2D and 3D. Numeric acute and chronic values outlined in Appendix B for protection of aquatic life apply to effluent dependent waters except in situations where site-specific criteria has been developed through the process outlined in Section 36.

Section (d) was modified from “In such cases, acute and chronic values may be determined by use of the site-specific procedures outlined in sections 33 or 36 or in the references listed in Appendix E of these regulations” to “In such cases, acute and chronic values may be determined using the site-specific procedures outlined in the references listed in Appendix E or other scientifically defensible methods” to identify that site-specific criteria may be developed using methods other than those listed in Appendix E.

The wording of (e)(i), (e)(ii), (f)(i) and (f)(ii) was modified to be consistent with the policies of the Wyoming Department of Agriculture. The wording of (e)(i) and 21(f)(i) was revised to “The pesticide used is a product which has been registered with the EPA and the Wyoming Department of Agriculture for use in the state, in accordance with W.S. 35-7-356.” The term “such toxicants” was revised to “restricted use pesticides” in (e)(ii) and (f)(ii).

#### **Section 22. Radioactive Material.**

Section (a) was modified to specify the radiological criteria that apply to waters protected for drinking water uses, rather than incorporate the criteria by reference. Furthermore, the previously referenced 40 CFR 141.15 and 141.16, published July 1, 1998, was outdated, as these sections were removed from the Code of Federal Regulations (65 FR 76745, Dec. 7, 2000, 141.15 and 141.16 are removed).

The referenced limits are 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha particle activity (excluding radon and uranium), 30 µg/L for uranium and 4 millirems per year (mrem/year) for beta particle and photon radioactivity in waters designated for drinking water uses (i.e. Class 1, 2AB and 2A waters). These numeric limits are the maximum contaminant levels for radionuclides published in 40 CFR 141.66.

#### **Section 23. Turbidity.**

Section (a) was changed from “cold water fisheries and drinking water supplies” to “cold water fisheries **and/or** drinking water supplies” to indicate that the turbidity criteria apply to both cold water fisheries and drinking water uses, whether or not these uses occur together on the same water body.

#### **Section 24. Dissolved Oxygen.**

In both paragraphs, the term “wastes attributable to or influenced by” was changed to “pollution attributable to” to be more inclusive of the types of anthropogenic conditions that can result in impacts to dissolved oxygen concentrations. The term “pollution,” defined in Section 2(a), includes “alteration of the physical, chemical or biological properties,” rather

than just “wastes,” defined in Section 2(a) as “sewage, industrial waste and all other liquid, gaseous, solid, radioactive, or other substances which may pollute any waters of the state.” The change from “wastes” to “pollution” is also more consistent with the purpose of the Environmental Quality Act, defined in W.S. 35-11-102.

#### **Section 25. Temperature.**

The statement “effluent attributable to or influenced by the activities of man shall not be discharged in amounts which” in (a) was changed to “pollution attributable to the activities of man shall not” to be more inclusive of the types of anthropogenic conditions that can result in changes to temperature. Similar changes were made in (b) and (c) and the statement “pollution attributable to the activities of man” was added to (d). The term “pollution,” defined in Section 2(a), includes “alteration of the physical, chemical or biological properties,” rather than just “wastes,” defined in Section 2(a) as “sewage, industrial waste and all other liquid, gaseous, solid, radioactive, or other substances which may pollute any waters of the state.” The change from “effluent” to “pollution” is also more consistent with the purpose of the Environmental Quality Act, defined in W.S. 35-11-102.

The abbreviation “F” was revised to “Fahrenheit” and the abbreviation “C” was revised to “Celsius” for clarification. The Celsius equivalent for 60 degrees Fahrenheit was included.

Section (e) was modified from “with the exception of the provisions of Sections 9 and 11 of these regulations” to “with the exception of the provisions of Sections 9 and 11 of these regulations and other natural conditions” to accommodate situations other than those related to mixing zones (Section 9) and flow (Section 11) that result in temperatures that exceed the temperature criteria in Section 25. An example of such a condition is the upper portion of a pool or lake when ambient air temperatures are high.

#### **Section 26. pH.**

Statements in (a) and (b) that include “wastes attributable to or influenced by” were changed to “pollution attributable to” to be more inclusive of the types of anthropogenic conditions that can result in changes to pH. The term “pollution,” defined in Section 2(a), includes “alteration of the physical, chemical or biological properties,” rather than just “wastes,” defined in Section 2(a) as “sewage, industrial waste and all other liquid, gaseous, solid, radioactive, or other substances which may pollute any waters of the state.” The change from “wastes” to “pollution” is also more consistent with the purpose of the Environmental Quality Act, defined in W.S. 35-11-102.

**Section 27. *E. coli* Bacteria.**

Section (a) was revised to: “In all waters designated for primary contact recreation, during the summer recreation season (May 1 through September 30), concentrations of *E. coli* bacteria shall not exceed a geometric mean of 126 organisms per 100 milliliters during any consecutive 60-day period. Primary contact waters are identified in the *Wyoming Surface Water Classification List*.”

The following was removed from (a): “All waters in Table A of the Wyoming Surface Water Classification List are designated for primary contact recreation unless identified as a secondary contact water by a “(s)” notation. Waters not specifically listed in Table A of the *Wyoming Surface Water Classification List* shall be designated as secondary contact waters” based on a disapproval by EPA in a September 2008 action letter. EPA disapproved removing primary contact recreation use from a large number of waters because a use attainability analysis (UAA) had not been conducted. EPA’s interpretation of Clean Water Act Section 101(a)(2) is that aquatic life and primary contact recreation are attainable on all waters, unless it can be demonstrated through a UAA that the uses are not attainable.

The sampling requirements for determining attainment will be included in *Wyoming’s Methods for Determining Surface Water Quality Condition and TMDL Prioritization*, as the number of samples required for determining attainment is beyond the scope of the magnitude, duration and frequency information included within Chapter 1. The period over which the geometric mean can be assessed was changed from 30 days to 60 days to be more consistent with the derivation of the *E. coli* criteria. The *E. coli* criteria were derived from *Ambient Water Quality Criteria for Bacteria - 1986. EPA 440/5-84-002. Office of Water, Regulations and Standards, Washington, D.C.*, which were based on sampling conducted over a “summer bathing season,” a period of at least eight weeks.

Section (b) was modified to read: “In all waters designated for secondary contact recreation, and in waters designated for primary contact recreation during the winter recreation season (October 1 through April 30), concentrations of *E. coli* bacteria shall not exceed a geometric mean of 630 organisms per 100 milliliters during any consecutive 60-day period. Waters will be designated for secondary contact recreation through the reclassification and use attainability analysis process outlined in Sections 33 and 34 of these regulations. Secondary contact waters are identified in the *Wyoming Surface Water Classification List*.”

Sub-section (d), Variances, “Temporary and/or permanent variances to the *E. coli* values provided in (a) through (c) above may be granted in instances where the primary source of bacterial contamination is found to be natural in origin (wildlife), unavoidable (off-channel stock watering pits), or otherwise in the public interest,” was removed based on disapproval

by EPA in a September 2008 action letter. EPA's concern with 27(d) was that the variances could be established outside of the State's water quality standards rule making process and establishment of these criteria would be inconsistent with the Clean Water Act and the Code of Federal Regulations.

### **Section 33. Reclassifications and Site-Specific Criteria.**

Section (b)(v) was revised to be consistent with the wording of factor (5) in 40 CFR (Code of Federal Regulations) 131.10(g) and now states: "Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of an aquatic life use." The six factors outlined in (b)(i) through (b)(vi) are taken directly from 40 CFR 131.10(g)(1) through 131.10(g)(6).

### **Section 36. Effluent Dependent Criteria.**

The formatting of this section was changed to follow Section 6, Format for Final Rules Submitted for Filing, Chapter 1, Wyoming Secretary of State Rules on Rules. Specifically, the periods following lower case "a" and "b" were removed and replaced with parentheses and the numbers 1-4 under "a" and 1-3 under "b" were replaced with lower case roman numerals in parentheses.

### **Appendix A. Wyoming Surface Water Classifications.**

The upper case letters of "Main Stem" in (a)(iv) was changed to lower case to be consistent with the remainder of the Class 1 waters.

The wording of (a)(x) was changed from "The main stem of the Tongue River, the main stem of the North Fork of the Tongue River, and the main stem of the South Fork of the Tongue River above the U.S. Forest Service Boundary" to "The main stem of the North Fork of the Tongue River, the main stem of the South Fork of the Tongue River and the main stem of the Tongue River above the U.S. Forest Service boundary" to avoid confusion. Both the North Fork Tongue River and South Fork Tongue River are entirely within the U.S. Forest Service boundary, while the main stem of the Tongue River flows across the U.S. Forest Service boundary.

The formatting of this section was changed to follow Section 6, Format for Final Rules Submitted for Filing, Chapter 1, Wyoming Secretary of State Rules on Rules. Specifically, the numbers (1), (2) and (3) were changed to (A), (B) and (C) and the letters (A), (B), (C) and (C) were changed to (I), (II), (III) and (IV).

Section (b) was modified to specify that “recreational use designations” can also be found in the *Wyoming Surface Water Classification List*. The sentence, “The list is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34 and 35,” was added to make the language consistent with existing language in Section 4(e).

## **Appendix B. Water Quality Criteria.**

The column headings for priority and non-priority pollutants were changed to distinguish aquatic life criteria from human health consumption criteria. Superscripts were moved from the pollutant name to the value to be more consistent with the *National Recommended Water Quality Criteria*. In instances where (HM) and (PAH) followed a particular pollutant in the priority pollutant list, they were removed. HM, referring to halomethane compounds, and PAH, referring to polycyclic aromatic hydrocarbons, were removed because the compounds that were labeled did not include all of the HM or PAH compounds in the list, nor were the abbreviations defined.

The water quality criteria for priority and non-priority pollutants were updated to conform to the most recent federal recommendations. The two sources for the criteria are the Clean Water Act, Section 304(a) recommended criteria (2009 revision), *National Recommended Water Quality Criteria 2009*<sup>1</sup>, or the Safe Drinking Water Act (SDWA) *National Drinking Water Regulations, May 2009*<sup>2</sup> and last updated in 40 CFR 141 July 1, 2012<sup>3</sup>. When a lower organoleptic (i.e. taste and odor) value is presented within the *National Recommended Water Quality Criteria*, the organoleptic value is used as the human health consumption of fish and drinking water value. In general, where Section 304(a) and SDWA publish different values for the same pollutant, the more stringent value is included in Appendix B to ensure protection of drinking water supplies and minimize treatment costs.

**(a) Priority Pollutants.** Priority pollutants are listed in the order they are found on the EPA priority pollutants list that can be accessed here: EPA's Priority Pollutants<sup>4</sup>. The pollutants contained in EPA’s Priority Pollutants list that do not occur in the priority pollutants list in Appendix B are those for which no 304(a) criteria currently exist.

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<sup>1</sup>National Recommended Water Quality Criteria:

<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>

<sup>2</sup>National Drinking Water Regulations: <http://water.epa.gov/drink/contaminants/upload/mcl-2.pdf>

<sup>3</sup>40 CFR 141 July 1, 2012: [http://www.ecfr.gov/cgi-bin/text-](http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=96352e3bfeab355ec940593ac9659d21&rgn=div5&view=text&node=40:24.0.1.1.3&idno=40)

[idx?c=ecfr&SID=96352e3bfeab355ec940593ac9659d21&rgn=div5&view=text&node=40:24.0.1.1.3&idno=40](http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=96352e3bfeab355ec940593ac9659d21&rgn=div5&view=text&node=40:24.0.1.1.3&idno=40)

<sup>4</sup>EPA Priority Pollutants: <http://water.epa.gov/scitech/methods/cwa/pollutants.cfm>

### **Specific Pollutants:**

**Acrolein.** Aquatic life acute and chronic values of 3 µg/L were added. Human health consumption of fish and drinking water value was updated from 190 µg/L to 6 µg/L and human health consumption of fish value was revised from 290 µg/L to 9 µg/L based on the *National Recommended Water Quality Criteria*.

**Chlorobenzene.** The human health consumption of fish and drinking water value was updated from 100 µg/L to 20 µg/L to reflect the lower organoleptic effects value in the *National Recommended Water Quality Criteria*. The footnote was also changed from “9” to “7” to indicate that the new value is an organoleptic effects value.

**1,1-Dichloroethylene.** The human health consumption of fish and drinking water value was updated from 330 µg/L to 7 µg/L to reflect the lower maximum contaminant level (MCL) in the *National Primary Drinking Water Regulations*. The footnote “9” was added to indicate the source of the value.

**Phenol.** The human health consumption of fish value was revised from 1,700,000 µg/L to 860,000 µg/L to be consistent with the *National Recommended Water Quality Criteria*.

**Endrin.** The human health consumption of fish and drinking water value was revised from 0.59 µg/L to 0.059 µg/L to be consistent with the *National Recommended Water Quality Criteria*.

**Polychlorinated Biphenyls (PCBs).** The seven PCB compounds were consolidated to one entry to be consistent with the *National Recommended Water Quality Criteria*. The aquatic life chronic, human health consumption of fish and drinking water, and human health consumption of fish values apply to total PCBs, rather than individual PCB compounds. The footnote “13” was added to the aquatic life chronic value to indicate that the value applies to total PCBs.

**Toxaphene.** The human health consumption of fish and drinking water and human health consumption of fish values were updated from 0.0028 µg/L to 0.00028 µg/L to be consistent with the *National Recommended Water Quality Criteria*.

**Cyanide.** The human health values for cyanide were changed to 140 µg/L to be consistent with the *National Recommended Water Quality Criteria*. The previous human health consumption of fish and drinking water value, 200 µg/L, was the MCL from the National Primary Drinking Water Regulations. The previous human health consumption of fish value, 220,000 µg/L, was the value recommended in the *2002 National Recommended Water*

*Quality Criteria.* The superscript “6” was added to the human health values to indicate that the values reflect total cyanide, rather than free cyanide. The aquatic life values for cyanide represent free cyanide. Footnote six was revised to “Criterion expressed as total cyanide, even though the method used to derive the criterion is based on free cyanide. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g.  $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ , this criterion may be overly conservative.”

**Nickel.** The human health consumption of fish and drinking water value for nickel was revised from 100  $\mu\text{g}/\text{L}$  to 610  $\mu\text{g}/\text{L}$  to be consistent with the *National Recommended Water Quality Criteria*. The previous value, 100  $\mu\text{g}/\text{L}$ , was a MCL from the *National Drinking Water Regulations*, but the criterion was remanded in 1995. The *National Drinking Water Regulations May 2009* and July 1, 2011, 40 CFR 141.62, Maximum Contaminant Levels for Inorganic Compounds, does not include nickel.

**Silver.** The aquatic life acute value for silver was changed from 3.4  $\mu\text{g}/\text{L}$  to 1.7  $\mu\text{g}/\text{L}$  to be consistent with the *National Recommended Water Quality Criteria*. The *National Recommended Water Quality Criteria* describe that the aquatic life acute values for aldrin, chlordane, alpha-endosulfan, beta-endosulfan, heptachlor, heptachlor epoxide and silver should be divided by two to be comparable with acute values derived using an averaging period. The aquatic life acute criteria for each of the other parameters (aldrin, chlordane, alpha-endosulfan, beta-endosulfan, heptachlor and heptachlor epoxide) reflected this recommendation, while the silver criterion did not. A footnote was added to each of the parameters, including silver, to outline when the criterion should be used. Footnote 16 reads: “Criterion has been divided by two to be comparable with other acute values derived using an averaging period. Value can be multiplied by two if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA’s 1980 guidelines as a not to be exceeded instantaneous maximum.”

Further, because silver is a hardness dependent metal, the 1.7  $\mu\text{g}/\text{L}$  criterion is only applicable at a hardness of 100  $\text{mg}/\text{L}$  (as  $\text{CaCO}_3$ ); therefore, the recommendation to divide the criterion by two was also included in Appendix F, which details how to derive the criterion for hardness values other than 100  $\text{mg}/\text{L}$  (as  $\text{CaCO}_3$ ).

A human health consumption of fish and drinking water value, 100 $\mu\text{g}/\text{L}$ , based on the *National Secondary Drinking Water Standards* for silver was added to be consistent with other parameters in Appendix B. Footnote 11 was also added to the 100  $\mu\text{g}/\text{L}$  value to identify it as a secondary drinking water criterion.

**Thallium.** The human health consumption of fish and drinking water value was changed from 2.4  $\mu\text{g}/\text{L}$  to 0.24  $\mu\text{g}/\text{L}$  and the human health consumption of fish value changed from

4.7 µg/L to 0.47 µg/L to be consistent with the *National Recommended Water Quality Criteria*.

**(b) Non-Priority Pollutants.** As with priority pollutants, the list of water quality criteria for non-priority pollutants was updated to conform to the most recent federal recommendations.

**Specific Pollutants:**

**Bromate.** Bromate was added to the list of non-priority pollutants with a human health consumption of fish and drinking water value of 10 µg/L. Bromate is a byproduct of drinking water disinfection and is included in the *National Primary Drinking Water Regulations* and listed in 40 CFR 141.64, Maximum Contaminant Levels for Disinfection Byproducts.

**Chlorite.** Chlorite was added to the list of non-priority pollutants with a human health consumption of fish and drinking water value of 1,000 µg/L. Chlorite is a byproduct of drinking water disinfection and is included in the *National Primary Drinking Water Regulations* and listed in 40 CFR 141.64, Maximum Contaminant Levels for Disinfection Byproducts.

**Diazinon.** Diazinon was added to the list of non-priority pollutants. Aquatic life acute and chronic values, both 0.17 µg/L, were inserted to be consistent with the *2009 National Recommended Water Quality Criteria*. Diazinon was added to the *National Recommended Water Quality Criteria* in 2006. The change is also noted at the following Federal Register Notice: <http://www.gpo.gov/fdsys/pkg/FR-2006-02-23/pdf/E6-2557.pdf>.

**Haloacetic acids.** Haloacetic acids were added to the list of non-priority pollutants with a human health consumption of fish and drinking water value of 60 µg/L. Haloacetic acids are a byproduct of drinking water disinfection and are included in the *National Primary Drinking Water Regulations* and listed in 40 CFR 141.64, Maximum Contaminant Levels for Disinfection Byproducts.

**Hexachlorocyclo-hexane-technical.** Hexachlorocyclo-hexane-technical was added to the list of non-priority pollutants with human health consumption of fish and drinking water value of 0.0123 µg/L and a human health fish value of 0.0414 µg/L. Hexachlorocyclo-hexane-technical has been included in the list of *National Recommended Water Quality Criteria* since 1999.

**Nonylphenol.** Nonylphenol was added to the list of non-priority pollutants. Aquatic life acute and chronic values, 28 µg/L and 6.6 µg/L, respectively, were inserted to be consistent

with the 2009 *National Recommended Water Quality Criteria*. Nonylphenol was added to the *National Recommended Water Quality Criteria* in 2006. The federal register notice can be found here: <http://www.epa.gov/fedrgstr/EPA-WATER/2006/February/Day-23/w2558.htm>.

**Hydrogen Sulfide.** The “Sulfide, S<sup>2-</sup>, and HS<sup>-</sup>” components of the name of the parameter were deleted. The parameter now reads, “Hydrogen Sulfide (H<sub>2</sub>S; Undissociated).” The water quality criterion for hydrogen sulfide was included in the 1976 *Quality Criteria for Water (The Red Book)*, which specified that 2 µg/L acute criterion as “undissociated H<sub>2</sub>S.”

**Tributyltin (TBT).** The aquatic life chronic value was revised from 0.063 µg/L to 0.072 µg/L to be consistent with the *National Recommended Water Quality Criteria*. The value changed from 0.063 µg/L in the 2002 *National Recommended Water Quality Criteria* to 0.072 µg/L in the 2006 *National Recommended Water Quality Criteria*. The change is also noted at the following Federal Register Notice: <http://www.epa.gov/fedrgstr/EPA-WATER/2004/January/Day-05/w082.htm>.

**Trichlorofluoromethane.** This pollutant was removed from the list of non-priority pollutants, as it was not found in either the *National Recommended Water Quality Criteria* or the *National Drinking Water Regulations*.

**Total trihalomethanes (TTHM).** Total trihalomethanes (TTHM) were added to the list of non-priority pollutants with a human health consumption of fish and drinking water value of 80 µg/L. Total trihalomethanes are a byproduct of drinking water disinfection and are included in the *National Primary Drinking Water Regulations* and listed in 40 CFR 141.64, Maximum Contaminant Levels for Disinfection Byproducts.

#### Footnotes

The quantity of aquatic organisms consumed per day noted in footnotes 2 and 8 was updated from 6.5 to 17.5 grams per day to reflect changes made to EPA’s default consumption rate in 2000 when the Human Health Methodology was revised.

The previous footnote 6, “Chemicals which are not individually classified as carcinogens but which are contained within a class of chemicals with carcinogenicity as the basis for criteria derivation for that class of chemicals; an individual carcinogenicity assessment for these chemicals is pending,” was deleted because no values had this footnote in the *National Recommended Water Quality Criteria*. The revised footnote 6 applies to the human health values for cyanide and reads: “Criterion expressed as total cyanide, even though the method used to derive the criterion is based on free cyanide. If a substantial fraction of the cyanide

present in a water body is present in a complexed form (e.g.  $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ ), this criterion may be overly conservative.”

Footnote 10, “This value is expressed in terms of the total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor 0.922 to convert this to a value that is expressed in terms of dissolved metal. Using this conversion, the chronic aquatic life value for selenium is 4.61  $\mu\text{g}/\text{L}$  as dissolved metal” has been changed to include the conversion factor for the aquatic life acute value. The footnote now reads “This value is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use a conversion factor (0.996 for the acute and 0.922 for the chronic) to convert this number to a value that is expressed in terms of a dissolved metal. Using these conversion factors, the aquatic life acute value for selenium is 19.92  $\mu\text{g}/\text{L}$  as a dissolved metal and the aquatic life chronic value for selenium is 4.61  $\mu\text{g}/\text{L}$  as a dissolved metal.”

Footnote 11, “The iron and manganese criteria are based on Safe Drinking Water Act secondary standards and are intended to prevent undesirable aesthetic effects. These values represent the dissolved amount of each substance rather than the total amount,” was revised to refer to all values based on Safe Drinking Water Act secondary standards. Footnote 11 now reads: “Criterion is based on Safe Drinking Water Act secondary standards and is intended to prevent undesirable cosmetic or aesthetic effects. Value represents the dissolved amount of each substances rather than the total amount. Criterion only applies where drinking water is an actual use.” The last sentence allows WDEQ/WQD to protect drinking water uses using secondary drinking water criteria where they occur, but avoids being overly protective on waters that do not support drinking water uses. Because designation of Wyoming’s drinking water use is based not on an existing drinking water supply, but the presence of game fish, many waters of the state are protected for drinking water uses that are not in fact used as drinking water. Further, many geologic formations within the state contain high metal concentrations; this results in naturally high metal concentrations in surface waters where drinking water uses do not exist.

Footnote 13 was modified slightly to be consistent with the language used in the *National Recommended Water Quality Criteria*, “or homolog or Aroclor,” was added after “all isomer.”

A portion of footnote 14, “where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as  $\text{CaCO}_3$  in the receiving water after mixing, the 87  $\mu\text{g}/\text{L}$  chronic criterion will not apply, and aluminum will be regulated based on compliance with the 750  $\mu\text{g}/\text{L}$  acute aluminum criterion,” was modified to read: “the 87  $\mu\text{g}/\text{L}$  chronic criterion will apply except where the receiving water after mixing has a pH greater than or equal to 7.0 and a hardness (as  $\text{CaCO}_3$ ) greater than or equal to 50 mg/L. Where the

receiving stream after mixing has a pH greater than or equal to 7.0 and a hardness (as CaCO<sub>3</sub>) greater than or equal to 50 mg/L, the 750 µg/L acute criterion will apply” to help clarify the conditions under which either the acute or chronic criterion apply.

Footnote 16 was added and reads: “Criterion has been divided by two to be comparable with other acute values derived using an averaging period. Value can be multiplied by two if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA’s 1980 guidelines as a not to be exceeded instantaneous maximum.”

### **(c) Site Specific Criteria.**

The formatting of section (c) of Appendix B was modified to be consistent with the formatting used in the rest of the document. The formatting follows Chapter 1, Wyoming Secretary of State Rules on Rules, Section 6, Format for Final Rules Submitted for Filing.

### **Appendix D. Dissolved Oxygen Criteria.**

The details provided by the asterisk (\*) were moved above the footnotes and “2A” was changed to “2AB” to indicate that the dissolved oxygen criteria apply only to waters with fish as a designated use. The following reference was also added: “Criteria derived from: *U.S. EPA. 1986. Ambient Water Quality Criteria. EPA 440/5-86-003. National Technical Service. Springfield, VA*” to clarify the source of the dissolved oxygen criteria.

### **Appendix E. References to Develop Site-Specific Criteria and Bioassays.**

The title of Appendix E was changed from “References for Use in Making Bioassays of Surface Waters” to “References to Develop Site-Specific Criteria and Bioassays” to identify that some of the references listed in Appendix E are used to develop site-specific criteria based on ambient conditions rather than toxicology tests. An additional reference was added: “U.S. Environmental Protection Agency: Aquatic Life Ambient Freshwater Quality Criteria-Copper. EPA-822-R-07-001. U.S. EPA, 2007” to identify the use of the Biotic Ligand Model to develop site-specific copper criteria.

### **Appendix F. Conversion Factors and Equation for Hardness Dependent Metals.**

The title of Appendix F was changed from “Conversion Factors: Total Recoverable – Dissolved Values for Metals Equations for Parameters With Hardness Dependence” to “Conversion Factors to Change Total Recoverable Metal Values to Dissolved Values and

Equations For Hardness Dependent Metals” for clarification. The title is abbreviated in the Table of Contents as “Conversion Factors and Equations for Hardness Dependent Metals.”

The formatting was modified to break the conversion factors and equations into subsections, similar to the formatting within the rest of the document. Additional details were added to both subsections.

The subsection on conversion factors was modified based on footnotes in the *National Recommended Water Quality Criteria* and now reads: “Aquatic life values for the following metals are based on the dissolved amount of each substance. The recommended aquatic life value was calculated by using previous 304(a) aquatic life values expressed in terms of total recoverable metal and multiplying it by a conversion factor (CF). The conversion factors provided below are necessary to convert a metal value expressed as the total recoverable fraction in the water column to the dissolved fraction in the water column.”

Some detail and a footnote were added to the subsection describing the conversion factors for cadmium and lead. The subsection now reads: “The conversion factors (CF) for cadmium and lead are not constant but vary with hardness (mg/L of CaCO<sub>3</sub>). Conversion factors can be calculated using the following equations, although should not exceed one<sup>(a)</sup>.” The footnote is defined on the following page and reads: “Based on Guidance on the Calculation of Hardness-Dependent Metals Criteria presented in: *U.S. EPA. 2002. National Recommended Water Quality Criteria. EPA-822-R-02-047.*”

Additional detail was also added to the equations for parameters with hardness dependence. The introduction now reads: “Equations for Hardness Dependent Metals. Aquatic life values at various hardness<sup>(b)</sup> concentrations can be calculated using the formulas below. The formulas include the conversion factors to derive dissolved metal values:”

A 0.5 was added to the formula to derive the acute aquatic life value for silver,  $e^{(1.72[\ln(\text{hardness})] - 6.52)}(0.85)(0.5)$ , to be consistent with the other criteria derived from the 1980 guidelines, aldrin, chlordane, alpha-endosulfan, beta-endosulfan, heptachlor and heptachlor epoxide. The aquatic life acute values for each of these parameters was divided by two because the original criteria derived from the 1980 guidelines were not to be exceeded instantaneous maximum values, rather than values derived using an averaging period. Footnote “c” was added to the silver formula to clarify when and when not to multiply by 0.5 and reads: “Criterion multiplied by 0.5 to be comparable with other acute values derived using an averaging period. Value does not need to be multiplied by 0.5 if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA’s 1980 guidelines as a not to be exceeded maximum.”

## **Appendix G. Equations for pH Dependent Parameters.**

The title of Appendix G was modified slightly to read “Equations For pH Dependent Parameters.” The words “Acute” and “Chronic” were added to the table and the order of the acute and chronic formulas was reversed to be consistent with other aquatic life values detailed in the Appendices.

### **Proposed Revisions to the Implementation Policies**

The *Implementation Policies for Antidegradation, Mixing Zones and Dilution Allowances, Turbidity and Use Attainability Analysis* were also revised. The entire document was formatted to follow Section 6, Format for Final Rules Submitted for Filing, Chapter 1, Wyoming Secretary of State Rules on Rules. The *Antidegradation Implementation Policy* was modified to reflect changes to requirements for storm water permits and to clarify aspects of the 401 certification process. The *Turbidity Implementation Policy* was revised to specify that the notice of intent to authorize a temporary increase in turbidity will be published a minimum of fourteen days prior to authorizing the turbidity increase and that in certain circumstances (unforeseen acts of nature), the administrator may authorize a temporary increase without publishing a notice of intent. The *Use Attainability Analysis Implementation Policy* was modified to specify a 45-day public comment period for any classification changes made through the use attainability analysis process and to reflect changes to Chapter 1, Section 27, *E. coli* Bacteria. The Recreational Use Designations Use Attainability Analysis (UAA) Worksheet was also revised. As mentioned previously, under the revision of Section 20, the *Agricultural Use Implementation Policy* was removed.

### **Effect of the Rule Revision**

The council anticipates that the result of these proposed revisions will provide a level of surface water protection sufficient to address public health and environmental concerns. The revised standards update the Wyoming surface water protection program to meet the most current federal requirements provided in 40 CFR Part 131.

### **Public Participation**

WDEQ/WQD initiated the revision of Chapter 1 on September 12, 2011 with the release of a public notice and *Proposed Rule Revision Outreach Document*. The public was invited to submit written comments between September 12 and October 21, 2011 or submit oral comments during a public meeting held in Casper, Wyoming on October 13, 2011. Considering the initial public comment, and in anticipation of a fourth quarter Water and Waste Advisory Board (board) meeting, a second public notice was published on August 24, 2012 and drafts of Chapter 1, Implementation Policies, Statement of Principal Reasons and Response to Comments (October

21, 2011) were released. Comments were received until September 24, 2012. A Response to Comments (September 24, 2012) was prepared and changes made to the drafts of Chapter 1, Implementation Policies and Statement of Principal Reasons. These documents were included in a rule package released through a November 13, 2012 public notice and considered by the board at a public meeting in Casper, Wyoming on December 14, 2012.

During the December 14, 2012 meeting, the board extended the written public comment period until January 15, 2013. No additional comments were received during the extended public comment period. Considering comments from the board and the public, a revised rule package consisting of Chapter 1, Implementation Policies, Statement of Principal Reasons and Response to Comments (January 15, 2013) was prepared. These documents were included in a rule package released through a February 19, 2013 public notice and considered by the board at a public meeting held in Casper, Wyoming on March 21, 2013. During that meeting the board recommended advancing the rules to the Environmental Quality Council (council).

The formal rulemaking process began on May 13, 2013 with the release of the Notice of Intent to Adopt Rules and a public notice outlining that the council would hold a hearing regarding the proposed changes to Chapter 1 on July 11, 2013. Also released on May 13, 2013 were drafts of Chapter 1, the Implementation Policies and Statement of Principal Reasons. Written comments received by 5:00 PM MST June 27, 2013 were included in a Response to Comments (June 27, 2013) and were incorporated into Chapter 1 and the Implementations Policies that were considered by the council at the July 11, 2013 hearing.

Comments received as a result of each portion of the public outreach process were considered in drafting the proposed revisions. Consideration of factors listed in W.S. 35-11-302(a)(vi) is reflected in specific comments and responses to comments.

### Conclusion

The council has determined that the adoption of these rules is necessary to update the Wyoming surface water standards to comply with federal regulations and carry out the responsibilities of the Department of Environmental Quality to protect surface water quality in the state.

EXECUTED THIS 11<sup>th</sup> DAY OF July, 2013.

FOR THE ENVIRONMENTAL QUALITY COUNCIL



Chairperson

LP/rm/13-0619

# **WATER QUALITY RULES AND REGULATIONS**

## **Chapter 1**

### **WYOMING SURFACE WATER QUALITY STANDARDS**

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## Chapter 1

### WYOMING SURFACE WATER QUALITY STANDARDS

Section 1. **Authority.** These regulations are promulgated pursuant to Wyoming Statutes (W.S.) 35-11-101 through 35-11-1803, specifically 302(a)(i) and 302(b)(i) and (ii), and no person shall cause, threaten or allow violation of a surface water quality standard contained herein. Nothing in this definition is intended to expand the scope of the Environmental Quality Act, defined at W.S. 35-11-103(a)(xiii) and limited in W. S. 35-11-1104, nor do these regulations supersede or abrogate the authority of the state to appropriate quantities of water for beneficial uses.

#### Section 2. **Definitions.**

(a) The definitions in W.S. 35-11-103(a) and (c) of the Wyoming Environmental Quality Act apply to these rules. For example:

(i) “Credible data” means scientifically valid chemical, physical and biological monitoring data collected under an accepted sampling and analysis plan, including quality control, quality assurance procedures and available historical data;

(ii) “Discharge” means any addition of any pollution or wastes to any waters of the state;

(iii) “Ecological function” means the ability of an area to support vegetation and fish and wildlife populations, recharge aquifers, stabilize base flows, attenuate flooding, trap sediment and remove or transform nutrients and other pollutants;

(iv) “Man-made wetlands” means those wetlands that are created intentionally or occur incidental to human activities, and includes any enhancement made to an existing wetland which increases its function or value;

(v) “Mitigation” means all actions to avoid, minimize, restore and compensate for ecological functions or wetland values lost;

(vi) “Natural wetlands” means those wetlands that occur independently of human manipulation of the landscape;

(vii) “Nonpoint source” means any source of pollution other than a point source. For purposes of W.S. 16-1-201 through 16-1-207 only, nonpoint source includes leaking underground storage tanks as defined by W.S. 35-11-1415(a)(ix) and aboveground storage tanks as defined by W.S. 35-11-1415(a)(xi);

(viii) "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, concentrated animal feeding operation or vessel or other floating craft, from which pollutants are or may be discharged;

(ix) "Pollution" means contamination or other alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity or odor of the waters or any discharge of any acid or toxic material, chemical or chemical compound, whether it be liquid, gaseous, solid, radioactive or other substance, including wastes, into any waters of the state which creates a nuisance or renders any waters harmful, detrimental or injurious to public health, safety or welfare, to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses, or to livestock, wildlife or aquatic life, or which degrades the water for its intended use, or adversely affects the environment. This term does not mean water, gas or other material which is injected into a well to facilitate production of oil, or gas or water, derived in association with oil or gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the state, and if the state determines that such injection or disposal well will not result in the degradation of ground or surface or water resources;

(x) "Wastes" means sewage, industrial waste and all other liquid, gaseous, solid, radioactive, or other substances which may pollute any waters of the state;

(xi) "Waters of the state" means all surface and groundwater, including waters associated with wetlands, within Wyoming;

(xii) "Wetlands" means those areas in Wyoming having all three (3) essential characteristics:

- (A) Hydrophytic vegetation;
- (B) Hydric soils; and
- (C) Wetland hydrology.

(xiii) "Wetland value" means those socially significant attributes of wetlands such as uniqueness, heritage, recreation, aesthetics and a variety of economic values.

(b) The following definitions supplement those definitions contained in W.S. 35-11-103 of the Wyoming Environmental Quality Act.

(i) "Acute value" means the one hour average concentration. The EPA has determined that this value, if not exceeded more than once every three years on average, should not result in unacceptable effects on freshwater aquatic organisms and

their uses. Acute values represent a response to a stimulus severe enough to induce a rapid reaction, typically in 96 hours or less. Appendix B contains acute values for certain pollutants.

(ii) “Adjacent wetlands” means wetlands that are connected by a defined channel to a surface tributary system, are within the 100 year flood plain of a river or stream, or occupy the fringe of any still water body which is connected by a defined channel to a surface tributary system.

(iii) “Ambient-based criteria” means water quality criteria that are calculated based upon actual ambient or background water body conditions.

(iv) “Aquatic life” means fish, invertebrates, amphibians and other flora and fauna which inhabit waters of the state at some stage of their life cycles. Aquatic life does not include human pathogens or insect pests, aquatic invasive species or other organisms which may be considered “undesirable” by the Wyoming Game and Fish Department or U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(v) “Best management practices (BMPs)” means a practice or combination of practices that after problem assessment, examination of alternative practices, and in some cases public participation, are determined to be the most technologically and economically feasible means of managing, preventing or reducing nonpoint source pollution.

(vi) “Chronic value” means the four day average concentration. The EPA has determined that this value, if not exceeded more than once every three years on average, should not result in unacceptable effects on freshwater aquatic organisms and their uses. Chronic values represent a response to a continuous, long-term stimulus. Appendix B contains chronic values for certain pollutants.

(vii) “Cold water game fish” means burbot (genus *Lota*), grayling (genus *Thymallus*), trout, salmon and char (genera *Salmo*, *Oncorhynchus* and *Salvelinus*) and whitefish (genus *Prosopium*).

(viii) “Construction-related discharge” means discharges of sediment or turbidity related to construction activities in or along waters of the state. Generally, these discharges include, but are not limited to, construction site dewatering, temporary diversions, runoff from construction sites, excavation or equipment operation beneath the water’s surface, the discharge of dredged or fill material and placement of structural members such as bridge abutments, culverts, pipelines, etc. into or across any water of the state.

(ix) “Designated uses” means those uses specified in water quality standards for each water body or segment whether or not they are being attained.

(x) “Dissolved oxygen” means a measure of the amount of free oxygen in water.

(xi) “*E. coli*” means any of the bacterium in the family Enterobacteriaceae named *Escherichia* (genus) *coli* (species).

(xii) “Effluent dependent water” means a water body with insufficient natural flow to support aquatic life, but which has perennial or intermittent flows for all or a portion of its length as the result of the discharge of wastewater.

(xiii) “Effluent limitations” means any restriction established by the state or by the administrator of the Environmental Protection Agency on quantities, rates and concentrations of chemical, physical, biological and other constituents which are discharged from point sources into waters of the state, including schedules of compliance.

(xiv) “Environmental Protection Agency” means the federal Environmental Protection Agency (EPA).

(xv) “Ephemeral stream” means a stream which flows only in direct response to a single precipitation event in the immediate watershed or in response to a single snow melt event, and which has a channel bottom that is always above the prevailing water table.

(xvi) “Eutrophic” means the condition whereby waters or environments saturated with water become nutrient enriched (especially with phosphorus or nitrogen). This action leads to those waters becoming oxygen depleted or anaerobic.

(xvii) “Existing quality” as used in these regulations refers only to Class 1 waters and means the established chemical, physical and biological water quality as of the date the specific water segment was designated Class 1 with recognition that water quality will fluctuate on a seasonal and year-to-year basis depending upon natural variations in water quantity.

(xviii) “Existing use” means those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.

(xix) “Federal Act” means the Federal Water Pollution Control Act (Clean Water Act) and amendments as of November 27, 2002.

(xx) “Full body contact water recreation” means any recreational or other surface water use in which there is contact with the water sufficient to pose a significant health hazard (i.e. water skiing, swimming).

(xxi) “Game fish” means bass (genera *Micropterus* and *Ambloplites*), catfish and bullheads (genera *Ameiurus*, *Ictalurus* and *Noturus*), crappie (genus *Pomoxis*), freshwater drum (genus *Aplodinotus*), grayling (genus *Thymallus*), burbot (genus *Lota*), pike (genus *Esox*), yellow perch (genus *Perca*), sturgeon (genus *Scaphirhynchus*), sunfish (genus *Lepomis*), trout, salmon and char (genera *Salmo*, *Oncorhynchus* and *Salvelinus*), walleye and sauger (genus *Sander*) and whitefish (genus *Prosopium*).

(xxii) “Historic data” means scientifically valid data that are more than five years old or qualitative information that adds some factual information on the historic conditions of a water body. This historic qualitative information may include photographs, journals and factual testimony of persons who have lived near or relied upon the water body, and old records on water use and water conditions.

(xxiii) “Hydric soil” means a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

(xxiv) “Hydrophytic vegetation” means a community of plants where, under normal circumstances, more than 50 percent of the composition of the dominant species from all strata are obligate wetland (OBL), facultative wetland (FACW), and/or facultative (FAC) species; or a frequency analysis of all species within the community yields a prevalence index value of less than 3.0 (where OBL = 1.0, FACW = 2.0, FAC = 3.0, FACU (facultative upland) = 4.0, and UPL (upland species) = 5.0).

(xxv) “Intermittent stream” means a stream or part of a stream where the channel bottom is above the local water table for some part of the year, but is not a perennial stream.

(xxvi) “Isolated water” means any surface water of the state which is not connected by a defined channel to a surface tributary system, is not within the 100 year flood plain of any river or stream and does not occupy the fringe of any still water body which is connected by a defined channel to a surface tributary system.

(xxvii) “Main stem” means the major channel of a river or stream as shown on the latest and most detailed records of the Wyoming State Engineer.

(xxviii) “Micrograms per liter ( $\mu\text{g/L}$ )” means micrograms of solute per liter of solution equivalent to parts per billion (ppb) in liquids, assuming unit density.

(xxix) “Milligrams per liter (mg/L)” means milligrams of solute per liter of solution equivalent to parts per million (ppm) in liquids, assuming unit density.

(xxx) “Mixing zone” means limited area or volume of a surface water body within which an effluent becomes thoroughly mixed with the water body.

(xxxix) “Natural” means that condition which would exist without the measurable influence of man's activities.

(xxxix) “Natural biotic community” means the population structures which were historically or normally present under a given set of chemical and physical conditions or which would potentially exist without the measurable influence of man's activities had the habitat not been altered.

(xxxix) “Natural water quality” means that quality of water which would exist without the measurable influence of man's activities.

(xxxix) “Nephelometric turbidity unit (NTU)” means the standard unit used to measure the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through water, as measured by a nephelometer.

(xxxix) “Net environmental benefit (NEB)” means a risk management approach to derive site-specific criteria for effluent dependent water bodies that weighs the potential for loss of a permitted effluent discharge against the benefits of augmented flow. A net environmental benefit is demonstrated where there is a credible threat to remove the permitted discharge, the discharge has been shown to create an environmental benefit, removal of the discharge would cause more environmental harm than leaving it in place and the discharge will not pose a health risk to humans, livestock or wildlife.

(xxxix) “Nongame fish” means all fish species except those listed in Section 2(b)(xxi) above.

(xxxix) “Non-priority pollutant” means any substance or combination of substances other than those listed by EPA under Section 307(a) of the Clean Water Act.

(xxxix) “Perennial stream” means a stream or part of a stream that flows continually during all of the calendar year as the result of a groundwater discharge or surface runoff.

(xxxix) “pH” means a term used to express the intensity of acidic or alkaline conditions. pH is a measure of the hydrogen ion activity in a water sample. It is mathematically related to hydrogen ion activity according to the expression:  $\text{pH} = -\log_{10} (\text{H}^+)$ , where  $(\text{H}^+)$  is the hydrogen ion activity. A pH value of 7 at 25 degrees Celsius is neutral, with pHs less than 7 progressively more acidic and pHs greater than 7 progressively more basic (alkaline).

(xl) “PicoCuries per liter (pCi/L)” means a term describing the radiation level of water or solutions. A picocurie is equal to  $10^{-12}$  curie; a curie is defined as  $3.7 \times 10^{10}$  disintegrations per second.

(xli) “Priority pollutants” means those substances or combination of substances that are listed by EPA under Section 307(a) of the Clean Water Act.

(xlii) “Primary contact recreation” means any recreational or other surface water use that could be expected to result in ingestion of the water or immersion (full body contact).

(xliii) “Salinity” means the total mineral dissolved constituents, after carbonates have been converted to oxides, organics have been oxidized and bromine and iodine have been replaced by chloride. This term is often used interchangeably with the term total dissolved solids.

(xliv) “Seasonal fishery” means a water body, or portion thereof, which supports game and/or nongame fish or spawning for only a portion of the year, but does not have the natural physical conditions necessary to support those uses on a year round basis. Seasonal fisheries may include intermittent and ephemeral streams, shallow reservoirs, lakes or ponds, which either naturally recruit fish from adjacent perennial water bodies or are managed as put-and-take fisheries.

(xlv) “Secondary contact recreation” means any recreational or other surface water use in which contact with water is either incidental or accidental and that would not be expected to result in ingestion of the water or immersion.

(xlvi) “Storm water”, for the purposes of Section 7 of these regulations, means surface runoff from construction sites or industrial activities which are regulated under Section 402(p) of the Clean Water Act and Chapter 2 of the Wyoming Water Quality Rules and Regulations. Excluded from this definition are those storm water discharges associated with industrial activities which are subject to an existing federal effluent limitation guideline addressing storm water and where the constituents listed in the federal effluent limitations have a reasonable potential to affect the receiving waters.

(xlvii) “Surface waters of the state” means all perennial, intermittent and ephemeral defined drainages, lakes, reservoirs and wetlands which are not man-made retention ponds used for the treatment of municipal, agricultural or industrial waste; and all other bodies of surface water, either public or private which are wholly or partially within the boundaries of the state. Nothing in this definition is intended to expand the scope of the Environmental Quality Act, as limited in W.S. 35-11-1104.

(xlviii) “Toxic materials” means those materials or combinations of materials including disease causing agents, which, after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the director of the Wyoming Department of Environmental Quality (department), cause death, disease, behavioral abnormalities, cancer, genetic

malfunctions, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such organisms or their offspring.

(xlix) “Tributary” means those streams or stream segments which flow into or contribute water to another stream, stream segment, downstream reach of the same stream or other water body.

(l) “Undesirable aquatic life” means organisms generally associated with degraded or eutrophic conditions. These may include the following organisms where they have replaced members of the natural biotic community: insect pests, aquatic invasive species or other organisms which may be considered “undesirable” by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(li) “Use attainability analysis (UAA)” means a structured scientific assessment of the factors affecting the attainment of the use. The factors may include physical, chemical, biological and economic factors as described in Section 33 of these regulations.

(lii) “Warm water game fish” means bass (genera *Micropterus* and *Ambloplites*), catfish and bullheads (genera *Ameiurus*, *Ictalurus* and *Noturus*), crappie (genus *Pomoxis*), yellow perch (genus *Perca*), sunfish (genus *Lepomis*), walleye and sauger (genus *Sander*), pike (genus *Esox*), sturgeon (genus *Scaphirhynchus*) and freshwater drum (genus *Aplodinotus*).

(liii) “Wetland hydrology” means the presence of water on or near the land surface at a frequency and duration to cause the formation of hydric soils and support a prevalence of vegetation typically adapted to saturated and/or inundated conditions.

(liv) “Wyoming Continuing Planning Process (CPP)” means a planning process provided for under Section 303(e)(1) of the Clean Water Act developed through public participation and consisting of policies, procedures and programs that result in the definition and implementation of actions that lead to the prevention, reduction and abatement of water pollution and for the protection and enhancement of water uses in the State of Wyoming. The CPP is continuous in time and is designed to respond to changes in conditions and attitudes. The CPP is adopted by resolution of the Water and Waste Advisory Board and is certified by the Governor.

(lv) “Wyoming surface waters” shall have the same meaning as “surface waters of the state” defined in Section 2(b)(xlvii).

(lvi) “Zone of passage” means a continuous water route which joins segments of a surface water body above and below a mixing zone.

(lvii) “404 permit” means a permit issued pursuant to Section 404 of the Clean Water Act to regulate the discharge of dredged or fill materials into surface waters of the United States.

Section 3. **Water Uses.** The objectives of the Wyoming water pollution control program are described in W.S. 35-11-102. These objectives are designed to serve the interests of the state and achieve the related goals, objectives and policies of the Clean Water Act. The objectives of the Wyoming program are to provide, wherever attainable, the highest possible water quality commensurate with the following uses:

(a) **Agriculture.** For purposes of water pollution control, agricultural uses include irrigation and/or livestock watering.

(b) **Fisheries.** The fisheries use includes water quality, habitat conditions, spawning and nursery areas, and food sources necessary to sustain populations of cold water game fish, warm water game fish and nongame fish. This use does not include the protection of aquatic invasive species or other fish which may be considered “undesirable” by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(c) **Industry.** Industrial use protection involves maintaining a level of water quality useful for industrial purposes.

(d) **Drinking water.** The drinking water use involves maintaining a level of water quality that is suitable for potable water or intended to be suitable after receiving conventional drinking water treatment.

(e) **Recreation.** Recreational use protection involves maintaining a level of water quality which is safe for human contact. It does not guarantee the availability of water for any recreational purpose. The recreation designated use includes primary contact recreation and secondary contact recreation subcategories.

(f) **Scenic value.** Scenic value use involves the aesthetics of the aquatic systems themselves (odor, color, taste, settleable solids, floating solids, suspended solids and solid waste) and is not necessarily related to general landscape appearance.

(g) **Aquatic life other than fish.** This use includes water quality and habitat necessary to sustain populations of organisms other than fish in proportions which make up diverse aquatic communities common to the waters of the state. This use does not include the protection of human pathogens, insect pests, aquatic invasive species or other organisms which may be considered “undesirable” by the Wyoming Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

(h) **Wildlife.** The wildlife use includes protection of water quality to a level which is safe for contact and consumption by avian and terrestrial wildlife species.

(i) Fish consumption. The fish consumption use involves maintaining a level of water quality that will prevent any unpalatable flavor and/or accumulation of harmful substances in fish tissue.

Section 4. **Surface Water Classes and Uses.** The following water classes are a hierarchical categorization of waters according to existing and designated uses. Except for Class 1 waters, each classification is protected for its specified uses plus all the uses contained in each lower classification. Class 1 designations are based on value determinations rather than use support and are protected for all uses in existence at the time or after designation. There are four major classes of surface water in Wyoming with various subcategories within each class (see *Wyoming Surface Water Classification List* for current classifications).

(a) Class 1, Outstanding Waters. Class 1 waters are those surface waters in which no further water quality degradation by point source discharges other than from dams will be allowed. Nonpoint sources of pollution shall be controlled through implementation of appropriate best management practices. Pursuant to Section 7 of these regulations, the water quality and physical and biological integrity which existed on the water at the time of designation will be maintained and protected. In designating Class 1 waters, the Environmental Quality Council (council) shall consider water quality, aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal, industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence of significant quantities of developable water and other values of present and future benefit to the people.

(b) Class 2, Fisheries and Drinking Water. Class 2 waters are waters, other than those designated as Class 1, that are known to support fish and/or drinking water supplies or where those uses are attainable. Class 2 waters may be perennial, intermittent or ephemeral and are protected for the uses indicated in each subcategory listed below. There are five subcategories of Class 2 waters.

(i) Class 2AB. Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable. Class 2AB waters include all permanent and seasonal game fisheries and can be either “cold water” or “warm water” depending upon the predominance of cold water or warm water species present. All Class 2AB waters are designated as cold water game fisheries unless identified as a warm water game fishery by a “ww” notation in the *Wyoming Surface Water Classification List*. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value uses.

(ii) Class 2A. Class 2A waters are those that are not known nor have the potential to support fish but are used for public or domestic drinking water supplies, including their perennial tributaries and adjacent wetlands. Uses designated on Class 2A waters include drinking water, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

(iii) Class 2B. Class 2B waters are those known to support or have the potential to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where it has been shown that drinking water uses are not attainable pursuant to the provisions of Section 33. Class 2B waters include permanent and seasonal game fisheries and can be either “cold water” or “warm water” depending upon the predominance of cold water or warm water species present. All Class 2B waters are designated as cold water game fisheries unless identified as a warm water game fishery by a “ww” notation in the *Wyoming Surface Water Classification List*. Uses designated on Class 2B waters include game and nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

(iv) Class 2C. Class 2C waters are those known to support or have the potential to support only nongame fish populations or spawning and nursery areas at least seasonally including their perennial tributaries and adjacent wetlands. Class 2C waters include all permanent and seasonal nongame fisheries and are considered warm water. Uses designated on Class 2C waters include nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

(v) Class 2D. Effluent dependent waters which are known to support fish populations and where the resident fish populations would be significantly degraded in terms of numbers or species diversity if the effluent flows were removed or reduced. Class 2D waters are protected to the extent that the existing fish communities and other designated uses are maintained and that the water quality does not pose a health risk or hazard to humans, livestock or wildlife. Uses designated on Class 2D waters include game or nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value.

(c) Class 3, Aquatic Life Other than Fish. Class 3 waters are waters, other than those designated as Class 1, that are intermittent, ephemeral or isolated waters and because of natural habitat conditions, do not support nor have the potential to support fish populations or spawning, or certain perennial waters which lack the natural water quality to support fish (e.g. geothermal areas). Class 3 waters provide support for invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycles. Uses designated on Class 3 waters include aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value. Generally, waters suitable for this classification have wetland characteristics, and such characteristics will be a primary indicator used in identifying Class 3 waters. There are four subcategories of Class 3 waters.

(i) Class 3A. Class 3A waters are isolated waters including wetlands that are not known to support fish populations or drinking water supplies and where those uses are not attainable.

(ii) Class 3B. Class 3B waters are tributary waters including adjacent wetlands that are not known to support fish populations or drinking water supplies and where those uses are not attainable. Class 3B waters are intermittent and ephemeral streams with sufficient hydrology to normally support and sustain communities of aquatic life including invertebrates, amphibians, or other flora and fauna which inhabit waters of the state at some stage of their life cycles. In general, 3B waters are characterized by frequent linear wetland occurrences or impoundments within or adjacent to the stream channel over its entire length. Such characteristics will be a primary indicator used in identifying Class 3B waters.

(iii) Class 3C. Class 3C waters are perennial streams without the natural water quality potential to support fish or drinking water supplies but do support wetland characteristics. These may include geothermal waters and waters with naturally high concentrations of dissolved salts or metals or pH extremes.

(iv) Class 3D. Effluent dependent waters which are known to support communities of aquatic life other than fish and where the existing aquatic habitat would be significantly reduced in terms of aerial extent, habitat diversity or ecological value if the effluent flows are removed or reduced. Class 3D waters are protected to the extent that the existing aquatic community, habitat and other designated uses are maintained and the water quality does not pose a health risk or hazard to humans, livestock or wildlife.

(d) Class 4, Agriculture, Industry, Recreation and Wildlife. Class 4 waters are waters, other than those designated as Class 1, where it has been determined that aquatic life uses are not attainable pursuant to the provisions of Section 33 of these regulations. Uses designated on Class 4 waters include recreation, wildlife, industry, agriculture and scenic value.

(i) Class 4A. Class 4A waters are artificial canals and ditches that are not known to support fish populations.

(ii) Class 4B. Class 4B waters are intermittent and ephemeral stream channels that have been determined to lack the hydrologic potential to normally support and sustain aquatic life pursuant to the provisions of Section 33(b)(ii) of these regulations. In general, 4B streams are characterized by only infrequent wetland occurrences or impoundments within or adjacent to the stream channel over its entire length. Such characteristics will be a primary indicator used in identifying Class 4B waters.

(iii) Class 4C. Class 4C waters are isolated waters that have been determined to lack the potential to normally support and sustain aquatic life pursuant to

the provisions of Section 33(b)(i), (iii), (iv), (v) or (vi) of these regulations. Class 4C includes, but is not limited to, off-channel effluent dependent ponds where it has been determined under Section 33(b)(iii) that removing a source of pollution to achieve full attainment of aquatic life uses would cause more environmental damage than leaving the source in place.

(e) Specific stream segment classifications are contained in a separate document entitled *Wyoming Surface Water Classification List* which is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34, 35 and Appendix A of this chapter. Class 1 waters are those waters that have been specifically designated by the council. Class 2AB, 2A, 2B and 2C designations are based upon the fisheries information contained in the Wyoming Game and Fish Department's *Streams and Lakes Database* submitted to the department in June 2000. This database represents the best available information and is considered conclusive. Class 2D and 3D designations are based upon use attainability analyses demonstrating that the waters are effluent dependent and do not pose a hazard to humans, wildlife or livestock. Class 4 designations are based upon knowledge that a water body is an artificial, man-made conveyance, or has been determined not to support aquatic life uses through an approved use attainability analysis. All other waters are designated as Class 3A, 3B or 3C. Section 27 of these regulations describes how recreation use designations are made for specific water bodies.

**Section 5. Standards Enforcement.** The numerical and narrative standards contained within these regulations shall be used to establish effluent limitations for those discharges requiring control via permits to discharge in the case of point sources and best management practices in the case of nonpoint sources. If no permit or best management practice has been issued or implemented for a pollution source the state may, in addition to other appropriate legal action, take direct action to enforce these standards.

The processes used to implement the standards are described in various implementation documents adopted by the department. Such documents are adopted with full public participation and include, but are not limited to, the *Implementation Policies for Antidegradation, Mixing Zones and Dilution Allowances, Turbidity and Use Attainability Analysis*, the Wyoming Continuing Planning Process (CPP) and best management practices.

These regulations shall not be interpreted to preclude the establishment of appropriate compliance schedules for permitting purposes nor shall compliance with the conditions of these regulations exempt any discharger from the penalty provisions of W.S. 35-11-901.

**Section 6. Interstate Compacts, Court Decrees and Water Rights.** The department shall, after review and conference with the State Engineer, make recommendations to the State Engineer concerning proposed new diversions which could cause violations of these regulations.

Section 7. **Class 1 Waters.**

(a) Except as authorized in Section 7(b) of these regulations, no new point sources other than dams may discharge, and no existing point sources, other than dams, may increase their quantity of pollution discharge, to any water designated as Class 1.

(b) Storm water and construction-related discharges of pollution to Class 1 waters may be authorized and shall be controlled through applicable water quality permits, Section 401 certifications and/or by the application of best management practices. Such discharges shall not degrade the quality of any Class 1 water below its existing quality or adversely affect any existing use of the water. Temporary increases in turbidity that are within the limits established in Section 23 of these regulations and that do not negatively affect existing uses can be permitted. For purposes of this section, temporary increases in turbidity shall not exceed the actual construction period. The department shall impose whatever controls and monitoring are necessary on point source discharges to Class 1 waters and their tributaries to ensure that the existing quality and uses of the Class 1 water are protected and maintained.

(c) Nonpoint source discharges of pollution to Class 1 waters or tributaries of Class 1 waters shall be controlled by application of best management practices adopted in accordance with the Wyoming Continuing Planning Process. For Class 1 waters, best management practices will maintain existing quality and water uses.

Section 8. **Antidegradation.**

(a) Water uses in existence on or after November 28, 1975 and the level of water quality necessary to protect those uses shall be maintained and protected. Those surface waters not designated as Class 1, but whose quality is better than the standards contained in these regulations, shall be maintained at that higher quality. However, after full intergovernmental coordination and public participation, the department may issue a permit for or allow any project or development which would constitute a new source of pollution, or an increased source of pollution, to these waters as long as the following conditions are met:

- (i) The quality is not lowered below these standards;
- (ii) All existing water uses are fully maintained and protected;
- (iii) The highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint sources have been achieved; and
- (iv) The lowered water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

(b) The Water Quality Administrator (administrator) may require an applicant to submit additional information, including, but not limited to, an analysis of alternatives to any proposed discharge and relevant economic information before making a determination under this section.

(c) The procedures used to implement this section are described in the *Antidegradation Implementation Policy*.

Section 9. **Mixing Zones.** Except for acute whole effluent toxicity (WET) values and Sections 14, 15, 16, 17, 28 and 29(b) of these regulations, compliance with water quality standards shall be determined after allowing reasonable time for mixing. Except for the zone of initial dilution, which is the initial 10% of the mixing zone, the mixing zone shall not contain pollutant concentrations that exceed the aquatic life acute values (see Appendix B). In addition, there shall be a zone of passage around the mixing zone which shall not contain pollutant concentrations that exceed the aquatic life chronic values (see Appendix B). Under no circumstance may a mixing zone be established which would allow human health criteria (see Appendix B) to be exceeded within 500 yards of a drinking water supply intake or result in acute lethality to aquatic life. The procedures used to implement this section are described in the *Mixing Zones and Dilution Allowances Implementation Policy*.

Section 10. **Testing Procedures.** For determination of the parameters involved in the standards, analyses will be in accordance with test procedures defined pursuant to: Title 40, Code of Federal Regulations, Part 136, or any modifications thereto. For test procedures not listed in the Code of Federal Regulations, test procedures outlined in the latest editions of: *EPA Methods for Chemical Analysis of Water and Wastes*; *Standard Methods for the Examination of Water and Wastewaters*; or *ASTM Standards* shall be used.

Where standard methods of testing have not been established, the suitability of testing procedures shall be determined by the department and the EPA using defensible scientific methods.

Numeric criteria included in the standards represent levels necessary to protect designated uses and do not necessarily reflect detection limits that can be achieved using standard analytical techniques. Standard analytical techniques are considered during development of discharge permits and evaluation of water quality data. Sampling entities should consult with the department to determine reporting limit needs to ensure that adequate testing procedures and reporting limits are requested from the laboratory.

Section 11. **Flow Conditions.**

(a) Numeric water quality standards shall be enforced at all times except during periods below low flow. Low flow can be determined by the following methods:

(i) Using the 7Q10 (the minimum seven (7) consecutive day flow which has the probability of occurring once in ten (10) years);

(ii) The EPA's biologically based flow method which determines a four (4) day, three (3) year low flow for chronic exposures and a one (1) day, three (3) year low flow for acute exposures (*Technical Guidance Manual For Performing Waste Load Allocation, Book VI, Design Conditions: Chapter 1, Stream Design Flow for Steady-State Modeling, August 1986, US EPA*); or

(iii) Other defensible scientific methods.

For all methods, application of the standards will conform to the magnitude, duration and frequency provisions described in these regulations.

(b) During periods when stream flows are less than the minimums described above, the department may, in consultation with the Wyoming Game and Fish Department and the affected discharger(s), require permittees to institute operational modifications as necessary to insure the protection of aquatic life. This section should not be interpreted as requiring the maintenance of any particular stream flow.

(c) The narrative water quality standards in Sections 14, 15, 16, 17, 28 and 29(b) of these regulations shall be enforced at all streamflow conditions.

Section 12. **Protection of Wetlands.** Point or nonpoint sources of pollution shall not cause the destruction, damage, or impairment of naturally occurring wetlands except when mitigated through an authorized wetlands mitigation process. When approving mitigation, the department may consider both the ecological functions and the wetland value of the disturbed wetland.

This section does not apply to wetlands created by point or nonpoint sources, nor are such wetlands required to be maintained through continuation of such discharges. Similarly, any man-made wetlands or enhancements which have been credited in the state wetland banking program are not required to be maintained until the credit is used for mitigation purposes. These areas will, however, be protected from discharges of wastes, toxic substances or chemical pollutants as are any other waters of the state.

Section 13. **Toxic Materials.** Except for those substances referenced in Sections 21(e) and (f) of these regulations, toxic materials attributable to or influenced by the activities of man shall not be present in any Wyoming surface water in concentrations or combinations which constitute "pollution".

Section 14. **Dead Animals and Solid Waste.** Dead animals or solid waste shall not be placed or allowed to remain in Wyoming surface waters. When discovered, removal shall be expeditious unless removal would likely cause more contamination than non-removal. This section should not be interpreted to place a burden on any person to

remove dead wildlife from surface waters where the death of the animals occurs under natural or uncontrollable circumstances.

Except as authorized through a 404 permit, solid waste shall not be placed or allowed to remain in surface waters of the state, nor shall solid wastes be placed or allowed to remain in any location which would cause or threaten contamination of Wyoming surface waters.

Section 15. **Settleable Solids.** In all Wyoming surface waters, substances attributable to or influenced by the activities of man that will settle to form sludge, bank or bottom deposits shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife.

Section 16. **Floating and Suspended Solids.** In all Wyoming surface waters, floating and suspended solids attributable to or influenced by the activities of man shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife.

Section 17. **Taste, Odor and Color.** No Class 1, 2 or 3 waters shall contain substances attributable to or influenced by the activities of man that produce taste, odor and color or that would:

- (a) Of themselves or in combination, impart an unpalatable or off-flavor in fish flesh;
- (b) Visibly alter the natural color of the water or impart color to skin, clothing, vessels or structures;
- (c) Produce detectable odor; or
- (d) Directly or through interaction among themselves, or with chemicals used in existing water treatment processes, result in concentrations that will impart undesirable taste or odor to public water supplies.

Section 18. **Human Health.** In all Class 1, 2AB and 2A waters, the “Human Health Consumption of Fish and Drinking Water” values listed in Appendix B of these regulations shall not be exceeded. In all Class 2B, 2C and 2D waters, the “Human Health Consumption of Fish” (consumption of aquatic organisms) values shall not be exceeded.

In certain waters, the criteria listed in Appendix B of these regulations may not be appropriate due to unique physical or chemical conditions. In such cases, human health values may be established using the site-specific procedures outlined in the references listed in Appendix E or other scientifically defensible methods.

Section 19. **Industrial Water Supply.** All Wyoming surface waters which have the natural water quality potential for use as an industrial water supply shall be maintained at a quality which allows continued use of such waters for industrial purposes.

Degradation of such waters shall not be of such an extent to cause a measurable increase in raw water treatment costs to the industrial user(s).

Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an industrial water supply.

Section 20. **Agricultural Water Supply.** All Wyoming surface waters which have the natural water quality potential for use as an agricultural water supply shall be maintained at a quality which allows continued use of such waters for agricultural purposes.

Degradation of such waters shall not be of such an extent to cause a measurable decrease in crop or livestock production.

Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an agricultural water supply.

Section 21. **Protection of Aquatic Life.**

(a) Ammonia.

(i) The toxicity of ammonia varies with pH and temperature and the applicable limitations are included in the tables in Appendix C of these regulations. The numeric ammonia criteria in Appendix C apply to all Class 1, 2AB, 2A, 2B and 2C waters.

(ii) In all Class 2D and 3 waters, concentrations of ammonia attributable to or influenced by human activities shall not be present in concentrations which could result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.

(b) Specific numeric standards for a number of toxicants are listed in the "Aquatic Life Acute Value" and "Aquatic Life Chronic Value" columns in Appendix B of these regulations. These standards apply to all Class 1, 2 and 3 waters. For these pollutants, the chronic value (four (4) day average concentration) and the acute value (one (1) hour average concentration) shall not be exceeded more than once every three (3) years.

(c) Others. For those pollutants not listed in Appendix B or C of these regulations, maximum allowable concentrations on Class 1, 2 and 3 waters shall be

determined through the bioassay procedures outlined in the references listed in Appendix E of these regulations.

(d) In certain waters, the criteria listed in Appendix B or C of these regulations may not be appropriate due to unique physical or chemical conditions. In such cases, acute and chronic values may be determined using the site-specific procedures outlined in the references listed in Appendix E or other scientifically defensible methods.

(e) Aquatic pesticides specifically designed to kill, repel or mitigate aquatic pest problems (e.g. mosquito larvae or heavy plant growth in irrigation ditches) may be added to surface waters of the state if the use and application is in compliance with the following:

(i) The pesticide used is a product which has been registered with the EPA and the Wyoming Department of Agriculture for use in the state, in accordance with W.S. 35-7-356;

(ii) The application is conducted by a person licensed by the Wyoming Department of Agriculture to purchase and apply restricted use pesticides in the state;

(iii) All applications of aquatic pesticides must be administered in accordance with label directions. However, compliance with label directions shall not exempt any person or agency from the penalty provisions of W.S. 35-11-901 should non-target species or non-target areas be affected.

(f) This section shall not apply to the use of fish toxicants if the use and application is in compliance with the following:

(i) The pesticide used is a product which has been registered with the EPA and the Wyoming Department of Agriculture for use in the state, in accordance with W.S. 35-7-356;

(ii) The application is conducted by a person licensed by the Wyoming Department of Agriculture to purchase and apply restricted use pesticides in the state;

(iii) All applications of fish toxicants must be administered in accordance with label directions. However, compliance with label directions shall not exempt any person or agency from the penalty provisions of W.S. 35-11-901 should non-target species or non-target areas be affected.

(iv) The Wyoming Game and Fish Department may apply fish toxicants to any surface water of the state provided that prior notice is made to the department and after receipt of verification from the Water Quality Division that the proposed application is in compliance with this section.

(v) The National Park Service, as the wildlife management agency in Yellowstone National Park, may apply fish toxicants to surface waters within Yellowstone National Park for the purpose of killing or controlling fish provided that prior notice is made to the department and after receipt of a verification from the Water Quality Division that the proposed application is in compliance with this section. Approval from the Wyoming Game and Fish Department is also required prior to application of fish toxicants to waters which flow into surface waters of the state outside of Yellowstone National Park.

(vi) Private certified pesticide applicators for restricted use pesticides may apply fish toxicants only to waters located entirely on private property where there is no surface outlet to waters of the state provided that prior notice is made to the department and after receipt of verification from the Water Quality Division that the proposed application is in compliance with this section. Approval, including any necessary permits, from the Wyoming Game and Fish Department is also required prior to application of fish toxicants to insure protection of fish and wildlife resources.

(vii) Pesticide applications must be conducted in a manner that minimizes to the extent practicable, the magnitude of any change in the concentration of the parameters affected by the activity and the length of time during which any change may occur. The application must include measures that prevent significant risk to public health and ensure that existing and designated uses of the water are protected and maintained upon the completion of the activity.

(viii) Except for the circumstances described in (i) through (vii) above, no other agency or person may apply fish toxicants in any water of the state.

#### Section 22. **Radioactive Material.**

(a) In Class 1, 2AB and 2A waters, radiological limits of 5 pCi/L for combined radium-226 and radium-228, 15 pCi/L for gross alpha particle activity (excluding radon and uranium), 30 µg/L for uranium and 4 millirems per year (mrem/year) for beta particle and photon radioactivity shall not be exceeded.

(b) In Class 2B, 2C, 2D, 3 and 4 waters, the total radium-226 concentration shall not exceed 60 pCi/L.

(c) In all Wyoming surface waters, radioactive materials attributable or influenced by the activities of man shall not be present in the water or in the sediments in amounts which could cause harmful accumulations of radioactivity in plant, wildlife, livestock or aquatic life.

Section 23. **Turbidity.**

(a) In all cold water fisheries and/or drinking water supplies (Classes 1, 2AB, 2A and 2B), the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than ten (10) nephelometric turbidity units (NTUs).

(b) In all warm water or nongame fisheries (Classes 1, 2AB, 2B and 2C), the discharge of substances attributable to or influenced by the activities of man shall not be present in quantities which would result in a turbidity increase of more than 15 NTUs.

(c) An exception to paragraphs (a) and (b) of this section shall apply to:

(i) The North Platte River from Guernsey Dam to the Nebraska line during the annual "silt run" from Guernsey Dam; and

(ii) Short-term increases of turbidity that have been determined by the administrator to have only a minimal effect on water uses. Such determinations shall be made on a case-by-case basis and shall be subject to whatever controls, monitoring and best management practices are necessary to fully maintain and protect all water uses. The procedures used to implement this section are described in the *Turbidity Implementation Policy*.

Section 24. **Dissolved Oxygen.** In all Class 2A, 2D and 3 waters, pollution attributable to the activities of man shall not deplete dissolved oxygen amounts to a level which will result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.

In all Class 1, 2AB, 2B and 2C waters, pollution attributable to the activities of man shall not result in a dissolved oxygen content of less than that presented on the chart in Appendix D of these regulations.

Section 25. **Temperature.**

(a) For Class 1, 2 and 3 waters, pollution attributable to the activities of man shall not change ambient water temperatures to levels which result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.

(b) When ambient temperatures are above 60 degrees Fahrenheit (15.6 degrees Celsius) in all Class 1, 2AB and 2B waters which are cold water fisheries, pollution attributable to the activities of man shall not result in an increase of more than 2 degrees Fahrenheit (1.1 degree Celsius) in existing temperatures.

(c) When ambient temperatures are above 60 degrees Fahrenheit (15.6 degrees Celsius) in all Class 1, 2AB, 2B and 2C waters which are warm water fisheries, pollution attributable to the activities of man shall not result in an increase of more than 4 degrees Fahrenheit (2.2 degrees Celsius) in existing temperatures.

(d) Except on Class 2D, 3 and 4 waters, the maximum allowable stream temperature will be the maximum natural daily stream temperature plus the allowable change, provided that this temperature is not lethal to existing fish life and under no circumstance shall pollution attributable to the activities of man result in a temperature that exceeds 68 degrees Fahrenheit (20 degrees Celsius) in the case of cold water fisheries and 86 degrees Fahrenheit (30 degrees Celsius) in the case of warm water fisheries.

(e) With the exception of the provisions of Sections 9 and 11 of these regulations and other natural conditions, temperature standards shall apply at all times and at all depths of the receiving water and may not be violated at any time or at any depth.

(f) The various requirements of this section may be waived only under the provisions of Section 316(a) of the Clean Water Act.

#### Section 26. **pH.**

(a) For all Wyoming surface waters, pollution attributable to the activities of man shall not be present in amounts which will cause the pH to be less than 6.5 or greater than 9.0 standard units.

(b) For all Class 1, 2 and 3 waters, pollution attributable to the activities of man shall not change the pH to levels which result in harmful acute or chronic effects to aquatic life, directly or in conjunction with other chemical constituents, or which would not fully support existing and designated uses.

#### Section 27. ***E. coli* Bacteria.**

(a) Primary Contact Recreation. In all waters designated for primary contact recreation, during the summer recreation season (May 1 through September 30), concentrations of *E. coli* bacteria shall not exceed a geometric mean of 126 organisms per 100 milliliters during any consecutive 60-day period. Primary contact waters are identified in the *Wyoming Surface Water Classification List*.

(b) Secondary Contact Recreation. In all waters designated for secondary contact recreation and in waters designated for primary contact recreation during the winter recreation season (October 1 through April 30), concentrations of *E. coli* bacteria shall not exceed a geometric mean of 630 organisms per 100 milliliters during any consecutive 60-day period. Waters will be designated for secondary contact recreation through the reclassification and use attainability analysis process outlined in Sections 33

and 34 of these regulations. Secondary contact waters are identified in the *Wyoming Surface Water Classification List*.

(c) **Single-sample Maximum Concentrations.** During the summer recreation season, on all waters designated for primary contact recreation, the following single-sample maximum concentrations of *E. coli* bacteria shall apply:

- (i) High use swimming areas - 235 organisms per 100 milliliters
- (ii) Moderate full body contact - 298 organisms per 100 milliliters
- (iii) Lightly used full body contact - 410 organisms per 100 milliliters
- (iv) Infrequently used full body contact - 576 organisms per 100 milliliters

Single-sample maximum values may be used to post recreational use advisories in public recreation areas and to derive single-sample maximum effluent limitations on point source discharges. An exceedance of the single-sample maxima shall not be cause for listing a water body on the State 303(d) list or development of a TMDL or watershed plan. The appropriate recreational use category (i through iv, above) shall be determined by the administrator as needed, on a case by case basis. In making such a determination, the administrator may consider such site-specific circumstances as type and frequency of use, time of year, public access, proximity to populated areas and local interests.

**Section 28. Undesirable Aquatic Life.** All Wyoming surface waters shall be free from substances and conditions or combinations thereof which are attributable to or influenced by the activities of man, in concentrations which produce undesirable aquatic life.

**Section 29. Oil and Grease.** In all Wyoming surface waters, substances attributable to or influenced by the activities of man shall not be present in amounts which would cause:

- (a) The oil and grease content to exceed 10 mg/L; or
- (b) The formation of a visible sheen or visible deposits on the bottom or shoreline, or damage or impairment of the normal growth, function or reproduction of human, animal, plant or aquatic life.

**Section 30. Total Dissolved Gases.** In all Class 1, 2AB, 2B and 2C waters, the total dissolved gas concentration below man-made dams shall not exceed 110 percent of the saturation value for gases at the existing atmospheric and hydrostatic pressures.

Section 31. **Colorado Basin Salinity.** The State of Wyoming is a member of the Colorado River Basin Salinity Control Forum, which includes all states in the Colorado River Basin. This forum has adopted a salinity control program for the basin which has been adopted as Chapter 6 of the Wyoming Water Quality Rules and Regulations.

Section 32. **Biological Criteria.** Class 1, 2 and 3 waters of the state must be free from substances, whether attributable to human-induced point source discharges or nonpoint source activities, in concentrations or combinations which will adversely alter the structure and function of indigenous or intentionally introduced aquatic communities.

Section 33. **Reclassifications and Site-Specific Criteria.**

(a) Any person at any time may petition the department or the council to change the classification, add or remove a designated use or establish site-specific criteria on any surface water.

(b) The administrator may lower a classification, remove a designated use which is not an existing nor attainable use, establish ambient-based criteria on effluent dependent waters, make a recommendation to the council to establish sub-categories of a use or establish site-specific criteria if it can be demonstrated through a use attainability analysis (UAA) that the original classification, designated use or water quality criteria are not feasible because:

(i) Naturally occurring pollutant concentrations prevent the attainment of the classification or use; or

(ii) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met; or

(iii) 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

(iv) Dams, diversions or other types of hydrologic modifications preclude the attainment of the classification or use, and it is not feasible to restore the water body to its original condition or to operate such modification in such a way that would result in the attainment of the classification or use; or

(v) 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 an aquatic life use; or

(vi) Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact. This subsection shall not apply to the derivation of site-specific criteria.

(c) The administrator may raise a classification, add a designated use or make a recommendation to the council to establish sub-categories of a use or site-specific criteria, if it can be demonstrated through a use attainability analysis (UAA) that such uses are existing uses or may be attained with the imposition of more stringent controls or management practices.

(d) The procedures used to implement this section are described in the *Use Attainability Analysis Implementation Policy*.

(e) The provisions of subsections (b) and (c) above are not applicable to Class 1 designations. Class 1 designations may be added or removed in accordance with the provisions of the Environmental Quality Act, the Wyoming Administrative Procedures Act and Section 4(a) of these regulations.

**Section 34. Use Attainability Analysis.** The administrator shall review all petitions submitted under Section 33 of these regulations and make a determination based upon the technical merits of the use attainability analysis. Public notice and opportunity for comment shall be provided prior to making this determination.

(a) Any changes in water classifications or use designations resulting from the administrator's determination shall be submitted to EPA for approval as revised water quality standards for Clean Water Act purposes and shall become effective either upon EPA approval or 90 days after submittal, whichever comes first. If within 90 days of submittal, the EPA determines that any such revised or new standard is not consistent with the applicable requirements of the Clean Water Act and specifies the changes needed to meet such requirements, the administrator may consider EPA's recommendations and publish a revised final determination. All determinations made under this subsection are considered final actions of the administrator and may be appealed pursuant to Chapter 1, Section 16 of the Rules of Practice and Procedure.

(b) Except for ambient-based criteria on effluent dependent waters, proposed changes in water quality criteria that result from the administrator's findings shall be recommended to the council for adoption as revised rules. Ambient-based criteria for effluent dependent waters shall be established according to the provisions of Section 36 of these rules. If adopted by the council, the revised rules shall be filed with the secretary of state and shall become effective 90 days after filing. The revised rules shall also be concurrently submitted to EPA for approval as revised water quality standards for Clean Water Act purposes. If within 90 days of submittal, the EPA determines that any such revised or new standard is not consistent with the applicable requirements of the Clean Water Act and specifies the changes needed to meet such requirements, the department

may recommend a new standard incorporating EPA's specifications to the council for adoption.

**Section 35. Credible Data.**

(a) Development of scientifically valid chemical, physical and biological monitoring data shall:

(i) Consist of data collection using accepted referenced laboratory and field methods employed by a person who has received specialized training and has field experience in developing a monitoring plan, a quality assurance plan, and employing the methods outlined in such plans or works under the supervision of a person who has these qualifications. Specialized training includes a thorough knowledge of written sampling protocols and field methods such that the data collection and interpretation are reproducible, scientifically defensible and free from preconceived bias; and

(ii) Includes documented quality assurance consisting of a plan that details how environmental data operations are planned, implemented and assessed with respect to quality during the duration of the project.

(b) Credible data shall be collected on each water body, as required in this section, and shall be considered for purposes of characterizing the integrity of the water body including consideration of soil, geology, hydrology, geomorphology, climate, stream succession and the influences of man upon the system. These data in combination with other available and applicable information shall be used through a weight-of-evidence approach to designate uses and determine whether those uses are being attained. In those instances where numerical standards contained in these rules are exceeded or on ephemeral and intermittent water bodies where chemical and biological sampling may not be practical or feasible, less than a complete set of data may be used to make a decision on attainment.

(c) All changes to use designations after the effective date of this rule shall include the consideration of credible data relevant to the decision. Changes which involve the removal of a use designation or the replacement of a designation shall be supported by a use attainability analysis (UAA).

(d) After the effective date of this rule, credible data shall be utilized in determining a water body's attainment of designated uses.

**Section 36. Effluent Dependent Criteria.** In addition to the provisions of Section 33 of these regulations, the administrator may make modifications to the numeric criteria for pollutants listed in Appendix B on Class 2D and 3D waters. These modifications may be made on a categorical or site-specific basis by application of the following process:

(a) The adopted statewide numeric criteria may be modified on Class 2D and 3D waters to reflect ambient conditions by developing a UAA demonstrating that the water body is effluent dependent and that continued discharge of a permitted effluent to the water body has been shown to create a net environmental benefit. Criteria modification based on a finding of net environmental benefit is authorized where:

(i) The water body is effluent dependent;

(ii) The discharge has been shown to create an environmental benefit and removal of the discharge would cause more environmental harm than leaving it in place;

(iii) There is a credible threat to remove the discharge; and

(iv) Appropriate safeguards are in place, ensuring that downstream uses will be protected and the discharge will pose no health risk or hazard to humans, livestock or wildlife.

(b) Where the above factors have been satisfied, site-specific criteria may be set equal to the background concentration plus a margin of error for each parameter where the highest background concentration exceeds the statewide numeric criteria. Such site-specific criteria will be implemented as instantaneous maximum values.

(i) The background concentration shall be the highest concentration recorded over the course of a one year period where samples have been taken at least once in each month.

(ii) The margin of error shall be one standard deviation calculated from the same data set used to establish background.

(iii) In addition to water column values, aquatic life tissue criteria shall also be established for all parameters known to be bioaccumulating and where recommended criteria have been developed by EPA. Such criteria shall be at least equal to the nationally recommended tissue criteria published by EPA under Section 304(a) of the Clean Water Act.

(c) The procedures used to implement this section are described in the *Use Attainability Analysis Implementation Policy*.

## Appendix A

### Wyoming Surface Water Classifications

All surface waters in Wyoming are classified as follows:

- (a) Class 1 Waters. The following waters are designated Class 1:
  - (i) All surface waters located within the boundaries of national parks and congressionally designated wilderness areas as of January 1, 1999;
  - (ii) The main stem of the Snake River through its entire length above the U.S. Highway 22 Bridge (Wilson Bridge);
  - (iii) The main stem of the Green River, including the Green River Lakes from the mouth of the New Fork River upstream to the wilderness boundary;
  - (iv) The main stem of the Wind River from the Wedding of the Waters upstream to Boysen Dam;
  - (v) The main stem of the North Platte River from the mouth of Sage Creek (approximately 15 stream miles downstream of Saratoga, Wyoming) upstream to the Colorado state line;
  - (vi) The main stem of the North Platte River from the headwaters of Pathfinder Reservoir upstream to Kortez Dam (Miracle Mile segment);
  - (vii) The main stem of the North Platte River from the Natrona County Road 309 bridge (Goose Egg bridge) upstream to Alcova Reservoir;
  - (viii) The main stem of Sand Creek above the U.S. Highway 14 bridge;
  - (ix) The main stem of the Middle Fork of the Powder River through its entire length above the mouth of Buffalo Creek;
  - (x) The main stem of the North Fork of the Tongue River, the main stem of the South Fork of the Tongue River and the main stem of the Tongue River above the U.S. Forest Service boundary;
  - (xi) The main stem of the Sweetwater River above the mouth of Alkali Creek;
  - (xii) The main stem of the Encampment River from the northern U.S. Forest Service boundary upstream to the Colorado state line;

(xiii) The main stem of the Clarks Fork River from the U.S. Forest Service boundary upstream to the Montana state line;

(xiv) All waters within the Fish Creek (near Wilson, Wyoming) drainage;

(xv) The main stem of Granite Creek (tributary of the Hoback River) through its entire length;

(xvi) Fremont Lake;

(xvii) Wetlands adjacent to the above listed Class 1 waters.

(b) Individual water classifications for major water bodies and recreational use designations are listed in the most current version of the *Wyoming Surface Water Classification List*. The list is published by the department and periodically revised and updated according to the provisions of Sections 4, 33, 34 and 35. In addition to the listings contained in that document, the following provisions apply:

(i) National Parks and Wilderness Areas. All surface waters located within the boundaries of Yellowstone and Grand Teton National Parks and congressionally designated wilderness areas as of January 1, 1999 are Class 1 waters. A Class 1 designation always takes precedence over the classification given in the listing. For example, Dinwoody Creek is shown as a Class 2 water; however, the upper portions are within a wilderness area and those portions are Class 1. The portion below the wilderness boundary is Class 2.

(ii) Unlisted Waters. The waters contained in the *Wyoming Surface Water Classification List* are all waters which are named on the USGS 1:500,000 hydrologic map of Wyoming and those otherwise classified by the department. The classification list does not contain an exhaustive listing of all the surface waters in the state. Waters which are not listed are classified as follows:

(A) All waters shown as having any species of game fish present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2AB;

(B) All waters shown as having only nongame fish species present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the department in June 2000 are classified as 2C;

(C) All other waters shall be classified as follows:

(I) Those waters supported by an approved UAA containing defensible reasons for not protecting aquatic life uses shall be 4A, 4B or 4C. This category includes isolated, effluent dependent waters;

(II) Effluent dependent waters that support resident fish populations shall be 2D;

(III) Effluent dependent waters that do not support resident fish populations shall be 3D;

(IV) The remaining waters shall be 3A, 3B or 3C.

(iii) Wetlands. All adjacent wetlands shall have the same classification as the water to which they are adjacent.

**Appendix B**  
**Water Quality Criteria<sup>(1)</sup>**

(a) Priority Pollutants.

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
Acenaphthene			20 <sup>(7)</sup>	990
Acrolein	3	3	6	9
Acrylonitrile			0.051 <sup>(3)</sup>	0.25 <sup>(3)</sup>
Benzene			2.2 <sup>(3)</sup>	51 <sup>(3)</sup>
Benzidine			0.000086 <sup>(3)</sup>	0.00020 <sup>(3)</sup>
Carbon tetrachloride (Tetrachloromethane)			0.23 <sup>(3)</sup>	1.6 <sup>(3)</sup>
Chlorobenzene (Monochlorobenzene)			20 <sup>(7)</sup>	1,600
1,2,4-Trichlorobenzene			35	70
Hexachlorobenzene			0.00028 <sup>(3)</sup>	0.00029 <sup>(3)</sup>
1,2-Dichloroethane			0.38 <sup>(3)</sup>	37 <sup>(3)</sup>
1,1,1-Trichloroethane			200 <sup>(9)</sup>	
Hexachloroethane			1.4 <sup>(3)</sup>	3.3 <sup>(3)</sup>
1,1,2-Trichloroethane			0.59 <sup>(3)</sup>	16 <sup>(3)</sup>
1,1,2,2-Tetrachloroethane			0.17 <sup>(3)</sup>	4 <sup>(3)</sup>
Bis(2-chloroethyl) ether			0.030 <sup>(3)</sup>	0.53 <sup>(3)</sup>
2-Chloronaphthalene			1,000	1,600
2,4,6-Trichlorophenol			1.4 <sup>(3)</sup>	2.4 <sup>(3)</sup>
4-Chloro-3-methylphenol (3-Methyl-4-chlorophenol) (p-Chloro-m-cresol)			3,000 <sup>(7)</sup>	
Chloroform (Trichloromethane)			5.7 <sup>(3)</sup>	470 <sup>(3)</sup>
2-Chlorophenol			0.1 <sup>(7)</sup>	150
1,2-Dichlorobenzene			420	1,300
1,3-Dichlorobenzene			320	960
1,4-Dichlorobenzene			63	190
3,3'-Dichlorobenzidine			0.021 <sup>(3)</sup>	0.028 <sup>(3)</sup>
1,1-Dichloroethylene			7 <sup>(9)</sup>	7,100
1,2-trans-Dichloroethylene			100 <sup>(9)</sup>	10,000

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
2,4-Dichlorophenol			0.3 <sup>(7)</sup>	290
1,2-Dichloropropane			0.50 <sup>(3)</sup>	15 <sup>(3)</sup>
1,3-Dichloropropene (1,3-Dichloropropylene) (cis and trans isomers)			0.34 <sup>(3)</sup>	21 <sup>(3)</sup>
2,4-Dimethylphenol			380	850
2,4-Dinitrotoluene			0.11 <sup>(3)</sup>	3.4 <sup>(3)</sup>
1,2-Diphenylhydrazine			0.036 <sup>(3)</sup>	0.20 <sup>(3)</sup>
Ethylbenzene			530	2,100
Fluoranthene			130	140
Bis(2-chloroisopropyl) ether			1,400	65,000
Methylene chloride (Dichloromethane)			4.6 <sup>(3)</sup>	590 <sup>(3)</sup>
Methyl bromide (Bromomethane)			47	1,500
Bromoform (Tribromomethane)			4.3 <sup>(3)</sup>	140 <sup>(3)</sup>
Dichlorobromomethane			0.55 <sup>(3)</sup>	17 <sup>(3)</sup>
Chlorodibromomethane			0.40 <sup>(3)</sup>	13 <sup>(3)</sup>
Hexachlorobutadiene			0.44 <sup>(3)</sup>	18 <sup>(3)</sup>
Hexachlorocyclopentadiene			1 <sup>(7)</sup>	1,100
Isophorone			35 <sup>(3)</sup>	960 <sup>(3)</sup>
Nitrobenzene			17	690
2,4-Dinitrophenol			69	5,300
4,6-Dinitro-2-methylphenol (2-Methyl-4,6- dinitrophenol) (4,6-Dinitro-o-cresol)			13	280
N-Nitrosodimethylamine			0.00069 <sup>(3)</sup>	3 <sup>(3)</sup>
N-Nitrosodiphenylamine			3.3 <sup>(3)</sup>	6 <sup>(3)</sup>
N-Nitrosodi-n-propylamine			0.005 <sup>(3)</sup>	0.51 <sup>(3)</sup>
Pentachlorophenol	19 <sup>(5)</sup>	15 <sup>(5)</sup>	0.27 <sup>(3)</sup>	3 <sup>(3)</sup>
Phenol			300 <sup>(7)</sup>	860,000
Bis(2-ethylhexyl) phthalate			1.2 <sup>(3)</sup>	2.2 <sup>(3)</sup>
Butylbenzyl phthalate			1,500	1,900
Di-n-butyl phthalate			2,000	4,500

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
Diethyl phthalate			17,000	44,000
Dimethyl phthalate			270,000	1,100,000
Benzo(a)anthracene(1,2-Benzanthracene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Benzo(a)pyrene (3,4-Benzopyrene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Benzo(b)fluoranthene (3,4-Benzofluoranthene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Benzo(k)fluoranthene(1,1,2-Benzofluoranthene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Chrysene			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Anthracene			8,300	40,000
Fluorene			1,100	5,300
Dibenzo(a,h)anthracene(1,2,5,6-Dibenzanthracene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Indeno(1,2,3-cd)pyrene			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Pyrene			830	4,000
Tetrachloroethylene			0.69 <sup>(3)</sup>	3.3 <sup>(3)</sup>
Toluene			1,000 <sup>(9)</sup>	15,000
Trichloroethylene			2.5 <sup>(3)</sup>	30 <sup>(3)</sup>
Vinyl chloride (Chloroethylene)			0.025 <sup>(3)</sup>	2.4 <sup>(3)</sup>
Aldrin	1.5 <sup>(16)</sup>		0.000049 <sup>(3)</sup>	0.000050 <sup>(3)</sup>
Dieldrin	0.24	0.056	0.000052 <sup>(3)</sup>	0.000054 <sup>(3)</sup>
Chlordane	1.2 <sup>(16)</sup>	0.0043	0.00080 <sup>(3)</sup>	0.00081 <sup>(3)</sup>
4,4'-DDT	0.55 <sup>(16)</sup>	0.001	0.00022 <sup>(3)</sup>	0.00022 <sup>(3)</sup>
4,4'-DDE			0.00022 <sup>(3)</sup>	0.00022 <sup>(3)</sup>
4,4'-DDD			0.00031 <sup>(3)</sup>	0.00031 <sup>(3)</sup>
alpha-Endosulfan	0.11 <sup>(16)</sup>	0.056	62	89
beta-Endosulfan	0.11 <sup>(16)</sup>	0.056	62	89
Endosulfan sulfate			62	89
Endrin	0.086	0.036	0.059	0.060
Endrin aldehyde			0.29	0.30
Heptachlor	0.26 <sup>(16)</sup>	0.0038	0.000079 <sup>(3)</sup>	0.000079 <sup>(3)</sup>
Heptachlor epoxide	0.26 <sup>(16)</sup>	0.0038	0.000039 <sup>(3)</sup>	0.000039 <sup>(3)</sup>

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
alpha-BHC (Hexachlorocyclohexane- alpha)			0.0026 <sup>(3)</sup>	0.0049 <sup>(3)</sup>
beta-BHC (Hexachlorocyclohexane- beta)			0.0091 <sup>(3)</sup>	0.017 <sup>(3)</sup>
gamma-BHC (Lindane) (Hexachlorocyclohexane- gamma)	0.95		0.2 <sup>(9)</sup>	1.8
Polychlorinated biphenyls (PCBs)		0.014 <sup>(13)</sup>	0.000064 <sup>(3)(13)</sup>	0.000064 <sup>(3)(13)</sup>
Toxaphene	0.73	0.0002	0.00028 <sup>(3)</sup>	0.00028 <sup>(3)</sup>
Antimony			5.6	640
Arsenic	340	150	10 <sup>(3)(9)</sup>	10 <sup>(3)(9)</sup>
Asbestos			7,000,000 fibers/L <sup>(9)</sup>	
Beryllium			4 <sup>(9)</sup>	
Cadmium	2.0 <sup>(4)</sup>	0.25 <sup>(4)</sup>	5 <sup>(9)</sup>	
Chromium (III)	569.8 <sup>(4)</sup>	74.1 <sup>(4)</sup>	100 <sup>(9)</sup> (total)	
Chromium (VI)	16	11	100 <sup>(9)</sup> (total)	
Copper	13.4 <sup>(4)</sup>	9 <sup>(4)</sup>	1000 <sup>(7)</sup>	
Cyanide (free)	22	5.2	140 <sup>(6)</sup>	140 <sup>(6)</sup>
Lead	64.6 <sup>(4)</sup>	2.5 <sup>(4)</sup>	15 <sup>(9)</sup>	
Mercury	1.4	0.77	0.050	0.051
Nickel	468.2 <sup>(4)</sup>	52.0 <sup>(4)</sup>	610	4,600
Selenium	20 <sup>(10)</sup>	5 <sup>(10)</sup>	50 <sup>(9)</sup>	4,200
Silver	1.7 <sup>(4)(16)</sup>		100 <sup>(11)</sup>	
Thallium			0.24	0.47
Zinc	117.2 <sup>(4)</sup>	118.1 <sup>(4)</sup>	5,000 <sup>(7)</sup>	26,000
Dioxin (2,3,7,8-TCDD)			0.000000005 <sup>(3)</sup>	0.000000005 <sup>(3)</sup>

## (b) Non-Priority Pollutants.

Non-Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
Alachlor			2 <sup>(9)</sup>	
Aluminum (pH 6.5-9.0 only)	750	87 <sup>(14)</sup>		
Ammonia	See Appendix C			
Atrazine			3 <sup>(9)</sup>	
Barium			2,000 <sup>(9)</sup>	
Bis(chloromethyl) ether			0.00010 <sup>(3)</sup>	0.00029 <sup>(3)</sup>
Bromate			10 <sup>(9)</sup>	
Carbofuran			40 <sup>(9)</sup>	
Chloride	860,000 <sup>(15)</sup>	230,000 <sup>(15)</sup>		
Chlorine (total residual)	19	11		
Chlorite			1,000 <sup>(9)</sup>	
Chlorophenoxy herbicide (2,4,5-TP)			10	
Chlorpyrifos	0.083	0.041		
Chlorophenoxy herbicide (2,4-D)			70 <sup>(9)</sup>	
Dalapon			200 <sup>(9)</sup>	
Demeton		0.1		
Di(2-ethylhexyl) adipate			400 <sup>(9)</sup>	
Diazinon	0.17	0.17		
Dibromochloropropane (DBCP)			0.2 <sup>(9)</sup>	
cis-1,2-Dichloroethylene			70 <sup>(9)</sup>	
Dinoseb			7 <sup>(9)</sup>	
Dinitrophenols			69	5,300
Dissolved Gases		100% Sat.		
Dissolved Oxygen		See Appendix D		
<i>E. coli</i>			See Section 27	
Diquat			20 <sup>(9)</sup>	
Endothall			100 <sup>(9)</sup>	
Ethylene dibromide (EDB)			0.05 <sup>(9)</sup>	
Fluoride			2000 <sup>(11)</sup>	

Non-Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water <sup>(2)</sup> (µg/L)	Fish <sup>(8)</sup> (µg/L)
Glyphosate			700 <sup>(9)</sup>	
Guthion		0.01		
Haloacetic acids			60 <sup>(9)</sup>	
Hexachlorocyclo-hexane - technical			0.0123 <sup>(3)</sup>	0.0414 <sup>(3)</sup>
Iron		1000 <sup>(12)</sup>	300 <sup>(11)</sup>	
Malathion		0.1		
Manganese	3110 <sup>(4)(12)</sup>	1462 <sup>(4)(12)</sup>	50 <sup>(11)</sup>	
Methoxychlor		0.03	40 <sup>(9)</sup>	
Mirex		0.001		
Nitrite (as N)			1000 <sup>(9)</sup>	
Nitrates (as N)			10000 <sup>(9)</sup>	
Nitrite+Nitrate (both as N)			10000 <sup>(9)</sup>	
Nitrosamines			0.0008	1.24
Nitrosodibutylamine, N			0.0063 <sup>(3)</sup>	0.22 <sup>(3)</sup>
Nitrosodiethylamine, N			0.0008 <sup>(3)</sup>	1.24 <sup>(3)</sup>
Nitrosopyrrolidine, N			0.016 <sup>(3)</sup>	34 <sup>(3)</sup>
Nonylphenol	28	6.6		
Oxamyl (Vydate)			200 <sup>(9)</sup>	
Parathion	0.065	0.013		
Pentachlorobenzene			1.4	1.5
pH		6.5-9.0		
Picloram			500 <sup>(9)</sup>	
Simazine			4 <sup>(9)</sup>	
Styrene			100 <sup>(9)</sup>	
Hydrogen Sulfide (H <sub>2</sub> S; Undissociated)		2		
1,2,4,5-Tetrachlorobenzene			0.97	1.1
Tributyltin (TBT)	0.46	0.072		
2,4,5-Trichlorophenol			1.0 <sup>(7)</sup>	3,600
Total trihalomethanes (TTHM)			80 <sup>(9)</sup>	
2,4,5-TP (2,4,5- trichlorophenoxy) Propionic acid			50 <sup>(9)</sup>	
Xylenes			10,000 <sup>(9)</sup>	

<sup>(1)</sup>Except for the aquatic life values for metals and where otherwise indicated, the values given in Appendix B refer to the total recoverable (dissolved plus suspended) amount of each substance. For the aquatic life values for metals, the values refer to dissolved amount.

<sup>(2)</sup>Except where otherwise indicated, these values are based on EPA Section 304(a) criteria recommendations assuming consumption of 2 liters of water and 17.5 grams of aquatic organisms per day.

<sup>(3)</sup>Except for arsenic, the substance is classified as a carcinogen with the value based on an incremental risk of one additional instance of cancer in one million persons. Arsenic is classified as a carcinogen, however, the value is not based on an additional 1:1,000,000 cancer risk.

<sup>(4)</sup>Hardness dependent criterion. Value given is an example only and is based on a CaCO<sub>3</sub> hardness of 100 mg/L. Criteria for hardness concentrations other than 100 mg/L as CaCO<sub>3</sub> must be calculated using the formulas in Appendix F.

<sup>(5)</sup>pH dependent criterion. Value given is an example only and is based on a pH of 7.8. Criteria for pH values other than 7.8 must be calculated using the formulas in Appendix G.

<sup>(6)</sup>Criterion expressed as total cyanide, even though the method used to derive the criterion is based on free cyanide. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g. Fe<sub>4</sub>[Fe(CN)<sub>6</sub>]<sub>3</sub>), this criterion may be overly conservative.

<sup>(7)</sup>Criterion is based on organoleptic (taste and odor) effects and is more stringent than if based solely on toxic or carcinogenic effects.

<sup>(8)</sup>EPA Section 304(a) human health criteria recommendation assuming consumption of contaminated aquatic organisms at a rate of 17.5 grams per day.

<sup>(9)</sup>Criterion is based on an EPA drinking water standard (maximum contaminant level or MCL).

<sup>(10)</sup>This value is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use a conversion factor (0.996 for the acute and 0.922 for the chronic) to convert this number to a value that is expressed in terms of a dissolved metal. Using these conversion factors, the aquatic life acute value for selenium is 19.92 µg/L as a dissolved metal and the aquatic life chronic value for selenium is 4.61 µg/L as a dissolved metal.

<sup>(11)</sup> Criterion is based on Safe Drinking Water Act secondary standards and is intended to prevent undesirable cosmetic or aesthetic effects. Value represents the dissolved amount of each substance rather than the total amount. Criterion only applies where drinking water is an actual use.

<sup>(12)</sup>Value is based on the dissolved amount which is the amount that will pass through a

0.45 µm membrane filter prior to acidification to pH 1.5-2.0 with nitric acid.

<sup>(13)</sup>This criterion applies to total PCBs (i.e. the sum of all congener or all isomer or homolog or Aroclor analyses).

<sup>(14)</sup>The 87 µg/L chronic criterion for aluminum is based on information showing chronic effects on brook trout and striped bass. The studies underlying the 87 µg/L chronic value, however, were conducted at low pH (6.5-6.6) and low hardness (< 10 mg/L CaCO<sub>3</sub>), conditions uncommon in Wyoming surface waters. A water effect ratio toxicity study in West Virginia indicated that aluminum is substantially less toxic at higher pH and hardness (although the relationship is not well quantified at this time). EPA is also aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg/L when either total recoverable or dissolved aluminum is measured. Based on this information and considering the available toxicological information in Tables 1 and 2 of EPA's Aluminum Criteria Document (EPA 440/5-86-008), the department will implement the 87 µg/L chronic criterion for aluminum as follows: the 87 µg/L chronic criterion will apply except where the receiving water after mixing has a pH greater than or equal to 7.0 and a hardness (as CaCO<sub>3</sub>) greater than or equal to 50 mg/L. Where the receiving stream after mixing has a pH greater than or equal to 7.0 and a hardness (as CaCO<sub>3</sub>) greater than or equal to 50 mg/L, the 750 µg/L acute criterion will apply. In situations where the 87 µg/L chronic criterion applies, a discharger may request development of and provide the basis for a site-specific chronic criterion based on a water-effect ratio.

<sup>(15)</sup>Criterion applies on Class 1, 2AB, 2B and 2C waters only.

<sup>(16)</sup>Criterion has been divided by two to be comparable with other acute values derived using an averaging period. Value can be multiplied by two if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA's 1980 guidelines as a not to be exceeded instantaneous maximum.

(c) Site-Specific Criteria. The criteria in this section are applicable only to the waters and/or locations specified and replaces similar criteria expressed elsewhere in these regulations.

(i) Belle Fourche Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Belle Fourche River Drainage above the confluence of Donkey Creek and the main stem of the Belle Fourche River;

(B) The numeric human health criteria for iron and manganese shall not apply to main stem of the Belle Fourche River below the confluence of Donkey Creek.

(ii) Big Horn River Drainage

(A) Cottonwood Creek (near Hamilton Dome): The aquatic life criterion for chloride shall be 860 mg/L and the aquatic life criterion for selenium shall be 43 µg/L. These values represent instantaneous maximum values, not to be exceeded at any time.

(iii) Cheyenne River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 tributaries of Antelope Creek;

(B) The numeric human health criteria for iron and manganese shall not apply to Little Thunder Creek and all of its Class 2 tributaries below the confluence of North Prong.

(iv) Little Powder River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Little Powder River Drainage.

(v) North Platte River Drainage

(A) Poison Spider Creek: The aquatic life criterion for chloride shall be 531 mg/L. This value represents an instantaneous maximum value, not to be exceeded at any time.

(vi) Powder River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Powder River Drainage except on the following waters:

(I) The main stem of Clear Creek and its Class 2 tributaries upstream of Clearmont, Wyoming;

tributaries; (II) The main stem of Crazy Woman Creek and its Class 2

tributaries; and (III) The North Fork of the Powder River and all its Class 2

tributaries. (IV) The Middle Fork of the Powder River and all its Class 2

(B) Salt Creek: The aquatic life criterion for chloride shall be 1600 mg/L. This value represents an instantaneous maximum value, not to be exceeded at any time.

(C) Meadow Creek (tributary to Salt Creek): The aquatic life criterion for chloride shall be 1600 mg/L. This value represents an instantaneous maximum value, not to be exceeded at any time.

(D) Powder River below Salt Creek: The aquatic life criterion for chloride shall be 984 mg/L. This value represents an instantaneous maximum value, not to be exceeded at any time.

## Appendix C

### Ammonia Toxicity Criteria

(a) The ammonia values in the tables below are expressed in milligrams ammonia nitrogen per liter (mg N/L) and vary with temperature and/or pH, fish species or fish life stage. The ammonia criteria for pH values not represented in the tables can be calculated using the formulas in section (b) of Appendix C.

(i) pH-Dependent Values of the Acute Criterion (CMC)<sup>(1)</sup> for Ammonia

Acute Values, (mg N/L)		
pH	Salmonids Present	Salmonids Absent
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

(ii) Temperature and pH Dependent Values of the Chronic Criterion (CCC)<sup>(2)</sup> for Ammonia, Fish Early Life Stages *Present*

Temperature (°C)										
pH	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

(iii) Temperature and pH Dependent Values of the Chronic Criterion (CCC)<sup>(2)</sup> for Ammonia, Fish Early Life Stages *Absent*

Temperature (°C)										
pH	0-7	8	9	10	11	12	13	14	15*	16*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

\*At 15 °C and above, the criterion for fish early life stages absent is the same as the criterion for fish early life stages present.

(b) For pH values not expressed in the tables above, ammonia toxicity criteria can be calculated as follows:

(i) Criterion maximum concentration (CMC) when salmonids or other sensitive cold water species are present:

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

(ii) Criterion maximum concentration (CMC) when salmonids or other sensitive cold water species are absent:

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

(iii) Criterion continuous concentration (CCC) when fish early life stages are present:

$$CCC = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * \text{MIN}(2.85, 1.45*10^{0.028*(25-T)})$$

(iv) Criterion continuous concentration (CCC) when fish early life stages are absent:

$$CCC = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * 1.45*10^{0.028*(25-\text{MAX}(T,7))}$$

<sup>(1)</sup>Criterion maximum concentration (CMC) refers to the one-hour average concentration of total ammonia nitrogen (mg N/L) not to be exceeded more than once every three (3) years. The CMC can also be referred to as the acute value.

<sup>(2)</sup>Criterion continuous concentration (CCC) refers to the 30-day average concentration of total ammonia nitrogen (mg N/L) not to be exceeded more than once every three (3) years. In addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC. The CCC can also be referred to as the chronic value. The CCC values are implemented on Class 2 waters with an assumption that early life stages of fish are present. This assumption can be rebutted, but only where a permittee, discharge permit applicant or affected party provides sufficient site-specific information to support a conclusion that the assumption is not appropriate for that water body.

## Appendix D

### Minimum Dissolved Oxygen Criteria\* (mg/L)

	Cold Water Criteria		Class 2C and Warm Water Criteria	
	Early Life Stages <sup>(1)(2)</sup>	Other Life Stages	Early Life Stages <sup>(2)</sup>	Other Life Stages
30 Day Mean	n/a <sup>(3)</sup>	6.5	n/a <sup>(3)</sup>	5.5
7 Day Mean	9.5 (6.5)	n/a <sup>(3)</sup>	6.0	n/a <sup>(3)</sup>
7 Day Mean Minimum <sup>(4)</sup>	n/a <sup>(3)</sup>	5.0	n/a <sup>(3)</sup>	4.0
1 Day Minimum <sup>(4)</sup>	8.0 (5.0)	4.0	5.0	3.0

\*These limitations apply to Class 1, 2AB, 2B and 2C waters only and in no case shall be interpreted to require dissolved oxygen concentrations greater than 100 percent saturation at ambient temperature and elevation. Criteria derived from: *U.S. EPA. 1986. Ambient Water Quality Criteria. EPA 440/5-86-003. National Technical Service, Springfield, VA.*

<sup>(1)</sup>These are water column concentrations recommended to achieve the required inter-gravel dissolved oxygen concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.

<sup>(2)</sup>Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching.

<sup>(3)</sup>n/a (not applicable).

<sup>(4)</sup>All minima should be considered as instantaneous concentrations to be achieved at all times.

## **Appendix E**

### **References to Develop Site-Specific Criteria and Bioassays**

U.S. Environmental Protection Agency: Quality Criteria for Water. EPA-440/5-86/001. U.S. EPA, 1986.

U.S. Environmental Protection Agency: Ambient Water Quality Criteria Documents, 1980, and subsequent revisions. U.S. EPA, 1980.

U.S. Environmental Protection Agency: Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses. U.S. EPA, 1983.

U.S. Environmental Protection Agency: Technical Guidance Manual for Performing Waste Load Allocation, Book VI, Chapter 1: Stream Design Flow for Steady-State Modeling. U.S. EPA, 1986.

U.S. Environmental Protection Agency: Technical Support Document for Water Quality Based Toxics Control. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms. EPA-600/4-85/013. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Second Edition. EPA-600/4-89/001. U.S. EPA, 1989.

U.S. Environmental Protection Agency: Water Quality Standards Handbook, Second Edition, EPA 823-B-94-005a, August 1994, with Appendices.

U.S. Environmental Protection Agency: Aquatic Life Ambient Freshwater Quality Criteria-Copper. EPA-822-R-07-001. U.S. EPA, 2007.

## Appendix F

### Conversion Factors to Change Total Recoverable Metal Values to Dissolved Values and Equations For Hardness Dependent Metals

(a) Conversion Factors. Aquatic life values for the following metals are based on the dissolved amount of each substance. The recommended aquatic life value was calculated by using previous 304(a) aquatic life values expressed in terms of total recoverable metal and multiplying it by a conversion factor (CF). The conversion factors provided below are necessary to convert a metal value expressed as the total recoverable fraction in the water column to the dissolved fraction in the water column.

The toxicity of these metals also varies with hardness and the total recoverable value must be calculated based on the hardness (mg/L of CaCO<sub>3</sub>) prior to multiplying by the conversion factor (CF).

(i) The conversion factors for the following metals are constants:

Metal	Acute Value	Chronic Value
Chromium (III)	0.316	0.860
Copper	0.960	0.960
Nickel	0.998	0.997
Silver	0.85	n/a
Zinc	0.978	0.986

(ii) The conversion factors (CF) for cadmium and lead are not constant but vary with hardness (mg/L of CaCO<sub>3</sub>). Conversion factors can be calculated using the following equations, although when an ambient hardness of less than 25 mg/L (as CaCO<sub>3</sub>) is used to establish criteria for lead or cadmium, the conversion factor should not exceed one<sup>(a)</sup>:

(A) Cadmium Acute:  $CF = 1.136672 - [(\ln \text{hardness})(0.041838)]$

(B) Cadmium Chronic:  $CF = 1.101672 - [(\ln \text{hardness})(0.041838)]$

(C) Lead Acute and Chronic:  $CF = 1.46203 - [(\ln \text{hardness})(0.145712)]$

(b) Equations for Hardness Dependent Metals. Aquatic life values at various hardness<sup>(b)</sup> concentrations can be calculated using the formulas below. The formulas include the conversion factors to derive dissolved metal values:

<b>Parameter</b>	<b>Acute 1-Hour Average Concentration (µg/L)</b>	<b>Chronic 4-Day Average Concentration (µg/L)</b>
<b>Cadmium</b>	$e^{(1.0166[\ln(\text{hardness})] - 3.924)}(\text{CF})$	$e^{(0.7409[\ln(\text{hardness})] - 4.719)}(\text{CF})$
<b>Chromium (III)</b>	$e^{(0.8190[\ln(\text{hardness})] + 3.7256)}(0.316)$	$e^{(0.8190[\ln(\text{hardness})] + 0.6848)}(0.860)$
<b>Copper</b>	$e^{(0.9422[\ln(\text{hardness})] - 1.700)}(0.960)$	$e^{(0.8545[\ln(\text{hardness})] - 1.702)}(0.960)$
<b>Lead</b>	$e^{(1.273[\ln(\text{hardness})] - 1.460)}(\text{CF})$	$e^{(1.273[\ln(\text{hardness})] - 4.705)}(\text{CF})$
<b>Manganese</b>	$e^{(0.7693[\ln(\text{hardness})] + 4.4995)}$	$e^{(0.5434[\ln(\text{hardness})] + 4.7850)}$
<b>Nickel</b>	$e^{(0.8460[\ln(\text{hardness})] + 2.255)}(0.998)$	$e^{(0.8460[\ln(\text{hardness})] + 0.0584)}(0.997)$
<b>Silver</b>	$e^{(1.72[\ln(\text{hardness})] - 6.52)}(0.85)(0.5)^{(c)}$	n/a
<b>Zinc</b>	$e^{(0.8473[\ln(\text{hardness})] + 0.884)}(0.978)$	$e^{(0.8473[\ln(\text{hardness})] + 0.884)}(0.986)$

<sup>(a)</sup>Based on Guidance on the Calculation of Hardness-Dependent Metals Criteria presented in: *U.S. EPA. 2002. National Recommended Water Quality Criteria. EPA-822-R-02-047.*

<sup>(b)</sup>Hardness as mg/L CaCO<sub>3</sub>. Hardness values used in these equations must be less than 400 mg/L. For hardness values greater than 400 mg/L, use 400.

<sup>(c)</sup>Criterion multiplied by 0.5 to be comparable with other acute values derived using an averaging period. Value does not need to be multiplied by 0.5 if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA's 1980 guidelines as a not to be exceeded instantaneous maximum.

## Appendix G

### Equations For pH Dependent Parameters

<b>Parameter</b>	<b>Acute 1-Hour Average Concentration (µg/L)</b>	<b>Chronic 4-Day Average Concentration (µg/L)</b>
<b>Pentachlorophenol</b>	$e^{[1.005(\text{pH}) - 4.830]}$	$e^{[1.005(\text{pH}) - 5.290]}$

LP/rm/13-0620

# **WATER QUALITY RULES AND REGULATIONS**

## **Chapter 1**

### **WYOMING SURFACE WATER QUALITY STANDARDS**

[Proposed Rules](#)  
[July 8, 2013](#)

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Chapter 1

WYOMING SURFACE WATER QUALITY STANDARDS

Section 1. **Authority.** These regulations are promulgated pursuant to [Wyoming Statutes \(W.-S.\) 35-11-101](#) through ~~35-11-1803-1507~~, specifically 302-(a)-(i) and 302-(b)-(i) and (ii), and no person shall cause, threaten or allow violation of a surface water quality standard contained herein. Nothing in this definition is intended to expand the scope of the Environmental Quality Act, [defined at W.S. 35-11-103\(a\)\(xiii\)](#), ~~and~~ limited in W. S. 35-11-1104, nor do these regulations supersede or abrogate the authority of the state to appropriate quantities of water for beneficial uses.

       Section 2. **Definitions.**

(a) The definitions in ~~W.S. section~~ 35-11-103(a) and (c) of the Wyoming Environmental Quality Act apply to these rules. For example:

~~(i) “Compensatory mitigation” means replacement, substitution or enhancement of ecological functions and wetland values to offset anticipated losses of those values caused by filling, draining or otherwise damaging a wetland;~~

(ii) “Credible data” means scientifically valid chemical, physical and biological monitoring data collected under an accepted sampling and analysis plan, including quality control, quality assurance procedures and available historical data;

(iii) “Discharge” means any addition of any pollution or wastes to any waters of the state;

(iii) “Ecological function” means the ability of an area to support vegetation and fish and wildlife populations, recharge aquifers, stabilize base flows, attenuate flooding, trap sediment and remove or transform nutrients and other pollutants;

(iv) “Man-made wetlands” means those wetlands that are created intentionally or occur incidental to human activities, and includes any enhancement made to an existing wetland which increases its function or value;

(v) “Mitigation” means all actions to avoid, minimize, restore and compensate for ecological functions or wetland values lost;

(vi) “Natural wetlands” means those wetlands that occur independently of human manipulation of the landscape;

45 | (viii) “Nonpoint source” means any source of pollution other than a  
46 | point source. For purposes of W.S. 16-1-201 through 16-1-207 only, nonpoint source  
47 | includes leaking underground storage tanks as defined by W.S. 35-11-1415(a)(ix) and  
48 | aboveground storage tanks as defined by W.S. 35-11-1415(a)(xi);  
49 |

50 | (viii\*) “Point source” means any discernible, confined and discrete  
51 | conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well,  
52 | discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel  
53 | or other floating craft, from which pollutants are or may be discharged;  
54 |

55 | (ix) “Pollution” means contamination or other alteration of the  
56 | physical, chemical or biological properties of any waters of the state, including change in  
57 | temperature, taste, color, turbidity or odor of the waters or any discharge of any acid or  
58 | toxic material, chemical or chemical compound, whether it be liquid, gaseous, solid,  
59 | radioactive or other substance, including wastes, into any waters of the state which  
60 | creates a nuisance or renders any waters harmful, detrimental or injurious to public  
61 | health, safety or welfare, to domestic, commercial, industrial, agricultural, recreational or  
62 | other legitimate beneficial uses, or to livestock, wildlife or aquatic life, or which degrades  
63 | the water for its intended use, or adversely affects the environment. This term does not  
64 | mean water, gas or other material which is injected into a well to facilitate production of  
65 | oil, or gas or water, derived in association with oil or gas production and disposed of in a  
66 | well, if the well used either to facilitate production or for disposal purposes is approved  
67 | by authority of the state, and if the state determines that such injection or disposal well  
68 | will not result in the degradation of ground or surface or water resources;  
69 |

70 | (xi) “Wastes” means sewage, industrial waste and all other liquid,  
71 | gaseous, solid, radioactive, or other substances which may pollute any waters of the state;  
72 |

73 | (xii) “Waters of the state” means all surface and groundwater, including  
74 | waters associated with wetlands, within Wyoming;  
75 |

76 | (xiii) “Wetlands” means those areas in Wyoming having all three (3)  
77 | essential characteristics:  
78 |

79 | (A) Hydrophytic vegetation;

80 | (B) Hydric soils; and

81 | (C) Wetland hydrology.  
82 |

83 | (xiii\*) “Wetland value” means those socially significant attributes of  
84 | wetlands such as uniqueness, heritage, recreation, aesthetics and a variety of economic  
85 | values.  
86 |  
87 |  
88 |

89 | (b) The following definitions supplement those definitions contained in [W.S.](#)  
90 | ~~section~~ 35-11-103 of the Wyoming Environmental Quality Act.

91 |  
92 |           (i) “Acute value” means the one hour average concentration. The  
93 | EPA has determined that this value, if not exceeded more than once every three years on  
94 | average, should not result in unacceptable effects on freshwater aquatic organisms and  
95 | their uses. Acute values represent a response to a stimulus severe enough to induce a  
96 | rapid reaction, typically in 96 hours or less. Appendix B contains acute values for certain  
97 | pollutants.

98 |  
99 |           (ii) “Adjacent wetlands” means wetlands that are connected by a  
100 | defined channel to a surface tributary system, ~~or~~ are within the 100 year flood plain of a  
101 | river or stream, or occupy the fringe of any still water body which is connected by a  
102 | defined channel to a surface tributary system.

103 |  
104 |           (iii) “Ambient-based criteria” means water quality criteria that are  
105 | calculated based upon actual ambient or background water body conditions.

106 |  
107 |           (iv) “Aquatic life” means fish, invertebrates, amphibians, and other  
108 | flora and fauna which inhabit waters of the state at some stage of their life cycles.  
109 | Aquatic life does not include [human pathogens](#) or insect pests, ~~or exotic aquatic invasive~~  
110 | species [or other organisms](#) which may be considered “undesirable” by the Wyoming  
111 | Game and Fish [Department](#) or U.S. Fish and Wildlife Service within their appropriate  
112 | jurisdictions ~~and identified human pathogens~~.

113 |  
114 | ~~(v) —“Assimilative capacity” means the increment of water quality in terms of~~  
115 | ~~concentration, during the appropriate critical condition(s), that is better than the~~  
116 | ~~applicable numeric criterion. The concept of assimilative capacity has no meaning in~~  
117 | ~~relation to pollutants that are limited only by narrative criteria.~~

118 |  
119 |           (vi) “Best management practices (BMPs)” means a practice or  
120 | combination of practices that after problem assessment, examination of alternative  
121 | practices, and in some cases -public participation, are determined to be the most  
122 | technologically and economically feasible means of managing, preventing or reducing  
123 | nonpoint source pollution.

124 |  
125 |           (vii) “Chronic value” means the four day average concentration. The  
126 | EPA has determined that this value, if not exceeded more than once every three years on  
127 | average, should not result in unacceptable effects on freshwater aquatic organisms and  
128 | their uses. Chronic values represent a response to a continuous, long-term stimulus.  
129 | Appendix B contains chronic values for certain pollutants.

130 |  
131 |           (viii) “Cold water game fish” means burbot (~~g~~Genus *Lota*), grayling  
132 | (~~g~~Genus *Thymallus*), trout, salmon and char (~~genera~~Genus *Salmo*, *Oncorhynchus* and  
133 | *Salvelinus*); and whitefish (~~g~~Genus *Prosopium*).

134  
135 | \_\_\_\_\_(viii~~x~~) “Construction-related discharge” means discharges of sediment or  
136 turbidity related to construction activities in or along waters of the state. Generally, these  
137 discharges include, but are not limited to, construction site dewatering, temporary  
138 diversions, runoff from construction sites, excavation or equipment operation beneath the  
139 water’s surface, the discharge of dredged or fill material and placement of structural  
140 members such as bridge abutments, culverts, pipelines, etc. into or across any water of  
141 the state.

142  
143 | \_\_\_\_\_(ix) “Designated uses” means those uses specified in water quality  
144 standards for each water body or segment whether or not they are being attained.

145  
146 | \_\_\_\_\_(xi) “Dissolved oxygen” means a measure of the amount of free  
147 oxygen in water.

148  
149 | \_\_\_\_\_(xii) “*E. coli*” means any of the bacterium in the **F**family  
150 Enterobacteriaceae named *Escherichia* (**g**Genus) *coli* (**s**Species).

151  
152 | \_\_\_\_\_(xiii) “Effluent dependent water” means a water body with insufficient  
153 natural flow to support aquatic life~~that would be ephemeral without the presence of~~  
154 ~~permitted effluent~~, but which has perennial or intermittent flows for all or a portion of its  
155 length as the result of the discharge of wastewater.

156  
157 | ~~\_\_\_\_\_ (xiv) “Effluent dominated water” means a water body that would be intermittent~~  
158 ~~or perennial without the presence of wastewater effluent, but for which the flow or~~  
159 ~~volume of water for the majority of the year is primarily attributable to the discharge of~~  
160 ~~wastewater.~~

161  
162 | \_\_\_\_\_(xiii~~v~~) “Effluent limitations” means any restriction established by the state  
163 or by the administrator of the Environmental Protection Agency on quantities, rates and  
164 concentrations of chemical, physical, biological and other constituents which are  
165 discharged from point sources into waters of the state, including schedules of compliance.

166  
167 | \_\_\_\_\_(xiv~~i~~) “Environmental Protection Agency” means the federal  
168 Environmental Protection Agency (EPA).

169  
170 | \_\_\_\_\_(xv~~ii~~) “Ephemeral stream” means a stream which flows only in direct  
171 response to a single precipitation event in the immediate watershed or in response to a  
172 single snow melt event, and which has a channel bottom that is always above the  
173 prevailing water table.

174  
175 | \_\_\_\_\_(xvi~~ii~~) “Eutrophic” means the condition whereby waters or environments  
176 saturated with water become nutrient enriched (especially with phosphorus or nitrogen).  
177 This action leads to those waters becoming oxygen depleted or anaerobic.

178

179 | \_\_\_\_\_(xvii\*) “Existing quality” as used in these regulations refers only to Class  
180 | 1 waters and means the established chemical, physical, and biological water quality as of  
181 | the date the specific water segment was designated Class 1 with recognition of the fact  
182 | that water quality will ~~tend to~~ fluctuate on a seasonal and year-to-year basis depending  
183 | upon natural ~~variations~~ fluctuations in water quantity.  
184 |

185 | \_\_\_\_\_(xviii\*) “Existing use” means those uses actually attained in the water body  
186 | on or after November 28, 1975, whether or not they are included in the water quality  
187 | standards.  
188 |

189 | ⊕

191 | \_\_\_\_\_(xixi) “Federal Act” means the Federal Water Pollution Control Act  
192 | (Clean Water Act) and amendments as of November 27, 2002 ~~June 21, 2001~~.  
193 |

194 | \_\_\_\_\_(xxii) “Full body contact water recreation” means any recreational or  
195 | other surface water use in which there is contact with the water sufficient to pose a  
196 | significant health hazard (i.e., water skiing, swimming).  
197 |

198 | \_\_\_\_\_(xxiii) “Game fish” means bass (~~Genus~~ genera *Micropterus* and  
199 | *Ambloplites*), catfish and bullheads (genera ~~Genus~~ *Ameiurus*, *Ictalurus* and *Noturus* ~~and~~  
200 | *Pylodietis*), crappie (~~G~~ genus *Pomoxis*), freshwater drum (~~G~~ genus *Aplodinotus*), grayling  
201 | (g ~~Genus~~ *Thymallus*), burbot (g ~~Genus~~ *Lota*), pike (g ~~Genus~~ *Esox*), yellow perch (g ~~Genus~~  
202 | *Perca*), sturgeon (~~G~~ genus *Scaphirhynchus*), sunfish (g ~~Genus~~ *Lepomis*), trout, salmon and  
203 | char (Genus ~~genera~~ *Salmo*, *Oncorhynchus*, and *Salvelinus*), walleye and sauger (~~G~~ genus  
204 | *Sander* ~~Stizostedion~~); ~~and~~ whitefish (g ~~Genus~~ *Prosopium*).  
205 |

206 | \_\_\_\_\_(xxiv) “Historic data” means scientifically valid data that are ~~is~~ more than  
207 | five years old; or qualitative information that adds some factual information on the  
208 | historic conditions of a water body. ~~-~~ This historic qualitative information may include  
209 | photographs, journals and factual testimony of persons who have lived near or relied  
210 | upon the water body, and old records on water use and water conditions.  
211 |

212 | \_\_\_\_\_(xxiii\*) “Hydric soil” means a soil that formed under conditions of  
213 | saturation, flooding or ponding long enough during the growing season to develop  
214 | anaerobic conditions in the upper part.  
215 |

216 | \_\_\_\_\_(xxiv\*) “Hydrophytic vegetation” means a community of plants where,  
217 | under normal circumstances, more than 50 percent of the composition of the dominant  
218 | species from all strata are obligate wetland (OBL), facultative wetland (FACW), and/or  
219 | facultative (FAC) species; or a frequency analysis of all species within the community  
220 | yields a prevalence index value of less than 3.0 (where OBL = 1.0, FACW = 2.0, FAC =  
221 | 3.0, FACU (facultative upland) = 4.0, and UPL (upland species) = 5.0).  
222 |

223 | \_\_\_\_\_(xxv~~ii~~) “Intermittent stream” means a stream or part of a stream where the  
224 | channel bottom is above the local water table for some part of the year, but is not a  
225 | perennial stream.

227 | \_\_\_\_\_(xxvi~~ii~~)“Isolated water” means any surface water of the state which is not  
228 | connected by a defined channel to a surface tributary system, ~~and~~ is not within the 100  
229 | year flood plain of any river or stream and does not occupy the fringe of any still water  
230 | body which is connected by a defined channel to a surface tributary system.

232 | \_\_\_\_\_(xxvii~~x~~)——“Main stem” means the major channel of a river or stream  
233 | as shown on the latest and most detailed records of the Wyoming State Engineer.

235 | \_\_\_\_\_(xxviii~~x~~)——“Micrograms per liter (~~m~~ug/L)” means micrograms of  
236 | solute per liter of solution equivalent to parts per billion (ppb) in liquids, assuming unit  
237 | density.

239 | \_\_\_\_\_(xxix~~i~~) “Milligrams per liter (mg/L)” means milligrams of solute per liter  
240 | of solution equivalent to parts per million (ppm) in liquids, assuming unit density.

242 | \_\_\_\_\_(xxx~~ii~~) “Mixing zone” means limited area or volume of a surface water  
243 | body within which an effluent becomes thoroughly mixed with the water body.

245 | ~~——(xxxiii)“Nanograms per liter (ng/L)” means nanograms of solute per liter of  
246 | solution equivalent to parts per trillion in liquids, assuming unit density.~~

248 | (xxxi~~v~~)“Natural” means that condition which would exist without the ~~measurable~~  
249 | ~~effects or~~ measurable influence of man's activities.

251 | \_\_\_\_\_(xxxii~~v~~) “Natural biotic community” means the population struc-  
252 | tures which were historically or normally present under a given set of chemical and  
253 | physical conditions or which would potentially exist without the ~~measurable effects or~~  
254 | measurable influence of man's activities had ~~not~~ the habitat not been altered.

256 | \_\_\_\_\_(xxxii~~vi~~) “Natural water quality” means that quality of water which  
257 | would exist without the ~~measurable effects or~~ measurable influence of man's activities.

259 | \_\_\_\_\_(xxxiv~~ii~~) “Nephelometric turbidity unit (NTU)” means the standard  
260 | unit used to measure the optical property that causes light to be scattered and absorbed  
261 | rather than transmitted in straight lines through water, as measured by a nephelometer.

263 | \_\_\_\_\_(xxxv~~ii~~) “Net environmental benefit (NEB)” means a risk  
264 | management approach to derive site-specific criteria for effluent dependent water bodies  
265 | that weighs the potential for loss of a permitted effluent discharge against the benefits of  
266 | augmented flow. A net environmental benefit is demonstrated where there is a credible  
267 | threat to remove the permitted discharge, ~~and~~ the discharge has been shown to create an

268 | environmental benefit, ~~and~~ removal of the discharge would cause more environmental  
269 | harm than leaving it in place and the discharge will not pose a health risk to humans,  
270 | livestock or wildlife.

271 |  
272 | \_\_\_\_\_(xx\*vi\*) “Nongame fish” means all fish species except those listed  
273 | in Section 2-(b)(xxi) above.

274 |  
275 | \_\_\_\_\_(xxvii\*) “Non-priority pollutant” means any substance or  
276 | combination of substances other than those listed by EPA under Section 307(a) of the  
277 | ~~Federal~~ Clean Water Act.

278 |  
279 | \_\_\_\_\_(xxviii\*) “Perennial stream” means a stream or part of a stream that  
280 | flows continually during all of the calendar year as the result of a groundwater discharge  
281 | or surface runoff.

282 |  
283 | \_\_\_\_\_(xxix\*) “pH” means a term used to express the intensity of acidic  
284 | or alkaline conditions. pH is a measure of the hydrogen ion activity in a water sample. It  
285 | is mathematically related to hydrogen ion activity according to the expression:  $\text{pH} = -\log$   
286 |  $10 (\text{H}^+)$ , where  $(\text{H}^+)$  is the hydrogen ion activity. A pH value of 7 at 25 degrees Celsius is  
287 | neutral, with pHs ~~of~~ less than 7 progressively more acidic and pHs ~~of~~ greater than 7  
288 | progressively more basic (alkaline).

289 |  
290 | \_\_\_\_\_(xliii\*) “PicoCuries per liter (pCi/L)” means a term describing the  
291 | radiation level of water or solutions. A picocurie is equal to  $10^{-12}$  curie; a curie is defined  
292 | as  $3.7 \times 10^{10}$  disintegrations per second.

293 |  
294 | \_\_\_\_\_(xli\*) “Priority pollutants” means those substances or combination of  
295 | substances that are listed by EPA under Section 307(a) of the ~~Federal~~ Clean Water Act.

296 |  
297 | (xli\*) “Primary contact recreation” means any recreational or other surface water  
298 | use that could be expected to result in ingestion of the water or immersion (full body  
299 | contact).

300 |  
301 | \_\_\_\_\_(xlii\*) “Salinity” means the total mineral dissolved constituents,  
302 | after carbonates have been converted to oxides, organics have been oxidized and bromine  
303 | and iodine have been replaced by chloride. This term is often used interchangeably with  
304 | the term total dissolved solids.

305 |  
306 | \_\_\_\_\_(xliii\*) “Seasonal fishery” means a water body, or portion thereof, which  
307 | supports game and/or nongame fish or spawning for only a portion of the year, but does  
308 | not have the natural physical conditions necessary to support those uses on a year round  
309 | basis. Seasonal fisheries may include intermittent and ephemeral streams, shallow  
310 | reservoirs, lakes, or ponds, which either naturally recruit fish from adjacent perennial  
311 | water bodies or are managed as put-and-take fisheries.

312 |

313 | \_\_\_\_\_(xlvi~~iii~~) “Secondary contact recreation” means any recreational or other  
314 | surface water use in which contact with water is either incidental or accidental and ~~that~~  
315 | would not be expected to result in ingestion of the water or immersion.

316 |  
317 | \_\_\_\_\_(xlv~~i~~~~\*~~) “Storm water”, for the purposes of Section 7 of these regulations~~is~~  
318 | ~~chapter~~, means surface runoff from construction sites or industrial activities which are  
319 | regulated under Section 402-(p) of the ~~federal~~ Clean Water Act and Chapter 2 ~~or Chapter~~  
320 | ~~18~~ of the Wyoming Water Quality Rules and Regulations. Excluded from this definition  
321 | are those storm water discharges associated with industrial activities which are subject to  
322 | an existing federal effluent limitation guideline addressing storm water and where the  
323 | constituents listed in the federal effluent limitations have a reasonable potential to affect  
324 | the receiving waters.

325 |  
326 | \_\_\_\_\_(xlv~~ii~~) “Surface waters of the state” means all perennial, intermittent and  
327 | ephemeral defined drainages, lakes, reservoirs, and wetlands which are not man-made  
328 | retention ponds used for the treatment of municipal, agricultural or industrial waste; and  
329 | all other bodies of surface water, either public or private which are wholly or partially  
330 | within the boundaries of the state. Nothing in this definition is intended to expand the  
331 | scope of the Environmental Quality Act, as limited in W.S. 35-11-1104.

332 |  
333 | \_\_\_\_\_(xlv~~iii~~) “Toxic materials” means those materials or combinations of  
334 | materials including disease causing agents, which, after discharge and upon exposure,  
335 | ingestion, inhalation or assimilation into any organism, either directly from the  
336 | environment or indirectly by ingestion through food chains, will, on the basis of  
337 | information available to the director of the Wyoming Department of Environmental  
338 | Quality (department), cause death, disease, behavioral abnormalities, cancer, genetic  
339 | malfunctions, ~~physiological malfunctions~~ (including malfunctions in reproduction) or  
340 | physical deformations in such organisms or their offspring.

341 |  
342 | \_\_\_\_\_(xlv~~ix~~~~+~~) “Tributary” means those streams or stream segments which flow  
343 | into or contribute water to another stream, stream segment, downstream reach of the  
344 | same stream, or other water body.

345 |  
346 | \_\_\_\_\_(l~~iii~~) “Undesirable aquatic life” means organisms generally associated  
347 | with degraded or eutrophic conditions. These may include the following organisms  
348 | where they have replaced members of the natural biotic community: insect pests,  
349 | aquatic invasive species or other organisms~~exotic fish, or species~~ which may be  
350 | considered~~are designated~~ “undesirable” by the Wyoming Game and Fish Department or  
351 | the U.S. Fish and Wildlife Service within their appropriate jurisdictions.

352 |  
353 | \_\_\_\_\_(l~~v~~) “Use attainability analysis (UAA)” means a structured scientific  
354 | assessment of the factors affecting the attainment of the use. The factors may include  
355 | physical, chemical, biological, and economic factors as described in Section 33 of these  
356 | regulations.

357 |

358 | \_\_\_\_\_(lii\*) “Warm water game fish” means bass (genera~~Genus~~ *Micropterus*  
359 | and *Ambloplites*), ~~-~~catfish and bullheads (genera~~Genus~~ *Ameiurus*, *Ictalurus*, and *Noturus*  
360 | and *Pylodictus*), crappie (~~G~~genus *Pomoxis*), yellow perch (g~~Genus~~ *Perca*-), sunfish  
361 | (g~~Genus~~ *Lepomis*), walleye and sauger (g~~Genus~~ *Stizostedion*Sander), pike (g~~Genus~~  
362 | *Esox*), sturgeon (G~~genus~~ *Scaphirhynchus*) and freshwater drum (g~~Genus~~ *Aplodinotus*).  
363 |

364 | \_\_\_\_\_(lviii) “Wetland hydrology” means the presence of water on or near the  
365 | land surface at a frequency and duration to cause the formation of hydric soils and  
366 | support a prevalence of vegetation typically adapted to saturated and/or inundated  
367 | conditions.  
368 |

369 | \_\_\_\_\_(livii) “Wyoming Continuing Planning Process (CPP)” means a planning  
370 | process provided for under Section 303-(e)-(1) of the Clean Water~~Federal~~ Act ~~-~~developed  
371 | through public participation and consisting of policies, procedures and programs that  
372 | result in the definition and implementation of actions that lead to the prevention,  
373 | reduction and abatement of water pollution and for the protection and enhancement of  
374 | water uses in the State of Wyoming. The CPP is continuous in time and is designed to  
375 | respond to changes in conditions and attitudes. The CPP is adopted by resolution of the  
376 | Water and Waste Advisory Board and is certified by the Governor.  
377 |

378 | \_\_\_\_\_(lviii) “Wyoming surface waters” shall have the same meaning as  
379 | “surface waters of the state” defined in Section 2-(b)(xlvij).  
380 |

381 | \_\_\_\_\_(lvi\*) “Zone of passage” means a continuous water route which joins  
382 | segments of a surface water body above and below a mixing zone.  
383 |

384 | \_\_\_\_\_(lvix) “404 permit” means a permit issued pursuant to Section 404 of the  
385 | Clean Water~~Federal~~ Act to regulate the discharge of dredged or fill materials into surface  
386 | waters of the United States.  
387 |

388 | Section 3. **Water Uses.** The objectives of the Wyoming water pollution  
389 | control program are described in W.S. 35-11-102. These objectives are designed to serve  
390 | the- interests of the state and achieve the related goals, objectives, and policies of the  
391 | Clean Water~~Federal~~ Act. The objectives of the Wyoming program are to provide,  
392 | wherever attainable, the highest possible water quality commensurate with the following  
393 | uses:  
394 |

395 | (a) Agriculture. For purposes of water pollution control, agricultural uses  
396 | include irrigation and/or livestock watering.  
397 |

398 | (b) Fisheries. The fisheries use includes water quality, habitat conditions,  
399 | spawning and nursery areas, and food sources necessary to sustain populations of cold  
400 | water game fish, warm water game fish and nongame fish. This use does not include the  
401 | protection of aquatic invasive ~~exotic~~-species or other fish which may be~~are~~

402 | ~~considered~~ ~~designated~~ “undesirable” by the Wyoming Game and Fish Department or the  
403 | U.S. Fish and Wildlife Service within their appropriate jurisdictions.

404  
405 | (c) Industry. Industrial use protection involves maintaining a level of water  
406 | quality useful for industrial purposes.

407  
408 | (d) Drinking water. The drinking water use involves maintaining a level of  
409 | water quality that is suitable for potable water or intended to be suitable after receiving  
410 | conventional drinking water treatment.

411  
412 | (e) Recreation. Recreational use protection involves maintaining a level of  
413 | water quality which is safe for human contact. It does not guarantee the availability of  
414 | water for any recreational purpose. The recreation designated use includes primary  
415 | contact recreation and secondary contact recreation subcategories.

416  
417 | (f) Scenic value. Scenic value use involves the aesthetics of the aquatic  
418 | systems themselves (odor, color, taste, settleable solids, floating solids, suspended solids,  
419 | and solid waste) and is not necessarily related to general landscape appearance.

420  
421 | (g) Aquatic life other than fish. This use includes water quality and habitat  
422 | necessary to sustain populations of organisms other than fish in proportions which make  
423 | up diverse aquatic communities common to the waters of the state. This use does not  
424 | include the protection of human pathogens, insect pests, aquatic invasive species or other  
425 | organisms ~~or exotic species~~ which may be considered “undesirable” by the Wyoming  
426 | Game and Fish Department or the U.S. Fish and Wildlife Service within their appropriate  
427 | jurisdictions ~~and human pathogens~~.

428  
429 | (h) Wildlife. The wildlife use includes protection of water quality to a level  
430 | which is safe for contact and consumption by avian and terrestrial wildlife species.

431  
432 | (i) Fish consumption. The fish consumption use involves maintaining a level  
433 | of water quality that will prevent any unpalatable flavor and/or accumulation of harmful  
434 | substances in fish tissue.

435  
436 | Section 4. **Surface Water Classes and Uses.** The following water classes  
437 | are a hierarchical categorization of waters according to existing and designated uses.  
438 | Except for Class 1 waters, each classification is protected for its specified uses plus all  
439 | the uses contained in each lower classification. Class 1 designations are based on value  
440 | determinations rather than use support and are protected for all uses in existence at the  
441 | time or after designation. -There are four major classes of surface water in Wyoming  
442 | with various subcategories within each class (see “*Wyoming Surface Water Classification*  
443 | *List*” for current classifications ~~isting~~).

444  
445 | (a) Class 1, Outstanding Waters. Class 1 waters are those surface waters in  
446 | which no further water quality degradation by point source discharges other than from

447 | dams will be allowed. Nonpoint sources of pollution shall be controlled through  
448 | implementation of appropriate best management practices. Pursuant to Section 7 of these  
449 | regulations, the water quality and physical and biological integrity which existed on the  
450 | water at the time of designation will be maintained and protected. In designating Class 1  
451 | waters, the Environmental Quality Council ([council](#)) shall consider water quality,  
452 | aesthetic, scenic, recreational, ecological, agricultural, botanical, zoological, municipal,  
453 | industrial, historical, geological, cultural, archaeological, fish and wildlife, the presence  
454 | of significant quantities of developable water and other values of present and future  
455 | benefit to the people.

456 |  
457 | (b) Class 2, Fisheries and Drinking Water. Class 2 waters are waters, other  
458 | than those designated as Class 1, that are known to support fish [and](#)/or drinking water  
459 | supplies or where those uses are attainable. Class 2 waters may be perennial, intermittent  
460 | or ephemeral and are protected for the uses indicated in each sub-category listed below.  
461 | There are five subcategories of Class 2 waters.

462 |  
463 | (i) Class 2AB. Class 2AB waters are those known to support game  
464 | fish populations or spawning and nursery areas at least seasonally and all their perennial  
465 | tributaries and adjacent wetlands and where a game fishery and drinking water use is  
466 | otherwise attainable. Class 2AB waters include all permanent and seasonal game  
467 | fisheries and can be either “cold water” or “warm water” depending upon the  
468 | predominance of cold water or warm water species present. All Class 2AB waters are  
469 | designated as cold water game fisheries unless identified as a warm water game fishery  
470 | by a “ww” notation in the *“Wyoming Surface Water Classification List”*<sup>22</sup>. Unless it is  
471 | shown otherwise, these waters are presumed to have sufficient water quality and quantity  
472 | to support drinking water supplies and are protected for that use. Class 2AB waters are  
473 | also protected for nongame fisheries, fish consumption, aquatic life other than fish,  
474 | recreation, wildlife, industry, agriculture and scenic value uses.

475 |  
476 | (ii) Class 2A. Class 2A waters are those that are not known nor have  
477 | the potential to support ~~game~~-fish but are used for public or domestic drinking water  
478 | supplies, including their perennial tributaries and adjacent wetlands. Uses designated on  
479 | Class 2A waters include drinking water, aquatic life other than fish, recreation, wildlife,  
480 | industry, agriculture and scenic value.

481 |  
482 | (iii) Class 2B. Class 2B waters are those known to support or have the  
483 | potential to support game fish populations or spawning and nursery areas at least  
484 | seasonally and all their perennial tributaries and adjacent wetlands and where it has been  
485 | shown that drinking water uses are not attainable pursuant to the provisions of Section  
486 | 33. Class 2B waters include permanent and seasonal game fisheries and can be either  
487 | “cold water” or “warm water” depending upon the predominance of cold water or warm  
488 | water species present. All Class 2B waters are designated as cold water game fisheries  
489 | unless identified as a warm water game fishery by a “ww” notation in the *“Wyoming*  
490 | *Surface Water Classification List”*<sup>22</sup>. Uses designated on Class 2B waters include game

491 and nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife,  
492 industry, agriculture and scenic value.

493  
494 (iv) Class 2C. Class 2C waters are those known to support or have the  
495 potential to support only nongame fish populations or spawning and nursery areas at least  
496 seasonally including their perennial tributaries and adjacent wetlands. Class 2C waters  
497 | include all permanent and seasonal nongame fisheries and are considered “warm water”<sup>22</sup>.  
498 Uses designated on Class 2C waters include nongame fisheries, fish consumption, aquatic  
499 | life other than fish, recreation, wildlife, industry, agriculture, and scenic value.

500  
501 (v) Class 2D. Effluent dependent waters which are known to support  
502 fish populations and where the resident fish populations would be significantly degraded  
503 in terms of numbers or species diversity if the effluent flows were removed or reduced.  
504 Class 2D waters are protected to the extent that the existing fish communities and other  
505 designated uses are maintained and that the water quality does not pose a health risk or  
506 hazard to humans, livestock or wildlife. Uses designated on Class 2D waters include  
507 game or nongame fisheries, fish consumption, aquatic life other than fish, recreation,  
508 | wildlife, industry, agriculture, and scenic value.

509  
510 (c) Class 3, Aquatic Life Other than Fish. Class 3 waters are waters, other  
511 than those designated as Class 1, that are intermittent, ephemeral or isolated waters and  
512 because of natural habitat conditions, do not support nor have the potential to support fish  
513 populations or spawning, or certain perennial waters which lack the natural water quality  
514 | to support fish (e.g., geothermal areas). Class 3 waters provide support for invertebrates,  
515 amphibians, or other flora and fauna which inhabit waters of the state at some stage of  
516 their life cycles. Uses designated on Class 3 waters include aquatic life other than fish,  
517 recreation, wildlife, industry, agriculture and scenic value. Generally, waters suitable for  
518 this classification have wetland characteristics, and such characteristics will be a primary  
519 indicator used in identifying Class 3 waters. There are four subcategories of Class 3  
520 waters.

521  
522 | (i) ~~Class 3A.~~ Class 3A waters are isolated waters including wetlands  
523 that are not known to support fish populations or drinking water supplies and where those  
524 uses are not attainable.

525  
526 | (ii) ~~Class 3B.~~ Class 3B waters are tributary waters including adjacent  
527 wetlands that are not known to support fish populations or drinking water supplies and  
528 | where those uses are not attainable. Class 3B waters are intermittent and ephemeral  
529 streams with sufficient hydrology to normally support and sustain communities of aquatic  
530 life including invertebrates, amphibians, or other flora and fauna which inhabit waters of  
531 | the state at some stage of their life cycles. In general, 3B waters are characterized by  
532 frequent linear wetland occurrences or impoundments within or adjacent to the stream  
533 channel over its entire length. Such characteristics will be a primary indicator used in  
534 identifying Class 3B waters.

535

536 (iii) Class 3C. Class 3C waters are perennial streams without the  
537 natural water quality potential to support fish or drinking water supplies but do support  
538 wetland characteristics. These may include geothermal waters and waters with naturally  
539 high concentrations of dissolved salts or metals or pH extremes.

540  
541 (iv) Class 3D. Effluent dependent waters which are known to support  
542 communities of aquatic life other than fish and where the existing aquatic habitat would  
543 be significantly reduced in terms of aerial extent, habitat diversity or ecological value if  
544 the effluent flows are removed or reduced. Class 3D waters are protected to the extent  
545 that the existing aquatic community, habitat and other designated uses are maintained and  
546 the water quality does not pose a health risk or hazard to humans, livestock or wildlife.  
547

548 (d) Class 4, Agriculture, Industry, Recreation and Wildlife. Class 4 waters are  
549 waters, other than those designated as Class 1, where it has been determined that aquatic  
550 life uses are not attainable pursuant to the provisions of Section 33 of these regulations.  
551 Uses designated on Class 4 waters include recreation, wildlife, industry, agriculture and  
552 scenic value.  
553

554 (i) Class 4A. Class 4A waters are artificial canals and ditches that are  
555 not known to support fish populations.  
556

557 (ii) Class 4B. Class 4B waters are intermittent and ephemeral stream  
558 channels that have been determined to lack the hydrologic potential to normally support  
559 and sustain aquatic life pursuant to the provisions of Section 33(b)(ii) of these  
560 regulations. In general, 4B streams are characterized by only infrequent wetland  
561 occurrences or impoundments within or adjacent to the stream channel over its entire  
562 length. Such characteristics will be a primary indicator used in identifying Class 4B  
563 waters.  
564

565 (iii)- Class 4C. Class 4C waters are isolated waters that have been  
566 determined to lack the potential to normally support and sustain aquatic life pursuant to  
567 the provisions of Section 33(b)(i), (iii), (iv), (v); or (vi) of these regulations. Class 4C  
568 includes, but is not limited to, off-channel effluent dependent ponds -where it has been  
569 determined under Section 33(b)(iii) that removing a source of pollution to achieve full  
570 attainment of aquatic life uses would cause more environmental damage than leaving the  
571 source in place.  
572

573 (e) Specific stream segment classifications are contained in a separate  
574 document entitled "[Wyoming Surface Water Classification List](#)" which is published by  
575 the department and periodically revised and updated according to the provisions of  
576 Sections 4, 33, 34, 35 and Appendix A of this chapter. Class 1 waters are those waters  
577 that have been specifically designated by the [Environmental Quality Council](#). Class  
578 2AB, 2A, 2B and 2C designations are based upon the fisheries information contained in  
579 the Wyoming Game and Fish Department's "[Streams and Lakes](#)" [inventory Database](#) as  
580 submitted to the [Department of Environmental Quality](#) in June, 2000. This database

581 represents the best available information and is considered conclusive. Class 2D and 3D  
582 | designations are based upon ~~u~~Use ~~a~~Attainability ~~a~~Analyses demonstrating that the waters  
583 | are effluent dependent and do not pose a hazard to humans, wildlife or livestock. Class 4  
584 | designations are based upon knowledge that a water body is an artificial, man-made  
585 | conveyance, or has been determined not to support aquatic life uses through an approved  
586 | ~~U~~use ~~a~~Attainability ~~a~~Analysis. All other waters are designated as Class 3A, ~~or~~ 3B or 3C.  
587 | ~~New information made available to the department may be cause to amend the~~  
588 | ~~classifications. Additionally, Section 27 of these regulations is chapter~~ describes how  
589 | recreation use designations are made for specific water bodies.

590  
591           Section 5.       **Standards Enforcement.** The numerical and narrative standards  
592 | contained within these regulations shall be used to establish effluent limitations for those  
593 | discharges requiring control via permits to discharge in the case of point sources and best  
594 | management practices in the case of nonpoint sources. If no permit or best management  
595 | practice has been issued or implemented for a pollution source the state may, in addition  
596 | to other appropriate legal action, take direct action to enforce these standards.

597  
598           The processes used to implement the standards are described in various  
599 | implementation documents adopted by the department. Such documents are adopted with  
600 | full public participation and include, but are not limited to, the ~~i~~Implementation ~~p~~Policies  
601 | for ~~A~~antidegradation, ~~M~~ixing ~~Z~~ones ~~and~~ Dilution Allowances, ~~T~~turbidity, ~~and~~ ~~U~~se  
602 | ~~A~~ttainability ~~A~~analysis ~~and~~ agricultural use protection, the Wyoming Continuing  
603 | Planning Process (CPP), and best management practices.

604  
605           These regulations shall not be interpreted to preclude the establishment of  
606 | appropriate compliance schedules for permitting purposes nor shall compliance with the  
607 | conditions of these regulations exempt any discharger from the penalty provisions of  
608 | W.S. 35-11-901.

609  
610           Section 6.       **Interstate Compacts, Court Decrees and Water Rights.** The  
611 | department shall, after review and conference with the State Engineer, make  
612 | recommendations to the State Engineer concerning proposed new diversions which could  
613 | cause violations of these regulations.

614  
615 |           Section 7.       **Class 1 Waters.**

616  
617 |           (a)       Except as authorized in ~~Section 7 paragraph (b) of these regulations,~~ no  
618 | new point sources other than dams, may discharge, and no existing point sources, other  
619 | than dams, may increase their quantity of pollution discharge, to any water designated as  
620 | Class 1.

621  
622 |           (b)       Storm water and construction-related discharges of pollution to Class 1  
623 | waters may be authorized and shall be controlled through applicable water quality  
624 | permits, Section 401 certifications and/or by the application of best management  
625 | practices. Such discharges shall not degrade the quality of any Class 1 water below its

626 existing quality or adversely affect any existing use of the water. Temporary increases in  
627 turbidity that are within the limits established in Section 23 of these regulations and that  
628 do not negatively affect existing uses can be permitted. For purposes of this section,  
629 temporary increases in turbidity shall not exceed the actual construction period. The  
630 department shall impose whatever controls and monitoring are necessary on point source  
631 discharges to Class 1 waters and their tributaries to ensure that the existing quality and  
632 uses of the Class 1 water are protected and maintained.

633

634 (c) Nonpoint source discharges of pollution to Class 1 waters or tributaries of  
635 Class 1 waters shall be controlled by application of best management practices adopted in  
636 accordance with the Wyoming Continuing Planning Process. For Class 1 waters, best  
637 management practices will maintain existing quality and water uses.

638

639 |       Section 8.     **Antidegradation.**

640

641 (a) Water uses in existence on or after November 28, 1975 and the level of  
642 | water quality necessary to protect those uses shall be maintained and protected. Those  
643 | surface waters not designated as Class 1, but whose quality is better than the standards  
644 | contained in these regulations, shall be maintained at that higher quality. However, after  
645 | full intergovernmental coordination and public participation, the ~~Wyoming Department~~  
646 | ~~of Environmental Quality~~ may issue a permit for or allow any project or development  
647 | which would constitute a new source of pollution, or an increased source of pollution, to  
648 | these waters as long as the following conditions are met:

649

650 (i) The quality is not lowered below these standards;

651

652 (ii) All existing water uses are fully maintained and protected;

653

654 (iii) The highest statutory and regulatory requirements for all new and  
655 existing point sources and all cost effective and reasonable best management practices for  
656 nonpoint sources have been achieved; and

657

658 (iv) The lowered water quality is necessary to accommodate important  
659 economic or social development in the area in which the waters are located.

660

661 (b) The Water Quality Administrator (administrator) may require an  
662 | applicant to submit additional information, including    , but not limited to    , an analysis of  
663 | alternatives to any proposed discharge and relevant economic information before making  
664 | a determination under this section.

665

666 (c) The procedures used to implement this section are described in the  
667 | “Antidegradation Implementation Policy.”<sup>2</sup>

668

669 Section 9.     **Mixing Zones.** Except for acute whole effluent toxicity (WET)  
670 | values and Sections -14, 15, 16, 17, -28 and 29-(b) of these regulations, compliance with

671 water quality standards shall be determined after allowing reasonable time for mixing.  
672 Except for the zone of initial dilution, which is the initial 10% of the mixing zone, the  
673 mixing zone shall not contain pollutant concentrations that exceed the ~~acute~~-aquatic life  
674 acute values (see Appendix B). In addition, there shall be a zone of passage around the  
675 mixing zone which shall not contain pollutant concentrations that exceed the ~~chronic~~  
676 aquatic life chronic values (see Appendix B). Under no circumstance may a mixing zone  
677 be established which would allow human health criteria (see Appendix B) to be exceeded  
678 within 500 yards of a drinking water supply intake or result in acute lethality to aquatic  
679 life. The procedures used to implement this section are described in the “Mixing Zones  
680 and Dilution Allowances Implementation Policy.”<sup>22</sup>

681  
682 Section 10. **Testing Procedures.** For determination of the parameters  
683 involved in the standards, analyses will be in accordance with test procedures defined  
684 pursuant to: Title 40, Code of Federal Regulations, Part 136, or any modifications  
685 thereto. For test procedures not listed in the Code of Federal Regulations, test procedures  
686 outlined in the latest editions of: *EPA Methods for Chemical Analysis of Water and*  
687 *Wastes*; ~~or~~; *Standard Methods for the Examination of Water and Wastewaters*; or; *ASTM*  
688 *Standards*; ~~Part 31, Water~~ shall be used.

689  
690 ~~The analytical technique for total uranium (as U) shall be the fluorometric method~~  
691 ~~as referenced in *Methods for Determination of Radioactive Substances in Water and*~~  
692 ~~*Fluvial Sediments, Techniques of Water—Resource Investigations of the U.S. Geological*~~  
693 ~~*Survey, Book 5, Chapter A-5, pp. 83–92.*~~

694  
695 ———Where standard methods of testing have not been established, the suitability of  
696 testing procedures shall be determined by the department and the EPA using defensible  
697 scientific methods.

698  
699 Numeric criteria included in the standards represent levels necessary to protect  
700 designated uses and do not necessarily reflect detection limits that can be achieved using  
701 standard analytical techniques. Standard analytical techniques are considered during  
702 development of discharge permits and evaluation of water quality data. Sampling entities  
703 should consult with the department to determine reporting limit needs to ensure that  
704 adequate testing procedures and reporting limits are requested from the laboratory.

705  
706 Section 11. **Flow Conditions.**

707  
708 (a) Numeric water quality standards shall be enforced at all times except  
709 during periods below low flow. Low flow can be determined by the following methods:  
710 ~~Whatever method is selected for a specific situation, application of the standards will~~  
711 ~~conform to the magnitude, frequency, and duration provisions as described in these~~  
712 ~~regulations;~~

713  
714 (i) Using the 7Q10 (the minimum seven (7) consecutive day flow  
715 which has the probability of occurring once in ten (10) years);

716  
717 (ii) The EPA's biologically based flow method which determines a  
718 four (4) day, three (3) year low flow for chronic exposures and a one (1) day, three (3)  
719 year low flow for acute exposures (~~ref:~~*Technical Guidance Manual For Performing*  
720 *Waste Load Allocation*,<sup>5</sup> *Book VI, Design Conditions: Chapter 1, Stream Design Flow for*  
721 *Steady-State Modeling, August 1986, US EPA*); or

722  
723 (iii) Other defensible scientific methods.

724  
725 For all methods, application of the standards will conform to the magnitude,  
726 duration and frequency provisions described in these regulations.

727  
728 (b) During periods when stream flows are less than the minimums described  
729 above, the department may, in consultation with the Wyoming Game and Fish  
730 Department and the affected discharger(s), require permittees to institute operational  
731 modifications as necessary to insure the protection of aquatic life. This section should  
732 not be interpreted as requiring the maintenance of any particular stream flow.

733  
734 (c) The narrative water quality standards in Sections 14, 15, 16, 17, 28 and  
735 29(b) of these regulations shall be enforced at all stream-flow conditions.

736  
737 Section 12. **Protection of Wetlands.** Point or nonpoint sources of pollution  
738 shall not cause the destruction, damage, or impairment of naturally occurring wetlands  
739 except when mitigated through an authorized wetlands mitigation process. When  
740 approving mitigation, the department may consider both the ecological functions and the  
741 wetland value of the disturbed wetland.

742  
743 This section does not apply to wetlands created by point or nonpoint sources;<sup>5</sup> nor  
744 are such wetlands required to be maintained through continuation of such discharges.  
745 Similarly, any man-made wetlands or enhancements which have been credited in the state  
746 wetland banking program are not required to be maintained until the credit is used for  
747 mitigation purposes. These areas will, however, be protected from discharges of wastes,  
748 toxic substances or chemical pollutants as are any other waters of the state.

749  
750 Section 13. **Toxic Materials.** Except for those substances referenced in  
751 Sections 21-(e) and (f) of these regulations, toxic materials attributable to or influenced  
752 by the activities of man shall not be present in any Wyoming surface water in  
753 concentrations or combinations which constitute "pollution".

754  
755 Section 14. **Dead Animals and Solid Waste.** Dead animals or solid waste  
756 shall not be placed or allowed to remain in Wyoming surface waters. When discovered,  
757 removal shall be expeditious unless removal would likely cause more contamination than  
758 non-removal. This section should not be interpreted to place a burden on any person to  
759 remove dead wildlife from surface waters where the death of the animals occurs under  
760 natural or uncontrollable circumstances.

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Except as authorized through a 404 permit, solid waste shall not be placed or allowed to remain in surface waters of the state, nor shall solid wastes be placed or allowed to remain in any location which would cause or threaten contamination of Wyoming surface waters.

**Section 15. Settleable Solids.** In all Wyoming surface waters, substances attributable to or influenced by the activities of man that will settle to form sludge, bank or bottom deposits shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife.

**Section 16. Floating and Suspended Solids.** In all Wyoming surface waters, floating and suspended solids attributable to or influenced by the activities of man shall not be present in quantities which could result in significant aesthetic degradation, significant degradation of habitat for aquatic life, or adversely affect public water supplies, agricultural or industrial water use, plant life or wildlife.

**Section 17. Taste, Odor and Color.** No Class 1, 2, or 3 waters shall contain substances attributable to or influenced by the activities of man that produce taste, odor and color or that would:

(a) — Of themselves or in combination, impart an unpalatable or off-flavor in fish flesh;

(b) — Visibly alter the natural color of the water or impart color to skin, clothing, vessels or structures;

(c) — Produce detectable odor; or

(d) — Directly or through interaction among themselves, or with chemicals used in existing water treatment processes, result in concentrations that will impart undesirable taste or odor to public water supplies.

**Section 18. Human Health.** In all Class 1, 2AB, and 2A waters, the “Human Health Consumption of values for Fish and Drinking Water” values listed in Appendix B of these regulations shall not be exceeded. In all Class 2B, 2C and 2D waters, the “Human Health Consumption of values for Fish Only” (consumption of aquatic organisms) values shall not be exceeded.

In certain waters, the criteria listed in Appendix B of these regulations may not be appropriate due to unique physical or chemical conditions. In such cases, human health values may be established ~~determined by using~~ of the site-specific procedures outlined in the references listed in Appendix E ~~of these regulations~~ or other scientifically defensible methods.

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Section 19. **Industrial Water Supply.** All Wyoming surface waters which have the natural water quality potential for use as an industrial water supply shall be maintained at a quality which allows continued use of such waters for industrial purposes.

Degradation of such waters shall not be of such an extent to cause a measurable increase in raw water treatment costs to the industrial user(s).

Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an industrial water supply.

Section 20. **Agricultural Water Supply.** All Wyoming surface waters which have the natural water quality potential for use as an agricultural water supply shall be maintained at a quality which allows continued use of such waters for agricultural purposes.

Degradation of such waters shall not be of such an extent to cause a measurable decrease in crop or livestock production.

Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an agricultural water supply.

~~The procedures used to implement this section are described in the “Agricultural Use Protection Policy.”~~

Section 21. **Protection of Aquatic Life.**

(a) Ammonia.

(i) The toxicity of ammonia varies with pH and temperature and the applicable limitations are included in the ~~tables~~~~charts~~ in Appendix C of these regulations. The numeric ammonia criteria in Appendix C apply to all Class 1, ~~2AB, 2A, 2B, 2AB~~ and 2C waters.

(ii) In all Class ~~2D and~~ 3 waters, concentrations of ammonia attributable to or influenced by human activities shall not be present in concentrations which could result in harmful acute or chronic effects to aquatic life, or which would not fully support existing and designated uses.

(b) Specific numeric standards for a number of toxicants are listed in the ~~“Aquatic Life “Acute V”~~ and ~~“Aquatic Life C”~~~~chronic V”~~ columns in Appendix B of these regulations. These standards apply to all Class 1, ~~2A, 2B, 2AB, 2C, 3A, 3B~~ and 3C waters. For these pollutants, the chronic value (four (4) day average concentration) and the acute value (one (1) hour average concentration) shall not be exceeded more than once every three (3) years.

851  
852 (c) Others. For those pollutants not listed in Appendix B or C of these  
853 regulations, maximum allowable concentrations on Class 1, 2 and 3 -waters shall be  
854 determined through the bioassay procedures outlined in the references listed in Appendix  
855 E of these regulations.

856  
857 (d) In certain waters, the criteria listed in Appendix B or C of these  
858 regulations may not be appropriate due to unique physical or chemical conditions. In  
859 such cases, acute and chronic values may be determined ~~by using~~ of the site-specific  
860 procedures outlined in ~~sections 33 or 36 or in~~ the references listed in Appendix E or other  
861 scientifically defensible methods ~~of these regulations~~.

862  
863 (e) Aquatic pesticides specifically designed to kill, repel or mitigate aquatic  
864 pest problems (e.g. such as mosquito larvae or heavy plant growth in irrigation ditches)  
865 may be added to surface waters of the state if the use and application is in compliance  
866 with the following:

867  
868 (i) The ~~pesticide~~chemical toxicant used is a product which has been  
869 registered ~~with~~by the -EPA and ~~approved by~~ the Wyoming Department of Agriculture for  
870 use in the state, in accordance with W.S. 35-7-356;

871  
872 (ii) The application is conducted by a person licensed by the Wyoming  
873 Department of Agriculture to purchase and apply restricted use pesticides ~~such toxicants~~  
874 in the state;

875  
876 (iii) All applications of aquatic pesticides must be administered in  
877 accordance with label directions. However, compliance with label directions shall not  
878 exempt any person or agency from the penalty provisions of W.S. 35-11-901 should non-  
879 target species or non-target areas be affected.

880  
881 (f) This section shall not apply to the use of fish toxicants if the use and  
882 application is in compliance with the following:

883  
884 (i) The ~~pesticide~~chemical toxicant used is a product which has been  
885 registered ~~with~~by the -EPA and ~~approved by~~ the Wyoming Department of Agriculture for  
886 use in the state, in accordance with W.S. 35-7-356;

887  
888 (ii) The application is conducted by a person licensed by the Wyoming  
889 Department of Agriculture to purchase and apply restricted use pesticides ~~such toxicants~~  
890 in the state;

891  
892 (iii) All applications of fish toxicants must be administered in  
893 accordance with label directions. However, compliance with label directions shall not  
894 exempt any person or agency from the penalty provisions of W.S. 35-11-901 should non-  
895 target species or non-target areas be affected.

896  
897 (iv) The Wyoming Game and Fish Department may apply fish  
898 toxicants to any surface water of the state provided that prior notice is made to the  
899 | ~~D~~epartment ~~of Environmental Quality~~ and after receipt of ~~a~~ verification from the Water  
900 Quality Division that the proposed application is in compliance with this section.

901  
902 (v) The National Park Service, as the wildlife management agency in  
903 Yellowstone National Park, may apply fish toxicants to surface waters within  
904 Yellowstone National Park for the purpose of killing or controlling fish provided that  
905 | prior notice is made to the ~~D~~epartment ~~of Environmental Quality~~ and after receipt of a  
906 verification from the Water Quality Division that the proposed application is in  
907 compliance with this section. Approval from the Wyoming Game and Fish Department  
908 is also required prior to application of fish toxicants to waters which flow into surface  
909 waters of the state outside of Yellowstone National Park.

910  
911 (vi) Private certified pesticide applicators for restricted use pesticides  
912 may apply fish toxicants only to waters located entirely on private property where there is  
913 no surface outlet to waters of the state provided that prior notice is made to the  
914 | ~~d~~epartment ~~of Environmental Quality~~ and after receipt of ~~a~~ verification from the Water  
915 Quality Division that the proposed application is in compliance with this section.  
916 Approval, including any necessary permits, from the Wyoming Game and Fish  
917 Department is also required prior to application of fish toxicants to insure protection of  
918 fish and wildlife resources.

919  
920 (vii) Pesticide applications must be conducted in a manner that  
921 minimizes to the extent practicable, the magnitude of any change in the concentration of  
922 the parameters affected by the activity and the length of time during which any change  
923 may occur. The application must include measures that prevent significant risk to public  
924 health and ensure that existing and designated uses of the water are protected and  
925 maintained upon the completion of the activity.

926  
927 (viii) Except for the circumstances described in (i) through (vii) above,  
928 no other agency or person may apply fish toxicants in any water of the state.

929  
930 | Section 22. **Radioactive Material.**

931  
932 (a)— In Class 1, 2AB and 2A waters, ~~the radiological limits of 5 pCi/L for~~  
933 combined radium-226 and radium-228, 15 pCi/L for gross alpha particle activity  
934 (excluding radon and uranium), 30 µg/L for uranium and 4 millirems per year  
935 (mrem/year) for beta particle and photon radioactivity ~~established in the most recent~~  
936 ~~Federal Primary Drinking Water Standards published by EPA or its successor agency (40~~  
937 ~~CFR parts 141.15 and 141.16, published July 1, 1998)~~ shall not be exceeded.

938  
939 | (b) In Class 2B, 2C, 2D, 3 and 4 waters, the total radium-~~226~~ concentration  
940 shall not exceed 60 pCi/L.

941  
942 (c) In all Wyoming surface waters, radioactive materials attributable or  
943 influenced by the activities of man shall not be present in the water or in the sediments in  
944 amounts which could cause harmful accumulations of radioactivity in plant, wildlife,  
945 | livestock; or aquatic life.

946  
947 | Section 23. **Turbidity.**

948  
949 | (a) In all cold water fisheries and/or drinking water supplies (Classes 1,  
950 | 2AB, 2A, and 2B), the discharge of substances attributable to or influenced by the  
951 | activities of man shall not be present in quantities which would result in a turbidity  
952 | increase of more than ten (10) nephelometric turbidity units (NTUs).

953  
954 | (b) In all warm water or nongame fisheries (Classes 1, 2AB, 2B and 2C), the  
955 | discharge of substances attributable to or influenced by the activities of man shall not be  
956 | present in quantities which would result in a turbidity increase of more than 15 NTUs.

957  
958 (c) An exception to paragraphs (a) and (b) of this section shall apply to:

959  
960 (i) The North Platte River from Guernsey Dam to the Nebraska line  
961 during the annual “silt run” from Guernsey Dam; and

962  
963 (ii) Short-term increases of turbidity that have been determined by the  
964 administrator to have only a minimal effect on water uses. Such determinations shall be  
965 | made on a case-by-case basis and shall be subject to whatever controls, monitoring, and  
966 | best management practices are necessary to fully maintain and protect all water uses.  
967 | The procedures used to implement this section are described in the “*Turbidity*  
968 | *Implementation Policy*.”

969  
970 Section 24. **Dissolved Oxygen.** In all Class 2A, 2D and 3 waters,  
971 | pollutionwastes attributable to ~~or influenced by~~ the activities of man shall not deplete  
972 dissolved oxygen amounts to a level which will result in harmful acute or chronic effects  
973 to aquatic life, or which would not fully support existing and designated uses.

974  
975 | In all Class 1, 2AB, 2B and 2C waters, pollutionwastes attributable to ~~or~~  
976 | ~~influenced by~~ the activities of man shall not ~~be present in amounts which will~~ result in a  
977 dissolved oxygen content of less than that presented on the chart in Appendix D of these  
978 regulations.

979  
980 Section 25. **Temperature.**

981  
982 | (a) For Class 1, 2 and 3 waters, pollutioneffluent attributable to ~~or influenced~~  
983 | ~~by~~ the activities of man shall not ~~be discharged in amounts which~~ change ambient water  
984 temperatures to levels which result in harmful acute or chronic effects to aquatic life, or  
985 which would not fully support existing and designated uses.

986  
987 (b) When ambient temperatures are above 60 degrees Fahrenheit (15.6  
988 degrees Celsius) in all Class 1, 2AB, and 2B waters which are cold water fisheries,  
989 pollution effluent attributable to ~~or influenced by~~ the activities of man shall not ~~be~~  
990 ~~discharged in amounts which will~~ result in an increase of more than 2 degrees Fahrenheit  
991 (1.1 degree Celsius) in existing temperatures.

992  
993 (c) When ambient temperatures are above 60 degrees Fahrenheit (15.6  
994 degrees Celsius) in all Class 1, 2AB, 2B and 2C waters, which are warm water fisheries,  
995 pollution effluent attributable to ~~or influenced by~~ the activities of man shall not ~~be dis-~~  
996 ~~charged in amounts which will~~ result in an increase of more than 4 degrees Fahrenheit  
997 (2.2 degrees Celsius) in existing temperatures.

998  
999 (d) Except on Class 2D, 3 and ~~Class~~ 4 waters, the maximum allowable stream  
1000 temperature will be the maximum natural daily stream temperature plus the allowable  
1001 change, provided that this temperature is not lethal to existing fish life and under no  
1002 circumstance shall pollution attributable to the activities of man result in this a maximum  
1003 temperature that exceeds 68 degrees Fahrenheit (20 degrees Celsius) in the case of cold  
1004 water fisheries and 86 degrees Fahrenheit (30 degrees Celsius) in the case of warm water  
1005 fisheries.

1006  
1007 (e) With the exception of the provisions of Sections 9 and 11 of these  
1008 regulations and other natural conditions, temperature standards shall apply at all times  
1009 and at all depths of the receiving water and may not be violated at any time or at any  
1010 depth.

1011  
1012 (f) The various requirements of this section may be waived only under the  
1013 provisions of Section 316-(a) of the Clean Water ~~Federal~~ Act.

1014  
1015 Section 26. **pH.**

1016  
1017 (a) For all Wyoming surface waters, pollution wastes attributable to ~~or~~  
1018 ~~influenced by~~ the activities of man shall not be present in amounts which will cause the  
1019 pH to be less than 6.5 or greater than 9.0 standard units.

1020  
1021 (b) For all Class 1, 2 and 3 waters, pollution effluent attributable to the or  
1022 ~~influenced by human~~ activities of man shall not ~~be discharged in amounts which~~ change  
1023 the pH to levels which result in harmful acute or chronic effects to aquatic life, directly or  
1024 in conjunction with other chemical constituents, or which would not fully support  
1025 existing and designated uses.

1026  
1027 Section 27. ***E. coli* Bacteria.**

1028  
1029 (a) ~~—~~ Primary Contact Recreation. ~~—~~ In all waters designated for primary contact  
1030 recreation, during the summer recreation season (May 1 through September 30),

1031 concentrations of *E. coli* bacteria shall not exceed a geometric mean of 126 organisms per  
1032 100 milliliters ~~based on a minimum of not less than 5 samples obtained during separate~~  
1033 ~~24 hour periods for~~ during any consecutive 630-day period. ~~All waters in Table A of the~~  
1034 ~~Wyoming Surface Water Classification List are designated for primary contact recreation~~  
1035 ~~unless identified as a secondary contact water by a “(s)” notation. Waters not~~  
1036 ~~specifically listed in Table A of the Wyoming Surface Water Classification List shall be~~  
1037 ~~designated as secondary contact waters. During the period October 1 through April 30,~~  
1038 ~~all waters are protected for secondary contact recreation only. Primary contact waters are~~  
1039 ~~identified in the Wyoming Surface Water Classification List.~~

1040  
1041 (b)     -Secondary Contact Recreation. In all waters designated for secondary  
1042 contact recreation, and in waters designated for primary contact recreation during the  
1043 winter recreation season (October 1 through April 30), concentrations of *E. coli* bacteria  
1044 shall not exceed a geometric mean of 630 organisms per 100 milliliters ~~based on a~~  
1045 ~~minimum of not less than 5 samples obtained during separate 24 hour periods for~~ during  
1046 any consecutive 360-day period. Waters will be designated for secondary contact  
1047 recreation through the reclassification and use attainability analysis process outlined in  
1048 Sections 33 and 34 of these regulations. Secondary contact waters are identified in the  
1049 Wyoming Surface Water Classification List.

1050  
1051 (c)     -Single-sample Maximum Concentrations. During the summer recreation  
1052 season, on all waters designated for primary contact recreation, the following single-  
1053 sample maximum concentrations of *E. coli* bacteria shall apply:

- 1054  
1055         (i) High use swimming areas -- 235 organisms per 100 milliliters  
1056  
1057         (ii) Moderate full body contact -- 298 organisms per 100 milliliters  
1058  
1059         (iii) Lightly used full body contact - 410 organisms per 100 milliliters  
1060  
1061         (iv) Infrequently used full body contact - 576 organisms per 100  
1062 milliliters

1063  
1064         Single-sample maximum values may be used to post recreational use advisories in  
1065 public recreation areas and to derive single-sample maximum effluent limitations on  
1066 point source discharges. An exceedance of the single-sample maxima shall not be cause  
1067 for listing a water body on the State 303(d) list or development of a TMDL or watershed  
1068 plan. The appropriate recreational use category (i through iv, above) shall be determined  
1069 by the administrator as needed, on a case by case basis. In making such a determination,  
1070 the administrator may consider such site-specific circumstances as type and frequency of  
1071 use, time of year, public access, proximity to populated areas, and local interests.

1072  
1073 (d) ~~Variance~~s. ~~Temporary and/or permanent variance~~s to the *E. coli* values  
1074 ~~provided in (a) through (c) above may be granted in instances where the primary source~~

1075 | ~~of bacterial contamination is found to be natural in origin (wildlife), unavoidable (off-~~  
1076 | ~~channel stock watering pits), or otherwise in the public interest.~~

1077 |  
1078 | ~~\_\_\_\_\_~~Section 28. **Undesirable Aquatic Life.** All Wyoming surface waters shall be  
1079 | free from substances and conditions or combinations thereof which are attributable to or  
1080 | influenced by the activities of man, in concentrations which produce undesirable aquatic  
1081 | life.

1082 |  
1083 | Section 29. **Oil and Grease.** In all Wyoming surface waters, substances  
1084 | attributable to or influenced by the activities of man shall not be present in amounts  
1085 | which would cause:

1086 |  
1087 | (a) The oil and grease content to exceed 10 mg/L; or

1088 |  
1089 | (b) The formation of a visible sheen or visible deposits on the bottom or  
1090 | shoreline, or damage or impairment of the normal growth, function or reproduction of  
1091 | human, animal, plant or aquatic life.

1092 |  
1093 | Section 30. **Total Dissolved Gases.** In all Class 1, 2AB, 2B and 2C waters,  
1094 | the total dissolved gas concentration below man-made dams shall not exceed 110 percent  
1095 | of the saturation value for gases at the existing atmospheric and hydrostatic pressures.

1096 |  
1097 | Section 31. **Colorado Basin Salinity.** The State of Wyoming is a member of  
1098 | the Colorado River Basin Salinity Control Forum, which includes all states in the  
1099 | Colorado River Basin. This forum has adopted a salinity control program for the basin  
1100 | which has been adopted as Chapter 6 of the Wyoming Water Quality Rules and Regula-  
1101 | tions.

1102 |  
1103 | Section 32.— **Biological Criteria.** Class 1, 2 and 3 waters of the state must be  
1104 | free from substances, whether attributable to human-induced point source discharges or  
1105 | nonpoint source activities, in concentrations or combinations which will adversely alter  
1106 | the structure and function of indigenous or intentionally introduced aquatic communities.

1107 |  
1108 | Section 33. **Reclassifications and Site-Specific Criteria.**

1109 |  
1110 | (a) Any person at any time may petition the department or the ~~Environmental~~  
1111 | ~~Quality Council (Council)~~ to change the classification, add or remove a designated use  
1112 | or establish site-specific criteria on any surface water.

1113 |  
1114 | (b) The ~~Water Quality A~~Administrator may lower a classification, remove a  
1115 | designated use which is not an existing ~~use~~ or ~~an~~ attainable use, establish ambient-based  
1116 | criteria on effluent dependent waters, ~~or~~ make a recommendation to the ~~Environmental~~  
1117 | ~~Quality Council~~ council to establish sub-categories of a use, or establish site-specific  
1118 | criteria if it can be demonstrated through a ~~u~~Use ~~a~~Attainability ~~a~~Analysis (UAA) that the

1119 | original classification, ~~and/or~~ designated use or water quality criteria are not feasible  
1120 | because:

1121

1122 | (i) Naturally occurring pollutant concentrations prevent the attainment  
1123 | of the classification or use; or

1124

1125 | (ii) ~~Natural~~, ephemeral, intermittent or low flow conditions or water  
1126 | levels prevent the attainment of the use, unless these conditions may be compensated for  
1127 | by the discharge of sufficient volume of effluent discharges without violating state water  
1128 | conservation requirements to enable uses to be met; or

1129

1130 | (iii) Human caused conditions or sources of pollution prevent the  
1131 | attainment of the use and cannot be remedied or would cause more environmental  
1132 | damage to correct than to leave in place; or

1133

1134 | (iv) Dams, diversions, ~~or~~ other types of hydrologic modifications  
1135 | preclude the attainment of the classification or use, and it is not feasible to restore the  
1136 | water body to its original condition or to operate such modification in such a way that  
1137 | would result in the attainment of the classification or use; or

1138

1139 | (v) Physical conditions related to the natural features of the water  
1140 | body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like,  
1141 | unrelated to water quality, preclude attainment of the aquatic life classification ~~or~~ use;  
1142 | or

1143

1144 | (vi) Controls more stringent than those required by Sections 301(b) and  
1145 | 306 of the Clean Water ~~Federal~~ Act would result in substantial and widespread economic  
1146 | and social impact. This subsection shall not apply to the derivation of site-specific  
1147 | criteria.

1148

1149 | (c) The ~~Water Quality A~~ Administrator may raise a classification, add a  
1150 | designated use, ~~or~~ make a recommendation to the ~~c~~ Environmental Quality Council to  
1151 | establish sub-categories of a use or site-specific criteria, if it can be demonstrated through  
1152 | a Use a ~~Attainability a~~ Analysis (UAA) that such uses are existing uses or may be  
1153 | attained with the imposition of more stringent controls or management practices.

1154

1155 | (d) The procedures used to implement this section are described in the ~~“Use~~  
1156 | *Attainability Analysis Implementation Policy.*”<sup>22</sup>

1157

1158 | (e) The provisions of subsections (b) and (c) above are not applicable to Class  
1159 | 1 designations. Class 1 designations may be added or removed in accordance with ~~the~~  
1160 | provisions of the Environmental Quality Act, the Wyoming Administrative Procedures  
1161 | Act and Section 4-(a) of these regulations.

1162

1163 | Section 34. **Use Attainability Analysis.** The ~~Water Quality~~ administrator  
1164 | shall review all petitions submitted under Section 33 of these regulations and make a  
1165 | determination based upon the technical merits of the ~~u~~Use ~~a~~Attainability ~~A~~analysis.  
1166 | Public notice and opportunity for comment shall be provided prior to making this  
1167 | determination.

1169 | (a) Any changes in water classifications or use designations resulting from the  
1170 | administrator's determination shall be submitted to EPA for approval as revised water  
1171 | quality standards for Clean Water Act purposes and shall become effective either upon  
1172 | EPA approval or 90 days after submittal, whichever comes first. ~~-~~If within 90 days of  
1173 | submittal, the EPA determines that any such revised or new standard is not consistent  
1174 | with the applicable requirements of the ~~Clean Water~~Federal Act and specifies the changes  
1175 | needed to meet such requirements, the administrator may consider EPA's  
1176 | recommendations and publish a revised final determination. All determinations made  
1177 | under this subsection are considered final actions of the administrator and may be  
1178 | appealed pursuant to Chapter 1, Section 16 of the Rules of Practice and Procedure.

1180 | (b) Except for ambient-based criteria on effluent dependent waters, ~~-~~proposed  
1181 | changes in water quality criteria that result from the administrator's findings shall be  
1182 | recommended to the ~~c~~Environmental Quality ~~C~~Council for adoption as revised rules.  
1183 | Ambient-based criteria for effluent dependent waters shall be established according to the  
1184 | provisions of Section 36 of these rules. If adopted by the ~~c~~Council, the revised rules shall  
1185 | be filed with the secretary of state and shall become effective 90 days after filing. ~~\_~~The  
1186 | revised rules shall also be concurrently submitted to EPA for approval as revised water  
1187 | quality standards for Clean Water Act purposes. If within 90 days of submittal, the EPA  
1188 | determines that any such revised or new standard is not consistent with the applicable  
1189 | requirements of the ~~Clean F~~Water~~ederal~~ Act and specifies the changes needed to meet  
1190 | such requirements, the department may recommend a new standard incorporating EPA's  
1191 | specifications to the ~~c~~Environmental Quality ~~C~~Council for adoption.

1193 | Section 35. **Credible Data.**

1195 | (a) Development of scientifically valid chemical, physical and biological  
1196 | monitoring data shall:

1198 | (i) Consist of data collection using accepted referenced laboratory and  
1199 | field methods employed by a person who has received specialized training and has field  
1200 | experience in developing a monitoring plan, a quality assurance plan, and employing the  
1201 | methods outlined in such plans; or works under the supervision of a person who has these  
1202 | qualifications. Specialized training includes a thorough knowledge of written sampling  
1203 | protocols and field methods such that the data collection and interpretation are  
1204 | reproducible, scientifically defensible; and free from preconceived bias; and  
1205 |

1206 (ii) Includes documented quality assurance consisting of a plan that  
1207 | details how environmental data operations are planned, implemented, and assessed with  
1208 | respect to quality during the duration of the project.

1209  
1210 (b) Credible data shall be collected on each water body, as required in this  
1211 | section, and shall be considered for purposes of characterizing the integrity of the water  
1212 | body including consideration of soil, geology, hydrology, geomorphology, climate,  
1213 | stream succession and the influences of man upon the system. These data in combination  
1214 | with other available and applicable information shall be used through a weight-of-  
1215 | evidence approach to designate uses and determine whether those uses are being attained.  
1216 | In those instances where numerical standards contained in these rules are exceeded or on  
1217 | ephemeral and intermittent water bodies where chemical and biological sampling may  
1218 | not be practical or feasible, less than a complete set of data may be used to make a  
1219 | decision on attainment.

1220  
1221 (c) All changes to use designations after the effective date of this rule shall  
1222 | include the consideration of credible data relevant to the decision. Changes which  
1223 | involve the removal of a use designation or the replacement of a designation shall be  
1224 | supported by a use attainability analysis (UAA).

1225  
1226 (d) After the effective date of this rule, credible data shall be utilized in  
1227 | determining a water body's attainment of designated uses.

1228  
1229 | Section 36. Effluent Dependent Criteria. In addition to the provisions of  
1230 | Section 33 of these regulations, the ~~Water Quality A~~Administrator may make  
1231 | modifications to the numeric ~~criteria values~~ for pollutants listed in Appendix B on Class  
1232 | 2D and 3D waters. These modifications may be made on a categorical or site-specific  
1233 | basis by application of the following process:

1234  
1235 | ~~(a).~~ The adopted statewide numeric criteria may be modified on Class 2D and  
1236 | 3D waters to reflect ambient conditions by developing a UAA demonstrating that the  
1237 | water body is effluent dependent and that continued discharge of a permitted effluent to  
1238 | the water body has been shown to create a net environmental benefit. Criteria  
1239 | modification based on a finding of net environmental benefit is authorized where:

1240  
1241 | ~~(i)1.~~ The water body is effluent dependent;

1242  
1243 | ~~(ii)2.~~ The discharge has been shown to create an environmental benefit  
1244 | and removal of the discharge would cause more environmental harm than leaving it in  
1245 | place;

1246  
1247 | ~~(iii)3.~~ There is a credible threat to remove the discharge; and

1248

1249 | ~~(iv)4.~~ Appropriate safeguards are in place, ensuring that downstream  
1250 | uses will be protected and the discharge will pose no health risk or hazard to humans,  
1251 | livestock or wildlife.  
1252 |  
1253 | ~~(b)2.~~ Where the above factors have been satisfied, site-specific criteria may be  
1254 | set equal to the background concentration plus a margin of error for each parameter  
1255 | where the highest background concentration exceeds the statewide numeric criteria. Such  
1256 | site-specific criteria will be implemented as instantaneous maximum values.  
1257 |  
1258 | ~~(i)1.~~ The background concentration shall be the highest concentration  
1259 | recorded over the course of a one year period where samples have been taken at least  
1260 | once in each month.  
1261 |  
1262 | ~~(ii)2.~~ The margin of error shall be one standard deviation calculated  
1263 | from the same data set used to establish background.  
1264 |  
1265 | ~~(iii)3.~~ In addition to water column values, aquatic life tissue criteria shall  
1266 | also be established for all parameters known to be bio-accumulating and where  
1267 | recommended criteria have been developed by EPA. Such ~~criteria values~~ shall be at least  
1268 | equal to the nationally recommended tissue criteria published by EPA under ~~s~~Section  
1269 | 304(a) of the Clean Water Act.  
1270 |  
1271 | ~~(c)~~ The procedures used to implement this section are described in the ~~22~~Use  
1272 | *Attainability Analysis Implementation Policy.*<sup>22</sup>

## Appendix A

### Wyoming Surface Water Classifications

All surface waters in Wyoming are classified as follows:

      (a) Class 1 Waters. The following waters are designated Class 1:

(i) All surface waters located within the boundaries of national parks and congressionally designated wilderness areas as of January 1, 1999;

(ii) The main stem of the Snake River through its entire length above the U.S. Highway 22 Bridge (Wilson Bridge);

(iii) The main stem of the Green River, including the Green River Lakes from the mouth of the New Fork River upstream to the wilderness boundary;

(iv) The ~~m~~Main ~~s~~Stem of the Wind River from the Wedding of the Waters upstream to Boysen Dam;

(v) The main stem of the North Platte River from the mouth of Sage Creek (approximately 15 stream miles downstream of Saratoga, Wyoming) upstream to the Colorado state line;

(vi) The main stem of the North Platte River from the headwaters of Pathfinder Reservoir upstream to Kortez Dam (Miracle Mile segment);

(vii) The main stem of the North Platte River from the Natrona County Road 309 bridge (Goose Egg bridge) upstream to Alcova Reservoir;

(viii) The main stem of Sand Creek above the U.S. Highway 14 bridge;

(ix) The main stem of the Middle Fork of the Powder River through its entire length above the mouth of Buffalo Creek;

(x) The main stem of the ~~Tongue River, the main stem of the~~ North Fork of the Tongue River, ~~and~~ the main stem of the South Fork of the Tongue River and the main stem of the Tongue River above the U.S. Forest Service ~~b~~Boundary;

(xi) The main stem of the Sweetwater River above the mouth of Alkali Creek;

(xii) The main stem of the Encampment River from the northern U.S. Forest Service boundary upstream to the Colorado state line;

(xiii) The main stem of the Clarks Fork River from the U.S. Forest Service boundary upstream to the Montana state line;

(xiv) All waters within the Fish Creek (near Wilson, Wyoming) drainage;

(xv) The main stem of Granite Creek (tributary of the Hoback River) through its entire length;

(xvi) Fremont Lake;

(xvii) Wetlands adjacent to the above listed Class 1 waters.

(b) Individual water classifications for major water bodies and recreational use designations are listed in the most current version of the “*Wyoming Surface Water Classification List*”. The list -is published by the department and periodically revised and updated by the Wyoming Department of Environmental Quality, Water Quality Division according to the provisions of Sections 4, 33, 34 and 35. In addition to the listings contained in that document, the following provisions apply:

(i) National Parks and Wilderness Areas. All surface waters located within the boundaries of Yellowstone and Grand Teton National Parks and congressionally designated wilderness areas as of January 1, 1999 are Class 1 waters. A ~~Such~~ Class 1 designation always takes precedence over the classification given in the listing. For example, Dinwoody Creek is shown as a Class 2 water; however, the upper portions are within a wilderness area and those portions are Class 1. The ~~portion~~ below the wilderness boundary is Class 2.

(ii) Unlisted Waters. The waters contained in the “*Wyoming Surface Water Classification List*” are all waters which are named on the USGS 1:500,000 hydrologic map of Wyoming and those otherwise classified by the department. The ~~c~~ Classification ~~List~~ does not contain an exhaustive listing of all the surface waters in the state. Waters which are not listed are classified as follows:

(A) ~~1~~ All waters shown as having any species of game fish present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the ~~D~~ department ~~of Environmental Quality~~ in June, 2000 are classified as 2AB;

(B) ~~2~~ All waters shown as having only nongame fish species present in the Wyoming Game and Fish Department's *Streams and Lakes Database* as submitted to the ~~D~~ department ~~of Environmental Quality~~ in June, 2000 are classified as 2C;

(3) ~~C~~ All other waters shall be classified as follows:

| (I~~A~~) Those waters supported by an approved UAA containing defensible reasons for not protecting aquatic life uses shall be 4A, 4B or 4C. This category includes isolated, effluent dependent waters;

| (II~~B~~) Effluent dependent waters that support resident fish populations shall be 2D;

| (III~~E~~) Effluent dependent waters that do not support resident fish populations shall be 3D;

| (IV~~E~~) The remaining waters shall be 3A, 3B or 3C.

(iii) Wetlands. All adjacent wetlands shall have the same classification as the water to which they are adjacent.

PRIORITY POLLUTANTS

Appendix B

Water Quality Criteria<sup>(1)</sup>

(a) Priority Pollutants PRIORITY POLLUTANTS

<u>Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	<u>Acute Value</u> <u>(µg/L)</u>	<u>Chronic Value</u> <u>(µg/L)</u>	<u>Fish and</u> <u>Drinking Water</u> <sup>(2)</sup> <u>(µg/L)</u>	<u>Fish</u> <sup>(8)</sup> <u>-</u> <u>(µg/L)</u>
	<u>Aquatic Life</u> <u>Acute Value</u> <u>Micrograms/L</u>	<u>Aquatic Life</u> <u>Chronic Value</u> <u>Micrograms/L</u>	<u>Human Health</u> <u>Value</u> <u>Fish &amp; Drinking</u> <u>Water</u> <sup>(2)</sup> <u>Micrograms/L</u>	<u>Human Health</u> <u>Value</u> <u>Fish Only</u> <sup>(8)</sup> <u>Micrograms/L</u>
Acenaphthene			20 <sup>(7)</sup>	-990
Acrolein	<u>3</u>	<u>3</u>	<del>-1906</del>	<del>-2909</del>
Acrylonitrile <sup>(3)</sup>			-0.051 <sup>(3)</sup>	-0.25 <sup>(3)</sup>
Benzene <sup>(3)</sup>			-2.2 <sup>(3)</sup>	-51 <sup>(3)</sup>
Benzidine <sup>(3)</sup>			-0.000086 <sup>(3)</sup>	-0.00020 <sup>(3)</sup>
Carbon tetrachloride <sup>(3)</sup> (Tetrachloromethane)			-0.23 <sup>(3)</sup>	-1.6 <sup>(3)</sup>
Chlorobenzene (Monochlorobenzene)			<del>-20400</del> <sup>(92)</sup>	-1,600
1,2,4-Trichlorobenzene			35	-70
Hexachlorobenzene <sup>(3)</sup>			-0.00028 <sup>(3)</sup>	-0.00029 <sup>(3)</sup>
1,2-Dichloroethane <sup>(3)</sup>			0.38 <sup>(3)</sup>	-37 <sup>(3)</sup>
1,1,1-Trichloroethane			200 <sup>(9)</sup>	
Hexachloroethane <sup>(3)</sup>			-1.4 <sup>(3)</sup>	-3.3 <sup>(3)</sup>
1,1,2-Trichloroethane <sup>(3)</sup>			-0.59 <sup>(3)</sup>	-16 <sup>(3)</sup>
1,1,2,2-Tetrachloroethane <sup>(3)</sup>			0.17 <sup>(3)</sup>	-4 <sup>(3)</sup>
Bis(2-chloroethyl) ether <sup>(3)</sup>			-0.030 <sup>(3)</sup>	-0.53 <sup>(3)</sup>
2-Chloronaphthalene			-1,000	-1,600
2,4,6-Trichlorophenol <sup>(3)</sup>			-1.4 <sup>(3)</sup>	-2.4 <sup>(3)</sup>
4-Chloro-3-methylphenol <u>(3-Methyl-4-chlorophenol)</u> <u>(p-Chloro-m-cresol)</u>			3,000 <sup>(7)</sup>	
Chloroform <del>(HM)</del> <sup>(3)</sup> (Trichloromethane)			5.7 <sup>(3)</sup>	470 <sup>(3)</sup>
2-Chlorophenol			0.1 <sup>(7)</sup>	-150
1,2-Dichlorobenzene			420	-1,300
1,3-Dichlorobenzene			-320	-960

PRIORITY POLLUTANTS

<u>Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	Acute Value ( <u>µg/L</u> )	Chronic Value ( <u>µg/L</u> )	Fish and Drinking Water <sup>(2)</sup> ( <u>µg/L</u> )	Fish <sup>(8)</sup> -( <u>µg/L</u> )
	<del>Aquatic Life Acute Value</del> <u>Micrograms/L</u>	<del>Aquatic Life Chronic Value</del> <u>Micrograms/L</u>	<del>Human Health Value Fish &amp; Drinking Water<sup>(2)</sup></del> <u>Micrograms/L</u>	<del>Human Health Value Fish Only<sup>(8)</sup></del> <u>Micrograms/L</u>
1,4-Dichlorobenzene			63	-190
3,3'-Dichlorobenzidine <sup>(3)</sup>			-0.021 <sup>(3)</sup>	-0.028 <sup>(3)</sup>
1,1-Dichloroethylene <sup>(3)</sup>			<del>3307</del> <sup>(9)</sup>	-7,100
1,2-trans-Dichloroethylene			100 <sup>(9)</sup>	-10,000
2,4-Dichlorophenol			0.3 <sup>(7)</sup>	-290
1,2-Dichloropropane			-0.50 <sup>(3)</sup>	-15 <sup>(3)</sup>
<u>1,3-Dichloropropene</u> (1,3-Dichloropropylene) <del>(1,3-Dichloropropene)</del> (cis and trans isomers)			-0.34 <sup>(3)</sup>	-21 <sup>(3)</sup>
2,4-Dimethylphenol			-380 <sup>(7)</sup>	-850
2,4-Dinitrotoluene <sup>(3)</sup>			0.11 <sup>(3)</sup>	-3.4 <sup>(3)</sup>
1,2-Diphenylhydrazine <sup>(3)</sup>			-0.036 <sup>(3)</sup>	-0.20 <sup>(3)</sup>
Ethylbenzene			-530	-2,100
Fluoranthene			-130	-140
Bis(2-chloroisopropyl) ether			1,400	-65,000
Methylene chloride <del>(HM)</del> <sup>(3)</sup> (Dichloromethane)			-4.6 <sup>(3)</sup>	-590 <sup>(3)</sup>
Methyl bromide <del>(HM)</del> (Bromomethane)			-47	-1,500
Bromoform <del>(HM)</del> <sup>(6)</sup> (Tribromomethane)			4.3 <sup>(3)</sup>	-140 <sup>(3)</sup>
Dichlorobromomethane <del>(HM)</del> <sup>(6)</sup>			-0.55 <sup>(3)</sup>	-17 <sup>(3)</sup>
Chlorodibromomethane <del>(HM)</del> <sup>(6)</sup>			-0.40 <sup>(3)</sup>	-13 <sup>(3)</sup>
Hexachlorobutadiene <sup>(3)</sup>			0.44 <sup>(3)</sup>	-18 <sup>(3)</sup>
Hexachlorocyclopentadiene			1 <sup>(7)</sup>	-1,100
Isophorone <sup>(3)</sup>			-35 <sup>(3)</sup>	-960 <sup>(3)</sup>
Nitrobenzene			17	-690
2,4-Dinitrophenol			-69	-5,300

PRIORITY POLLUTANTS

<u>Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	Acute Value ( <u>µg/L</u> )	Chronic Value ( <u>µg/L</u> )	Fish and Drinking Water <sup>(2)</sup> ( <u>µg/L</u> )	Fish <sup>(8)</sup> -( <u>µg/L</u> )
	<del>Aquatic Life Acute Value</del> <u>Micrograms/L</u>	<del>Aquatic Life Chronic Value</del> <u>Micrograms/L</u>	<del>Human Health Value Fish &amp; Drinking Water<sup>(2)</sup></del> <u>Micrograms/L</u>	<del>Human Health Value Fish Only<sup>(8)</sup></del> <u>Micrograms/L</u>
<del>4,6-Dinitro-o-cresol</del> (4,6-Dinitro-2-methylphenol) <u>(2-Methyl-4,6-dinitrophenol)</u> <u>(4,6-Dinitro-o-cresol)</u>			13	-280
N-Nitrosodimethylamine <sup>(3)</sup>			0.00069 <sup>(3)</sup>	-3 <sup>(3)</sup>
N-Nitrosodiphenylamine <sup>(3)</sup>			-3.3 <sup>(3)</sup>	-6 <sup>(3)</sup>
N-Nitrosodi-n-propylamine <sup>(3)</sup>			0.005 <sup>(3)</sup>	-0.51 <sup>(3)</sup>
Pentachlorophenol	19 <sup>(5)</sup>	15 <sup>(5)</sup>	-0.27 <sup>(3)</sup>	-3 <sup>(3)</sup>
Phenol			300 <sup>(7)</sup>	<del>170860</del> 000
Bis(2-ethylhexyl) phthalate <sup>(3)</sup>			-1.2 <sup>(3)</sup>	-2.2 <sup>(3)</sup>
Butyl-benzyl phthalate			-1,500	-1,900
Di-n-butyl phthalate			-2,000	-4,500
Diethyl phthalate			-17,000	-44,000
Dimethyl phthalate			-270,000	-1,100,000
Benzo(a)anthracene-(PAH) <sup>(3)</sup> (1,2-Benzanthracene)			-0.0038 <sup>(3)</sup>	-0.018 <sup>(3)</sup>
Benzo(a)pyrene-(PAH) <sup>(3)</sup> (3,4-Benzopyrene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Benzo(b)fluoranthene (PAH) <sup>(3)</sup> (3,4-Benzofluoranthene)			0.0038 <sup>(3)</sup>	0.018 <sup>(3)</sup>
Benzo(k)fluoranthene (PAH) <sup>(3)</sup> (11,12-Benzofluoranthene)			-0.0038 <sup>(3)</sup>	-0.018 <sup>(3)</sup>
Chrysene-(PAH) <sup>(3)</sup>			-0.0038 <sup>(3)</sup>	-0.018 <sup>(3)</sup>
Anthracene-(PAH) <sup>(6)</sup>			-8,300	-40,000
Fluorene-(PAH) <sup>(6)</sup>			-1,100	-5,300
Dibenzo(a,h)anthracene (PAH) <sup>(3)</sup> (1,2,5,6-Dibenzanthracene)			-0.0038 <sup>(3)</sup>	-0.018 <sup>(3)</sup>
Indeno(1,2,3-cd)pyrene (PAH) <sup>(3)</sup>			-0.0038 <sup>(3)</sup>	-0.018 <sup>(3)</sup>

PRIORITY POLLUTANTS

<u>Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	Acute Value ( <u>µg/L</u> )	Chronic Value ( <u>µg/L</u> )	Fish and Drinking Water <sup>(2)</sup> ( <u>µg/L</u> )	Fish <sup>(8)</sup> -( <u>µg/L</u> )
	<del>Aquatic Life Acute Value</del> <u>Micrograms/L</u>	<del>Aquatic Life Chronic Value</del> <u>Micrograms/L</u>	<del>Human Health Value Fish &amp; Drinking Water<sup>(2)</sup></del> <u>Micrograms/L</u>	<del>Human Health Value Fish Only<sup>(8)</sup></del> <u>Micrograms/L</u>
Pyrene (PAH) <sup>(6)</sup>			-830	-4,000
Tetrachloroethylene <sup>(3)</sup>			-0.69 <sup>(3)</sup>	-3.3 <sup>(3)</sup>
Toluene			1,000 <sup>(9)</sup>	-15,000
Trichloroethylene <sup>(3)</sup>			-2.5 <sup>(3)</sup>	-30 <sup>(3)</sup>
Vinyl chloride <sup>(3)</sup> (Chloroethylene)			-0.025 <sup>(3)</sup>	-2.4 <sup>(3)</sup>
Aldrin <sup>(3)</sup>	1.5 <sup>(16)</sup>		-0.000049 <sup>(3)</sup>	-0.000050 <sup>(3)</sup>
Dieldrin <sup>(3)</sup>	0.24	0.056	-0.000052 <sup>(3)</sup>	-0.000054 <sup>(3)</sup>
Chlordane <sup>(3)</sup>	1.2 <sup>(16)</sup>	0.0043	-0.00080 <sup>(3)</sup>	-0.00081 <sup>(3)</sup>
4,4'-DDT <sup>(3)</sup>	0.55 <sup>(16)</sup>	0.001	-0.00022 <sup>(3)</sup>	-0.00022 <sup>(3)</sup>
4,4'-DDE <sup>(3)</sup>			-0.00022 <sup>(3)</sup>	-0.00022 <sup>(3)</sup>
4,4'-DDD <sup>(3)</sup>			-0.00031 <sup>(3)</sup>	-0.00031 <sup>(3)</sup>
alpha-Endosulfan	0.11 <sup>(16)</sup>	0.056	-62	-89
beta-Endosulfan	0.11 <sup>(16)</sup>	0.056	-62	-89
Endosulfan sulfate			-62	-89
Endrin	0.086	0.036	-0.059	-0.060
Endrin aldehyde			-0.29	-0.30
Heptachlor <sup>(3)</sup>	0.26 <sup>(16)</sup>	0.0038	-0.000079 <sup>(3)</sup>	-0.000079 <sup>(3)</sup>
Heptachlor epoxide <sup>(3)</sup>	0.26 <sup>(16)</sup>	0.0038	-0.000039 <sup>(3)</sup>	-0.000039 <sup>(3)</sup>
alpha-BHC (Hexachlorocyclohexane- alpha)			-0.0026 <sup>(3)</sup>	-0.0049 <sup>(3)</sup>
beta-BHC (Hexachlorocyclohexane- beta)			-0.0091 <sup>(3)</sup>	-0.017 <sup>(3)</sup>
gamma-BHC (Lindane) (Hexachlorocyclohexane- gamma)	0.95		-0.2 <sup>(9)</sup>	-1.8
<u>Polychlorinated biphenyls</u> <u>(PCBs)</u> <del>CB-1242 (Arochlor</del> <del>1242)<sup>(3)</sup></del>		0.014 <sup>(13)</sup>	0.000064 <sup>(3)(13)</sup>	0.000064 <sup>(3)(13)</sup>
<del>PBC-1254 (Arochlor-1254)<sup>(3)</sup></del>		<del>0.014</del>	<del>0.000064<sup>(13)</sup></del>	<del>0.000064<sup>(13)</sup></del>

**PRIORITY POLLUTANTS**

<u>Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	Acute Value ( <u>µg/L</u> )	Chronic Value ( <u>µg/L</u> )	Fish and Drinking Water <sup>(2)</sup> ( <u>µg/L</u> )	Fish <sup>(8)</sup> -( <u>µg/L</u> )
	<del>Aquatic Life Acute Value Micrograms/L</del>	<del>Aquatic Life Chronic Value Micrograms/L</del>	<del>Human Health Value Fish &amp; Drinking Water<sup>(2)</sup> Micrograms/L</del>	<del>Human Health Value Fish Only<sup>(8)</sup> Micrograms/L</del>
<del>PBC-1221 (Arochlor-1221)<sup>(3)</sup></del>		0.014	0.000064 <sup>(13)</sup>	0.000064 <sup>(13)</sup>
<del>PBC-1232 (Arochlor-1232)<sup>(3)</sup></del>		0.014	0.000064 <sup>(13)</sup>	0.000064 <sup>(13)</sup>
<del>PBC-1248 (Arochlor-1248)<sup>(3)</sup></del>		0.014	0.000064 <sup>(13)</sup>	0.000064 <sup>(13)</sup>
<del>PBC-1260 (Arochlor-1260)<sup>(3)</sup></del>		0.014	0.000064 <sup>(13)</sup>	0.000064 <sup>(13)</sup>
<del>PBC-1016 (Arochlor-1016)<sup>(3)</sup></del>		0.014	0.000064 <sup>(13)</sup>	0.000064 <sup>(13)</sup>
Toxaphene <sup>(3)</sup>	0.73	0.0002	-0.00028 <sup>(3)</sup>	-0.00028 <sup>(3)</sup>
Antimony			-5.6	-640
Arsenic <sup>(3)</sup>	340	150	10 <sup>(3)(9)</sup>	10 <sup>(3)(9)</sup>
Asbestos <sup>(3)</sup>			7,000,000 fibers/L <sup>(9)</sup>	
Beryllium <sup>(3)</sup>			4 <sup>(9)</sup>	
Cadmium	2.0 <sup>(4)</sup>	0.25 <sup>(4)</sup>	5 <sup>(9)</sup>	
Chromium (III)	569.8 <sup>(4)</sup>	74.1 <sup>(4)</sup>	100 <sup>(9)</sup> (total)	
Chromium (VI)	16	11	100 <sup>(9)</sup> (total)	
Copper	13.4 <sup>(4)</sup>	9 <sup>(4)</sup>	1000 <sup>(7)</sup>	
Cyanide (free)	22	5.2	140 <sup>(6)</sup> 200 <sup>(9)</sup>	140 <sup>(6)</sup> 220000
Lead	64.6 <sup>(4)</sup>	2.5 <sup>(4)</sup>	15 <sup>(9)</sup>	
Mercury	1.4	0.77	0.050	0.051
Nickel	468.2 <sup>(4)</sup>	52.0 <sup>(4)</sup>	610100 <sup>(9)</sup>	4,600
Selenium	20 <sup>(10)</sup>	5 <sup>(10)</sup>	50 <sup>(9)</sup>	-4,200
Silver	3.41.7 <sup>(4)(16)</sup>		100 <sup>(11)</sup>	
Thallium			-0.2-4	-0.4-7
Zinc	117.2 <sup>(4)</sup>	118.1 <sup>(4)</sup>	5,000 <sup>(7)</sup>	-26,000
Dioxin (2,3,7,8-TCDD) <sup>(3)</sup>			0.000000005 <sup>(3)</sup>	0.000000005 <sup>(3)</sup>

(b) Non-Priority Pollutants.

<u>Non-Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	<u>Aquatic Life</u> Acute Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Aquatic Life</u> Chronic Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish <u>and</u> & Drinking Water <sup>(2)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish-Only <sup>(8)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )
Alachlor <sup>(3)</sup>			2 <sup>(9)</sup>	
Aluminum (pH 6.5-9.0 only)	750	87 <sup>(14)</sup>		
Ammonia	See Appendix C			
Atrazine			3 <sup>(9)</sup>	
Barium			2,000 <sup>(9)</sup>	
Bis(chloromethyl) ether <sup>(3)</sup>			-0.00010 <sup>(3)</sup>	-0.00029 <sup>(3)</sup>
<u>Bromate</u>			<u>10<sup>(9)</sup></u>	
Carbofuran			40 <sup>(9)</sup>	
Chloride	860,000 <sup>(15)</sup>	230,000 <sup>(15)</sup>		
Chlorine (total residual)	19	11		
<u>Chlorite</u>			<u>1,000<sup>(9)</sup></u>	
Chlorophenoxy <u>h</u> Herbicide (2,4,5,-TP)			10	
Chlorpyrifos	0.083	0.041		
Chlorophenoxy <u>h</u> Herbicide (2,4,-D)			70 <sup>(9)</sup>	
Dalapon			200 <sup>(9)</sup>	
Demeton		0.1		
Di(2-ethylhexyl) adipate			400 <sup>(9)</sup>	
<u>Diazinon</u>	<u>0.17</u>	<u>0.17</u>		
Dibromochloropropane (DBCP) <sup>(3)</sup>			0.2 <sup>(9)</sup>	
<u>cis-1,2</u> -Dichloroethylene ( <del>cis-1,2</del> )			70 <sup>(9)</sup>	
Dinoseb			7 <sup>(9)</sup>	
Dinitrophenols			-69	-5,300
Dissolved Gases		100% Sat.		
Dissolved Oxygen		See Appendix D		
<i>E. coli</i>			See Section 27	

<u>Non-Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	<u>Aquatic Life</u> Acute Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Aquatic Life</u> Chronic Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish <u>and</u> & Drinking Water <sup>(2)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish-Only <sup>(8)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )
Diquat			20 <sup>(9)</sup>	
Endothall			100 <sup>(9)</sup>	
Ethylene dibromide (EDB) <sup>(3)</sup>			0.05 <sup>(9)</sup>	
Fluoride			-2000 <sup>(11)</sup>	
Glyphosate			700 <sup>(9)</sup>	
Guthion		0.01		
<u>Haloacetic acids</u>			<u>60</u> <sup>(9)</sup>	
<u>Hexachlorocyclo-hexane - technical</u>			<u>0.0123</u> <sup>(3)</sup>	<u>0.0414</u> <sup>(3)</sup>
Iron		1000 <sup>(12)</sup>	300 <sup>(11)</sup>	
Malathion		0.1		
Manganese	3110 <sup>(4)(12)</sup>	1462 <sup>(4)(12)</sup>	50 <sup>(11)</sup>	
Methoxychlor		0.03	40 <sup>(9)</sup>	
Mirex		0.001		
Nitrite (as N)			1000 <sup>(9)</sup>	
Nitrates (as N)			10000 <sup>(9)</sup>	
Nitrite+Nitrate (both as N)			10000 <sup>(9)</sup>	
Nitrosamines			0.0008	1.24
Nitrosodibutylamine, N			-0.0063 <sup>(3)</sup>	-0.22 <sup>(3)</sup>
Nitrosodiethylamine, N			0.0008 <sup>(3)</sup>	1.24 <sup>(3)</sup>
N-nitrosopyrrolidine, N <sup>(3)</sup>			0.016 <sup>(3)</sup>	-34 <sup>(3)</sup>
<u>Nonylphenol</u>	<u>28</u>	<u>6.6</u>		
Oxamyl (Vydate)			200 <sup>(9)</sup>	
Parathion	0.065	0.013		
Pentachlorobenzene			-1.4	-1.5
pH		6.5-9.0		
Picloram			500 <sup>(9)</sup>	
Simazine			4 <sup>(9)</sup>	
Styrene			100 <sup>(9)</sup>	

<u>Non-Priority</u> Pollutant	<u>Aquatic Life</u>		<u>Human Health Consumption of</u>	
	<u>Aquatic Life</u> Acute Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Aquatic Life</u> Chronic Value <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish <u>and</u> & Drinking Water <sup>(2)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )	<u>Human Health</u> Value Fish- <u>Only</u> <sup>(8)</sup> <u>Micrograms/L</u> ( <u>µg/L</u> )
<del>Sulfide</del> -Hydrogen Sulfide ( <u>H<sub>2</sub>S; Undissociated</u> )( <del>S<sup>2-</sup>; HS<sup>-</sup></del> )		2		
1,2,4,5- <del>T</del> tetrachlorobenzene			-0.97	-1.1
Tributyltin ( <u>TBT</u> )	0.46	0.07263		
<del>Trichloro</del> fluoromethane			10000	860000
2,4,5- <del>T</del> trichlorophenol			1.0 <sup>(7)</sup>	-3,600
<u>Total trihalomethanes</u> ( <u>TTHM</u> )			<u>80</u> <sup>(9)</sup>	
2,4,5-TP (2,4,5- trichlorophenoxy) <u>P</u> ropionic acid			50 <sup>(9)</sup>	
Xylenes			10,000 <sup>(9)</sup>	

\_\_\_\_<sup>(1)</sup>\_\_\_\_ Except for the aquatic life values for metals and where otherwise indicated, the values given in ~~this~~ Appendix B refer to the total recoverable (dissolved plus suspended) amount of each substance. For the aquatic life values for metals, the values refer to dissolved amount.

\_\_\_\_<sup>(2)</sup>\_\_\_\_ Except where otherwise indicated, these values are based on EPA Section 304(a) criteria recommendations assuming consumption of 2 liters of water and ~~17.565~~ 17.565 grams of aquatic organisms per day.

\_\_\_\_<sup>(3)</sup>\_\_\_\_ Except for arsenic, the substance is classified as a carcinogen with the value based on an incremental risk of one additional instance of cancer in one million persons. Arsenic is classified as a carcinogen, however, the value is not based on an additional 1:1,000,000 cancer risk.

\_\_\_\_<sup>(4)</sup>\_\_\_\_ Hardness dependent criteria~~a~~. Value given is an example only and is based on a CaCO<sub>3</sub> hardness of 100 mg/L. Criteria for hardness concentrations other than 100 mg/L as CaCO<sub>3</sub> each case must be calculated using the formulas in Appendix F.

\_\_\_\_<sup>(5)</sup>\_\_\_\_ pH dependent criteria~~a~~. Value given is an example only and is based on a pH of 7.8. Criteria for pH values other than 7.8 each case must be calculated using the formulas in Appendix G.

<sup>(6)</sup> ~~Criterion expressed as total cyanide, even though the method used to derive the criterion is based on free cyanide. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g. Fe<sub>4</sub>[Fe(CN)<sub>6</sub>]<sub>3</sub>), this criterion may be overly conservative. Chemicals which are not individually classified as carcinogens but which are contained within a class of chemicals with carcinogenicity as the basis for the criteria derivation for that class of chemicals; an individual carcinogenicity assessment for these chemicals is pending.~~

<sup>(7)</sup> ~~Criterion Value~~ is based on organoleptic (taste and odor) effects and is more stringent than if based solely on toxic or carcinogenic effects.

<sup>(8)</sup> EPA Section 304(a) human health criteria recommendation assuming consumption of contaminated aquatic organisms at a rate of ~~17.56.5~~ grams per day.

<sup>(9)</sup> ~~The c~~Criterion is based on an EPA drinking water standard (~~m~~Maximum ~~c~~Contaminant ~~I~~Level or MCL).

<sup>(10)</sup> This value is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use ~~a the~~ conversion factor (~~0.996 for the acute and 0.922 for the chronic~~) to convert this ~~number~~ to a value that is expressed in terms of ~~a~~ dissolved metal. Using ~~these is~~ conversion ~~factors~~, the ~~aquatic life acute value for selenium is 19.92 µg/L as a dissolved metal~~~~chronic~~ and the aquatic life ~~chronic~~ value for selenium is 4.61 µg/L as ~~a~~ dissolved metal.

<sup>(11)</sup> ~~The iron and manganese C~~riteria ~~is~~are based on Safe Drinking Water Act secondary standards and ~~is~~are intended to prevent undesirable ~~cosmetic or~~ aesthetic effects. ~~These v~~Values represents the dissolved amount of each substance rather than the total amount. ~~Criterion only applies where drinking water is an actual use.~~

<sup>(12)</sup> Value is based on the dissolved amount which is the amount that will pass through a 0.45 µm membrane filter prior to acidification to pH 1.5-2.0 with nitric acid.

<sup>(13)</sup> This criterion applies to total PCBs (~~—~~i.e., the sum of all congener or all isomer ~~or~~ ~~homolog or Aroclor~~ analyses).

<sup>(14)</sup> The 87 µg/L chronic criterion for aluminum is based on information showing chronic effects on brook trout and striped bass. The studies underlying the 87 µg/L chronic value, however, were conducted at low pH (~~6.5--6.6~~) and low hardness (< 10 ~~mg/L ppm~~ CaCO<sub>3</sub>), conditions uncommon in Wyoming surface waters. A water effect ratio toxicity study in West Virginia indicated that aluminum is substantially less toxic at higher pH and hardness (although the relationship is not well quantified at this time). ~~Further,~~ EPA is ~~also~~ aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg/L when either ~~the~~ total recoverable or dissolved aluminum is measured. Based on this information and considering the available toxicological information in Tables 1 and 2 of EPA's Aluminum Criteria Document (EPA 440/5-86-008), the ~~d~~Department ~~of Environmental Quality~~ will implement the 87 µg/L chronic criterion for aluminum as follows: ~~the 87 µg/L chronic criterion will apply except~~ where the ~~receiving water after mixing has a pH is equal to or~~ greater than ~~or equal to~~ 7.0 and ~~the a~~

hardness (as CaCO<sub>3</sub>) ~~is greater than or~~ equal to ~~or greater than~~ 50 mg/L ppm as CaCO<sub>3</sub> in the receiving water after mixing.<sup>2</sup> ~~Where the receiving stream after mixing has a pH greater than or equal to 7.0 and a hardness (as CaCO<sub>3</sub>) greater than or equal to 50 mg/L, the 750 87-μg/L acute~~ chronic criterion will ~~not~~ apply, ~~and aluminum will be regulated based on compliance with the 750 μg/L acute aluminum criterion.~~ In situations where the 87 μg/L chronic criterion applies, a discharger may request development of and provide the basis for a site-specific chronic criterion based on a water-effect ratio.

<sup>(15)</sup> Criterion applies on Class 1, 2AB, 2B and 2C waters only.

<sup>(16)</sup> Criterion has been divided by two to be comparable with other acute values derived using an averaging period. Value can be multiplied by two if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA's 1980 guidelines as a not to be exceeded instantaneous maximum.

(c) Site-Specific Criteria, ~~SITE-SPECIFIC CRITERIA~~. The criteria in this section is applicable only to the waters and/or locations specified and replaces similar criteria expressed elsewhere in these regulations.

(i) Belle Fourche Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Belle Fourche River Drainage above the confluence of Donkey Creek and the main stem of the Belle Fourche River;

(B) The numeric human health criteria for iron and manganese shall not apply to main stem of the Belle Fourche River below the confluence of Donkey Creek.

(ii) Big Horn River Drainage

(A) Cottonwood Creek (near Hamilton Dome): The aquatic life criterion for chloride shall be 860 mg/L and the aquatic life criterion for selenium shall be 43 µg/L. These values represent instantaneous maximum values, not to be exceeded at any time.

(iii) Cheyenne River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 tributaries of Antelope Creek;

(B) The numeric human health criteria for iron and manganese shall not apply to Little Thunder Creek and all of its Class 2 tributaries below the confluence of North Prong.

(iv) Little Powder River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Little Powder River Drainage.

(v) North Platte River Drainage

(A) Poison Spider Creek: The aquatic life criterion for chloride shall be 531 mg/L. This value represents an instantaneous maximum value, not to be exceeded at any time.

(vi) Powder River Drainage

(A) The numeric human health criteria for iron and manganese shall not apply to Class 2 waters in the Powder River Drainage except on the following waters:

(I) The main stem of Clear Creek and its Class 2 tributaries



[Appendix C](#)

[Ammonia Toxicity Criteria](#)

          (a) The ammonia values in the tables below are expressed in milligrams ammonia nitrogen per liter (mg N/L) and vary with temperature and/or pH, ~~and~~ fish species or fish life stage. The ammonia criteria for pH values not represented in the tables can be calculated using the formulas in section (b) of ~~this A~~Appendix C.

                          (i)           pH-Dependent Values of the Acute Criterion (CMC)<sup>(1)</sup> for Ammonia

<b>Acute Values, (mg N/L)</b>		
<b>pH</b>	<b>Salmonids Present</b>	<b>Salmonids Absent</b>
<b>6.5</b>	32.6	48.8
<b>6.6</b>	31.3	46.8
<b>6.7</b>	29.8	44.6
<b>6.8</b>	28.1	42.0
<b>6.9</b>	26.2	39.1
<b>7.0</b>	24.1	36.1
<b>7.1</b>	22.0	32.8
<b>7.2</b>	19.7	29.5
<b>7.3</b>	17.5	26.2
<b>7.4</b>	15.4	23.0
<b>7.5</b>	13.3	19.9
<b>7.6</b>	11.4	17.0
<b>7.7</b>	9.65	14.4
<b>7.8</b>	8.11	12.1
<b>7.9</b>	6.77	10.1
<b>8.0</b>	5.62	8.40
<b>8.1</b>	4.64	6.95
<b>8.2</b>	3.83	5.72
<b>8.3</b>	3.15	4.71
<b>8.4</b>	2.59	3.88
<b>8.5</b>	2.14	3.20
<b>8.6</b>	1.77	2.65
<b>8.7</b>	1.47	2.20
<b>8.8</b>	1.23	1.84
<b>8.9</b>	1.04	1.56
<b>9.0</b>	0.885	1.32

(ii) Temperature and pH Dependent Values of the Chronic Criterion (CCC)<sup>(2)</sup> for Ammonia, Fish Early Life Stages *Present*

Temperature: (°C)										
pH	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

(iii) Temperature and pH Dependent Values of the Chronic Criterion (CCC)<sup>(2)</sup> for Ammonia, Fish Early Life Stages Absent

<b>Temperature; (°C)</b>										
<b>pH</b>	<b>0-7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15*</b>	<b>16*</b>
<b>6.5</b>	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
<b>6.6</b>	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
<b>6.7</b>	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
<b>6.8</b>	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
<b>6.9</b>	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
<b>7.0</b>	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
<b>7.1</b>	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
<b>7.2</b>	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
<b>7.3</b>	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
<b>7.4</b>	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
<b>7.5</b>	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97
<b>7.6</b>	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
<b>7.7</b>	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
<b>7.8</b>	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
<b>7.9</b>	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
<b>8.0</b>	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
<b>8.1</b>	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
<b>8.2</b>	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
<b>8.3</b>	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
<b>8.4</b>	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
<b>8.5</b>	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.990
<b>8.6</b>	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
<b>8.7</b>	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
<b>8.8</b>	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
<b>8.9</b>	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
<b>9.0</b>	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

\*-At 15 °C and above, the criterion for fish early life stages absent is the same as the criterion for fish early life stages present.

(b) For pH values not expressed in the tables above, ammonia toxicity criteria can be calculated as follows:

(i) Criterion maximum concentration (CMC) when salmonids or other sensitive cold water species are present:

$$CMC = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

(ii) Criterion maximum concentration (CMC) when salmonids or other sensitive cold water species are absent:

$$CMC = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

(iii) Criterion Continuous Concentration (CCC) when fish early life stages are present:

$$CCC = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * \text{MIN}(2.85, 1.45*10^{0.028*(25-T)})$$

(iv) Criterion Continuous Concentration (CCC) when fish early life stages are absent:

$$CCC = \left( \frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) * 1.45*10^{0.028*(25-\text{MAX}(T,7))}$$

<sup>(1)</sup> Criterion Maximum Concentration (CMC) refers to the one-hour average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three (3) years. The CMC can also be referred to as the acute value.

<sup>(2)</sup> Criterion Continuous Concentration (CCC) refers to the 30-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three (3) years. In addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC. The CCC can also be referred to as the chronic value. The CCC values are implemented on Class 2 waters with an assumption that early life stages of fish are present. This assumption can be rebutted, but only where a permittee, discharge permit applicant or affected party provides sufficient site-specific information to support a conclusion that the assumption is not appropriate for that water body.

## Appendix D

### Minimum Dissolved Oxygen Criteria\* (mg/L)

	Cold Water Criteria		Class 2C and Warm Water Criteria	
	Early Life Stages <sup>(1),(2)</sup>	Other Life Stages	Early Life Stages <sup>(2)</sup>	Other Life Stages
30 Day Mean	<del>n/a</del> NA <sup>(3)</sup>	6.5	<del>n/a</del> NA <sup>(3)</sup>	5.5
7 Day Mean	9.5 (6.5)	<del>n/a</del> NA <sup>(3)</sup>	6.0	<del>n/a</del> NA <sup>(3)</sup>
7 Day Mean Minimum <sup>(4)</sup>	<del>n/a</del> NA <sup>(3)</sup>	5.0	<del>n/a</del> NA <sup>(3)</sup>	4.0
1 Day Minimum <sup>(4)</sup>	8.0 (5.0)	4.0	5.0	3.0

\*These limitations apply to Class 1, 2AB, 2B and 2C waters only and in no case shall be interpreted to require dissolved oxygen concentrations greater than 100 percent saturation at ambient temperature and elevation. Criteria derived from: U.S. EPA. 1986. Ambient Water Quality Criteria. EPA 440/5-86-003. National Technical Service, Springfield, VA.

<sup>(1)</sup>—These are water column concentrations recommended to achieve the required inter-gravel dissolved oxygen concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.

<sup>(2)</sup>—Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching.

<sup>(3)</sup>—~~n/a~~NA (not applicable).

<sup>(4)</sup>—All minima should be considered as instantaneous concentrations to be achieved at all times.

~~\*These limitations apply to Class 1, 2A, 2B and 2C waters only and in no case shall be interpreted to require dissolved oxygen concentrations greater than 100 percent saturation at ambient temperature and elevation.~~

## Appendix E

### References ~~to for~~ Develop Site-Specific Criteria and Use in Making Bioassays of Surface Waters

U.S. Environmental Protection Agency: Quality Criteria for Water. EPA-440/5-86/001. U.S. EPA, 1986.

U.S. Environmental Protection Agency: Ambient Water Quality Criteria Documents, 1980, and subsequent revisions. U.S. EPA, 1980.

U.S. Environmental Protection Agency: Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses. U.S. EPA, 1983.

U.S. Environmental Protection Agency: Technical Guidance Manual for Performing Waste Load Allocation, Book VI, Chapter 1: Stream Design Flow for Steady-State Modeling. U.S. EPA, 1986.

U.S. Environmental Protection Agency: Technical Support Document for Water Quality Based Toxics Control. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms. EPA-600/4-85/013. U.S. EPA, 1985.

U.S. Environmental Protection Agency: Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Second Edition. EPA-600/4-89/001. U.S. EPA, 1989.

U.S. Environmental Protection Agency: Water Quality Standards Handbook, Second Edition, EPA 823-B-94-005a, August 1994, with Appendices.

[U.S. Environmental Protection Agency: Aquatic Life Ambient Freshwater Quality Criteria-Copper. EPA-822-R-07-001. U.S. EPA, 2007.](#)

## Appendix F

### Conversion Factors ~~to Change~~ Total Recoverable Metal Values ~~to~~ Dissolved Values ~~for~~ Metals ~~and~~ Equations For ~~Parameters With Hardness~~<sup>(4)</sup> Dependent Metal ~~see~~

(a) Conversion Factors. Aquatic life values for the following metals are based on the dissolved amounts of each substance. The recommended aquatic life value was calculated by using previous 304(a) aquatic life values expressed in terms of total recoverable metal and multiplying it by a conversion factor (CF). Because the National Toxics Criteria (EPA's Section 304(a) criteria) are expressed as "total recoverable" values, the application of a ~~The~~ ce conversion factors provided below are ~~is~~ necessary to convert from a metal value expressed as the "total recoverable" fraction in the water column to the ~~to~~ "dissolved" fraction in the water column.

Furthermore, The toxicity of these associated metals also varies with hardness and the total recoverable value must be calculated based on the CaCO<sub>3</sub> hardness (mg/L of CaCO<sub>3</sub>) prior to multiplying by the conversion factor (CF).

(i) The conversion factors for the following metals are constants:

Metal	Acute Value	Chronic Value
Chromium (III)	0.316	0.860
Copper	0.960	0.960
Nickel	0.998	0.997
Silver	0.85	<u>n/a</u> <del>N/A</del>
Zinc	0.978	0.986

(ii) The conversion factors (CF) for Cadmium and Lead are not constant but vary with hardness (mg/L of CaCO<sub>3</sub>) and Conversion factors can be calculated using the following equations, although when an ambient hardness of less than 25 mg/L (as CaCO<sub>3</sub>) is used to establish criteria for lead or cadmium, the conversion factor should not exceed one<sup>(a)</sup>:

(A) Cadmium Acute:  $CF = 1.136672 - [(ln \text{ hardness})(0.041838)]$

(B) Cadmium Chronic:  $CF = 1.101672 - [(ln \text{ hardness})(0.041838)]$

(C) Lead Acute and Chronic:  $CF = 1.46203 - [(ln \text{ hardness})(0.145712)]$

(b) Equations ~~f~~ For ~~Parameters With~~ Hardness<sup>(+)</sup> Dependent ~~ee~~ Metals. Aquatic life values at various hardness<sup>(b)</sup> concentrations can be calculated using the formulas below. The formulas include the conversion factors to derive ~~the~~ dissolved metal values:

Parameter	Acute 1-Hour Average Concentration (µg/L)	Chronic 4-Day Average Concentration (µg/L)
<b>Cadmium</b>	$e^{(1.0166 - [\ln(\text{hardness})] - 3.924)}(\text{CF})$	$e^{(0.7409 - [\ln(\text{hardness})] - 4.719)}(\text{CF})$
<b>Chromium (III)</b>	$e^{(0.8190 - [\ln(\text{hardness})] + 3.7256)}(0.316)$	$e^{(0.8190 - [\ln(\text{hardness})] + 0.6848)}(0.860)$
<b>Copper</b>	$e^{(0.9422 - [\ln(\text{hardness})] - 1.700)}(0.960)$	$e^{(0.8545 - [\ln(\text{hardness})] - 1.702)}(0.960)$
<b>Lead</b>	$e^{(1.273 - [\ln(\text{hardness})] - 1.460)}(\text{CF})$	$e^{(1.273 - [\ln(\text{hardness})] - 4.705)}(\text{CF})$
<b>Manganese</b>	$e^{(0.7693[\ln(\text{hardness})] + 4.4995)}$	$e^{(0.5434[\ln(\text{hardness})] + 4.7850)}$
<b>Nickel</b>	$e^{(0.8460 - [\ln(\text{hardness})] + 2.255)}(0.998)$	$e^{(0.8460 - [\ln(\text{hardness})] + 0.0584)}(0.997)$
<b>Silver</b>	$e^{(1.72 - [\ln(\text{hardness})] - 6.52)}(0.85)(0.5)^{(c)}$	<b>N/A/n/a</b>
<b>Zinc</b>	$e^{(0.8473 - [\ln(\text{hardness})] + 0.884)}(0.978)$	$e^{(0.8473 - [\ln(\text{hardness})] + 0.884)}(0.986)$

<sup>(a)</sup>Based on Guidance on the Calculation of Hardness-Dependent Metals Criteria presented in: U.S. EPA. 2002. National Recommended Water Quality Criteria. EPA-822-R-02-047.

<sup>(b+)</sup>Hardness as mg/L CaCO<sub>3</sub>. Hardness values used in these equations must be less than 400 mg/L. For hardness values greater than 400 mg/L, use 400.

<sup>(c)</sup>Criterion multiplied by 0.5 to be comparable with other acute values derived using an averaging period. Value does not need to be multiplied by 0.5 if criterion is to be used as an instantaneous maximum or end of pipe value, as the original criterion was derived using EPA's 1980 guidelines as a not to be exceeded instantaneous maximum.

## Appendix G

### Equations For ~~Parameters With~~ pH Dependent Parameterssee

<b>Parameter</b>	<b>4-Day Average Concentration (µg/L)</b>	<b>1-Hour Average Concen- tration (µg/L)</b>
<b>Pentachloro-Phenol</b>	$e^{[1.005 \cdot (\text{pH}) - 5.290]}$	$e^{[1.005 \cdot (\text{pH}) - 4.830]}$

<u>Parameter</u>	<u>Acute 1-Hour Average Concentration (µg/L)</u>	<u>Chronic 4-Day Average Concentration (µg/L)</u>
<u>Pentachlorophenol</u>	<u><math>e^{[1.005(\text{pH}) - 4.830]}</math></u>	<u><math>e^{[1.005(\text{pH}) - 5.290]}</math></u>

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