WATER QUALITY RULES AND REGULATIONS

Chapter 1

WYOMING SURFACE WATER QUALITY STANDARDS

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Chapter 1

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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) "Discharger specific variance" means a time-limited designated use and water quality criteria granted to a specific permittee that reflects the highest attainable condition during the duration of the variance.

(xi) "Dissolved oxygen" means a measure of the amount of free oxygen in water.

(xii) "*E. coli*" means any of the bacterium in the family Enterobacteriaceae named *Escherichia* (genus) *coli* (species).

(xiii) "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.

(xiv~~ii~~) "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.

(x~~i~~v) "Environmental Protection Agency" means the federal Environmental Protection Agency (EPA).

(xvi) "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.

(xvii) "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.

(xviii) "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.

(x~~vii~~ix)"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.

(x~~i~~x) "Federal Act" means the Federal Water Pollution Control Act (Clean Water Act) and amendments as of November 27, 2002.

(xxi) "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).

(xxii) "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*).

(xxiii) "Highest attainable condition" means the designated use and water quality criteria or effluent condition closest to the underlying designated use and water quality criteria or water quality-based effluent limit that is feasible to achieve without causing substantial and widespread economic and social impacts.

(xxiv) "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.

(xx~~i~~v~~ii~~)"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.

(xx~~i~~vi) "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).

(xxvii) "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.

(xxviii)"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.

(xxix~~vii~~) "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.

(xxx~~viii~~) "Micrograms per liter (µg/L)" means micrograms of solute per liter of solution equivalent to parts per billion (ppb) in liquids, assuming unit density.

(xx~~i~~xi) "Milligrams per liter (mg/L)" means milligrams of solute per liter of solution equivalent to parts per million (ppm) in liquids, assuming unit density.

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

(xxxiii)"Natural" means that condition which would exist without the measurable influence of man's activities.

(xxxiv~~i~~) "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.

(xxx~~i~~v~~ii~~) "Natural water quality" means that quality of water which would exist without the measurable influence of man's activities.

(xxx~~i~~vi) "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.

(xxxvii) "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.

(xxxviii) "Nongame fish" means all fish species except those listed in Section 2(b)(xxi) above.

(xxx~~v~~ix)"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.

(x~~xx~~l~~viii~~)"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.

(xli~~xxix~~) "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: pH = -log 10 (H^+), where (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).

(xlii) "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 3.7×10^{10} disintegrations per second.

(xliii) "Pollutant minimization program" means a structured set of activities intended to maintain and/or improve treatment processes and pollutant controls to prevent and reduce pollutant loadings.

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

(xl~~ii~~v) "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).

(xl~~i~~v~~i~~i) "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.

(xl~~i~~vii) "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.

(xlviii) "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.

(xlix~~vi~~) "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.

(~~x~~l~~v~~ii~~i~~) "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.

(~~x~~l~~v~~iii~~i~~) "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.

(~~x~~liii~~x~~) "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.

(liii) "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.

(liv) "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.

(li~~v~~vi~~i~~) "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*).

(li~~ii~~vi) "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.

(li~~v~~vii) "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.

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

(lix~~vi~~) "Zone of passage" means a continuous water route which joins segments of a surface water body above and below a mixing zone.

(lx~~vii~~) "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*.

Section 37. Discharger Specific Variances.

(a) Following public notice and opportunity for comment, including at least one public hearing with a minimum of 45-day notice, the administrator may grant a permittee a variance to a designated use and water quality criteria for ammonia and/or nutrients (e.g., total nitrogen, total phosphorus). The administrator may also grant subsequent variances consistent with this section.

(b) A variance shall not be granted if:

(i) the ammonia and/or nutrient water quality-based effluent limit can be achieved by implementing technology-based effluent limits under sections 301(b) and 306 of the Clean Water Act; or

(ii) the variance will result in an increase in the discharge of the pollutant.

(c) A variance may be granted in circumstances where:

(i) a comprehensive alternatives analysis demonstrates that the most cost-effective pollutant removal alternative capable of achieving the water quality-based effluent limit would create substantial and widespread economic and social impacts; and

(ii) the permittee implements actions necessary to achieve the highest attainable condition of the receiving water. The highest attainable condition shall be identified through a comprehensive alternatives analysis and/or other supporting documentation at the time the variance is granted or during any reevaluation and shall include:

(A) meeting an interim effluent condition that represents the greatest pollutant reduction achievable; and

(B) developing and implementing a pollutant minimization program.

(d) The duration of the variance shall only be as long as necessary to achieve the highest attainable condition as specified in Sections 2(b)(xxiii) and 37(c)(ii).

(e) Once granted, the variance shall only apply for the purpose of developing interim effluent limits. A discharge permit based on a variance shall include the interim effluent limit identified in the variance and any limitations and requirements identified in the variance as enforceable conditions of the permit.

(f) All discharger specific variances granted by the administrator are considered final actions and may be appealed pursuant to the Rules of Practice and Procedure, Chapter 1, Section 8.

(g) Following administrator approval and opportunity for appeal, the variance shall be submitted to EPA pursuant to ~~the Clean Water Act.~~ 33 U.S.C. § 1313 and ~~The variance shall~~ become effective either upon EPA approval or 90 days after submittal, whichever comes first.

(i) The director may grant an extension upon request by EPA's Regional Administrator.

(ii) If the director grants an extension, the variance shall become effective upon either EPA approval or expiration of the extension, whichever comes first.

(h) The department shall reevaluate each variance at least every five years using all existing and readily available information. The department may also initiate a reevaluation at any time.

(i) Upon notification that the department is initiating a reevaluation, or 180 days prior to permit expiration, the permittee shall submit:

(A) Information on how the permittee did or did not comply with the conditions of the variance;

(B) Information indicating that the most cost-effective pollutant removal alternative capable of achieving the water quality-based effluent limit continues to create substantial and widespread economic and social impacts; and

(C) Information sufficient to determine whether the highest attainable condition, as specified in Sections 2(b)(xxiii) and 37(c)(ii) should be modified.

(D) If the requirements identified in Section 37(i) are not met, the variance shall expire and the permittee shall be required to meet the water quality-based effluent

limit.

(ii) In circumstances where the reevaluation concludes that a more stringent highest attainable ~~modification to the interim effluent~~ condition is justified~~necessary~~, the department shall modify the discharge permit accordingly. In circumstances where the reevaluation concludes that a more lenient highest attainable condition is justified, a new variance must be developed.

(iii) Following public notice, the public shall be provided a minimum of 30 days to review and comment on the reevaluation. Each completed reevaluation is considered a final action of the administrator and may be appealed pursuant to the Rules of Practice and Procedure, Chapter 1, Section 8.

(iv) The administrator may terminate any variance for good cause following opportunity for public comment.

(v) The department shall submit the reevaluation to EPA within 30 days of completion or the variance shall expire and the permittee shall be required to meet the water quality-based effluent limit.

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 Kortes 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[1]

(a) Priority Pollutants.

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water[2] (µg/L)	Fish[8] (µg/L)
Acenaphthene			20[7]	990
Acrolein	3	3	6	9
Acrylonitrile			0.051[3]	0.25[3]
Benzene			2.2[3]	51[3]
Benzidine			0.000086[3]	0.00020[3]
Carbon tetrachloride (Tetrachloromethane)			0.23[3]	1.6[3]
Chlorobenzene (Monochlorobenzene)			20[7]	1,600
1,2,4-Trichlorobenzene			35	70
Hexachlorobenzene			0.00028[3]	0.00029[3]
1,2-Dichloroethane			0.38[3]	37[3]
1,1,1-Trichloroethane			200[9]	
Hexachloroethane			1.4[3]	3.3[3]
1,1,2-Trichloroethane			0.59[3]	16[3]
1,1,2,2-Tetrachloroethane			0.17[3]	4[3]
Bis(2-chloroethyl) ether			0.030[3]	0.53[3]
2-Chloronaphthalene			1,000	1,600
2,4,6-Trichlorophenol			1.4[3]	2.4[3]
4-Chloro-3-methylphenol (3-Methyl-4-chlorophenol) (p-Chloro-m-cresol)			3,000[7]	
Chloroform (Trichloromethane)			5.7[3]	470[3]
2-Chlorophenol			0.1[7]	150
1,2-Dichlorobenzene			420	1,300
1,3-Dichlorobenzene			320	960
1,4-Dichlorobenzene			63	190
3,3’-Dichlorobenzidine			0.021[3]	0.028[3]
1,1-Dichloroethylene			7[9]	7,100
1,2-trans-Dichloroethylene			100[9]	10,000
2,4-Dichlorophenol			0.3[7]	290

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

Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water[2] (µg/L)	Fish[8] (µg/L)
Benzo(a)anthracene(1,2-Benzanthracene)			0.0038[3]	0.018[3]
Benzo(a)pyrene (3,4-Benzopyrene)			0.0038[3]	0.018[3]
Benzo(b)fluoranthene (3,4-Benzofluoranthene)			0.0038[3]	0.018[3]
Benzo(k)fluoranthene(11,12-Benzofluoranthene)			0.0038[3]	0.018[3]
Chrysene			0.0038[3]	0.018[3]
Anthracene			8,300	40,000
Fluorene			1,100	5,300
Dibenzo(a,h)anthracene(1,2,5,6-Dibenzanthracene)			0.0038[3]	0.018[3]
Indeno(1,2,3-cd)pyrene			0.0038[3]	0.018[3]
Pyrene			830	4,000
Tetrachloroethylene			0.69[3]	3.3[3]
Toluene			1,000[9]	15,000
Trichloroethylene			2.5[3]	30[3]
Vinyl chloride (Chloroethylene)			0.025[3]	2.4[3]
Aldrin	1.5[16]		0.000049[3]	0.000050[3]
Dieldrin	0.24	0.056	0.000052[3]	0.000054[3]
Chlordane	1.2[16]	0.0043	0.00080[3]	0.00081[3]
4,4'-DDT	0.55[16]	0.001	0.00022[3]	0.00022[3]
4,4'-DDE			0.00022[3]	0.00022[3]
4,4'-DDD			0.00031[3]	0.00031[3]
alpha-Endosulfan	0.11[16]	0.056	62	89
beta-Endosulfan	0.11[16]	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[16]	0.0038	0.000079[3]	0.000079[3]
Heptachlor epoxide	0.26[16]	0.0038	0.000039[3]	0.000039[3]
alpha-BHC (Hexachlorocyclohexane-alpha)			0.0026[3]	0.0049[3]

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

(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[2] (µg/L)	Fish[8] (µg/L)
Alachlor			2[9]	
Aluminum (pH 6.5-9.0 only)	750	87[14]		
Ammonia	See Appendix C			
Atrazine			3[9]	
Barium			2,000[9]	
Bis(chloromethyl) ether			0.00010[3]	0.00029[3]
Bromate			10[9]	
Carbofuran			40[9]	
Chloride	860,000[15]	230,000[15]		
Chlorine (total residual)	19	11		
Chlorite			1,000[9]	
Chlorophenoxy herbicide (2,4,5-TP)			10	
Chlorpyrifos	0.083	0.041		
Chlorophenoxy herbicide (2,4-D)			70[9]	
Dalapon			200[9]	
Demeton		0.1		
Di(2-ethylhexyl) adipate			400[9]	
Diazinon	0.17	0.17		
Dibromochloropropane (DBCP)			0.2[9]	
cis-1,2-Dichloroethylene			70[9]	
Dinoseb			7[9]	
Dinitrophenols			69	5,300
Dissolved Gases		100% Sat.		
Dissolved Oxygen		See Appendix D		
E. coli			See Section 27	
Diquat			20[9]	
Endothall			100[9]	
Ethylene dibromide (EDB)			0.05[9]	
Fluoride			2000[11]	
Glyphosate			700[9]	

Non-Priority Pollutant	Aquatic Life		Human Health Consumption of	
	Acute Value (µg/L)	Chronic Value (µg/L)	Fish and Drinking Water[2] (µg/L)	Fish[8] (µg/L)
Guthion		0.01		
Haloacetic acids			60[9]	
Hexachlorocyclo-hexane - technical			0.0123[3]	0.0414[3]
Iron		1000[12]	300[11]	
Malathion		0.1		
Manganese	3110[4][12]	1462[4][12]	50[11]	
Methoxychlor		0.03	40[9]	
Mirex		0.001		
Nitrite (as N)			1000[9]	
Nitrates (as N)			10000[9]	
Nitrite+Nitrate (both as N)			10000[9]	
Nitrosamines			0.0008	1.24
Nitrosodibutylamine, N			0.0063[3]	0.22[3]
Nitrosodiethylamine, N			0.0008[3]	1.24[3]
Nitrosopyrrolidine, N			0.016[3]	34[3]
Nonylphenol	28	6.6		
Oxamyl (Vydate)			200[9]	
Parathion	0.065	0.013		
Pentachlorobenzene			1.4	1.5
pH		6.5-9.0		
Picloram			500[9]	
Simazine			4[9]	
Styrene			100[9]	
Hydrogen Sulfide (H_2S; Undissociated)		2		
1,2,4,5-Tetrachlorobenzene			0.97	1.1
Tributyltin (TBT)	0.46	0.072		
2,4,5-Trichlorophenol			1.0[7]	3,600
Total trihalomethanes (TTHM)			80[9]	
2,4,5-TP (2,4,5-trichlorophenoxy) Propionic acid			50[9]	
Xylenes			10,000[9]	

(1)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.

(2)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.

(3)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.

(4)Hardness dependent criterion. Value given is an example only and is based on a $CaCO_3$ hardness of 100 mg/L. Criteria for hardness concentrations other than 100 mg/L as $CaCO_3$ must be calculated using the formulas in Appendix F.

(5)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.

(6)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. $Fe_4[Fe(CN)_6]_3$), this criterion may be overly conservative.

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

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

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

(10)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.

(11) 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.

(12)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.

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

(14)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 $CaCO_3$), 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 $CaCO_3$) 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 $CaCO_3$) 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.

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

(16)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;

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

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

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

(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.

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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)[(1)] 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)[2] for Ammonia, Fish Early Life Stages *Present*

Temperature (ºC)										
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)[2] 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:

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

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

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

[1]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.

[2]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[1][2]	Other Life Stages	Early Life Stages[2]	Other Life Stages
30 Day Mean	n/a[3]	6.5	n/a[3]	5.5
7 Day Mean	9.5 (6.5)	n/a[3]	6.0	n/a[3]
7 Day Mean Minimum[4]	n/a[3]	5.0	n/a[3]	4.0
1 Day Minimum[4]	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.*

[1]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.

[2]Includes all embryonic and larval stages and all juvenile forms to 30-days following hatching.

[3]n/a (not applicable).

[4]All minima should be considered as instantaneous concentrations to be achieved at all times.

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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.

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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 $CaCO_3$) 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 $CaCO_3$). Conversion factors can be calculated using the following equations, although when an ambient hardness of less than 25 mg/L (as $CaCO_3$) is used to establish criteria for lead or cadmium, the conversion factor should not exceed one[(a)]:

(A) Cadmium Acute: CF = 1.136672 - [(ln hardness)(0.041838)]

(B) Cadmium Chronic: CF = 1.101672 - [(ln hardness)(0.041838)]

(C) Lead Acute and Chronic: CF = 1.46203 - [(ln hardness)(0.145712)]

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

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

[(a)]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-02-47.*

[(b)]Hardness as mg/L $CaCO_3$. Hardness values used in these equations must be less than 400 mg/L. For hardness values greater than 400 mg/L, use 400.

[(c)]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

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

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