

TEXAS SURFACE WATER QUALITY STANDARDS
TAC 307

§307.1. General Policy Statement

It is the policy of this state and the purpose of this chapter to maintain the quality of water in the state consistent with public health and enjoyment, propagation and protection of terrestrial and aquatic life, operation of existing industries, and taking into consideration economic development of the state; to encourage and promote development and use of regional and areawide wastewater collection, treatment, and disposal systems to serve the wastewater disposal needs of the citizens of the state; and to require the use of all reasonable methods to implement this policy.

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§307.2. Description of Standards

(a) Contents of the Texas Surface Water Quality Standards.

(1) Section 307.1 of this title (relating to General Policy Statement) contains the general standards policy of the commission.

(2) This section lists the major sections of the standards, defines basin classification categories, describes justifications for standards modifications, and provides the effective dates of the rules.

(3) Section 307.3 of this title (relating to Definitions and Abbreviations) defines terms and abbreviations used in the standards.

(4) Section 307.4 of this title (relating to General Criteria) lists the general criteria, which are applicable to all surface waters of the state unless specifically excepted in §307.8 of this title (relating to Application of Standards) or §307.9 of this title (relating to Determination of Standards Attainment).

(5) Section 307.5 of this title (relating to Anti-degradation) describes the anti-degradation policy and implementation procedures.

(6) Section 307.6 of this title (relating to Toxic Materials) establishes criteria and control procedures for specific toxic substances and total toxicity.

(7) Section 307.7 of this title (relating to Site-specific Uses and Criteria) defines appropriate water uses and supporting criteria for site-specific standards.

(8) Section 307.8 of this title sets forth conditions under which portions of the standards do not apply--such as in mixing zones or below critical low-flows.

(9) Section 307.9 of this title describes sampling and analytical procedures to determine standards attainment.

(10) Section 307.10 of this title (relating to Appendices A - F[A - E]) lists site-specific standards and supporting information for classified segments (Appendices A and C [A - C]), water bodies that are sole-source surface drinking water supplies (Appendix B), site-specific uses and criteria for unclassified[partially classified] water bodies (Appendix D), [and] site-specific toxic criteria that may be derived for any water in the state (Appendix E), and chlorophyll *a* criteria for selected reservoirs (Appendix F). Specific appendices are as follows:

(A) Appendix A--Site-specific[Water] Uses and [Numerical] Criteria for Classified Segments;

(B) Appendix B--Sole-source Surface Drinking Water Supplies [Low-Flow Criteria];

(C) Appendix C--Segment Descriptions;

(D) Appendix D--Site-specific Uses and Criteria for Unclassified Water Bodies;
[and]

(E) Appendix E--Site-specific Toxic Criteria; and [.]

(F) Appendix F--Site-specific Nutrient Criteria for Selected Reservoirs.

(b) Applicability. The Texas Surface Water Quality Standards apply to surface waters in the state--including wetlands.

(c) Classification of surface waters. The major surface waters of the state are classified as segments for purposes of water quality management and designation of site-specific standards. Classified segments are aggregated by basin, and basins are categorized as follows:

(1) River basin waters. Surface inland waters comprising the major rivers, their tributaries, including listed impounded waters and the tidal portion of rivers to the extent that they are confined in channels.

(2) Coastal basin waters. Surface inland waters, including listed impounded waters but exclusive of paragraph (1) of this subsection, discharging, flowing, or otherwise communicating with bays or the gulf, including the tidal portion of streams to the extent that they are confined in channels.

(3) Bay waters. All tidal waters, exclusive of those included in river basin waters, coastal basin waters, and gulf waters.

(4) Gulf waters. Waters which are not included in or do not form a part of any bay or estuary but which are a part of the open waters of the Gulf of Mexico to the limit of the state's jurisdiction.

(d) Modification of standards.

(1) The commission reserves the right to amend these standards following the completion of special studies.

(2) Any errors in water quality standards resulting from clerical errors or errors in data may be corrected by the commission through amendment of the affected standards. Water quality standards not affected by such clerical errors or errors in data remain valid until changed by the commission.

(3) The narrative provisions, presumed uses, designated uses, and numerical criteria of the Texas Surface Water Quality Standards may be amended for a specific water body to account for local conditions. A site-specific standard is an explicit amendment to this title, Chapter 307 (Texas Surface Water Quality Standards), and adoption of a site-specific standard requires the procedures for public notice and hearing established under the Texas Water Code, §26.024 and §26.025. An amendment which establishes a site-specific standard will require a use-attainability analysis which demonstrates that reasonably attainable water-quality related uses will be protected. Upon adoption, site-specific amendments to the standards will be listed in §307.10 of this title.

(4) Factors which may justify the development of site-specific standards are described in §§307.4, 307.6, 307.7, and 307.8 of this title.

(5) Temporary variance. When scientific information indicates that a site-specific standards amendment is justified, the commission may allow a corresponding temporary variance to the water quality standards in a permit for a discharge of wastewater or stormwater.

(A) A temporary variance is only applicable to an existing permitted discharge.

(B) A permittee may apply for a temporary variance prior to or during the permit application process. The temporary variance request shall be included in a public notice during the permit application process. An opportunity for public comment will be provided, and the request may be considered in any public hearing on the permit application.

(C) A temporary variance for a TPDES permit will also require review and approval by the EPA during the permitting process.

(D) The permit shall contain effluent limitations that protect existing uses and preclude degradation of existing water quality, and the term of the permit shall not exceed three years. Effluent limitations that are needed to meet the existing standards will be listed in the permit and will go into effect immediately as final permit effluent limitations in the succeeding permit, unless the permittee fulfills the requirements of the conditions for the variance in the permit.

(E) When the permittee has complied with the terms of the conditions in the temporary variance, then the succeeding permit may include a permit schedule to meet standards in accordance with subsection (f) of this section. The succeeding permit may also extend the temporary variance in accordance with subsection (f) of this section in order to allow additional time for a site-specific standard to be adopted in this title. This extension can be approved by the commission only after a site-specific study that supports a standards change has been completed and the commission agrees the completed study supports a change in the applicable standard(s).

(F) Site-specific standards which are developed under a temporary variance will be expeditiously proposed and publicly considered for adoption at the earliest opportunity.

(e) Implementation procedures. Provisions for implementing the water quality standards are described in a document entitled Procedures to Implement the Texas Surface Water Quality Standards.

(f) Permit schedules to meet standards. Upon permit amendment or permit renewal, the executive director or commission, as appropriate, may establish interim effluent limitations to allow a permittee time to modify effluent quality in order to attain final effluent limitations. The duration of any interim effluent limitations may not be longer than three years from the effective date of the permit issuance, except in accordance with a temporary variance as described in subsection (d)(5) of this section.

(g) Temporary standards. Where a criterion is not attained and cannot be attained for one or more of the reasons listed in 40 Code of Federal Regulations (CFR) §131.10(g), then a temporary standard for specific water bodies may be adopted in §307.10 of this title as an alternative to changing uses. A criterion which is established as a temporary standard must be adopted in accordance with the provisions of subsection (d)(3) of this section. Specific reasons and additional procedures for justifying a temporary standard are provided in the standards implementation procedures. A temporary standard shall identify the water body or water bodies where the criterion applies. A temporary standard will identify the numerical criteria that will apply during the existence of the temporary standard. A temporary standard does not exempt any discharge from compliance with applicable technology-based effluent limits. A temporary standard shall expire no later than the completion of the next triennial revision of the Texas Surface Water Quality Standards. When a temporary standard expires, subsequent discharge permits will be issued to meet the applicable existing water quality standards. If a temporary standard is sufficiently justified in accordance with the provisions of subsection (b)(3) of this section, it can be renewed during revisions of

the Texas Surface Water Quality Standards. A temporary standard cannot be established which would impair an existing use.

(h) Effective date of standards. Except as provided in 40 CFR §131.21 (EPA review and approval of water quality standards), these rules shall become effective 20 days after the date on which they are filed in the office of the secretary of state. As to actions covered by 40 CFR §131.21, the rules shall become effective upon approval by EPA.

(i) Effect of conflict or invalidity of rule.

(1) If any provision of this chapter or its application to any person or circumstances is held invalid, the invalidity does not affect other provisions or applications of the provisions contained in this chapter which can be given effect without the invalid provision or application, and to this end the provisions of this chapter are severable.

(2) To the extent of any irreconcilable conflict between provisions of this chapter and other rules of the commission, the provisions of this chapter shall supersede.

§307.3. Definitions and Abbreviations.

(a) Definitions. The following words and terms, when used in this chapter, shall have the defined meanings, unless the context clearly indicates otherwise.

(1) Acute toxicity--Toxicity which exerts a stimulus severe enough to rapidly induce an effect. The duration of exposure applicable to acute toxicity is typically 96 hours or less. Tests of total toxicity normally use lethality as the measure of acute impacts. (Direct thermal impacts are excluded from definitions of toxicity.)

(2) Ambient--Refers to the existing water quality in a particular water body.

(3) Aquatic vegetation--Refers to aquatic organisms, ie., plant life, found in the water and includes phytoplankton; algae, both attached and floating; and vascular and nonvascular plants, both rooted and floating.

(4)[(3)] Attainable use--A use which can be reasonably achieved by a water body in accordance with its physical, biological, and chemical characteristics whether it is currently meeting that use or not. Guidelines for the determination and review of attainable uses are provided in the standards implementation procedures. The designated use, existing use, or presumed use of a water body may not necessarily be the attainable use.

(5)[(4)] Background--Refers to the water quality in a particular water body that would occur if that water body were relatively unaffected by human activities.

(6) Baseflow conditions--Sustained or typical dry, warm-weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather.

(7)[(5)] Bedslope--Stream gradient, or the extent of the drop in elevation encountered as the stream flows downhill. One measure of bedslope is the elevation decline in meters over the stream distance in kilometers.

(8)[(6)] Best management practices--Schedules of activities, maintenance procedures, and other management practices to prevent or reduce the pollution of water in the state from point and nonpoint sources, to the maximum extent practicable. Best management practices also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

(9)[(7)] Bioaccumulative toxic--A chemical which is taken up by aquatic organisms from water directly or through the consumption of food containing the chemicals.

(10)[(8)] Bioconcentration factor--A unitless value describing the degree to which a chemical can be concentrated in the tissues of an organism in the aquatic environment and which is absorbed directly from the water. The bioconcentration factor is the ratio of a chemical's concentration in the tissue of an organism compared to that chemical's average concentration in the surrounding water.

(11)[(9)] Biological integrity--The species composition, diversity, and functional organization of a community of organisms in an environment relatively unaffected by pollution.

(12)[(10)] Chronic toxicity--Toxicity which continues for a long-term period after exposure to toxic substances. Chronic exposure produces sub-lethal effects, such as growth impairment

and reduced reproductive success, but it may also produce lethality. The duration of exposure applicable to the most common chronic toxicity test is seven days or more.

(13)[(11)] Classified--Refers to a water body that is listed and described in Appendix A and[or] Appendix C in §307.10 of this title (relating to Appendices A - E). Site-specific uses and criteria for classified water bodies are listed in Appendix A.

(12) Contact recreation--Recreational activities involving a significant risk of ingestion of water, including wading by children, swimming, water skiing, diving, and surfing.]

(14)[(13)] Criteria--Water quality conditions which are to be met in order to support and protect existing, designated, and attainable [desirable] uses.

(15)[(14)] Critical low-flow--Low-flow condition (e.g., 7Q2 flow) below which some standards do not apply. The impacts of permitted discharges are analyzed at critical low-flow.

(16)[(15)] Designated use--A use which is assigned to specific water bodies in Appendix A or in Appendix D in §307.10 of this title. Typical uses which may be designated for specific water bodies include domestic water supply, categories of aquatic life use, recreation categories, seagrass propogation, and aquifer protection.

(17)[(16)] Discharge permit--A permit issued by the state or a federal agency to discharge treated effluent or cooling water into waters of the state.(17) EC50 --The concentration of a toxicant that produces an adverse effect on 50% of the organisms tested in a specified time period.

(18)[(17)] EC₅₀-- The concentration of a toxicant that produces an adverse effect on 50% of the organisms tested in a specified time period.

(19)[(18)] *E. coli* --*Escherichia coli*, a subgroup of fecal coliform bacteria that is present in the intestinal tracts and feces of warm-blooded animals. It is used as an indicator of the potential presence of pathogens.

(20)[(19)] Effluent--Wastewater discharged from any point source prior to entering a water body.

(21)[(20)] Enterococci--A subgroup of fecal streptococci bacteria (mainly *Streptococcus faecalis* and *Streptococcus faecium*) that is present in the intestinal tracts and feces of warm-blooded animals. It is used as an indicator of the potential presence of pathogens.

(22)[(21)] Epilimnion--The upper mixed layer of a lake (including impoundments, ponds, and reservoirs).

(23)[(22)] Existing use--A use which is currently being supported by a specific water body or which was attained on or after November 28, 1975.

(24)[(23)] Fecal coliform--A portion of the coliform bacteria group which is present in the intestinal tracts and feces of warm-blooded animals; heat tolerant bacteria from other sources can sometimes be included. It is used as an indicator of the potential presence of pathogens.

(25)[(24)] Freshwaters--Inland waters which exhibit no measurable elevation changes due to normal tides.

(26)[(25)] Halocline--A vertical gradient in salinity under conditions of density stratification that is usually recognized as the point where salinity exhibits the greatest difference in the vertical direction.

(27)[(26)] Harmonic mean flow--A measure of mean flow in a water course which is calculated by summing the reciprocals of the individual flow measurements, dividing this sum by the number of measurements, and then calculating the reciprocal of the resulting number.

(28)[(27)] Incidental fishery--A level of fishery which applies to water bodies that are not considered to have a sustainable fishery but which have an aquatic life use of minimal, limited, intermediate, high, or exceptional.

(29)[(28)] Industrial cooling impoundment--An impoundment which is owned or operated by, or in conjunction with, the water rights permittee, and which is designed and constructed for the primary purpose of reducing the temperature and removing heat from an industrial effluent.

(30)[(29)] Intermittent stream--A stream which has a period of zero flow for at least one week during most years. Where flow records are available, a stream with a 7Q2 flow of less than 0.1 ft³/s is considered intermittent.

(31)[(30)] Intermittent stream with perennial pools--An intermittent stream which maintains persistent pools even when flow in the stream is less than 0.1 ft³/s.

(32)[(31)] LC₅₀--The concentration of a toxicant that is lethal (fatal) to 50% of the organisms tested in a specified time period.

(33) Main pool station--A monitoring station that is located in the main body of a reservoir near the dam and not located in a cove or in the riverine portion or transition zone of a reservoir. The data from the monitoring station is used for nutrient criteria calculations and assessment.

(34)[(32)] Method detection limit--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte. The method detection limit (MDL) is estimated in accordance with 40 CFR 136, Appendix B.

(35)[(33)] Minimum analytical level--The lowest concentration at which a particular substance can be quantitatively measured with a defined accuracy and precision level, using approved analytical methods. The minimum analytical level is not the published method detection limit for an EPA-approved analytical method, which is based on laboratory analysis of the substance in reagent (distilled) water. The minimum analytical level is based on analyses of the analyte in the matrix of concern (i.e., wastewater effluents). The executive director will establish general minimum analytical levels that will be applicable when information on matrix-specific minimum analytical levels is unavailable.

(36)[(34)] Mixing zone--The area contiguous to a permitted discharge where mixing with receiving waters takes place and where specified criteria, as listed in §307.8(b)(1) of this title (relating to Application of Standards), can be exceeded. Acute toxicity to aquatic organisms is not allowed in a mixing zone, and chronic toxicity to aquatic organisms is not allowed beyond a mixing zone.

(37)[(35)] Noncontact recreation--Activities, such as ship and barge traffic, birding, and using hike and bike trails near a water body, [Aquatic recreational pursuits] not involving a significant

risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions.]; including fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity.]

(38)[(36)] Nonpersistent toxic--A toxic substance that readily degrades in the aquatic environment, exhibits a half-life of less than 60 days[96 hours], and does not have a tendency to accumulate in organisms.

(39) Nutrient numeric criteria--Criteria that are established to protect surface waters from excessive growth of aquatic plants which includes phytoplankton, floating algae, floating higher plants, attached algae, and rooted plants. Nutrient criteria for reservoirs are expressed in terms of chlorophyll *a* concentration per unit volume as a measure of phytoplankton density. Associated screening levels for total phosphorus are also expressed in terms of concentration per unit volume in water.

(40) Nutrient--A chemical constituent, mostly a form of nitrogen or phosphorus, that in excess and appropriate ratios can contribute to the growth of nuisance aquatic vegetation and impact uses as defined in this title.

(41)[(37)] Oyster waters--Waters producing edible species of clams, oysters, or mussels.

(42)[(38)] Persistent toxic--A toxic substance that is not readily degraded and exhibits a half-life of 60 days[96 hours] or more in an aquatic environment.

(43)[(39)] Pollution--The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to the public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

(44)[(40)] Point source--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 or wastes are or may be discharged into or adjacent to any water in the state.

(45)[(41)] Presumed use--A use which is assigned to generic categories of water bodies (such as perennial streams). Presumed uses are superseded by designated uses for individual water bodies in Appendix A or Appendix D of §307.10 of this title.

(46) Primary contact recreation --Water recreation activities, such as wading by children, swimming, water skiing, diving, tubing, surfing, and whitewater kayaking, canoeing, and rafting, involving a significant risk of ingestion of water.

(47) Protection zone--Any area within the watershed of a sole-source surface drinking water supply that is: (1) within two miles of the normal pool elevation of a body of surface water that is a sole-source surface drinking water supply; (2) within two miles of that part of a perennial stream that is: (A) a tributary of a sole-source surface drinking water supply; and (B) within three linear miles upstream of the normal pool elevation of a sole-source surface drinking water supply; or (3) within two miles of

(definition numbers will be corrected in the final document)

that part of a stream that is a sole-source surface drinking water supply, extending three linear miles upstream from the water supply intake (Texas Water Code, Section 26.0286).

(48)[(42)] Public drinking water supply--A water body designated to provide water to a public water system as defined in Chapter 290 of this title (relating to Public Drinking Water).

(49)[(43)] Saltwater--A coastal water which has a measurable elevation change due to normal tides. In the absence of tidal information, saltwater is generally considered to be a coastal water which typically has a salinity of two parts per thousand or greater in a significant portion of the water column.

(50)[(44)] Salinity--The total dissolved solids in water after all carbonates have been converted to oxides, all bromide and iodide have been replaced by chloride, and all organic matter has been oxidized. For most purposes, salinity is considered equivalent to total dissolved salt content. Salinity is normally expressed in parts per thousand.

(51)[(45)] Seagrass propagation--A water-quality-related existing use which applies to saltwater with significant stands of submerged seagrass.

(52) Secondary contact recreation 1--Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion and that commonly occur.

(53) Secondary contact recreation 2--Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the water body and/or (2) limited public access.

(54)[(46)] Segment--A water body or portion of a water body which is individually defined and classified in Appendices A and C in the Texas Surface Water Quality Standards. A segment is intended to have relatively homogeneous chemical, physical, and hydrological characteristics. A segment provides a basic unit for assigning site-specific standards and for applying water quality management programs of the agency. Classified segments may include streams, rivers, bays, estuaries, wetlands, lakes, or reservoirs.

(55)[(47)] Settleable solids--The volume or weight of material which will settle out of a water sample in a specified period of time.

(56)[(48)] Seven-day, two-year low-flow (7Q2)--The lowest average stream flow for seven consecutive days with a recurrence interval of two years, as statistically determined from historical data. As specified in §307.8 of this title, some water quality standards do not apply at stream flows which are less than the 7Q2 flow.

(57)[(49)] Shellfish--Clams, oysters, mussels, crabs, crayfish, lobsters, and shrimp.

[(50) Significant aquatic life use--A broad characterization of aquatic life which indicates that a subcategory of aquatic life use (limited, intermediate, high, or exceptional) is applicable. Some aquatic life is expected to be present even in water bodies which are not designated for specific categories of aquatic life use. Some provisions to protect aquatic life applies to any water body in the state whether an aquatic life use is assigned or not. These provisions include the general criteria in §307.4 of this title

(relating to General Criteria), the numerical acute aquatic life criteria in §307.6(c) of this title, and the whole effluent toxicity requirements to preclude acute toxicity to aquatic life in §307.6(e) of this title.]

(58) Sole-source surface drinking water supply--A body of surface water that is identified as a public water supply in rules adopted by the commission under Texas Water Code, §26.023 and is the sole source of supply of a public water supply system, exclusive of emergency water connections (Texas Water Code, §26.0286).

(59)[(51)] Standard Methods for the Examination of Water and Wastewater--A document describing sampling and analytical procedures, which is published by the American Public Health Association, American Water Works Association, and Water Environment Federation. The most recent edition of this document is to be followed whenever its use is specified by these rules.

(60)[(52)] Standards--Existing, attainable, or designated[The designation of water bodies for desirable] uses as defined in this title and the narrative and numerical criteria deemed necessary to protect those uses in surface waters.

(61)[(53)] Standards implementation procedures--Procedures entitled *Procedures to Implement the Texas Surface Water Quality Standards (RG-194(Revised))*, which are adopted by the commission and approved by EPA as part of the State Continuing Planning Process.

(62)[(54)] Storm water--Rainfall runoff, snow melt runoff, surface runoff, and drainage.

(63)[(55)] Storm water discharge--A point source discharge that is composed entirely of storm water associated with an industrial activity, a construction activity, a discharge from a municipal separate storm sewer system, or other discharge designated by the agency.

(64)[(56)] Stream order--A classification of stream size, where the smallest, unbranched tributaries of a drainage basin are designated first order streams. Where two first order streams join, a second order stream is formed; and where two second order streams join, a third order stream is formed, etc. For purposes of water quality standards application, stream order is determined from USGS topographic maps with a scale of 1:24,000.

(65)[(57)] Surface water in the state--Lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state as defined in the Texas Water Code, §26.001[(from the mean high water mark (MHW) out 10.36 miles into the Gulf)], and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all water-courses and bodies of surface water, that are wholly or partially inside or bordering the state or subject to the jurisdiction of the state; except that waters in treatment systems which are authorized by state or federal law, regulation, or permit, and which are created for the purpose of waste treatment are not considered to be water in the state.

(66)[(58)] Sustainable Fisheries--Descriptive of water bodies which potentially have sufficient fish production or fishing activity to create significant long-term human consumption of fish. Sustainable fisheries include perennial streams and rivers with a stream order of three or greater; lakes and reservoirs greater than or equal to 150 acre-feet and/or 50 surface acres; all bays, estuaries, and tidal rivers. Water bodies which are presumed to have sustainable fisheries include all designated segments listed in Appendix A unless specifically exempted.

(67) Thalweg--The deepest portion of a stream or river channel cross-section.

(68)[(59)] Tidal--Descriptive of coastal waters which are subject to the ebb and flow of tides. For purposes of standards applicability, tidal waters are considered to be saltwater. Classified tidal waters include all bays and estuaries with a segment number that begins with 24xx, all streams with the word tidal in the segment name, and the Gulf of Mexico.

(69)[(60)] To discharge--Includes to deposit, conduct, drain, emit, throw, run, allow to seep, or otherwise release or dispose of, or to allow, permit, or suffer any of these acts or omissions.

(70)[(61)] Total Maximum Daily Load (TMDL)--The total amount of a substance that a water body can assimilate and still meet the Texas Surface Water Quality Standards.

(71)[(62)] Total dissolved solids--The amount of material (inorganic salts and small amounts of organic material) dissolved in water and commonly expressed as a concentration in terms of milligrams per liter. The term is equivalent to the term filterable residue, as used in the publication entitled, Standard Methods for the Examination of Water and Wastewater .

(72)[(63)] Total suspended solids--Total suspended matter in water, which is commonly expressed as a concentration in terms of milligrams per liter. The term is equivalent to nonfilterable residue, as used in the publication entitled, Standard Methods for the Examination of Water and Wastewater.

(73)[(64)] Total toxicity--Toxicity as determined by exposing aquatic organisms to samples or dilutions of instream water or treated effluent. Also referred to as whole effluent toxicity or biomonitoring.

(74) Toxic equivalence factor (TEF)--A factor which denotes a given dioxin compound's toxicity relative to 2,3,7,8-TCDD, which is assigned the maximum toxicity designation of one.

(75)[(65)] Toxicity--The occurrence of adverse effects to living organisms due to exposure to toxic materials. Adverse effects caused by conditions of temperature and dissolved oxygen are excluded from the definition of toxicity. With respect to the provisions of §307.6(e) of this title, which concerns total toxicity and biomonitoring requirements, adverse effects caused by concentrations of dissolved salts (such as sodium, potassium, calcium, chloride, carbonate) in source waters are excluded from the definition of toxicity. Source water is defined as surface water or groundwater that is used as a public water supply or industrial water supply (including a cooling-water supply). Source water does not include brine water that is produced during the extraction of oil and gas, or other sources of brine water that are substantially uncharacteristic of surface waters in the area of discharge. In addition, adverse effects caused by concentrations of dissolved salts which are added to source water by industrial processes are not excluded from the requirements of §307.6(e) of this title, except as specifically noted in §307.6(e)(2)(B) of this title, which concerns requirements for toxicity testing of 100% effluent. This definition of toxicity does not affect the standards for dissolved salts in this chapter other than §307.6(e) of this title. The standards implementation procedures contain provisions to protect surface waters from adverse effects of dissolved salts and methods to address the effects of dissolved salts on total toxicity tests.

(76)[(66)] Toxicity biomonitoring--The process or act of determining total toxicity. Documents which describe procedures for toxicity biomonitoring are cited in §307.6 of this title. Also referred to simply as biomonitoring.

(77)[(67)] Water-effect[Water-effects] ratio--The water-effect[water-effects] ratio is calculated as the toxic concentration (LC₅₀) of a substance in water at a particular site, divided by the toxic concentration of that substance as reported in laboratory dilution water. The water-effect[water-effects] ratio can be used to establish site-specific acute and chronic criteria to protect aquatic life. The site-specific criterion is equal to the water-effect[water-effects] ratio times the statewide aquatic life criterion in §307.6(c) of this title.

(78)[(68)] Water quality management program--The agency's overall program for attaining and maintaining water quality consistent with state standards, as authorized under the Texas Water Code, the Texas Administrative Code, and the Clean Water Act, §§106, 205(j), 208, 303(e) and 314 (33 United States Code, §§1251 et seq.).

(79)[(69)] Wetland--An area (including a swamp, marsh, bog, prairie pothole, or similar area) having a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances supports the growth and regeneration of hydrophytic vegetation. The term "hydric soil" means soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation. The term "hydrophytic vegetation" means a plant growing in: water or a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content. The term "wetland" does not include irrigated acreage used as farmland; a man-made wetland of less than one acre; or a man-made wetland for which construction or creation commenced on or after August 28, 1989, and which was not constructed with wetland creation as a stated objective, including but not limited to an impoundment made for the purpose of soil and water conservation which has been approved or requested by soil and water conservation districts. If this definition of wetland conflicts with the federal definition in any manner, the federal definition prevails.

(80)[(70)] Wetland water quality functions--Attributes of wetlands that protect and maintain the quality of water in the state, which include storm water storage and retention and the moderation of extreme water level fluctuations; shoreline protection against erosion through the dissipation of wave energy and water velocity, and anchoring of sediments; habitat for aquatic life; and removal, transformation, and retention of nutrients and toxic substances.

(81)[(71)] Zone of initial dilution--The small area at the immediate point of a permitted discharge where initial dilution with receiving waters occurs, and which may not meet certain criteria applicable to the receiving water. A zone of initial dilution is substantially smaller than a mixing zone.

(b) Abbreviations. The following abbreviations apply to this chapter:

- (1) AP--aquifer protection.
- (2) BMP--best management practices.
- (3) AS--agricultural water supply.
- (4) CASRN--Chemical Abstracts Service Registry number.
- (5) CFR--Code of Federal Regulations.
- (6) Cl⁻¹ --chloride.

- (7) CR--contact recreation.]
- (7)(8) DO--dissolved oxygen.
- (8)(9) E--exceptional aquatic life use.
- (9)(10) EPA--United States Environmental Protection Agency.
- (10)(11) degrees F--Degree(s) Fahrenheit.
- (11)(12) ft³/s--cubic feet per second.
- (12)(13) H--high aquatic life use.
- (13)(14) I--intermediate aquatic life use.
- (14)(15) IS--industrial water supply.
- (15)(16) L--limited aquatic life use.
- (16)(17) MCL--maximum contaminant level (for public drinking water supplies).
- (17)(18) mg/L--milligrams per liter.
- (18)(19) ml--milliliter.
- (19)(20) MS4--municipal separate storm sewer system.
- (20)(21) N--navigation.
- (21)(22) NCR--noncontact recreation.
- (22)(23) NPDES--National Pollutant Discharge Elimination System, as set out in the Clean Water Act, §402 (33 United States Code 1342).
- (23)(24) O--oyster waters.
- (24) PCR--primary contact recreation.
- (25) PS--public water supply.
- (26) 7Q2--seven-day, two-year low-flow.
- (27) SCR--secondary contact recreation
- (28) SG--seagrass propogation.
- (29)(27) SO₄⁻²--sulfate.
- (30)(28) TDS--total dissolved solids.

(31)[(29)] TMDL--total maximum daily load.

(32)[(30)] TPDES--Texas Pollutant Discharge Elimination System.

(33)[(31)] TSS--total suspended solids.

(34)[(32)] USFDA--United States Food and Drug Administration.

(35)[(33)] USGS--United States Geological Survey.

(36)[(34)] WF--waterfowl habitat.

(37)[(35)] WQM--water quality management.

(38)[(36)] $\mu\text{g/L}$ --micrograms per liter.

(39)[(37)] ZID--zone of initial dilution

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§307.4 General Criteria

(a) Application. The general criteria set forth in this section apply to surface water in the state and specifically apply to substances attributed to waste discharges or the activities of man. General criteria do not apply to those instances in which surface water, as a result of natural phenomena, exhibit characteristics beyond the limits established by this section. General criteria are superseded by specific exemptions stated in this section or in §307.8 of this title (relating to the Application of Standards), or by site-specific water quality standards for classified segments. Provisions of the general criteria remain in effect in mixing zones or below critical low-flow conditions unless specifically exempted in §307.8 of this title.

(b) Aesthetic parameters.

(1) Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the water in the state.

(2) Surface water shall be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms or putrescible sludge deposits or sediment layers which adversely affect benthic biota or any lawful uses.

(3) Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of surface water in the state. This provision does not prohibit dredge and fill activities which are permitted in accordance with the Federal Clean Water Act.

(4) Surface waters shall be maintained in an aesthetically attractive condition.

(5) Waste discharges shall not cause substantial and persistent changes from ambient conditions of turbidity or color.

(6) There shall be no foaming or frothing of a persistent nature.

(7) Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film or sheen of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse; or cause toxicity to man, aquatic life, or terrestrial life in accordance with subsection (d) of this section.

(c) Radiological substances. Radioactive materials shall not be discharged in excess of the amount regulated by Chapter 336 of this title (relating to Radioactive Substance Rules).

(d) Toxic substances. Surface waters will not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life. Additional requirements and criteria for toxic substances are specified in §307.6 of this title (relating to Toxic Materials). Criteria to protect aquatic life from acute toxicity apply to all surface waters in the state except as specified in §307.8(a)(3)[§307.8(a)(2)] of this title. Criteria to protect aquatic life from chronic toxicity apply to surface waters with an [a significant] aquatic life use of limited, intermediate, high, or exceptional as designated in §307.10 of this title (relating to Appendices A-F[A – E]) or as determined on a case-by-case basis in accordance with subsection (l) of this section. Toxic criteria to protect human health for consumption of fish apply to waters with a sustainable or incidental fishery, as described in

§307.6(d) of this title. Additional criteria apply to water in the state with a public drinking water supply use, as described in §307.6(d) of this title. The general provisions of this subsection do not change specific provisions in §307.8 of this title for applying toxic criteria.

(e) Nutrients. Nutrients from permitted discharges or other controllable sources shall not cause excessive growth of aquatic vegetation which impairs an existing, attainable, or designated use. Site-specific nutrient criteria, nutrient permit limitations, and/or separate rules to control nutrients in individual watersheds will be established where appropriate after notice and opportunity for public participation and proper hearing. Site-specific criteria related to chlorophyll *a* are listed in Appendix F of this title.

(f) Temperature. Consistent with §307.1 of this title (relating to General Policy Statement) and in accordance with state water rights permits, temperature in industrial cooling lake impoundments and all other surface water in the state shall be maintained so as to not interfere with the reasonable use of such waters. Numerical temperature criteria have not been specifically established for industrial cooling lake impoundments, which in most areas of the state contribute to water conservation and water quality objectives. [With the exception of industrial cooling impoundments, temperature elevations due to discharges of treated domestic (sanitary) effluent, and within designated mixing zones,] The[the] following temperature criteria, expressed as a maximum temperature differential (rise over ambient) are established as follows except for industrial cooling impoundments, temperature elevations due to discharges of treated domestic (sanitary) effluent, and within designated mixing zones. [:] The maximum temperature differentials are: freshwater streams--5 degrees Fahrenheit; freshwater lakes and impoundments--3 degrees Fahrenheit; tidal river reaches, bay and gulf waters--4 degrees Fahrenheit in fall, winter, and spring, and 1.5 degrees Fahrenheit in summer (June, July, and August). Additional temperature criteria (expressed as maximum temperatures) for classified segments are specified in Appendix A of §307.10 of this title.

(g) Salinity.

(1) Concentrations and the relative ratios of dissolved minerals such as chlorides, sulfates, and total dissolved solids will be maintained such that existing, designated, and attainable uses will not be impaired.

(2) Criteria for chlorides, sulfates, and total dissolved solids for classified freshwater segments are specified in Appendix A of §307.10 of this title.

(3) Salinity gradients in estuaries will be maintained to support attainable estuarine dependent aquatic life uses. Numerical salinity criteria for Texas estuaries have not been established because of the high natural variability of salinity in estuarine systems, and because long-term studies by state agencies to assess estuarine salinities are still ongoing. Absence of numerical criteria shall not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration will be given to all activities which may detrimentally affect salinity gradients.

(h) Aquatic life uses and dissolved oxygen.

(1) Dissolved oxygen concentrations shall be sufficient to support existing, designated, and attainable aquatic life uses. Aquatic-life use categories and corresponding dissolved oxygen criteria are described in §307.7(b)(3) of this title (relating to Site-specific Uses and Criteria).

(2) Aquatic life use categories and dissolved oxygen criteria for classified segments are specified in Appendix A of §307.10 of this title. Aquatic life use categories and dissolved oxygen criteria for other specific water bodies are specified in Appendix D of §307.10 of this title. Where justified by

sufficient site-specific information, dissolved oxygen criteria which differ from §307.7(b)(3) of this title may be adopted for a particular water body in §307.10 of this title.

(3) Perennial streams, rivers, lakes, bays, estuaries, and other appropriate perennial waters which are not specifically listed in Appendix A or D of §307.10 of this title are presumed to have a high aquatic life use and corresponding dissolved oxygen criteria. In accordance with results from statewide ecoregion studies, unclassified perennial streams in southeast and northeast Texas are assigned dissolved oxygen criteria as indicated in §307.7(b)(3)(A)(ii) of this title. Higher uses will be protected where they are attainable.

(4) When water is present in the streambed of intermittent streams, a 24-hour dissolved oxygen mean of at least 2.0 mg/L and an absolute minimum dissolved oxygen concentration of 1.5 mg/L will be maintained. Intermittent streams which are not specifically listed in Appendix A or D of §307.10 of this title are considered to [not] have a minimal [significant] aquatic life use except as indicated below in this subsection. For intermittent streams with seasonal aquatic life uses, dissolved oxygen concentrations commensurate with the aquatic life uses will be maintained during the seasons in which the aquatic life uses occur. Unclassified intermittent streams with [significant aquatic life uses created by] perennial pools are presumed to have a limited aquatic life use and corresponding dissolved oxygen criteria. Higher uses will be protected where they are attainable.

(i) Aquatic life uses and habitat. Vegetative and physical components of the aquatic environment will be maintained or mitigated to protect aquatic life uses. Procedures to protect habitat in permits for dredge and fill activities are specified in Federal Clean Water Act, §404 and in Chapter 279 of this title (relating to Water Quality Certification).

(j) Aquatic recreation.

(1) Existing, designated, and attainable uses of aquatic recreation will be maintained, as determined by criteria that indicate the potential presence of pathogens. Categories of recreation and applicable criteria are established in §307.7(b)(1) of this title (relating to Site-specific Uses and Criteria).

(2) Recreational use categories and criteria for classified segments are specified in Appendix A of §307.10 of this title. Where justified by sufficient site-specific information, recreational uses and/or criteria which differ from §307.7(b)(1) of this title may be adopted for a particular water body in §307.10 of this title. For water bodies not specifically listed in Appendix A, the following recreational uses are presumed to apply.

(A) Primary contact recreation. Primary contact recreation is presumed for lakes, reservoirs, and tidal water bodies. Primary contact recreation is presumed to apply to intermittent streams, intermittent streams with perennial pools, nontidal wetlands, and perennial freshwater streams and rivers, except where site-specific information indicates that recreational activities that involve a significant risk of ingestion are unlikely to occur, in accordance with 307.4(j)(B) of this title, (relating to secondary contact recreation 1).

(B) Secondary contact recreation 1. Secondary contact recreation 1 applies to water bodies where water recreation can occur, but the nature of the recreation does not involve a significant risk of ingestion. Secondary contact recreation 1 applies to intermittent and perennial freshwaters where site-specific information demonstrates that primary contact recreation is unlikely to occur. At a minimum, the following characteristics must be demonstrated for a presumed use of secondary contact recreation 1 to apply:

(i) during base flow conditions, the average depth at the thalweg (mid-channel) is less than 0.5 meters, and there are not substantial pools with a depth of 1 meter or greater. For purposes of this section, base flow conditions are defined as sustained or typical dry warm weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather; and

(ii) there are not existing recreational activities that create a significant risk of ingestion or a use for primary contact recreation.

(D) Secondary contact recreation 2. Secondary contact recreation 2 applies to water bodies where water recreation activities do not involve a significant risk of water ingestion, and where activities occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the water body and/or (2) limited public access. No water bodies are presumed to have a use of secondary contact recreation 2. This use is applicable when designated for an individual water body in §307.10 of this title.

(E) Noncontact recreation. Noncontact recreation applies to water bodies where recreation activities do not involve a significant risk of water ingestion, and where primary and secondary contact recreation uses should not occur because of unsafe conditions. No water bodies are presumed to have a use of noncontact recreation. This use is applicable when designated for an individual water body in §307.10 of this title.

(3) Assigning recreational uses to unclassified water bodies.

(A) Determining water body type. Recreational uses and associated numerical criteria will be assigned to unclassified water bodies in accordance with the presumed uses and guidelines established in §307.4(j)(2) of this title. To assign uses other than primary contact recreation, a reasonable level of inquiry will be conducted to determine if a different presumed use is appropriate for a particular water body. A reasonable level of inquiry can include available information and/or site surveys.

(B) Assigning presumed uses. Presumed uses can be assigned to individual water bodies for regulatory purposes, such as TPDES permits, listing impaired water bodies under Section 303(d) of the federal Clean Water Act, or establishing total maximum daily loads, without individually designating the recreational use and criteria in §307.10 of this title. Assigned uses that are less stringent than primary contact recreation will be noted in public notices of regulatory actions that could affect recreational water quality, and the assigned recreational uses will be subject to public comment. For tracking purposes, recreational uses that have been determined to be less stringent than primary contact recreation will be individually listed in §307.10 of this title whenever the water quality standards are revised.

(C) Assigning uses less stringent than presumed uses. A recreational use that is less stringent than applicable presumed uses can only be assigned to a water body for regulatory purposes after that use is designated for an individual water body in §307.10 of this title and approved by EPA. Support for designating a use less stringent than applicable presumed uses will include a use-attainability analysis that supports the designation and that meets at least one of the six reasons for changing a use in 40 Code of Federal Regulations 131.10(g).

[(j) Aquatic recreation. Existing, designated, and attainable uses of aquatic recreation will be maintained, as determined by criteria that indicate the potential presence of pathogens. Categories of recreation and applicable criteria are established in §307.7(b)(1) of this title. Contact recreation is presumed as a use for all water bodies except where listed otherwise for specific water bodies in Appendix A of §307.10 of this title.]

(k) Antidegradation. Nothing in this section shall be construed or otherwise utilized to supersede the requirements of §307.5 of this title (relating to Antidegradation).

(l) Assessment of unclassified waters for aquatic life uses. Waters which are not specifically listed in Appendices A or D of §307.10 of this title are assigned[designated] for the specific uses that are attainable or characteristic of those waters. Upon administrative or regulatory action by the executive director or commission which affects a particular unclassified water body, the characteristics of the affected water body will be reviewed by the agency to determine which aquatic life uses are appropriate. Additional uses so determined shall be indicated in public notices for discharge applications. Uses which are not applicable throughout the year in a particular unclassified water body will be assigned and protected for the seasons in which such uses are attainable. Initial determinations of use shall be considered preliminary, and in no way preclude redeterminations of use in public hearings conducted under the provisions of the Texas Water Code. For unclassified waters where the presumed minimum uses or criteria specified in this section are inappropriate, site-specific standards may be developed in accordance with §307.2(d) of this title (relating to Modification of Standards). Uses and criteria will be assigned in accordance with this section and with §307.7(b)(3) of this title. Procedures for assigning uses and criteria are described in the standards implementation procedures.

(m) pH. Consistent with §307.1 of this title (relating to General Policy Statement), pH levels in all surface water in the state shall be maintained so as to not interfere with the reasonable use of such waters. The following pH criteria, expressed as a maximum pH differential (rise or fall over ambient) are established as follows except for changes due to discharges of treated domestic (sanitary) effluent, and within designated mixing zones. The maximum pH differential above or below the ambient range is established as 0.5 standard units for all waters. Additional pH criteria (expressed as ranges of pH) for classified segments are specified in Appendix A of §307.10 of this title.

§307.5 Antidegradation

There have been no changes to this section.

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§307.6. Toxic Materials

(a) Application. The toxic criteria set forth in this section apply to surface water in the state and specifically apply to substances attributed to waste discharges or the activities of man. Toxic criteria do not apply to those instances in which surface water, as a result of natural phenomena, exhibit characteristics beyond the limits established by this section. Standards and procedures set forth in this section shall be applied in accordance with §307.8 of this title (relating to Application of Standards) and §307.9 of this title (relating to Determination of Standards Attainment).

(b) General provisions.

(1) Water in the state shall not be acutely toxic to aquatic life in accordance with §307.8 of this title.

(2) Water in the state with designated or existing aquatic life uses of limited or greater shall not be chronically toxic to aquatic life, in accordance with §307.8 of this title.

(3) Water in the state shall be maintained to preclude adverse toxic effects on human health resulting from contact recreation, consumption of aquatic organisms, consumption of drinking water or any combination of the three. Water in the state with sustainable fisheries and/or public drinking water supply uses will not exceed applicable human health toxic criteria, in accordance with subsection (d) of this section and §307.8 of this title.

(4) Water in the state shall be maintained to preclude adverse toxic effects on aquatic life, terrestrial wildlife, livestock, or domestic animals, resulting from contact, consumption of aquatic organisms, consumption of water, or any combination of the three.

(c) Specific numerical aquatic life criteria.

(1) Numerical criteria are established in Table 1 for those specific toxic substances for which adequate toxicity information is available, and which have the potential for exerting adverse impacts on water in the state.

Attached Graphic

(2) Numerical criteria are based on ambient water quality criteria documents published by EPA. EPA guidance criteria have been appropriately recalculated to eliminate the effects of toxicity data for aquatic organisms which are not native to Texas, in accordance with procedures in the EPA guidance document entitled *Guidelines for Deriving Numerical Site-specific Water Quality Criteria* (EPA 600/3-84-099) and Appendix B of the EPA draft guidance document entitled *Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals* (EPA-823-B-94-001).

(3) Specific numerical acute aquatic life criteria are applied as 24-hour averages, and specific numerical chronic aquatic life criteria are applied as seven-day averages.

(4) Ammonia and chlorine toxicity will be addressed by total toxicity (biomonitoring) requirements in subsection (e) of this section.

(5) Specific numerical aquatic life criteria for metals and metalloids in Table 1 apply to dissolved concentrations where noted. Dissolved concentrations can be estimated by filtration of samples prior to analysis, or by converting from total recoverable measurements in accordance with procedures

approved by the commission in the latest revision of the standards implementation procedures. Specific numerical aquatic life criteria for non-metallic substances in Table 1 apply to total recoverable concentrations unless otherwise noted.

(6) Specific numerical acute criteria for toxic substances are applicable to all water in the state except for small zones of initial dilution (ZIDs) at discharge points. Acute criteria may be exceeded within a ZID and below extremely low streamflow conditions (one-fourth of critical low-flow conditions) in accordance with §307.8 of this title (relating to Application of Standards). There shall be no lethality to aquatic organisms which move through a ZID, and the sizes of ZIDs are limited in accordance with §307.8 of this title. Specific numerical chronic criteria are applicable to all water in the state with designated or existing aquatic life uses, except inside mixing zones and below critical low-flow conditions, in accordance with §307.8 of this title.

(7) For toxic materials for which specific numerical criteria are not listed in Table 1, the appropriate criteria for aquatic life protection may be derived in accordance with current EPA guidelines for deriving site-specific water quality criteria. When insufficient data are available to use EPA guidelines, the following provisions shall be applied in accordance with this section and §307.8 of this title. The LC50 data used in the subsequent calculations are typically obtained from traditional laboratory studies; however, if LC50 data is lacking, other methodologies (such as quantitative structure-activity relationships) may be used:

(A) acute criteria will be calculated as 0.3 of the LC50 of the most sensitive aquatic species; $LC\ 50 \times (0.3) = \text{acute criteria}$;

(B) concentrations of non-persistent toxic materials shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 0.1 of acute LC 50 values) to the most sensitive aquatic species; $LC\ 50 \times (0.1) = \text{chronic criteria}$;

(C) concentrations of persistent toxic materials that do not bioaccumulate shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 0.05 of LC50 values) to the most sensitive aquatic species; and

(D) concentrations of toxic materials that bioaccumulate shall not exceed concentrations that are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 0.01 of LC50 values) to the most sensitive aquatic species.

(8) For toxic substances where the relationship of toxicity is defined as a function of pH or hardness, numerical criteria are presented as an equation based on this relationship. [Appropriate pH or hardness values for such criteria are listed for each basin in Table 2. Site-specific values for pH and hardness are used where available.] Site-specific values for each segment are given in the standards implementation procedures (RG-194).

(9) Criteria for most metals are multiplied by a water-effect[water-effects] ratio in order to incorporate the effects of local water chemistry on toxicity. The water-effect[water-effects] ratio is assumed to be equal to one except where sufficient site-specific data are available to determine the water-effect[water-effects] ratio for a particular water body or portion of a water body. A water-effect[water-effects] ratio is only applicable to those portions of a water body which are adequately addressed by site-specific data. Water-effect[Water-effects] ratios [and resulting site-specific criteria] which have been determined for particular water bodies are listed in Appendix E when standards are revised. A site-specific water-effect[water-effects] ratio which affects an effluent limitation in a wastewater discharge

permit, and which has not been incorporated into Appendix E of §307.10 of this title (relating to Appendices A - F[A - E]), will be noted in a public notice during the permit application process. An opportunity for public comment will be provided, and the water-effect[water-effects] ratio may be considered in any public hearing on the permit application.

TABLE 2
This table concerned with total hardness and pH values used for determining select in-stream toxic criteria is being repealed.

(10) Freshwater copper aquatic-life criteria include a multiplier (m) in order to incorporate effects of local water chemistry on toxicity. This multiplier may be based on either a water-effect ratio or a biotic ligand model. The multiplier is assumed to be equal to one except where sufficient site-specific data are available to determine the multiplier for a particular water body or portion of a water body. The multiplier is only applicable to those portions of a water body which are adequately addressed by site-specific data. As multipliers are determined for particular water bodies they will be listed in Appendix E when standards are revised. A site-specific multiplier which affects an effluent limitation in a wastewater discharge permit, and which has not been incorporated into Appendix E of §307.10 of this title (relating to Appendices A - F), will be noted in a public notice during the permit application process. An opportunity for public comment will be provided, and the multiplier may be considered in any public hearing on the permit application.

(11)[(10)] Additional site-specific factors may indicate that the numerical criteria listed in Table 1 are inappropriate for a particular water body. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title (relating to Modification of Standards). The application of a site-specific standard must not impair an existing, attainable, or designated use. Factors which may justify a temporary variance or site-specific standards amendment include the following:

- (A) background concentrations of specific toxics of concern in receiving waters, sediment, and/or indigenous biota;
- (B) persistence and degradation rate of specific toxic materials;
- (C) synergistic, additive, or antagonistic interactions of toxic substances with other toxic or nontoxic materials;
- (D) measurements of total effluent toxicity;
- (E) indigenous aquatic organisms, which may have different responses to particular toxic materials;
- (F) technological or economic limits of treatability for specific toxic materials;
- (G) bioavailability of specific toxic substances of concern, as determined by water-effect ratio tests or other analyses approved by the agency; and
- (H) new information concerning the toxicity of a particular substance.

(d) Specific numerical human health criteria.

(1) Numerical human health criteria are established in Table 2[3].

(2) Categories of human health criteria:

(A) concentration criteria [in freshwaters] to prevent contamination of drinking water, fish and other aquatic life to ensure that they are safe for human consumption. These criteria apply to surface [fresh]waters which are designated or used for public drinking water supplies. (Column A in Table 2[3]);

(B) concentration criteria [in freshwaters] to prevent contamination of fish and other aquatic life to ensure that they are safe for human consumption. These criteria apply to [freshwater] waters which have sustainable fisheries, and which are not designated or used for public water supply (Column B in Table 2[3]);

[(C) concentration criteria in saltwaters to prevent contamination of fish and other aquatic life to ensure that they are safe for human consumption. These criteria apply to saltwaters which have a sustainable fishery (Column C in Table 2).]

(3) Specific assumptions and procedures (except where noted in Table 2[3]).

(A) Sources for the toxicity factors to calculate[derive] criteria were derived from EPA's Integrated Risk Information System (IRIS); EPA's National Recommended Water Quality Criteria: 2002, Human Health Criteria Calculation Matrix (EPA-822-R-02-012); EPA Health Effects Assessment Summary Tables (HEAST); Assessment Tools for the Evaluation of Risk (ASTER); and the computer program, CLOGP3. [Bioconcentration factors were converted to an average lipid concentration in fish tissue of 3%, except where noted.]

(B) For known or suspected carcinogens (as identified in EPA's IRIS database[Types A, B, B2, or C in IRIS]), an incremental cancer risk level of 10^{-5} (1 in 100,000) was used to derive criteria. A RfD (reference dose) was determined for noncarcinogens and for carcinogens for which EPA has not derived cancer slope factors.

(C) Consumption rates of fish and shellfish were estimated as 17.5[10] grams per person per day [for people living inland, and 15 grams per person per day for people living near the coast].

(D) Drinking water consumption rates were estimated as 2.0 liters per person per day.

(E) For carcinogens, a body-weight scaling factor of 3/4 power was[is] used to convert data on laboratory test animals to human scale. Reported weights of laboratory test animals are used, and an average weight of 70 kg is assumed for humans.

(F) Childhood exposure was considered for all noncarcinogens. Consumption rates for fish and shellfish were estimated as 5.6 grams per child per day, and drinking water consumption rates were estimated as 0.64 liters per child per day. A child body weight was estimated at 15 kg. Both the water consumption rate and body weight are age-adjusted for a six year old child. The consumption rate for fish and shellfish for children is from Table 10-61 of EPA's 1997 Exposure Factors Handbook (EPA/600/P-95/002Fa-c).

(G)(F) Numerical human health criteria were derived in accordance with the general procedures and calculations in the EPA guidance documents entitled *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001); [and] *Guidance Manual for Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish* (EPA/503/8-89-002); and *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)* (EPA-822-B-00-004).

(H)(G) If a calculated criterion to prevent contamination of drinking water and fish to ensure they are safe for human consumption (Column A in Table 2[3]) was greater than the applicable maximum contaminant level (MCL) in Chapter 290 of this title (relating to Public Drinking Water), then the MCL was used as the criterion.

(I)(H) If the concentration of a substance in fish tissue used for these calculations was greater than the applicable United States Food and Drug Administration Action Level for edible fish and shellfish tissue, then the acceptable concentration in fish tissue was lowered to the Action Level for calculation of criteria.

(4) Human health criteria for additional toxic materials will be adopted by the commission as appropriate.

(5) Specific human health concentration criteria for water are applicable to water in the state which has sustainable fisheries, and/or designation or use as a public drinking water supply, except within mixing zones and below stream flow conditions as specified in [harmonic mean stream flows, in accordance with] §307.8 of this title. The following waters are considered to have sustainable fisheries:

(A) all designated segments listed in Appendix A of §307.10 of this title, unless specifically exempted;

(B) perennial streams and rivers with a stream order of three or greater, as defined in §307.3 of this title (relating to Definitions and Abbreviations);

(C) lakes and reservoirs greater than or equal to 150 acre feet and/or 50 surface acres;

(D) all bays, estuaries, and tidal rivers; and

(E) any other waters which potentially have sufficient fish production or fishing activity to create significant long-term human consumption of fish.

(6) Waters which are not considered to have a sustainable fishery[, but which have an aquatic life use,] will be considered to have an incidental fishery. Consumption rates assumed for incidental fishery waters are 1.75 grams [1.0 gram] per person per day [for inland waters, and 1.5 grams per person per day for saltwaters]. Numerical criteria applicable to incidental fishery waters are therefore ten times the criteria listed in Column[Columns] B [and C] of Table 2[3].

(7) Specific human health criteria are applied as long term average exposure criteria designed to protect populations over a life time [(70 years)]. Attainment measures for human health are addressed in §307.9 of this title.

(8) For toxic materials of concern for which specific human health criteria are not listed in Table 2[3], the following provisions shall apply.

(A) For known or suspected carcinogens (as identified in EPA's IRIS database[Types A, B, B2, or C in IRIS]), a cancer risk of 10^{-5} (1 in 100,000) shall be applied to the most recent numerical criteria adopted by EPA and published in the Federal Register. If an MCL or equivalent agency guideline for protection of drinking water sources is less than the resulting criterion, then the MCL shall apply to public drinking water supplies in accordance with paragraph (3)(H)(G) of this subsection.

(B) For toxic materials not defined as carcinogens, the most recent numerical criteria adopted by EPA and published in the Federal Register shall be applicable. If an MCL or equivalent agency guideline for protection of drinking water sources is less than the resulting criterion, then the MCL shall apply to public drinking water supplies in accordance with paragraph (3)(H)(G) of this subsection.

(C) In the absence of available criteria, numerical criteria may be derived from technically valid information and calculated in accordance with the provisions of paragraph (3) of this subsection.

(9) Numerical criteria for bioconcentratable pollutants will be derived in accordance with the general procedures in the EPA guidance document entitled, Assessment and Control of Bioconcentratable Contaminants in Surface Waters (March 1991). The commission may develop discharge permit limits in accordance with the provisions of this section.

(10) Numerical human health criteria are expressed as total recoverable concentrations for nonmetals[, mercury,] and selenium and as dissolved concentrations for other metals and metalloids.

(11) Additional site-specific factors may indicate that the numerical human health criteria listed in Table 2[3] are inappropriate for a particular water body. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title (relating to Modification of Standards). The application of site-specific criteria shall not impair an existing, attainable, or designated use or affect human health. Factors which may justify a temporary variance or site-specific standards amendment include the following:

(A) background concentrations of specific toxics of concern in receiving waters, sediment, and/or indigenous biota;

(B) persistence and degradation rate of specific toxic materials;

(C) synergistic or antagonistic interactions of toxic substances with other toxic or nontoxic materials;

(D) technological or economic limits of treatability for specific toxic materials;

(E) bioavailability of specific toxic substances of concern;

(F) local water chemistry and other site-specific conditions which may alter the bioconcentration, bioaccumulation, or toxicity of specific toxic substances;

(G) site-specific differences in the bioaccumulation responses of indigenous, edible aquatic organisms to specific toxic materials;

(H) local differences in consumption patterns of fish and shellfish or drinking water, but only if any changes in assumed consumption rates will be protective of the local population that frequently consumes fish, shellfish, or drinking water from a particular water body; and

(I) new information concerning the toxicity of a particular substance.

(e) Total toxicity.

(1) Total (whole-effluent) toxicity of permitted discharges, as determined from biomonitoring of effluent samples at appropriate dilutions, will be sufficiently controlled to preclude acute total toxicity in all water in the state with the exception of small zones of initial dilution (ZIDs) at discharge points and at extremely low streamflow conditions (one-fourth of critical low-flow conditions) in accordance with §307.8 of this title. Acute total toxicity levels may be exceeded in a ZID, but there shall be no lethality to aquatic organisms which move through a ZID, and the sizes of ZIDs are limited in accordance with §307.8 of this title. Chronic total toxicity, as determined from biomonitoring of effluent samples, will be precluded in all water in the state with existing or designated aquatic life uses except in mixing zones and at flows less than critical low-flows, in accordance with §307.8 of this title.

(2) General provisions for controlling total toxicity.

(A) Dischargers whose effluent has a significant potential for exerting toxicity in receiving waters will be required to conduct whole effluent toxicity biomonitoring at appropriate dilutions.

(B) In addition to the other requirements of this section, the effluent of discharges to water in the state shall not be acutely toxic to sensitive species of aquatic life, as demonstrated by effluent toxicity tests. Toxicity testing for this purpose shall be conducted on samples of 100% effluent, and the criterion for acute toxicity shall be mortality of 50% or more of the test organisms after 24 hours of exposure. This provision does not apply to mortality that is a result of an excess, deficiency, or imbalance of dissolved inorganic salts (such as sodium, calcium, potassium, chloride, or carbonate) which are in the effluent and are not listed in Table 1 in subsection (c) of this section or which are in source waters.

(C) The latest revisions of the following EPA publications provide methods for appropriate biomonitoring procedures: Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms , Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms , Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms , and the Technical Support Document for Water Quality-based Toxics Control . The use of other procedures approved by the agency and EPA is also acceptable. Toxicity tests must be conducted using representative, sensitive aquatic organisms as approved by the agency, and any such testing must adequately determine if toxicity standards are being attained.

(D) If toxicity biomonitoring results indicate that a discharge is exceeding the restrictions on total toxicity in this section, then the permittee shall conduct a toxicity identification evaluation and toxicity reduction evaluation in accordance with permitting procedures of the commission. As a result of a toxicity reduction evaluation, additional conditions may be established in the permit. Such conditions may include total toxicity limits, chemical specific limits, and/or best management practices designed to reduce or eliminate toxicity. Where sufficient to attain and maintain applicable numeric and narrative state water quality standards, a chemical specific limit rather than a total toxicity limit may be

established in the permit. Where conditions may be necessary to prevent or reduce effluent toxicity, permits shall include a reasonable schedule for achieving compliance with such additional conditions.

[~~(E)~~ If a permittee demonstrates, using the toxicity identification evaluation and toxicity reduction evaluation procedures, that diazinon is the primary cause of total toxicity, and that diazinon is ubiquitous within the wastewater system, the toxicity will be addressed in clauses (i) and (ii) of this subparagraph. If diazinon is not the primary cause of total toxicity, or if the permittee does not proceed with due diligence in controlling and investigating toxicity, or if diazinon is not ubiquitous within the wastewater system, the toxicity may be addressed in accordance with subparagraph (D) of this paragraph.]

[~~(i)~~ the permittee will be required to implement a public education and awareness campaign designed to control the introduction of diazinon into the wastewater system, and the permittee will be required to conduct an investigation into the sources of diazinon; and]

[~~(ii)~~ the permittee will be required to monitor for diazinon.]

~~(E)~~~~(F)~~ Discharge permit limits based on total toxicity may be established in consideration of site-specific factors, but the application of such factors shall not result in impairment of an existing, attainable, or designated use. These factors are applied as a site-specific standards modification in accordance with §307.2(d) of this title. A demonstration that uses are protected may consist of additional effluent toxicity testing, instream monitoring requirements, and/or other necessary information as determined by the agency. Factors which may justify a temporary variance or site-specific standards amendment include the following:

- (i) background toxicity of receiving waters;
- (ii) persistence and degradation rate of principal toxic materials which are contributing to the total toxicity of the discharge;
- (iii) site-specific variables which may alter the impact of toxicity in the discharge;
- (iv) indigenous aquatic organisms, which may have different levels of sensitivity than the species used for total toxicity testing; and
- (v) technological, economic, or legal limits of treatability or control for specific toxic material

§307.7. Site-specific Uses and Criteria

(a) Uses and numerical criteria are established on a site-specific basis in Appendices A, D, [and] E, and F of §307.10 of this title (relating to Appendices A - F [A – E]). Site-specific uses and numerical criteria may also be applied to unclassified waters in accordance with §307.4[(h)] of this title (relating to General Criteria) and §307.5(c) of this title (relating to Antidegradation). Site-specific criteria apply specifically to substances attributed to waste discharges or the activities of man. Site-specific criteria do not apply to those instances in which surface waters exceed criteria due to natural phenomena. The application of site-specific uses and criteria is described in §307.8 of this title (relating to the Application of Standards) and §307.9 of this title (relating to the Determination of Standards Attainment).

(b) Appropriate uses and criteria for site-specific standards are defined as follows.

(1) Recreation. Recreational use consists of four [two] categories - primary contact recreation, secondary contact recreation 1, secondary contact recreation 2, [waters] and noncontact recreation waters. Classified segments are designated for primary contact recreation unless sufficient site-specific information demonstrates that a different recreational use and/or criteria is justified based on one of the following reasons: (1) it has been determined that elevated concentrations of indicator bacteria frequently occur due to sources of pollution that [which] cannot be reasonably controlled by existing regulations; (2) it has been determined that wildlife sources of bacteria are unavoidably high and there is limited aquatic recreational potential as defined in the standards implementation procedures; or (3) primary or secondary contact recreation is considered unsafe for other reasons such as ship or barge traffic. In a classified segment where contact recreation is considered unsafe for reasons unrelated to water quality, a designated use of noncontact recreation may be assigned noncontact recreation criteria or criteria normally associated with primary contact recreation. A designation of primary or secondary contact recreation is not a guarantee that the water so designated is completely free of disease-causing organisms. Indicator bacteria, although not generally pathogenic, are indicative of potential contamination by feces of warm blooded animals. Recreational [The] criteria [for contact recreation] are based on these indicator bacteria, rather than direct measurements of pathogens. Criteria are expressed as the number of "colony forming units" of bacteria per 100 milliliters (ml) of water. Even where the concentration of indicator bacteria is less than the criteria for primary or secondary contact recreation, there is still some risk of contracting waterborne diseases. Additional guidelines on minimum data requirements and procedures for evaluating standards attainment are specified in the latest approved version of the TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality in Texas [Data].

(A) Freshwater

(i) Primary contact [Contact] recreation. The geometric mean of *E. coli* is 206 per 100 ml [should not exceed 126 per 100 ml]. In addition, the [single samples of] *E. coli* single sample number is [should not exceed] 399 [394] per 100 ml.[Contact recreation applies to all bodies of freshwater except where specifically designated otherwise in §307.10 of this title (relating to Appendices A-E).]

(ii) Secondary contact recreation 1. The geometric mean of *E. coli* is 630 per 100 ml.

(iii) Secondary contact recreation 2. The geometric mean of *E. coli* is 1,030 per 100 ml.

(iv) [(ii)] Noncontact recreation. The geometric mean of *E. coli* is [should not exceed] 2,060 [605] per 100 ml.

(v) For high saline inland water bodies with average conductivity values greater than or equal to 9,000 micromhos/cm, Enterococci is the applicable recreational indicator for instream bacteria sampling. For high saline inland waters with primary contact recreation, the geometric mean criterion for Enterococci is 54 per 100 ml, and the single sample criterion is 78 per 100 ml. For high saline inland waters with secondary contact recreation 1, the geometric mean criterion for Enterococci is 165 per 100 ml. For high saline inland waters with secondary contact recreation 2, the geometric mean for Enterococci is 270 per 100 ml. For high saline inland water bodies with noncontact recreation, the geometric mean criterion for Enterococci is 540 per 100 ml.

(B) Saltwater.

(i) Primary contact [Contact] recreation. The geometric mean of Enterococci is [should not exceed] 35 per 100 ml. In addition, the [single samples of] Enterococci single sample number is [should not exceed] 104 [89] per 100 ml. [Contact recreation applies to all bodies of saltwater, except where specifically designated otherwise in §307.10 of this title.]

(ii) Noncontact recreation. The geometric mean of Enterococci is [should not exceed] 350 [168] per 100 ml.

(iii) Other recreational categories. Additional categories of recreational uses and criteria for tidal streams and rivers can be established on a site-specific basis in §307.10 of this title (relating to Appendices A - F), if justified by a use-attainability analysis and the water body is not a coastal recreation water as defined in the Beach Act.

(C) Fecal coliform bacteria. Fecal coliform bacteria can be used as an alternative instream indicator of recreational suitability in high saline inland water bodies with conductivity values greater than or equal to 9,000 micromhos for two years after the adoption of this title to allow time for sufficient data to be available for Enterococci.[until sufficient data are available for *E. coli* or Enterococci. For segments designated as oyster waters in §307.10 of this title, fecal coliform can continue to be used as an indicator of recreational suitability because fecal coliform is used as the indicator for suitability of oyster water use as described in paragraph (3)(B) of this subsection.] Fecal coliform can [also] continue to be used as a surrogate indicator in effluent limits in[for] wastewater discharge permits that are issued within one year after the adoption of this title[discharges]. Fecal coliform criteria are the same for both freshwater and saltwater, as follows.

(i) Primary contact [Contact] recreation. The geometric mean of fecal coliform is [should not exceed] 200 per 100 ml. In addition, the [single samples of] fecal coliform single sample number is [should not exceed] 400 per 100 ml.

(ii) Secondary contact recreation 1 and 2. The geometric mean of fecal coliform is 1,000 per 100 ml.

(iii) [(ii)] Noncontact recreation. The geometric mean of fecal coliform is [Fecal coliform shall not exceed] 2,000 per 100 ml [as a geometric mean. In addition, single samples of fecal coliform should not exceed 4,000 per 100 ml.]

(D) Swimming advisory programs. For areas where local jurisdictions or private property owners voluntarily provide public notice or closure based on water quality, the use of any single-sample or short-term indicators of recreational suitability are selected at the discretion of the local managers of aquatic recreation. Guidance for single-sample bacterial indicators is available in the EPA

document entitled *Ambient Water Quality Criteria for Bacteria--1986*. Other short-term indicators to assess water quality suitability for recreation--such as measures of streamflow, turbidity, or rainfall--may also be appropriate.

(2) Domestic water supply.

(A) Use categories. Domestic water supply consists of three [two] use subcategories--public water supply, sole-source surface drinking water supply, and aquifer protection.

(i) Public water supply. Segments designated for public water supply are those known to be used or exhibit characteristics that would allow them to be used as the supply source for public water systems, as defined by Chapter 290 of this title (relating to Public Drinking Water [Water Hygiene]).

(ii) Sole-source surface drinking water supply and their protection zones. Water bodies that are sole-source surface drinking water supplies are listed in §307.10 of this title (relating to Appendix B). Sole-source surface drinking water supplies and their protection zones are addressed in Chapter 321 of this title (relating to Subchapter B: Concentrated Animal Feeding Operations).

(iii) [(ii)] Aquifer protection. Segments designated for aquifer protection are capable of recharging the Edwards Aquifer. The principal purpose of this use designation is to protect the quality of water infiltrating into and recharging the aquifer. The designation for aquifer protection applies only to those portions of the segments so designated that are on the recharge zone, transition zone, or contributing zone as defined in Chapter 213 of this title (relating to the Edwards Aquifer). Chapter 213 of this title establishes provisions for activities in the watersheds of segments which are designated for aquifer protection.

(B) Use criteria. The following use criteria apply to all [both] domestic water supply use subcategories.

(i) Radioactivity associated with dissolved minerals in the freshwater portions of river basin and coastal basin waters should not exceed levels established by drinking water standards as specified in Chapter 290 of this title unless the conditions are of natural origin.

(ii) Surface waters utilized for domestic water supply shall not exceed toxic material concentrations that prevent them from being treated by conventional surface water treatment to meet drinking water standards as specified in Chapter 290 of this title.

(iii) Chemical and microbiological quality of surface waters used for domestic water supply should conform to drinking water standards as specified in Chapter 290 of this title.

(3) Aquatic life. The establishment of numerical criteria for aquatic life is highly dependent on desired use, sensitivities of usual aquatic communities, and local physical and chemical characteristics. Six [Five] subcategories of aquatic life use are established. They include minimal, limited, intermediate, high, and exceptional aquatic life and oyster waters. Aquatic life use subcategories designated for segments listed in Appendix A of §307.10 of this title recognize the natural variability of aquatic community requirements and local environmental conditions.

(A) Dissolved oxygen.

(i) The characteristics and associated dissolved oxygen criteria for limited, intermediate, high, and exceptional aquatic life use subcategories are indicated in Table 3 [4]. This table also includes dissolved oxygen criteria for a minimal aquatic life use subcategory.

(ii) The dissolved oxygen criteria and associated critical low-flow values in Table 4 [5] apply to streams which have limited, intermediate, high, or exceptional [significant] aquatic life uses, and to streams which are specifically listed in Appendix A or D of §307.10 of this title. The criteria in Table 4 [5] apply to streams in Texas which are east of a line defined by Interstate Highway 35 and 35W from the Red River to the community of Moore in Frio County, and by U.S. Highway 57 from the community of Moore to the Rio Grande. The critical low-flow values in Table 4 [5] (at the appropriate stream bedslope) will be utilized as headwater flows when the flows are larger than applicable 7Q2 flows, in order to determine discharge effluent limits necessary to achieve dissolved oxygen criteria. For streams which have bedslopes less than the minimum bedslopes in Table 4 [5], the flows listed for the minimum bedslope of 0.1 m/km will be applicable. For streams which have bedslopes greater than the maximum bedslope in Table 4 [5], the flows listed for the maximum bedslope of 2.4 m/km will be applicable. The required effluent limits will be those necessary to achieve each level of dissolved oxygen (as defined in clause (i) of this subparagraph, Table 3 [4]) at or below an assigned, designated, or presumed aquatic life use. Presumed aquatic life uses will be in accordance with those required by §307.4(h) of this title. The dissolved oxygen criteria in Table 4 [5] do not apply to tidal streams.

(iii) The dissolved oxygen criteria in Table 4 [5] for limited, intermediate, high, and exceptional aquatic life uses are based upon data from the agency's least impacted stream study (Texas Aquatic Ecoregion Project). Results of this study indicate a strong dependent relationship for average summertime background dissolved oxygen concentrations and several hydrologic and physical stream characteristics--particularly bedslope (stream gradient) and stream flow. The dissolved oxygen criteria in Table 4 [5] are derived from a multiple regression equation for the eastern portion of Texas as defined in clause (ii) of this subparagraph. Further explanation of the development of the regression equation and its application will be contained in the standards implementation procedures.

(iv) The critical low-flow values in Table 4 [5] may be adjusted based on site-specific data relating dissolved oxygen concentrations to factors such as flow, temperature, or hydraulic conditions in accordance with the standards implementation procedures. Site-specific, critical low-flow values require approval by the agency. EPA will review any site-specific, critical low-flow values that could affect permits or other regulatory actions that are subject to approval by EPA. Critical low-flow values which have been determined for particular streams are listed in the standards implementation procedures. [§307.10 of this title when standards are revised.]

(B) Oyster waters.

(i) A 1,000 foot buffer zone, measured from the shoreline at ordinary high tide, is established for all bay and gulf waters, except those contained in river or coastal basins as defined in §307.2 of this title (relating to Description of Standards). Recreational criteria for indicator bacteria, as specified in §307.7[10](b)(1) of this title, are applicable within buffer zones.

(ii) The criteria for median [Median] fecal coliform concentration in bay and gulf waters, exclusive of buffer zones, are [shall not exceed] 14 colonies per 100 ml, with not more than 10% of all samples exceeding 43 colonies per 100 ml.

(iii) Oyster waters should be maintained so that concentrations of toxic materials do not cause edible species of clams, oysters, and mussels to exceed accepted guidelines for the protection of public health. Guidelines are provided by U. S. Food and Drug Administration (USDA) Action Levels for molluscan shellfish, but additional information related to human health protection may also be considered in determining acceptable toxic concentrations.

(4) Additional criteria.

(A) Chemical parameters. Site-specific criteria for chloride, sulfate, and total dissolved solids are established as averages over an annual period for either a single sampling point or multiple sampling points.

(B) pH. Site-specific numerical criteria for pH are established as absolute minima and maxima.

(C) Temperature. Site-specific temperature criteria are established as absolute maxima.

(D) Toxic materials. Criteria for toxic materials are established in §307.6 of this title (relating to Toxic Materials).

(E) Nutrient criteria. Numeric criteria to preclude excessive growth of aquatic vegetation are intended to protect multiple uses, such as primary, secondary and noncontact recreation, aquatic life, and public water supplies. Nutrient numeric criteria for specific reservoirs, expressed as concentrations of chlorophyll *a* in water, are listed in Appendix F of this title.

(5) Additional uses. Other basic uses, such as navigation, agricultural water supply, industrial water supply, seagrass propagation, and wetland water quality functions will be maintained and protected for all water in the state in which these uses can be achieved.

§307.8. Application of Standards.

(a) Low-flow conditions.

(1) The following standards do not apply below critical low-flows [seven-day, two-year low-flows]:

(A) site-specific criteria for aquatic recreation (single sample), dissolved oxygen, pH, temperature, and numerical chronic criteria for toxic materials as [defined in §307.7 of this title (relating to Site-specific Criteria and Uses) and] listed in Appendices A, D, and E of §307.10 of this title (relating to Appendices A - F [A - E]);

(B) numerical chronic criteria for toxic materials as established in §307.6 of this title (relating to Toxic Materials);

(C) total chronic toxicity restrictions as established in §307.6 of this title;

(D) maximum temperature differentials as established in §307.4(f) of this title (relating to General Criteria);

(E) dissolved oxygen criteria for unclassified waters, as established in §307.4(h)(1) of this title and in §307.7(b)(3) of this title; and

(F) aquatic recreation (single sample) criteria for unclassified waters, as established in §307.4(j) of this title and in §307.7(b)(1) of this title.

(2) Site-specific criteria for aquatic recreation (geometric mean), total dissolved solids, chloride, and sulfate as established in Appendix A of §307.10 of this title, and human health criteria as established in Table 3 of §307.6 of this title do not apply in the following stream types and flow conditions:

(A) perennial streams when flows are below 0.1 cubic feet per second;

(B) intermittent streams when less than 20 percent of the stream bed of a 500 meter sampling reach is covered by pools;

(3)[(2)] Numerical acute criteria for toxic materials and preclusion of total acute toxicity as established in §307.6 of this title are applicable at stream flows which are equal to or greater than one-fourth of critical low flows [seven-day, two-year low-flows (7Q2)].

(4)[(3)] Low-flow values for some classified segments are listed in the standards implementation procedures and [criteria in Appendix B of §307.10 of this title] are solely for the purpose of defining the flow conditions under which water quality standards apply to a given water body. These low-flow values [Low-flow criteria listed in Appendix B of §307.10 of this title] are not for the purpose of regulating flows in water bodies in any manner or requiring that minimum flows be maintained in classified segments.

(5)[(4)] Low-flow values [criteria defined in this section and] listed in the standards implementation procedures [Appendix B of §307.10 of this title] apply only to river basin and nontidal coastal basin waters. They do not apply to tidal rivers, bay or gulf waters, or reservoirs or estuaries.

(6)[(5)] Seven-day, two-year low-flows (7Q2) and harmonic mean flows in the standards implementation procedures [Appendix B of §307.10 of this title] were calculated from historical U.S. Geological Survey (USGS) daily streamflow records. The low-flow value [criterion] was set at 0.1 [of one] cubic foot per second (ft³/s) when the calculated 7Q2 or harmonic mean flow was equal to or less than 0.1 [of one] ft³/s.

(7) Alternative critical low-flows for classified segments that are dominated by springflow are also listed in the standards implementation procedures and were calculated as follows:

(A) for springflow-dominated segments that contain federally listed endangered or threatened species, the critical low-flow value is the 0.1% probability value derived from a lognormal distribution for the period of record at the USGS gage;

(B) for springflow-dominated segments that do not contain endangered or threatened species, the critical low-flow value is the 5% probability value derived from a lognormal distribution for the period of record at the USGS gage.

(8)[(6)] Flow values will be periodically recomputed to reflect alterations in the hydrologic characteristics of a segment, including reservoir construction, climatological trends, and other phenomena.

(9)[(7)] The general criteria are applicable at all flow conditions except as specified in this section or in §307.4 of this title.

[(8) Specific human health criteria for concentrations in water to prevent contamination of fish and shellfish so as to ensure safety for human consumption, as established in §307.6 of this title do not apply at stream flows below the harmonic mean flow.]

(b) Mixing zones. A reasonable mixing zone will be allowed at the discharge point of permitted discharges into surface water in the state, in accordance with the following provisions.

(1) The following portions of the standards do not apply within mixing zones:

(A) site-specific criteria, as defined in §307.7 of this title and listed in Appendices A, D, [and] E, and F of §307.10 of this title;

(B) numerical chronic aquatic life criteria for toxic materials as established in §307.6 of this title;

(C) total chronic toxicity restrictions as established in §307.6 of this title;

(D) maximum temperature differentials as established in §307.4(f) of this title;

(E) dissolved oxygen criteria for unclassified waters, as established in §307.4(h)(1) of this title;

(F) dissolved oxygen criteria for intermittent streams, as established in §307.4(h)(4)[(2)] of this title;

(G) aquatic recreation criteria for unclassified waters, as established in §307.4(j) of this title and in §307.7(b)(1) of this title;

(H) specific human health criteria for concentrations in water to prevent contamination of drinking water, fish and shellfish so as to ensure safety for human consumption, as established in §307.6 of this title;[.]

(I) maximum and minimum pH differentials as established in §307.4(m) of this title.

(2) Numerical acute aquatic life criteria for toxic materials and preclusion of total acute toxicity as established in §307.6 of this title are applicable in mixing zones. Acute criteria and acute total toxicity levels may be exceeded in small zones of initial dilution (ZIDs) at discharge points of permitted discharges, but there shall be no lethality to aquatic organisms which move through a ZID. ZIDs shall not exceed the following sizes:

(A) 60 feet downstream and 20 feet upstream from a discharge point in a stream and river, and in addition, ZIDs in streams and rivers shall not encompass more than 25% of the volume of stream flow at or above seven-day, two-year low-flow conditions;

(B) a 25-foot radius in all directions (or equivalent volume or area for diffuser systems) from a discharge point in a lake or reservoir; and

(C) a 50-foot radius in all directions (or equivalent volume or area for diffuser systems) from a discharge point in a bay, tidal river, or estuary.

(3) Provisions of the general criteria in §307.4 of this title remain in effect in mixing zones unless specifically exempted in this section.

(4) Water quality standards do not apply to treated effluents at the immediate point of discharge--prior to any contact with either ambient waters or a dry streambed. However, effluent total toxicity requirements may be specified to preclude acute lethality near discharge points, or to preclude acute and chronic instream toxicity.

(5) Where a mixing zone is defined in a valid permit of the Texas Commission on Environmental Quality [Texas Natural Resource Conservation Commission], the Railroad Commission of Texas, or the EPA, the mixing zone defined in the permit will apply.

(6) Mixing zones shall not preclude passage of free-swimming or drifting aquatic organisms to the extent that aquatic life use is significantly affected, in accordance with guidelines specified in the standards implementation procedures.

(7) Mixing zones will not overlap unless it can be demonstrated that no applicable standards will be violated in the area of overlap. Existing and designated uses will not be impaired by the combined impact of a series of contiguous mixing zones.

(8) Mixing zones will not encompass an intake for a domestic drinking water supply. Thermal mixing zones are excepted from this provision unless elevated temperatures adversely affect drinking water treatment.

(9) Mixing zones will be individually specified for all permitted domestic discharges with a permitted monthly average flow equal to or exceeding one million gallons per day and for all permitted industrial discharges to water in the state (excepting discharges which consist entirely of storm water

runoff). For domestic discharges with permitted monthly average flows less than one million gallons per day, a small mixing zone will be assumed in accordance with guidelines for mixing zone sizes specified in the standards implementation procedures; and the executive director or commission may require specified mixing zones as appropriate.

(10) The size of mixing zones for human health criteria may vary from the size of mixing zones for aquatic life criteria.

(c) Minimum analytical levels. The specified definition of permit compliance for a specific toxic material will not be lower than established minimum analytical levels, unless that toxic material is of particular concern in the receiving waters, or unless an effluent specific method detection limit has been developed in accordance with 40 CFR 136. Minimum analytical levels are listed in the standards implementation procedures.

(d) Once-through cooling water discharges. When a discharge of once-through cooling water does not measurably alter intake concentrations of a pollutant, then water-quality based effluent limits for that pollutant are not required. For facilities which intake and discharge cooling-water into different water bodies, this provision only applies if water quality and applicable water quality standards in the receiving water are maintained and protected.

(e) Storm water discharges. Pollution in storm water shall not impair existing or designated uses. Controls on the quality of storm water discharges shall be based on best management practices, technology-based limits, or both in combination with instream monitoring to assess standards attainment and to determine if additional controls on storm water quality are needed. The implementation procedures describe how water quality standards will be applied to TPDES storm water discharges. The evaluation of instream monitoring data for standards attainment shall include the effects of storm water, as described in §307.9 of this title (relating to the Determination of Standards Attainment).

§307.9. Determination of Standards Attainment.

(a) General standards attainment sampling and assessment procedures. The procedures listed in this section are solely for the purposes of assessing water body use attainment as directed in sections 303(d) and 305(b) of the Clean Water Act. Unless otherwise stated in this chapter, additional details concerning sampling procedures for the measurement, collection, preservation and laboratory analysis of water quality samples are provided in the latest version of the TCEQ [TNRCC] Surface Water Quality Monitoring Procedures Manual, the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, 40 CFR 136, or other reliable sources acceptable to the executive director. Laboratory accreditation requirements are specified in Chapter 25 or this title (relating to Environmental Testing Laboratory Accreditation and Certification). Unless otherwise stated in this chapter, additional details concerning how sampling data are evaluated to assess standards compliance are provided in the latest [approved] version of the TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality [Data] in Texas

(b) Samples[Representative samples] to determine standards attainment will be collected at locations approved by the TCEQ[agency]. Samples collected at non-approved locations may be accepted at the discretion of the TCEQ[agency]. Samples to determine standards attainment will be representative in terms of location, seasonal variations, and hydrologic conditions. Locations will be typical of significant areas of a water body. Temporal sampling will be sufficient to appropriately address seasonal variations of concern. Samples will not include extreme hydrologic conditions such as very high flows and flooding immediately after heavy rains. Further guidance on representative sampling, both spatially and temporally, can be found in the latest versions of the TCEQ Surface Water Quality Monitoring Procedures Manual and the TCEQ Guidance for Assessing and Reporting Surface Water Quality in Texas.

(c) Collection and preservation of water samples.

(1) To ensure that representative samples are collected and to minimize alterations prior to analysis, collection and preservation of attainment determination samples will be in accordance with procedures set forth in the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, the latest version of the TCEQ [TNRCC] Surface Water Quality Monitoring Procedures Manual, 40 CFR 136, or other reliable procedures acceptable to the agency.

(2) Bacterial and temperature determinations will be conducted on samples or measurements taken approximately one foot below the surface. Depth collection procedures for chloride, sulfate, total dissolved solids, dissolved oxygen, chlorophyll-a, and pH to determine standards attainment may vary depending on the water body being sampled. Where standards apply to the mixed surface layer, the depth of this layer is determined in accordance with procedures in the latest [approved] version of the TCEQ Surface Water Quality Monitoring Procedures Manual and the TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality [Data] in Texas. Standards for chloride, sulfate, total dissolved solids, dissolved oxygen, chlorophyll-a, and pH are applicable to the mixed surface layer, but a single sample taken near the surface normally provides an adequate representation of these parameters.

[(3) For dissolved oxygen, the following procedures are generally applicable:

(A) Non-tidal flowing streams. The dissolved oxygen criteria is applicable to the mixed surface layer, but a single sample taken near the surface normally provides an adequate representation of this parameter.

(B) Impoundments. Representative samples shall be collected from the entire water column in the absence of thermal stratification. Collection of representative samples shall be confined to the epilimnion when an impoundment is thermally stratified.

(C) Tidal waters. Representative samples shall be collected from the entire water column in the absence of density stratification. Under conditions of density stratification, a composite sample collected from the mixed surface layer shall be used to determine standards attainment.]

(3)[(4)] For toxic materials, numerical aquatic life criteria are applicable to water samples collected at any depth. Numerical human health criteria are applicable to the average (arithmetic) concentration from the surface to the bottom. For the purposes of standards attainment for aquatic life protection and human health protection, samples which are collected at approximately one foot below the water surface will also be acceptable for comparison to numerical criteria.

(d) Sample analysis.

(1) Numerical criteria. Procedures for laboratory analysis will be in accordance with the most recently published edition of the book entitled *Standard Methods for the Examination of Water and Wastewater*, the latest version of the *TCEQ Texas Surface Water Quality Monitoring Procedures Manual*, 40 CFR 136, or other reliable procedures acceptable to the agency.

(2) Radioactivity. Measurements will be made on filtered samples to determine radioactivity associated with dissolved minerals in accordance with current analytical methodology approved by the EPA.

(3) Toxicity. Bioassay techniques will be selected as testing situations dictate but will generally be conducted using representative sensitive organisms in accordance with §307.6 of this title (relating to Toxic Materials).

(e) Sampling periodicity and evaluation.

(1) Chloride, sulfate, total dissolved solids [(TDS)]. Standards attainment determinations shall be based on the median [average] of measurements taken over a period of at least one year. Results from all monitoring stations within the segment will be used [averaged] to allow for reasonable parametric gradients. Total dissolved solids [TDS] determinations may be based on measurements of specific conductance.

(2) Radioactivity. The impact of radioactive discharges on the surface waters in Texas will be evaluated utilizing information developed by the Sanitary Engineering Research Laboratory at the University of Texas and presented in the June 30, 1960, report entitled, *Report on Radioactivity--Levels in Surface Waters--1958-1960*.

(3) Bacteria. Standards attainment will be based on a geometric mean of applicable samples [and based on a single sample maximum,] and data will be evaluated in accordance with the provisions of §307.7(b)(1) of this title (relating to Site-specific Uses and Criteria). Samples can be evaluated with the single sample maximum criterion for purposes of swimmer safety notification programs and wastewater permit compliance.

(4) Toxic materials. Specific numerical acute toxic criteria are applied as 24-hour averages, and specific numerical chronic toxic criteria are applied as seven-day averages. Human health criteria are applied as long-term average exposure criteria designed to protect populations over a life time

of 70 years. Refer to the latest [approved] version of the TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality [Data] in Texas for sampling periodicity and evaluation applicable to standards. Standards attainment for human health criteria will be based on the median [average] of a minimum of four samples collected over at least a one year period.

(5) Temperature and pH. Standards attainment based on single measurements will be evaluated according to the latest [approved] version of the TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality [Data] in Texas.

(6) Dissolved oxygen.

(A) Criteria for daily (24-hour) average concentrations will be compared to a time-weighted average of measurements taken over a 24-hour period.

(B) Criteria for minimum concentrations will be compared to individual measurements. When data are collected over a 24-hour period, any single measurement may be compared to the applicable minimum criterion.

(7) Chlorophyll *a* and total phosphorus in reservoirs.

(A) Standards attainment determinations shall be based on the median chlorophyll *a* value as compared to the chlorophyll *a* criteria in Appendix F of §307.10 of this title. If a chlorophyll *a* criterion is exceeded, then data for total phosphorus are compared to the screening level of concern for total phosphorus as listed in the standards implementation procedures. Nonattainment of the water quality standards is indicated if a water body exceeds both the chlorophyll *a* criterion and the total phosphorus screening level.

(B) Assessment of the chlorophyll *a* criteria in Appendix F, and of the total phosphorus levels of concern in the standards implementation procedures, will be based on the median of at least 10 measurements taken over a period of at least five years. The data for the assessment will be collected at the sampling stations used for calculating the criteria and screening levels, as listed in Appendix F and the standards implementation procedures, or from comparable stations in the main pool of the reservoir.

(f) Biological integrity. Biological integrity, which is an essential component of the aquatic life categories defined in §307.7(b)(3) of this title, is assessed by sampling the aquatic community. Attainment of aquatic life use will [may] be assessed by indices of biotic integrity which are described in [publicly available documents such as in] the latest version of the TCEQ Surface Water Quality Monitoring Procedures Manual [TNRCC Receiving Water Assessment Procedures Manual]. Primary criteria associated with assessing the attainment of aquatic life uses are (1) indices of biotic integrity, and (2) criteria for dissolved oxygen. When monitoring data indicate that primary criteria are not being attained for a presumed high aquatic life use, as defined in 307.4(h) of this title, the affected water body is not automatically considered to be impaired and listed on the Texas 303(d) list based on the primary criteria. Instead, the listing can be deferred until a use-attainability analysis of the water body is conducted to establish the appropriate aquatic life use. If the water body is not meeting the primary criteria for the aquatic life use that is determined to be appropriate, then the water body is listed as impaired. When the appropriate aquatic life use as determined by the use-attainability study is less stringent than the presumed high use, then the appropriate aquatic life use and dissolved oxygen criteria will be listed in Appendix D of 307.10 of this title. Water bodies that are not meeting a presumed high

aquatic life use will be identified and subject to notice and public comment during revisions to the Texas 303(d) list.

(g) Additional parameters. Assessment of narrative criteria parameters shall be performed in accordance with the latest [approved] version of the *TCEQ [TNRCC] Guidance for [Screening and] Assessing and Reporting [Texas] Surface [and Finished Drinking] Water Quality [Data] in Texas.*

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