Presented below are water quality standards that are in effect for Clean Water Act purposes.

EPA is posting these standards as a convenience to users and has made a reasonable effort to assure their accuracy. Additionally, EPA has made a reasonable effort to identify parts of the standards that are not approved, disapproved, or are otherwise not in effect for Clean Water Act purposes.

RULES
OF THE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

CHAPTER 0400-40-03
GENERAL WATER QUALITY CRITERIA

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0400-40-03-.01 TENNESSEE BOARD OF WATER QUALITY, OIL AND GAS.

The Water Quality Control Act, T.C.A., §§ 69-3-101, et seq., makes it the duty of the Board of Water Quality, Oil and Gas to study and investigate all problems concerned with the pollution of the waters of the state and with its prevention, abatement, and control; and to establish such standards of quality for any waters of the state in relation to their reasonable and necessary use as the Board shall deem to be in the public interest; and establish general policies relating to pollution as the Board shall deem necessary to accomplish the purposes of the Act. The following general considerations and criteria shall be used to determine the permissible conditions of waters with respect to pollution and preventative or corrective measures required to control pollution in various waters or in different sections of the same waters.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.02 GENERAL CONSIDERATIONS.

(1) Tennessee water quality standards shall consist of the General Water Quality Criteria and the Antidegradation Statement found in Chapter 0400-40-03, and the Use Classifications for Surface Waters found in Chapter 0400-40-04.

(2) Waters have many uses which in the public interest are reasonable and necessary. Such uses include: sources of water supply for domestic and industrial purposes; propagation and maintenance of fish and other aquatic life; recreation in and on the waters including the safe consumption of fish and shellfish; livestock watering and irrigation; navigation; generation of power; propagation and maintenance of wildlife; and the enjoyment of scenic and aesthetic qualities of waters.

(3) The rigid application of uniform water quality is not desirable or reasonable because of the varying uses of such waters. The assimilative capacity of a stream for sewage and waste varies depending upon various factors and including the following: volume of flow, depth of channel, the presence of falls or rapids, rate of flow, temperature, natural characteristics, and the nature of the stream.

(4) In order to permit the reasonable and necessary uses of the waters of the state, existing pollution should be corrected as rapidly as practicable, and future pollution prevented through the level of treatment technology applicable to a specific source or that greater level of technology necessary to meet water quality standards; i.e., modeling and stream survey assessments, treatment plants or other control measures.

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(Rule 0400-40-03-.02, continued)

(5) Since all streams are classified for more than one use, the most stringent criteria will be applicable.

(6) Waters identified as wet weather conveyances according to the definition found in Rule 0400-40-03-.04, shall be protective of humans and wildlife that may come in contact with them and shall not adversely affect the quality of downstream waters. Applicable water quality standards will be maintained downstream of wet weather conveyances.

(7) Where general water quality criteria are applied on a regional, ecoregional, or subecoregional basis, these criteria will be considered to apply to a stream if eighty percent (80%) of its watershed or catchment is contained within the unit upon which the criterion is based.

(8) All fish and aquatic life metals criteria are expressed as total recoverable, except cadmium, copper, lead, nickel, silver, and zinc which are expressed as dissolved. Translators will be used to convert the dissolved fraction into a total recoverable permit limit. One of three approaches to metals translation will be used: (1) translator is the same as the conversion factor, (2) translator is based on relationships derived from STORET data, (3) a site-specific translator is developed. Where available, a site-specific translator is preferred. For assessing whether criteria for cadmium, copper, lead, nickel, silver, and zinc are exceeded by ambient water quality conditions, the dissolved criteria will also be translated in order to allow direct comparison to the ambient data, if total recoverable. The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit From a Dissolved Criteria (EPA-823-B-96-007) may be referenced in applying this provision.

(9) Site-specific numeric criteria studies may be conducted on any appropriate fish and aquatic life criteria criterion.

(a) Site-specific criteria studies based on a Water Effects Ratio (WER) calculated from the documented toxicity of a parameter in the stream in which it will be introduced may supersede the adopted criteria at a site. The Division shall approve a site-specific criterion for metals developed by others provided that the WER methodology [Interim Guidance on Determination and Use of Water-effect Ratios for Metals (EPA-823-B-94-001)] or the Streamlined Water-effects Ratio Procedure for Discharges of Copper (EPA-822-R-01-001) is used, both the study plan and results are approved by the Department, and the U.S. Environmental Protection Agency (EPA) has concurred with the final site specific criterion value(s).

(b) Any site specific criterion for other toxics based on methodologies other than the above-listed methodologies which recalculate specific criterion, such as the Resident Species Method or the Recalculation Method or the Biotic Ligand Model (BLM) for copper, must be adopted as a revision to Tennessee water quality standards into this chapter, and following EPA approval, can be used for Clean Water Act purposes.

References on this subject include, but are not limited to: Technical Support Document for Water Quality-based Toxics Control (EPA - 505/2-90-001); Technical Guidance Manual for Performing Waste Load Allocations: Book VIII (EPA/600/6-85/002a/002b/002c); MinteqA2, An Equilibrium Metal Speciation Model (EPA/600/3-87/012); Water Quality Standards Handbook, Second Edition (EPA-823-B-93-002); Interim Guidance on Determination and Use of Water-effect Ratios for Metals (EPA-823-B-94-001).

(10) Interpretation and application of narrative criteria shall be based on available scientific literature and EPA guidance and regulations.

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(Rule 0400-40-03-.02, continued)
Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.03 CRITERIA FOR WATER USES.

(1) The criteria for the use of Domestic Water Supply are the following.

(a) Dissolved Oxygen - There shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions.

(b) pH - The pH value shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24 hours.

(c) Hardness or Mineral Compounds - The hardness of or the mineral compounds contained in the water shall not appreciably impair the usefulness of the water as a source of domestic water supply.

(d) Total Dissolved Solids - The total dissolved solids shall at no time exceed 500 mg/l.

(e) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as may impair the usefulness of the water as a source of domestic water supply.

(f) Turbidity or Color - There shall be no turbidity or color in amounts or characteristics that cannot be reduced to acceptable concentrations by conventional water treatment processes (See definition).

(g) Temperature - The maximum water temperature change shall not exceed 3°C relative to an upstream control point. The temperature of the water shall not exceed 30.5°C and the maximum rate of change shall not exceed 2°C per hour. The temperature of impoundments where stratification occurs will be measured at a depth of five feet or mid-depth, whichever is less, and the temperature in flowing streams shall be measured at mid-depth.

(h) Coliform - The concentration of the E. coli group shall not exceed 630 colony forming units (cfu) per 100 ml as a geometric mean based on a minimum of five samples collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purpose of determining the geometric mean, individual samples having an E. coli group concentration of less than 1 cfu per 100 ml shall be considered as having a concentration of 1 cfu per 100 ml.

(i) Taste or Odor - The waters shall not contain substances which will result in taste or odor that prevent the production of potable water by conventional water treatment processes.

(j) Toxic Substances - The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions that materially affect the health and safety of man or animals, or impair the safety of conventionally treated water supplies. Available references include, but are not limited to: Quality Criteria for Water (Section 304(a) of Public Law 92-500 as amended); Federal Regulations under Section 307 of Public Law 92-500 as amended; and Federal Regulations under Section 1412 of the Public Health Service Act as amended by the

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(Rule 0400-40-03-.03, continued)

Safe Drinking Water Act, (Public Law 93-523). In addition, the following numeric criteria are for the protection of domestic water supply:

Compound	Criteria (µg/L)	Compound	Criteria (µg/L)
Antimony	6	Diquat	20
Arsenic	10	Endothall	100
Beryllium	4	Glyphosate	700
Barium	2000	Hexachlorobenzene	1
Cadmium	5	Hexachlorocyclopentadiene	50
Chromium, total	100	Oxamyl (Vydate)	200
Lead	5	Picloram	500
Cyanide (as free cyanide)	200	Simazine	4
Mercury	2	2,3,7,8 TCDD (Dioxin)	0.00003
Nickel	100	Benzene	5
Selenium	50	Carbon tetrachloride	5
Thallium	2	1,2-Dichloroethane	5
Alachlor	2	1,1-Dichloroethylene	7
Atrazine	3	1,1,1-Trichloroethane	200
Carbofuran	40	Trichloroethylene	5
Chlordane	2	Vinyl chloride	2
Dibromo chloropropane	0.2	para-Dichlorobenzene	75

Compound	Criteria (µg/L)	Compound	Criteria (µg/L)
2,4 Dichlorophenoxyacetic Acid	70	cis 1,2-Dichloroethylene	70
Ethylene dibromide	0.05	1,2-Dichloropropane	5
Heptachlor	0.4	Ethyl benzene	700
Heptachlor epoxide	0.2	Monochlorobenzene	100
Lindane	0.2	ortho-Dichlorobenzene	600
Methoxychlor	40	Styrene	100
Polychlorinated biphenyls	0.5	Tetrachloroethylene	5
2,4,5 Trichlorophenoxyprioponic acid	50	Toluene	1000
Pentachlorophenol	1	trans 1,2-Dichloroethylene	100
Benzo(a)pyrene	0.2	Xylenes, total	10000
Chlorobenzene	100	Dichloromethane	5
Dalapon	200	1,2,4-Trichlorobenzene	70
Di(2-ethylhexyl) adipate	400	1,1,2-Trichloroethane	5
Di(2-ethylhexyl) phthalate	6	Endrin	2.0
Dinoseb	7	Toxaphene	3
		Nitrate	10000
		Nitrite	1000

(k) Other Pollutants - The waters shall not contain other pollutants in quantities that may be detrimental to public health or impair the usefulness of the water as a source of domestic water supply.

(2) The criteria for the use of Industrial Water Supply are the following.

(a) Dissolved Oxygen - There shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions.

(b) pH - The pH value shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24 hours.

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(Rule 0400-40-03-.03, continued)

(c) Hardness or Mineral Compounds - The hardness of or the mineral compounds contained in the water shall not appreciably impair the usefulness of the water as a source of industrial water supply.

(d) Total Dissolved Solids - The total dissolved solids shall at no time exceed 500 mg/l.

(e) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as may impair the usefulness of the water as a source of industrial water supply.

(f) Turbidity or Color - There shall be no turbidity or color in amounts or characteristics that cannot be reduced to acceptable concentrations by conventional water treatment processes.

(g) Temperature - The maximum water temperature change shall not exceed 3°C relative to an upstream control point. The temperature of the water shall not exceed 30.5°C and the maximum rate of change shall not exceed 2°C per hour. The temperature of impoundments where stratification occurs will be measured at a depth of five feet or mid- depth, whichever is less, and the temperature in flowing streams shall be measured at mid-depth.

(h) Taste or Odor - The waters shall not contain substances which will result in taste or odor that would prevent the use of the water for industrial processing.

(i) Toxic Substances - The waters shall not contain toxic substances whether alone or in combination with other substances, which will adversely affect industrial processing.

(j) Other Pollutants - The waters shall not contain other pollutants in quantities that may adversely affect the water for industrial processing.

(3) The criteria for the use of Fish and Aquatic Life are the following.

(a) Dissolved Oxygen - The dissolved oxygen shall not be less than 5.0 mg/l with the following exceptions.

1. In streams identified as trout streams, including tailwaters, dissolved oxygen shall not be less than 6.0 mg/L.

2. The dissolved oxygen concentration of trout waters identified as supporting a naturally reproducing population shall not be less than 8.0 mg/L. (Tributaries to trout streams or naturally reproducing trout streams should be considered to be trout streams or naturally reproducing trout streams, unless demonstrated otherwise. Additionally, all streams within the Great Smoky Mountains National Park should be considered naturally reproducing trout streams.)

3. In wadeable streams in subecoregion 73a, dissolved oxygen levels shall not be less than a daily average of 5.0 mg/L with a minimum dissolved oxygen level of 4.0 mg/L.

4. The dissolved oxygen level of streams in ecoregion 66 (Blue Ridge Mountains) not identified as naturally reproducing trout streams shall not be less than 7.0 mg/L.

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(Rule 0400-40-03-.03, continued)

Substantial and/or frequent variations in dissolved oxygen levels, including diel fluctuations, are undesirable if caused by man-induced conditions. Diel fluctuations in wadeable streams shall not be substantially different than the fluctuations noted in reference streams in that region.

In lakes and reservoirs, the dissolved oxygen concentrations shall be measured at mid-depth in waters having a total depth of 10 feet or less, and at a depth of five feet in waters having a total depth of greater than 10 feet and shall not be less than 5.0 mg/L.

(b) pH - The pH value shall not fluctuate more than 1.0 unit over a period of 24 hours and shall not be outside the following ranges: 6.0 – 9.0 in wadeable streams and 6.5 – 9.0 in larger rivers, lakes, reservoirs, and wetlands.

(c) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character that may be detrimental to fish and aquatic life.

(d) Turbidity, Total Suspended Solids, or Color - There shall be no turbidity, total suspended solids, or color in such amounts or of such character that will materially affect fish and aquatic life. In wadeable streams, suspended solid levels over time should not be substantially different than conditions found in reference streams.

(e) Temperature - The maximum water temperature change shall not exceed 3°C relative to an upstream control point. The temperature of the water shall not exceed 30.5°C and the maximum rate of change shall not exceed 2°C per hour. The temperature of recognized trout waters shall not exceed 20°C. There shall be no abnormal temperature changes that may affect aquatic life unless caused by natural conditions. The temperature in flowing streams shall be measured at mid-depth.

The temperature of impoundments where stratification occurs will be measured at mid-depth in the epilimnion (see definition in Rule 0400-40-03-.04) for warm water fisheries and mid-depth in the hypolimnion (see definition in Rule 0400-40-03-.04) for cold water fisheries. In the case of large impoundments (100 acres or larger) subject to stratification and recognized as trout waters, the temperature of the hypolimnion shall not exceed 20°C.

A successful demonstration as determined by the Department conducted for thermal discharge limitations under Section 316(a) of the Clean Water Act, (33 U.S.C. § 1326), shall constitute compliance with this paragraph.

(f) Taste or Odor - The waters shall not contain substances that will impart unpalatable flavor to fish or result in noticeable offensive odors in the vicinity of the water or otherwise interfere with fish or aquatic life. References include, but are not limited to: Quality Criteria for Water (section 304(a) of Public Law 92-500 as amended).

(g) Toxic Substances - The waters shall not contain substances or a combination of substances including disease - causing agents which, by way of either direct exposure or indirect exposure through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), physical deformations, or restrict or impair growth in fish or aquatic life or their offspring. References on this subject include, but are not limited to: Quality Criteria for Water (Section 304(a) of Public Law 92-500 as amended); Federal Regulations under Section 307 of Public Law 92-500 as amended. In addition, the following numeric criteria are for the protection of fish and aquatic life:

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(Rule 0400-40-03-.03, continued)

Compound	Criterion Maximum Concentration µg/L (CMC)	Criterion Continuous Concentration µg/L (CCC)
Arsenic (III) [1]	340	150
Cadmium [2]	1.8	0.72
Chromium, III [2]	570	74
Chromium, VI [1]	16	11
Copper [2]	13	9.0
Lead [2]	65	2.5
Mercury [1] (b)	1.4	0.77
Nickel [2]	470	52
Selenium (lentic)	20	1.5 [3]
Selenium (lotic)	20	3.1 [3]
Silver [2]	3.2	---
Zinc [2]	120	120
Cyanide [4]	22	5.2
Chlorine (TRC)	19	11
Pentachlorophenol [5]	19	15
Acrolein	3.0	3.0
Aldrin	3.0	---
g-BHC – Lindane (b)	0.95	---
Carbaryl	2.1	2.1
Chlordane (b)	2.4	0.0043
Chlorpyrifos	0.083	0.041
4-4'-DDT (b)	1.1	0.001
Demeton	----	0.1
Diazinon	0.17	0.17
Dieldrin (b)	0.24	0.056
a-Endosulfan	0.22	0.056
b-Endosulfan	0.22	0.056
Endrin	0.086	0.036
Guthion	----	0.01
Heptachlor	0.52	0.0038
Heptachlor epoxide	0.52	0.0038
Malathion	----	0.1
Methoxyclor	----	0.03
Methoxyclor	----	0.001
Nonylphenol	28.0	6.6
Parathion	0.065	0.013
PCBs, total (b)	---	0.014
Toxaphene (b)	0.73	0.0002
Tributyltin (TBT)	0.46	0.072

(b) Bioaccumulative parameter.

[1] Criteria for these metals are expressed as dissolved.

[2] Criteria for these metals are expressed as dissolved and are a function of total hardness (mg/L). Hardness-dependent metals criteria may be calculated from the following (values displayed above correspond to a total hardness of 100 mg/l and may have been rounded):

CMC (dissolved) = exp{mA[ln(hardness)]+bA } (CF)

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(Rule 0400-40-03-.03, continued)

CCC (dissolved) = exp{mC [ln(hardness)]+bC} (CF)

Chemical	MA	bA	MC	BC	Freshwater Conversion Factors (CF)	
					CMC	CCC
Cadmium	0.9798	-3.866	0.7977	-3.909	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Copper	0.9422	-1.700	0.8545	-1.702	0.960	0.960
Lead	1.273	-1.460	1.273	-4.705	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.59			0.85	
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

If criteria are hardness-dependent, the Criterion Maximum Concentration (CMC) and Criterion Continuous Concentration (CCC) shall be based on the actual stream hardness. When an ambient hardness of less than 25 mg/L is used to establish criteria for cadmium or lead, the hardness dependent conversion factor (CF) shall not exceed one. When ambient hardness is greater than 400 mg/L, criteria shall be calculated according to one of the following two options: (1) calculate the criterion using a default Water Effects Ratio (WER) of 1.0 and a hardness of 400 mg/L in the hardness based equation; or (2) calculate the criterion using a WER and the actual ambient hardness of the surface water in the hardness based equation. For information concerning metals translation and site-specific criteria, see paragraph (9) of Rule 0400-40-03-.02.

[3] The numeric water criteria for selenium are applicable for all purposes, but for water quality assessment, fish tissue values may be used to confirm or refute impacts to aquatic life in accordance with and using the values from EPA's Final Criterion: Aquatic Life Ambient Water Quality Criterion for Selenium - Freshwater (June 30, 2016). However, a lack of fish tissue data or the absence of fish from a waterbody will not prevent it from being assessed as impaired if a numeric water concentration criterion is exceeded. Fish tissue concentration alone may be used to establish use impairment.

[4] If Standard Methods 4500-CN I (Weak Acid Dissociable), 4500-CN G (Cyanides Amenable to Chlorination after Distillation), or OIA-1677 are used, this criterion may be applied as free cyanide.

[5] Criteria for pentachlorophenol are expressed as a function of pH. Values displayed above correspond to a pH of 7.8 and are calculated as follows:

CMC = exp(1.005(pH) - 4.869) CCC = exp(1.005(pH) - 5.134)

(h) Other Pollutants - The waters shall not contain other pollutants that will be detrimental to fish or aquatic life.

(i) Iron - The waters shall not contain iron at concentrations that cause toxicity or in such amounts that interfere with habitat due to precipitation or bacteria growth.

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(Rule 0400-40-03-.03, continued)

(j) Ammonia - The concentration of total ammonia nitrogen (in mg N/L) shall not exceed the CMC (acute criterion) calculated using the following equation:

$$CMC = MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}\right),\right.$$
$$\left.\left(0.7249 \times \left(\frac{0.0114}{1+10^{7.204-pH}} + \frac{1.6181}{1+10^{pH-7.204}}\right) \times \left(23.12 \times 10^{0.036\times(20-T)}\right)\right)\right)$$

The 30-day average concentration of total ammonia nitrogen (in mg N/L) shall not exceed the CCC (chronic criterion) calculated using the following equation:

$$CCC = 0.8876 \times \left(\frac{0.0278}{1+10^{7.688-pH}} + \frac{1.1994}{1+10^{pH-7.688}}\right) \times \left(2.126 \times 10^{0.028\times(20-MAX(T,7))}\right)$$

In addition, the highest four-day average within the 30-day period shall not exceed 2.5 times the CCC.

(k) Nutrients - The waters shall not contain nutrients in concentrations that stimulate aquatic plant and/or algae growth to the extent that aquatic habitat is substantially reduced and/or the biological integrity fails to meet regional goals. Additionally, the quality of downstream waters shall not be detrimentally affected. Examples of parameters associated with the criterion include but are not limited to: nitrogen, phosphorus, potassium, calcium, magnesium, and various forms of each.

Interpretation of this provision may be made using the document Development of Regionally-based Interpretations of Tennessee's Narrative Nutrient Criterion and/or other scientifically defensible methods.

(l) Coliform - The concentration of the E. coli group shall not exceed 630 cfu per 100 ml as a geometric mean based on a minimum of five samples collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purposes of determining the geometric mean, individual samples having an E. coli group concentration of less than 1 cfu per 100 ml shall be considered as having a concentration of 1 cfu per 100 ml. In addition, the concentration of the E. coli group in any individual sample shall not exceed 2,880 cfu per 100 ml.

(m) Biological Integrity - The waters shall not be modified through the addition of pollutants or through physical alteration to the extent that the diversity and/or productivity of aquatic biota within the receiving waters are substantially decreased or, in the case of wadeable streams, substantially different from conditions in reference streams in the same ecoregion. The parameters associated with this criterion are the aquatic biota measured. These are response variables.

Interpretation of this provision for any stream which (a) has at least 80% of the upstream catchment area contained within a single bioregion and (b) is of the appropriate stream order specified for the bioregion and (c) contains the habitat (riffle or rooted bank) specified for the bioregion, may be made using protocols found in the Department's 2017 Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys and/or other scientifically defensible methods.

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(Rule 0400-40-03-.03, continued)

Interpretation of this provision for all other wadeable streams, lakes, and reservoirs may be made using Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers (EPA/841-B-99-002) or Lake and Reservoir Bioassessment and Biocriteria (EPA 841-B-98-007), and/or other scientifically defensible methods. Interpretation of this provision for wetlands or large rivers may be made using scientifically defensible methods. Effects to biological populations will be measured by comparisons to upstream conditions or to appropriately selected reference sites in the same bioregion if upstream conditions are determined to be degraded.

(n) Habitat - The quality of stream habitat shall provide for the development of a diverse aquatic community that meets regionally-based biological integrity goals. Examples of parameters associated with this criterion include but are not limited to: sediment deposition, embeddedness of riffles, velocity/depth regime, bank stability, and vegetative protection. Types of activities or conditions which can cause habitat loss include, but are not limited to: channel and substrate alterations, rock and gravel removal, stream flow changes, accumulation of silt, precipitation of metals, and removal of riparian vegetation. For wadeable streams, the in stream habitat within each subecoregion shall be generally similar to that found at reference streams. However, streams shall not be assessed as impacted by habitat loss if it has been demonstrated that the biological integrity goal has been met.

(o) Flow - Stream or other waterbody flows shall support the fish and aquatic life criteria.

(4) The criteria for the use of Recreation are the following.

(a) Dissolved Oxygen - There shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions.

(b) pH - The pH value shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24 hours.

(c) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character that may be detrimental to recreation.

(d) Total Suspended Solids, Turbidity, or Color - There shall be no total suspended solids, turbidity or color in such amounts or character that will result in any objectionable appearance to the water, considering the nature and location of the water.

(e) Temperature - The maximum water temperature change shall not exceed 3°C relative to an upstream control point. The temperature of the water shall not exceed 30.5°C and the maximum rate of change shall not exceed 2°C per hour. The temperature of impoundments where stratification occurs will be measured at a depth of five feet, or mid- depth whichever is less, and the temperature in flowing streams shall be measured at mid-depth.

(f) Coliform - The concentration of the E. coli group shall not exceed 126 cfu per 100 ml, as a geometric mean based on a minimum of five samples collected from a given sampling site over a period of not more than 30 consecutive days with individual samples being collected at intervals of not less than 12 hours. For the purposes of determining the geometric mean, individual samples having an E. coli concentration of less than 1 cfu per 100 ml shall be considered as having a concentration of 1 cfu per 100 ml.

Additionally, the concentration of the E. coli group in any individual sample taken from a lake, reservoir, state scenic river, Exceptional Tennessee Water or Outstanding

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(Rule 0400-40-03-.03, continued)

National Resource Water (ONRW) (0400-40-03-.06) shall not exceed 487 cfu per 100 ml. The concentration of the E. coli group in any individual sample taken from any other waterbody shall not exceed 941 cfu per 100 ml.

(g) Taste or Odor - The waters shall not contain substances that will result in objectionable taste or odor.

(h) Nutrients - The waters shall not contain nutrients in concentrations that stimulate aquatic plant and/or algae growth to the extent that the public's recreational uses of the waterbody or other downstream waters are detrimentally affected. Unless demonstrated otherwise, the nutrient criteria found in subparagraph (3)(k) of this rule will be considered adequately protective of this use.

(i) Nutrient Response Criteria for Pickwick Reservoir: those waters impounded by Pickwick Dam on the Tennessee River. The reservoir has a surface area of 43,100 acres at full pool, 9,400 acres of which are within Tennessee. Chlorophyll a (corrected, as described in Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998): the mean of the photic-zone (See definition) composite chlorophyll a samples collected monthly April through September shall not exceed 18 µg/L, as measured over the deepest point, main river channel, dam forebay.

(j) Toxic Substances - The waters shall not contain toxic substances, whether alone or in combination with other substances, that will render the waters unsafe or unsuitable for water contact activities including the capture and subsequent consumption of fish and shellfish, or will propose toxic conditions that will adversely affect man, animal, aquatic life, or wildlife. Human health criteria have been derived to protect the consumer from consumption of contaminated fish and water. The water and organisms criteria should only be applied to those waters classified for both recreation and domestic water supply. In addition, the following numeric criteria are for the protection of recreation:

Compound	Water & Organisms Criteria [1] (µg/L)	Organisms Only Criteria (µg/L)
INORGANICS		
Antimony	5.6	640
Arsenic (c)	10.0	10.0
Mercury (b)	0.05	0.051
Nickel	610	4600
Thallium	0.24	0.47
Cyanide	140	140
Selenium	170	4200
Zinc	7400	26000
Dioxin [2] (b)	0.000001	0.000001
VOLATILES		
Acrolein	6	9
Acrylonitrile (c)	0.51	2.5
Benzene (c)	22	510
Bromoform (c)	43	1400
Carbon tetrachloride (c)	2.3	16
Chlorobenzene	130	1600
Chlorodibromomethane (c)	4.0	130
Chloroform (c)	57	4700

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(Rule 0400-40-03-.03, continued)

Dichlorobromomethane (c)	5.5	170
1,2-Dichloroethane (c)	3.8	370
1,1-Dichloroethylene	330	7100
1,2-Dichloropropane (c)	5.0	150
1,3-Dichloropropene (c)	3.4	210
Ethylbenzene	530	2100
Methyl bromide	47	1500
Methylene chloride (c)	46	5900
1,1,2,2-Tetrachloroethane (c)	1.7	40
Tetrachloroethylene (c)	6.9	33
Toluene	1300	15000
1,2-Trans-Dichloroethylene	140	10000
1,1,2-Trichloroethane (c)	5.9	160
Trichloroethylene (c)	25	300
Vinyl chloride (c)	0.25	24

Compound	Water & Organisms Criteria [1] (µg/L)	Organisms Only Criteria (µg/L)
ACID EXTRACTABLES		
2-Chlorophenol	81	150
2,4-Dichlorophenol	77	290
2,4-Dimethylphenol	380	850
2-Methyl-4,6-dinitrophenol	13	280
Dinitrophenols	69	5300
Pentachlorophenol (c) (pH)	2.7	30
Phenol	10000	860000
2,4,6-Trichlorophenol (c)	14	24
BASE NEUTRALS		
Acenaphthene	670	990
Anthracene	8300	40000
Benzidine (c)	0.00086	0.0020
Benzo(a)anthracene (c)	0.038	0.18
Benzo(a)pyrene (c)	0.038	0.18
Benzo(b)fluoranthene (c)	0.038	0.18
Benzo(k)fluoranthene (c)	0.038	0.18
Bis(2-Chlorethyl)ether (c)	0.30	5.3
Bis(2-Chloro-isopropyl)ether	1400	65000
Bis(2-Ethylhexyl)phthalate (c)	12	22
Bis(Chloromethyl)ether (c)	0.0010	0.0029
Butylbenzyl Phthalate (c)	1500	1900
2-Chloronaphthalene	1000	1600
Chrysene (c)	0.038	0.18
Dibenz(a,h)Anthracene (c)	0.038	0.18
1,2-Dichlorobenzene	420	1300
1,3-Dichlorobenzene	320	960
1,4-Dichlorobenzene	63	190
3,3-Dichlorobenzidine (c)	0.21	0.28
Diethyl phthalate	17000	44000
Dimethyl phthalate	270000	1100000
Di-n-butyl phthalate	2000	4500
2,4-Dinitrotoluene (c)	1.1	34

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(Rule 0400-40-03-.03, continued)

1,2-Diphenylhydrazine (c)	0.36	2.0
Fluoranthene	130	140
Fluorene	1100	5300
Hexachlorobenzene (b)(c)	0.0028	0.0029
Hexachlorobutadiene (b)(c)	4.4	180
Hexachlorocyclohexane-Technical (b)(c)	0.123	0.414
Hexachlorocyclopentadiene	40	1100
Hexachloroethane (c)	14	33
Ideno(1,2,3-cd)Pyrene (c)	0.038	0.18
Isophorone (c)	350	9600
Nitrobenzene	17	690
Nitrosamines	0.0008	1.24
Nitrosodibutylamine (c)	0.063	2.2
Nitrosodiethylamine (c)	0.008	2.4
Nitrosopyrrolidine (c)	0.16	340
N-Nitrosodimethylamine (c)	0.0069	30
N-Nitrosodi-n-Propylamine (c)	0.05	5.1
N-Nitrosodiphenylamine (c)	33	60

Compound	Water & Organisms Criteria [1] (µg/L)	Organisms Only Criteria (µg/L)
Pyrene	830	4000
Pentachlorobenzene (b)	1.4	1.5
1,2,4,5-Tetrachlorobenzene (b)	0.97	1.1
1,2,4-Trichlorobenzene	35	70
2,4,5-Trichlorophenol	1800	3600
<u>PESTICIDES</u>		
Aldrin (c)	0.00049	0.00050
a-BHC (c)	0.026	0.049
b-BHC (c)	0.091	0.17
g-BHC - Lindane (b)	0.98	1.8
Chlordane (b)(c)	0.0080	0.0081
4-4'-DDT (b)(c)	0.0022	0.0022
4,4'-DDE (b)(c)	0.0022	0.0022
4,4'-DDD (b)(c)	0.0031	0.0031
Dieldrin (b)(c)	0.00052	0.00054
a-Endosulfan	62	89
b-Endosulfan	62	89
Endosulfan Sulfate	62	89
Endrin	0.059	0.06
Endrin Aldehyde	0.29	0.30
Heptachlor (c)	0.00079	0.00079
Heptachlor epoxide (c)	0.00039	0.00039
PCB, total (b)(c)	0.00064	0.00064
Toxaphene (b)(c)	0.0028	0.0028

(b) Bioaccumulative parameter.

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(Rule 0400-40-03-.03, continued)

(c) Carcinogenic pollutant. 10^{-5} risk level is used for all carcinogenic pollutants.

1 These criteria are for protection of public health due to consumption of water and organisms and should only be applied to these waters designated for both recreation and domestic water supply.

2 Total dioxin is the sum of the concentrations of all dioxin and dibenzofuran isomers after multiplication by Toxic Equivalent Factors (TEFs). Following are the TEFs currently recommended by EPA (subject to revision):

DIOXIN ISOMERS	TEF	FURAN ISOMERS	TEF
Mono-, Di-, & TriCDDs	0.0	Mono-, Di-, & TriCDFs	0.0
2,3,7,8 TCDD	1.0	2,3,7,8 TCDF	0.1
Other TCDDs	0.0	Other TCDFs	0.0
1,2,3,7,8 PeCDD	1.0	1,2,3,7,8 PeCDF	0.03
Other PeCDDs	0.0	2,3,4,7,8 PeCDF	0.3
		Other PeCDFs	0.0
1,2,3,4,7,8 HxCDD	0.1	1,2,3,4,7,8 HxCDF	0.1
1,2,3,6,7,8 HxCDD	0.1	1,2,3,6,7,8 HxCDF	0.1
1,2,3,7,8,9 HxCDD	0.1	1,2,3,7,8,9 HxCDF	0.1
Other HxCDDs	0.0	2,3,4,6,7,8 HxCDF	0.1
		Other HxCDFs	0.0
1,2,3,4,6,7,8 HpCDD	0.01	1,2,3,4,6,7,8 HpCDF	0.01
		1,2,3,4,7,8,9 HpCDF	0.01
Other HpCDDs	0.0	Other HpCDFs	0.0
OCDD	0.0003	OCDF	0.0003

(k) Other Pollutants - The waters shall not contain other pollutants in quantities which may have a detrimental effect on recreation.

(l) Fish Consumption Advisories - A public fishing advisory will be considered when the calculated risk of additional cancers exceeds 10^{-4} for typical consumers or 10^{-5} for atypical consumers (See definition). A "do not consume" advisory will be issued for the protection of typical consumers and a "precautionary advisory" will be issued for the protection of atypical consumers. The following formula will be used to calculate the risk of additional cancers, using the current risk calculation factors and assumptions used by EPA unless better site-specific information is available:

$R = qE$

where:

R = Plausible-upper-limit risk of cancer associated with a chemical in a fisheries species for a human subpopulation.

q = Carcinogenic Potency Factor for the chemical (mg kg-1 day-1)-1 estimated as the upper 95% confidence limit of the slope of a linear dose-response curve. Scientifically defensible Potency Factors will be used.

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(Rule 0400-40-03-.03, continued)

E = Exposure dose of the chemical (mg kg-1 day-1) from the fish species for the human subpopulation in the area. E is calculated by the following formula:

$$E = \frac{C\,I\,X}{W} \quad \text{where:}$$

C = Concentration of the chemical (mg/kg) in the edible portion of the species in the area. The average levels from multiple fillet samples of the same species will be used. Catfish will be analyzed skin-off with the belly flap included in the sample. Gamefish and carp will be analyzed skin-on with the belly flap included in the sample. Sizes of fish collected for analysis will represent the ranges of sizes likely to be collected and consumed by the public. References on this subject include, but are not limited to: EPA's Guidance for Assessing Chemical Contaminant Data for use in Fish Advisories.

I = Mean daily consumption rate (g/day averaged over 70-year lifetime) of the fish species by the human subpopulation in the area.

X = Relative absorption coefficient, or the ratio of human absorption efficiency to test animal absorption efficiency of the chemical.

W = Average human mass (kg).

For substances for which the public health concern is based on toxicity, a "do not consume" advisory will be considered warranted when average levels of the substance in the edible portion of fish exceed U.S. Food and Drug Administration (FDA) Action Levels or EPA national criteria. Based on the rationale used by FDA or EPA for their levels, the Commissioner may issue precautionary advisories at levels appropriate to protect sensitive populations.

(m) Flow - Stream flows shall support recreational uses.

(5) The criteria for the use of Irrigation are the following.

(a) Dissolved Oxygen - There shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions.

(b) pH - The pH value shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24 hours.

(c) Hardness or Mineral Compounds - The hardness of or the mineral compounds contained in the water shall not impair its use for irrigation.

(d) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as may impair the usefulness of the water for irrigation purposes.

(e) Temperature - The temperature of the water shall not interfere with its use for irrigation purposes.

(f) Toxic Substances - The waters shall not contain toxic substances whether alone or in combination with other substances which will produce toxic conditions that adversely affect the quality of the waters for irrigation.

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(Rule 0400-40-03-.03, continued)

(g) Other Pollutants - The waters shall not contain other pollutants in quantities which may be detrimental to the waters used for irrigation.

(6) The criteria for the use of Livestock Watering and Wildlife are the following.

(a) Dissolved Oxygen - There shall always be sufficient dissolved oxygen present to prevent odors of decomposition and other offensive conditions.

(b) pH - The pH value shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24 hours.

(c) Hardness or Mineral Compounds - The hardness of or the mineral compounds contained in the water shall not impair its use for livestock watering and wildlife.

(d) Solids, Floating Materials, and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits, or sludge banks of such size or character as to interfere with livestock watering and wildlife.

(e) Temperature - The temperature of the water shall not interfere with its use for livestock watering and wildlife.

(f) Toxic Substances - The waters shall not contain substances whether alone or in combination with other substances, which will produce toxic conditions that adversely affect the quality of the waters for livestock watering and wildlife.

(g) Other Pollutants - The waters shall not contain other pollutants in quantities which may be detrimental to the water for livestock watering and wildlife.

(7) The criteria for the use of Navigation are the following.

(a) Solids, Floating Materials and Deposits - There shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character as to interfere with navigation.

(b) Other Pollutants - The waters shall not contain other pollutants in quantities which may be detrimental to the waters used for navigation.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.04 DEFINITIONS.

In addition to the meanings provided in the Water Quality Control Act (T.C.A. § 69-3-103), terms used in these rules shall mean the following:

(1) Atypical consumers - Those persons in the vicinity of a stream or lake who due to physiological factors or previous exposure are more sensitive to specific pollutants than is the population in general. Examples of atypical consumers may include, but are not limited to: children; pregnant or nursing women; subsistence fishermen; frequent purchasers of commercially harvested fish; and agricultural, industrial, or military personnel who may have had previous occupational exposure to the contaminant of concern.

(2) Conventional water treatment - Conventional water treatment as referred to in the criteria denotes coagulation, sedimentation, filtration, and chlorination or disinfection.

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(Rule 0400-40-03-.04, continued)

(3) Degradation - The alteration of the properties of waters by the addition of pollutants, withdrawal of water, or removal of habitat, except those alterations of a short duration.

(4) De Minimis degradation - Degradation of a small magnitude, as provided in this paragraph.

(a) Discharges and withdrawals

1. Subject to the limitation in part 3. of this subparagraph, a single discharge will be considered de minimis if it uses less than five percent of the available assimilative capacity for the substance being discharged.

(Note: Consistent with T.C.A. § 69-3-108, special consideration will be given to bioaccumulative substances to confirm the effect is de minimis, even if they are less than five percent of the available assimilative capacity.)

2. Subject to the limitation in part 3. of this subparagraph, a single water withdrawal will be considered de minimis if it removes less than five percent of the 7Q10 flow of the stream.

3. If more than one activity described in part 1. or 2. of this subparagraph has been authorized in a segment and the total of the authorized and proposed impacts uses no more than 10% of the assimilative capacity, or 7Q10 low flow, they are presumed to be de minimis. Where the total of the authorized and proposed impacts uses 10% of the assimilative capacity, or 7Q10 low flow, additional degradation may only be treated as de minimis if the Division finds on a scientific basis that the additional degradation has an insignificant effect on the resource.

(b) Habitat alterations authorized by an Aquatic Resource Alteration Permit (ARAP) are de minimis if the Division finds that the impacts, individually and cumulatively are offset by impact minimization and/or in-system mitigation, provided however, in ONRWs the mitigation must occur within the ONRW.

(5) Domestic wastewater discharge - A discharge of sanitary and other non-process wastewater from a treatment facility other than a publicly-owned treatment works (POTW) treating municipal sewage and/or industrial waste. Examples of domestic wastewater discharges include, but are not limited to, homes, subdivisions, campgrounds, hotels, travel centers, parks, and schools.

(6) Ecoregion - A relatively homogeneous area defined by similarity of climate, landform, soil, potential natural vegetation, hydrology, or other ecologically relevant variables.

(7) Epilimnion - The upper layer of water in a thermally stratified lake or reservoir. This layer consists of the warmest water and has a fairly uniform (constant) temperature.

(8) Groundwater - Water beneath the surface of the ground within the zone of saturation, whether or not flowing through known and definite channels.

(9) Groundwater table - The upper surface of the zone of saturation by ground water.

(10) Hypolimnion - The lowest layer in a thermally stratified lake or reservoir. This layer consists of colder, more dense water, has a constant temperature and no mixing occurs. The hypolimnion of a eutrophic lake is usually low or lacking in oxygen.

(11) Interflow - The runoff infiltrating into the surface soil and moving toward streams as shallow, perched water above the main groundwater level.

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(Rule 0400-40-03-.04, continued)

(12) In-system mitigation - Mitigation for habitat alterations sufficient to result in no overall net loss of resource values, if provided in the same eight-digit hydrologic unit code as the alteration, or in another area proximate to the alteration as approved by the Division to offset the loss of resource values in the area. In-system mitigation may not occur within a different major river drainage basin as the alteration (*i.e.*, Tennessee River, Cumberland River, Mississippi River).

(13) Lentic - Still water aquatic ecosystems such as ponds, lakes, or reservoirs.

(14) Lotic - Flowing water aquatic ecosystems such as streams and rivers.

(15) Measurable degradation, as used in the context of discharges or withdrawals - Changes in parameters of waters that are of sufficient magnitude to be detectable by the best available instrumentation or laboratory analyses.

(Note: Because analytical techniques change, the Department may consider either the most sensitive detection method needed to comply with State standards or any biological, chemical, physical, or analytical method, conducted in accordance with EPA approved methods as identified in 40 C.F.R. part 136. Consistent with T.C.A. § 69-3-108, for scenarios involving cumulative, non-measurable activities or parameters that are managed by a narrative criterion, the Department will use mathematical models and ecological indices to ensure no degradation will result from the authorization of such activities, consistent with the State's mixing zone policy.)

(16) Minimum Level (ML) - A term referring to the lowest sample concentration at which reliable quantitative measurements can be made as defined in Appendix A of 40 C.F.R. part 136 (2018).

(17) Mixing zone - That section of a flowing stream or impounded waters in the immediate vicinity of an outfall where an effluent becomes dispersed and mixed.

(18) Multiple populations - Two or more individuals from each of two or more distinct taxa, in the context of obligate lotic aquatic organisms.

(19) New or increased discharge - A new discharge of pollutants to waters of the state or an increase in the authorized loading of a pollutant above either (1) numeric effluent limitations established in a National Pollutant Discharge Elimination System permit for that discharge, or (2) if no such limitations exist, the actual discharges of that pollutant.

(20) Normal weather conditions - Those within one standard deviation of the cumulative monthly precipitation means for at least the three months prior to the hydrologic determination investigation, based on a 30-year average computed at the end of each decade. Precipitation data shall come from National Oceanographic and Atmospheric Agency's National Climatic Data Center, National Resources Conservation Service's National Climatic Data Center, Natural Resources Conservation Service's National Water and Climate Center, or other well-established weather station.

(21) Obligate lotic aquatic organisms - Organisms that require flowing water for all or almost all of the aquatic phase of their life cycles.

(22) Parameter - A biological, chemical, radiological, bacteriological, or physical property of water that can be directly measured. Some criteria are expressed in terms of a single parameter; others, such as habitat, nutrients, and biological integrity are not directly measured, but are derived from measurements of parameters.

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(Rule 0400-40-03-.04, continued)

(23) Perched water - Water that accumulates above an aquitard that limits downward migration where there is an unsaturated interval below it, between the aquitard and the zone of saturation.

(24) Photic zone - The region of water through which light penetrates and where photosynthetic organisms live.

(25) Reference condition - A parameter-specific set of data from regional reference sites that establish the statistical range of values for that particular substance at least-impacted streams.

(26) Reference site - Least impacted waters within an ecoregion that have been monitored to establish a baseline to which alterations of other waters can be compared.

(27) Resource values - The physical, chemical, and biological properties of the water resource that help maintain classified uses. These properties may include, but are not limited to, the ability of the water resource to:

(a) Filter, settle, and/or eliminate pollutants;

(b) Prevent the entry of pollutants into downstream waters;

(c) Assist in flood prevention;

(d) Provide habitat for fish, aquatic life, and wildlife;

(e) Provide drinking water for wildlife and livestock;

(f) Provide and support recreational and navigational uses; and

(g) Provide both safe quality and adequate quantity of water for domestic water supply and other applicable classified uses.

(28) Response variable - A characteristic of water quality that can be measured and changes as a result of an alteration of habitat, water withdrawal, or discharge of pollutants, as distinguished from agents that cause changes in aquatic systems.

(29) Significant degradation - An appreciable permanent loss of resource values resulting from a habitat alteration in a waterbody with unavailable parameters for habitat, unless mitigation sufficient to ensure no overall net loss of resource values is provided.

(30) Stratification - The tendency in lakes and reservoirs for distinct layers of water to form as a result of vertical change in temperature and, therefore, in the density of water. During stratification, dissolved oxygen, nutrients, and other parameters of water chemistry do not mix well between layers, establishing chemical as well as thermal gradients.

(31) Stream - A surface water that is not a wet weather conveyance.

(32) Subecoregion - A smaller, more homogenous area that has been delineated within an ecoregion.

(33) Thermocline - The middle layer in a thermally stratified lake or reservoir. In this layer there is a rapid decrease in temperature with depth. Also called the metalimnion.

(34) Wadeable streams - Streams that can be sampled using a hand held, one meter square or smaller kick net without water and materials escaping over the top of the net.

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(Rule 0400-40-03-.04, continued)

(35) Watercourse - A man-made or natural hydrologic feature with a defined linear channel which discretely conveys flowing water, as opposed to sheet-flow.

(36) Wet weather conveyance - Man-made or natural watercourses, including natural watercourses that have been modified by channelization:

(a) That flow only in direct response to precipitation runoff in their immediate locality;

(b) Whose channels are at all times above the groundwater table;

(c) That are not suitable for drinking water supplies; and

(d) In which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

(37) Wet weather conveyance determination - The decision based on site specific information of whether a particular watercourse is a stream or a wet weather conveyance. It is synonymous with "stream determination" and "hydrologic determination."

(38) Zone of saturation - A subsurface zone below the groundwater table in which all of the interconnected voids and pore spaces are filled with water.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed January 6, 2015; effective April 6, 2015. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.05 INTERPRETATION OF CRITERIA.

(1) Interpretation of the above criteria shall conform to any rules and regulations or policies adopted by the Board of Water Quality, Oil and Gas.

(2) For measuring compliance with permit conditions, the effect of treated sewage or waste discharge on the receiving waters shall be considered beyond the mixing zone except as provided in this paragraph. Such mixing zones (See definition) shall be restricted in area and length; and shall not (a) prevent the free passage of fish or cause aquatic life mortality in the receiving waters; (b) contain materials in concentrations that exceed acute criteria beyond the zone immediately surrounding the outfall; (c) result in objectionable colors, odors, or other conditions; (d) produce undesirable aquatic life or result in dominance of a nuisance species; (e) endanger the public health or welfare; or (f) impair classified uses; (g) create a condition of chronic toxicity beyond the edge of the mixing zone; (h) adversely affect nursery and spawning areas; or (i) adversely affect species with special state or federal status. Mixing zones shall not apply to the discharge of bioaccumulative pollutants to waters of the state where the risk-based factors in Rule 0400-40-03-.03(4)(l) are exceeded for the pollutant group.

(3) Permits for the discharge of pollutants may establish a schedule of compliance when necessary to allow a reasonable opportunity to comply with these water quality standards. When the Division establishes a compliance schedule, it shall consider the technical and economic feasibility of waste treatment, recovery, or adjustment of the method of discharge. Any such schedule of compliance shall require compliance with an enforceable final effluent limitation as soon as possible and include a final compliance date. If compliance will take longer than one year, the schedule of compliance shall establish enforceable interim

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(Rule 0400-40-03-.05, continued)

requirements, establish dates for compliance with these requirements that are no longer than one year apart, and require reporting of interim compliance actions within 14 days of the applicable deadline. If the time necessary for completion of any requirement is more than one year and the requirement is not readily divisible into stages for completion, the permit shall require, at a minimum, specified dates for annual submission of progress reports on the status of interim requirements.

(4) Water quality criteria for fish and aquatic life and livestock watering and wildlife set forth shall generally be applied in permits on the basis of the following stream flows: unregulated streams - stream flows equal to or exceeding the seven-day minimum, 10-year recurrence interval; regulated streams - all flows in excess of the minimum critical flow occurring once in 10 years as determined by the Division. All other criteria shall be applied in permits on the basis of stream flows equal to or exceeding the 30-day minimum five year recurrence interval.

(5) In general, deviations from normal water conditions are undesirable, but the frequency, magnitude and duration of the deviations shall be considered in interpreting the above criteria in assessing use support. Excursions from water quality criteria of a magnitude, frequency, and/or duration such that a specific use classification is no longer supported by existing water quality is the condition of impairment. When interpreting pathogen data, samples collected during or immediately after significant rain events may be treated as outliers unless caused by point source dischargers. Such outlier data may be given less weight in assessment decisions than non-rain event sampling results.

(6) All discharges of sewage, industrial waste, and other waste shall receive the degree of treatment or effluent reduction necessary to comply with water quality standards, or state or federal laws and regulations pursuant thereto, and where appropriate will comply with the "Standards of Performance" as required by the Tennessee Water Quality Control Act, (T.C.A., §§ 69-3-101, et seq.).

(7) Where naturally formed conditions (e.g., geologic formations) or background water quality conditions are substantial impediments to attainment of the water quality standards, these natural or background conditions shall be taken into consideration in establishing any effluent limitations or restrictions on discharges to such waters. For purposes of water quality assessment, with the exception of pathogens, exceedances of water quality standards caused by natural conditions will not be considered the condition of pollution impairment. Examples of natural conditions include alterations caused by beaver activity, non-construction related rockslides of pyritic materials, and groundwater with naturally elevated metals or low dissolved oxygen levels.

(8) All chemical data reported under this rule shall be generated using "sufficiently sensitive" analytical methods approved under 40 C.F.R. part 136 (2018) or required under 40 C.F.R. chapter I, subchapter N or O (2018). An approved method is "sufficiently sensitive" when:

(a) The method minimum level (ML) is at or below the level of the applicable water quality criterion or the effluent limit established by the permit for the measured pollutant or pollutant parameter; or

(b) The method ML is above the applicable water quality criterion or the effluent limit established by the permit, but the amount of the pollutant or pollutant parameter actually measured is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter; or

(c) Demonstration is made showing that the method used has the lowest ML of the approved methods for the measured pollutant or pollutant parameter in the sample/matrix being analyzed. (Documentation supporting this demonstration is to be

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(Rule 0400-40-03-.05, continued)

submitted with reported data and shall include narrative justification for why the method chosen is believed to have the lowest ML of all approved methods identified in 40 CFR part 136 (2018). The Director shall determine whether the submitted information demonstrates sufficient method sensitivity.)

Note: When there is no analytical method that has been approved under 40 C.F.R. part 136 (2018) or required under 40 C.F.R. chapter I, subchapter N or O (2018), and a specific method is not otherwise required by the Director, the applicant may use any suitable method but shall provide a description of the method. When selecting a suitable method, factors such as a method's precision, accuracy, or resolution must be considered when assessing the performance of the method.

(9) Standard operating procedures for making stream and wet weather conveyance determinations (hydrologic determinations)

(a) General

1. Because a primary purpose of the Water Quality Control Act is to protect the waters of the state for the public, and since streams receive a higher level of protection than wet weather conveyances, anyone desiring to alter a watercourse who wishes to avoid unnecessary expense and delay, may request the department to process a permit application or issue an authorization under a general permit with the presumption that the watercourse is a stream. In that instance, a full hydrologic determination would not be performed under these rules. However, nothing shall preclude an applicant from subsequently seeking a wet weather conveyance determination.

2. The procedures detailed in this rule are intended to be used in situations where there is some question whether a watercourse is a stream or wet weather conveyance. In situations where it is obvious that a watercourse is a stream, such as named rivers or streams with watersheds larger than a square mile, or spring-fed streams with consistent flow greater than one cubic foot per second, it is not necessary to conduct a detailed hydrologic determination.

3. It is the purpose of this rule to set out the framework for making stream and wet weather conveyance determinations taking into consideration all relevant and necessary information on the biology, geology, geomorphology, precipitation, hydrology, and other scientifically based principles. Staff of the Department and certified hydrologic professionals not employed by the Department who are making a submission pursuant to T.C.A. § 69-3-108(r) shall follow these rules and the Guidance for Making Hydrologic Determinations (Guidance) which contains the instructions and examples for proper application of these rules to situations in the field that has been developed pursuant to T.C.A. § 69-3-107(25) in making these determinations.

4. The format for documenting these determinations is provided in the Hydrologic Determination Field Data Sheet (Data Sheet) in the Guidance. All available field characteristics necessary to make an accurate determination shall be evaluated, and all evidence utilized in making a determination shall be documented using the Data Sheet or as an addendum. Applicants may choose to submit additional hydrological or geotechnical data not included in the standard procedure in support of a hydrologic determination. Any additional relevant information submitted to the Department shall be considered by the Division in its determination.

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5. Any significant revision to the Data Sheet or Guidance shall be subject to a 30-day public comment period prior to adoption. The Department shall advertise its intent to modify the Data Sheet or Guidance by posting notice of proposed changes on the Department's internet web site and by sending to the permit mailing list. Significant modifications include the addition or deletion or substantive modification of either the primary or secondary indicators or a change in the scoring system. The Department shall consider the need for modifications to the Data Sheet and Guidance periodically and whenever a significant comment is submitted in regard to them.

6. To be classified as a wet weather conveyance, a watercourse must meet all four elements of the definition in T.C.A. § 69-3-103. Therefore, if it is determined that any one of the four elements does not apply to a watercourse, the watercourse is a stream.

7. Because natural variation and human activities can alter hydrologic conditions over time, hydrologic determination will only be considered valid for a maximum of five years or the term of a permit based on it.

8. Because there can be considerable variability within a given reach of a watercourse, wet weather conveyance determinations should not be made on a single point but must also investigate up and down channel and consider the watercourse's landscape context.

9. All of the indicators referred to in these rules and the Guidance are evidence relevant to the presence or absence of one or more of the four elements of the wet weather conveyance definition. The difference between the primary and secondary indicators is that each of the primary indicators is considered presumptive evidence alone regarding one or more of the four elements, and will allow for an immediate hydrologic determination to be made in most cases. Some of the primary indicators involve direct observations of the presence or absence of one or more of the elements. The primary indicators of wet weather conveyances are:

   (i) Hydrologic feature exists solely due to a process discharge;

   (ii) Defined bed and bank absent, watercourse dominated by upland vegetation/ grass;

   (iii) Watercourse dry anytime during February through April 15 under normal precipitation/ groundwater conditions; and

   (iv) Daily flow and precipitation records showing feature only flows in direct response to rainfall.

10. Primary indicators of streams are:

   (i) Presence of multiple populations of obligate lotic organisms with two months or longer aquatic phase;

   (ii) Presence of fish (except Gambusia);

   (iii) Presence of naturally occurring groundwater table connection;

   (iv) Flowing water in channel seven days or more since the last precipitation in the local watershed; and

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(v) Evidence watercourse has been used as a supply of drinking water.

11. When primary indicators cannot be observed or documented, then the investigator must evaluate the watercourse using secondary indicators. The secondary indicators are an aggregate set of observations that in total are used to evaluate the presence or absence of one or more of the elements of a wet weather conveyance. Secondary indicators are:

(i) Continuous bed and bank;

(ii) Sinuous channel;

(iii) In-channel structure, riffle-pool sequences;

(iv) Sorting of soil textures or other substrate;

(v) Active/relic floodplain;

(vi) Depositional bars or benches;

(vii) Braided channel;

(viii) Recent alluvial deposits;

(ix) Natural levees;

(x) Headcuts;

(xi) Grade controls;

(xii) Natural valley drainageway;

(xiii) At least second order channel on United States Geological Survey or Natural Resources Conservation Service map;

(xiv) Subsurface flow/discharge into channel;

(xv) Water in channel more than forty-eight hours since rain;

(xvi) Leaf litter in channel;

(xvii) Sediment on plants or on debris;

(xviii) Organic debris lines or piles (wrack lines);

(xix) Hydric soils in channel bed or sides;

(xx) Fibrous roots in channel;

(xxi) Rooted plants in channel;

(xxii) Crayfish in channel (exclude in floodplain);

(xxiii) Bivalves/mussels;

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(xxiv) Amphibians;

(xxv) Macrobenthos;

(xxvi) Filamentous algae, periphyton;

(xxvii) Iron-oxidizing bacteria/fungus; and

(xxviii) Wetland plants in channel.

12. The secondary indicators shall be scored in accordance with the instructions in the Guidance. Hydrologic determinations will often be made on the basis of secondary indicators because none of the primary indicators are present at the time of investigation. Any of the primary indicators contained in these rules and the Guidance may be considered conclusive after consideration of appropriate background information including recent weather and precipitation, in the absence of any directly contradictory evidence. However, since hydrologic determinations are required to be made at all times of year, secondary indicators of hydrologic status will be used, in accordance with the Guidance and these rules, as determinant evidence in the absence of primary indicators. The secondary indicators used in the Guidance shall be based on sound scientific principles.

13. Watercourses in which flow is solely a result of process or wastewater discharge or other non-natural sources shall not be regulated as streams even though they may exhibit characteristics of a stream rather than a wet weather conveyance.

(b) The specific procedures outlined herein are intended to consider each of the four elements necessary for a watercourse to be classified as a wet weather conveyance.

1. Because the duration of the flow in a watercourse is the central inquiry of hydrologic determinations, all of the primary and secondary indicators are relevant to evaluating it. Although other factors may also be relevant, at a minimum the following procedures shall be used to determine if a watercourse flows only in direct response to precipitation runoff in its immediate vicinity.

(i) Prior to conducting a field evaluation, the investigator should review recent precipitation patterns for the local area, the longer-term seasonal precipitation trends, and any other available information such as historic land use, regional geology and soil types, or previous hydrologic determinations near the site to be investigated.

(ii) The investigator must decide if the determination is being conducted under "normal weather conditions." The procedure for determining if weather conditions are normal, or either wetter or drier than normal, is contained in the Guidance. If conditions are either wetter or drier than normal the investigator must take this into consideration in making a hydrologic determination.

(iii) The vast majority of wet weather conveyances will generally cease to flow within 48 hours of almost all except some of the largest rain events. This is especially true in urbanized, impervious areas, or other areas with low infiltration rates, such as mowed lawns. The investigator shall document the presence or absence of flow within the watercourse. If in-stream surface flow is observed within the evaluated reach, and it has been at least seven days since the last rainfall event in the upstream watershed,

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the flow will not be considered a direct storm response, and the investigator shall conclude that the feature is a stream. The investigator shall document the source of the precipitation data. The source used shall be as close as feasible to the watercourse.

(iv) When subsurface water discharges such as seeps, interstitial flow, perched water, or interflow are observed and used as indicators of hydrology, investigators shall consider the influence of recent precipitation events and localized soil and geologic conditions on these features to determine if these features provide adequate hydrology such that the watercourse flows more than in direct response to precipitation. For example, since some such features have more flow when there has been significant recent precipitation, if they are flowing when there has not been much recent precipitation, it is more likely that they flow for sustained periods. In some instances, there may be observable outcroppings of a confining layer such as shale or clay that causes interstitial flow to discharge to a watercourse. In this situation, the capacity of up-gradient conditions such as the permeability and volume of the soils above the confining layer to sustain extended periods of surface flow should be considered. These types of sustained discharges should not be considered a direct response to rainfall. In other instances, such as in areas with a highly karst geology, observed seeps into a watercourse may be not be able to sustain extended periods of flow, and may be considered a more direct response to rainfall.

(v) Field investigations for hydrologic determinations should not be conducted if a one-inch precipitation event in 24 hours has occurred in the area of investigation within the previous 48 hours.

2. The following procedures are to determine if the channel is above the groundwater table at all times. Under the definition of wet weather conveyance in T.C.A. § 69-3-103, if there are any times that the channel is not above the groundwater table, it is a stream.

(i) Since larger streams and rivers are frequently in contact with the groundwater table, the investigator shall review topographic maps to determine if the watercourse is within the floodplain of, or within 20 feet in elevation of a larger stream or river known to carry perennial flow. Flow in such a watercourse should not be considered conclusive evidence of a groundwater table connection, but is contributing evidence to be considered in the determination. Therefore further investigation into additional factors including those listed below is necessary to determine that the watercourse in question is in contact with the groundwater table.

(ii) Since the presence of wetlands often indicates a shallow depth to the groundwater table, the investigator shall search for the presence of wetlands in the immediate vicinity of the watercourse both on topographic maps and in the field. The presence of wetlands in the vicinity of the watercourse being examined should not be considered conclusive evidence of a groundwater table connection, but is contributing evidence to be considered in the determination. Therefore further investigation into other factors including those listed below is necessary to determine that the watercourse in question is in contact with the groundwater table.

(iii) The investigator shall review United States Department of Agriculture soil surveys. Their soil descriptions often contain information on depth to water

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table. For watercourses whose channels are at a depth that indicates contact with the groundwater table for the soil type in which they are formed, the investigator can conclude that the watercourse is in contact with the water table, absent contradicting field information.

(iv) The investigator shall review site geological characteristics affecting the elevation of the groundwater table with respect to the elevation of the channel, including the presence of karst bedrock features, erodibility of watershed soils, thickness of regolith and channel alluvium, depth to bedrock or laterally persistent silt or clay horizons, land-use disturbances, and other watershed conditions controlling or contributing to the presence or absence of channel base flow.

(v) If data are available from water wells within one mile of and in similar landscape position to a watercourse under investigation, and if the surface elevation of standing water in the well is at or above the elevation of the bottom of the channel of the watercourse, then the investigator can conclude that the watercourse is in contact with the groundwater table.

(vi) The observed emergence of water from the ground is not necessarily water from the groundwater table and should not be considered as conclusive for the purpose of this element. Therefore further investigation into factors including those listed above is necessary to determine the source of the emergent water.

3. The following procedures are to determine if a watercourse is suitable for drinking water supplies. The investigator should note spring boxes, water pipes to carry water from the watercourse to a residence, or other observable evidence the watercourse is being used as a household water supply upstream of or within the segment being evaluated. When these features are noted, the investigator can conclude that the watercourse is a stream absent contradicting information.

4. The following procedures are to determine if a watercourse, under normal weather conditions, due to naturally occurring ephemeral or low flow does not have sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

(i) The presence of the requisite aquatic life is a primary indicator that the watercourse supports that aquatic life. In order to find that the requisite aquatic life is present, the investigator must document more than one individual of at least two qualifying taxa in the evaluated reach under normal weather conditions. Unhatched eggs or any other stage of a taxon's life cycle that could be found in a wet weather conveyance or lentic habitat (such as a deceased winged adult) should not be considered as a primary indicator that a watercourse is a stream. The specific taxa found should be noted on the Data Sheet. Representative individuals of the taxa used to make this determination should be collected for confirmation of identification. All aquatic life observed should be noted, even if some do not qualify as primary indicators. These organisms may also be relevant as secondary field indicators.

(ii) Indigenous members of taxa within the benthic macroinvertebrate groups listed below are obligate lotic aquatic organisms and thus are primary indicators that a watercourse is a stream when two or more specimens of two or more taxa are documented under normal weather conditions.

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(I) Gastropoda: Pleuroceridae, Viviparidae, Valvatidae

(II) Bivalvia: Unionidae

(III) Coleoptera: Dryopidae, Elmidae, Psephenidae, Ptilodactylidae, Staphylinidae

(IV) Diptera: Athericidae, Blephariceridae, Chironomidae (except: Chironomini or red midges), Empididae, Ptychopteridae, Tanyderidae, and some Tipulidae (Antocha, Rhabdomastix, Dicranota, Hexatoma, Limnophila, Tipula)

(V) Ephemeroptera: all members, except: Siphlonuridae, and some Ephemeridae (Hexagenia)

(VI) Megaloptera: all members, except: Chauliodes

(VII) Odonata: Aeshnidae, Calopterygidae, Cordulegastridae, Gomphidae, some Coenagrionidae (Argia, Chromagrion, Amphiagrion), some Libellulidae (Perithemis), and some Corduliidae (Epitheca, Helocordulia, Neurocordulia)

(VIII) Plecoptera: all members

(IX) Trichoptera: all members, except: Molannidae, some Leptoceridae (Nectopsyche, Triaenodes), and some Limnephilidae (Ironoquia, Limnephilus, Hesperophylax)

(X) Oligochaetes: Branchiobdellidae, Lumbriculidae, Sparganophilidae, some Tubificidae (subfamily Naidinae, Ilyodrilus, Rhyacodrilus, Varichaetadrilus), and some Lumbricidae (Eiseniella tetraedra only).

(iii) The presence of any indigenous fish species, other than the Mosquitofish (Gambusia), documented under normal weather conditions, is also a primary indicator that the watercourse is a stream, and constitutes support of the requisite aquatic life.

(iv) There are conditions in which a stream may be dry for a period of weeks or even months, but supports multiple populations of lotic aquatic organisms or fish at other times during a year. In such conditions, an investigator could appropriately determine that there is sufficient water on an annual basis to support such populations even though there were not any present on a particular date. In addition, man-made pollution or other water quality issues may preclude support of these organisms. Therefore, the absence of lotic aquatic organisms at the time of the investigation cannot be the sole basis for a determination that a watercourse meets the fourth element of the definition. When multiple populations of lotic aquatic organisms or fish cannot be documented to occur in a watercourse, then the investigator must consider the hydrologic and biologic factors referred to as secondary indicators in these rules and the Guidance to make a hydrologic determination.

(v) Under normal weather conditions, if the investigator documents the absence of water due to naturally occurring conditions in a watercourse between February 1 and April 15, then the investigator can conclude the

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watercourse is unable to support fish or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months and is therefore a wet weather conveyance.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.06 ANTIDEGRADATION STATEMENT.

(1) General

(a) It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act. Existing uses are those actually attained in the waterbody on or after November 28, 1975. Where the quality of Tennessee waters is better than the level necessary to support propagation of fish, shellfish, and wildlife, or recreation in and on the water, that quality will be maintained and protected unless the Department finds, after intergovernmental coordination and public participation, that lowering water quality is necessary to accommodate important economic or social development in the area in which the waters are located as established herein. In such waters, there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources in that stream segment and sources or activities exempted from permit requirements under the Water Quality Control Act in that stream segment should utilize all cost-effective and reasonable best management practices to prevent degradation of waters. Where new or increased temperature alterations are proposed, a successful demonstration as determined by the Department under Section 316(a) of the Clean Water Act, 33 U.S.C. § 1326, shall be considered to be in compliance with this rule.

(b) To apply this antidegradation statement to permits for new or increased discharges, new or increased water withdrawals, or new or expanded habitat alterations, the Department shall first determine if the application is complete. Absent extraordinary circumstances, the Department shall notify the applicant that an application is complete or of any deficiencies within 30 days of receipt of the application. When the Department determines the application is complete, it shall provide notice to the applicant in writing.

1. A complete application will include all of the information requested on the forms provided by the Department. For activities other than new domestic wastewater discharges, a complete application will include the applicant's basis for concluding that the proposed activity:

(i) Will not cause measurable degradation (for withdrawals or discharges);

(ii) Will only cause de minimis degradation;

(iii) Will cause no significant degradation (for habitat alterations); or

(iv) Will cause more than de minimis degradation.

2. If the proposed activity will cause degradation of any available parameter above a de minimis level, or if it is a new discharge of domestic wastewater, a complete application will:

(i) Analyze a range of potentially practicable alternatives to prevent or lessen the degradation associated with the proposed activity;

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(ii) Demonstrate that the proposed degradation is necessary to accommodate important social or economic development in the area in which the waters are located; and

(iii) Demonstrate that the proposed degradation will maintain water quality sufficient to protect existing uses in the receiving waters.

3. An alternative to degradation is practicable if it is technologically possible, able to be put into practice, and economically viable. Potentially practicable alternatives include, but are not limited to, the following:

(i) Alternatives for discharges include connection to an existing collection system, land application, water reuse, water recycling, or other treatment alternatives to prevent or reduce the level of degradation. For small domestic discharges, connection to an existing system or land application will be considered preferable.

(ii) For water withdrawals, alternatives include water conservation, water reuse or recycling, off-stream impoundments, water harvesting during high flow conditions, regionalization, withdrawing water from a larger waterbody, use of groundwater, connection to another water supply with available capacity, and pricing structures that encourage a reduction in consumption.

(iii) For activities that cause habitat alterations, alternatives that avoid or minimize degradation should be explored and explained by the applicant. These avoidance or minimization activities could include maintaining or enhancing buffer zones, bridging a stream rather than culverting it, altering the footprint of a project instead of relocating a stream, or using a culvert without a bottom, instead of one that is fully concreted.

4. To demonstrate that greater than de minimis degradation is necessary to accommodate important social or economic development in the area in which the waters are located, the applicant shall provide a written justification to include, as applicable, a description of the project, the number of jobs anticipated to be created (including salaries/benefits, duration, and type), tax revenue to be generated, impact of the proposed degradation to development potential in the area, other social/cultural impacts, and any other justification. Applicants shall submit alternative or additional information regarding economic or social necessity as directed by the Department. The justification should demonstrate an overall benefit to the local community, not just a benefit to the applicant.

(c) The Department shall propose a permit action by notifying the applicant in writing and by notifying the public and the state and federal agencies with jurisdiction over fish, wildlife, shellfish, plant and wildlife resources, parks, and historic preservation by posting a notice on the Department's web site and sending email to persons who have asked to be notified of permit actions. In the case of new or expanded habitat alterations or new or increased water withdrawals this public notice shall be a part of the public notice under paragraph (4) of Rule 0400-40-07-.04 and shall contain the information required by, and be governed by the procedures of, that paragraph of the rules. For a new or increased discharge, the public notice shall summarize the information given by the applicant pursuant to subparagraph (b) of this paragraph and shall contain the information required by, and be governed by the procedures of, Rule 0400-40-05-.06. Public notices should also include the Department's preliminary determination of the level of degradation and the antidegradation category of the affected waters.

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(d) After completion of the public notice and comment period, the Department shall make a final determination of the level of degradation that would occur as a result of the proposed activity. Not all activities cause an addition of pollutants, diminish flows, or impact habitat.

1. In the case of discharges, if the Department determines that no measurable degradation will occur as a result of the activity, no further review under this rule is required regardless of the antidegradation classification of the receiving stream, unless the activity:

(i) Is a new domestic wastewater discharge;

(ii) Introduces a parameter identified as bioaccumulative;

(iii) Introduces a parameter with a criterion below the current method detection level for that substance; or

(iv) Is proposed to occur in an ONRW.

2. In the case of water withdrawals requiring permits from waters other than ONRWs, if the Department determines that no measurable degradation will occur, no further review under this rule is required regardless of the antidegradation classification of the receiving stream.

3. In the case of habitat alterations, if the Department determines that no more than de minimis degradation will occur, no further review under the rule is required regardless of the antidegradation classification of the receiving stream.

(e) If the steps described in subparagraphs (b), (c) and (d) of this paragraph do not conclude the review under this rule, the Department shall make a final determination whether the waters impacted by the activity are ones with available parameters, unavailable parameters, Exceptional Tennessee Waters, or ONRWs, or if they are in more than one category. For example, a stream segment may be unavailable for one parameter and be available for others and Exceptional Tennessee Waters may also be unavailable for certain parameters. If an activity is proposed in a waterbody that is in more than one category, it must meet all of the applicable requirements.

(2) Waters with unavailable parameters

Unavailable parameters exist where water quality is at, or fails to meet, the levels specified in water quality criteria in Rule 0400-40-03-.03, even if caused by natural conditions. In the case of a criterion that is a single response variable or is derived from measurement of multiple response variables, the unavailable parameters shall be the agents causing water quality to be at or failing to meet the levels specified in criteria. For example, if the biological integrity criterion (derived from multiple response variables) is violated, the unavailable parameters shall be the pollutants causing the violation, not the response variables.

(a) In waters with unavailable parameters, new or increased discharges that would cause measurable degradation of the parameter that is unavailable shall not be authorized. Nor will discharges be authorized in such waters if they cause additional loadings of unavailable parameters that are bioaccumulative or that have criteria below current method detection levels.

(b) In waters with unavailable parameters, no new or increased water withdrawals that will cause additional measurable degradation of the unavailable parameter shall be authorized.

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(c) Where one or more of the parameters comprising the habitat criterion are unavailable, habitat alterations that cause significant degradation shall not be authorized.

(3) Waters with available parameters

Available parameters exist where water quality is better than the levels specified in water quality criteria in Rule 0400-40-03-.03.

(a) In waters with available parameters, new or increased discharges that would cause degradation above the level of de minimis for any available parameter for any criterion, or a new domestic wastewater discharge, will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity and the degradation is necessary to accommodate important economic or social development in the area and the degradation will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation.

(b) In waters with available parameters, new or increased water withdrawals that would cause degradation above the level of de minimis will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity and the degradation is necessary to accommodate important economic or social development in the area and will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation.

(c) In waters with available parameters, an activity that would cause degradation of habitat above the level of de minimis will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity and the degradation is necessary to accommodate important economic or social development in the area and will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation.

(4) Exceptional Tennessee Waters

(a) Exceptional Tennessee Waters are surface waters other than wet weather conveyances that are in any one of the following categories:

1. Waters within state or national parks, wildlife refuges, forests, wilderness areas, or natural areas;

2. State scenic rivers or federal Wild and Scenic Rivers;

3. Federally-designated critical habitat or other waters with documented non-experimental populations of State or federally-listed threatened or endangered aquatic or semi-aquatic plants or animals;

4. Waters within areas designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values;

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5. Waters with naturally reproducing trout;

6. Waters with exceptional biological diversity as evidenced by a score of 40 or 42 on the Tennessee Macroinvertebrate Index (or a score of 28 or 30 in subecoregion 73a) using protocols found in the Department's 2017 Quality System Standard Operating Procedure for Macroinvertebrate Stream Surveys, provided that the sample is considered representative of overall stream conditions; or

7. Other waters with outstanding ecological, or recreational value as determined by the Department. When application of this provision is a result of a request for a permit, such preliminary determination is to be made within 30 days of receipt of a complete permit application.

(b) The Department will maintain a list of waterbodies that have been reviewed and are known to have one or more of the above characteristics on its website and will make paper copies of that list available upon request.

(c) Authorization of Activities in Exceptional Tennessee Waters

1. In waters identified as Exceptional Tennessee Waters new or increased discharges that would cause degradation of any available parameter above the level of de minimis and new domestic wastewater discharges will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity, the degradation is necessary to accommodate important economic or social development in the area, and the discharge will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation. At the time of permit renewal, previously authorized discharges, including upstream discharges, which presently degrade Exceptional Tennessee Waters above a de minimis level, will be subject to a review of updated analysis of alternatives information provided by the applicant, but not to a determination of economic/social necessity. Public participation for these existing discharges will be provided in conjunction with permitting activities.

2. In waters identified as Exceptional Tennessee Waters, new or increased water withdrawals that would cause degradation of any available parameter above the level of de minimis will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity and the degradation is necessary to accommodate important economic or social development in the area and will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation.

3. In waters identified as Exceptional Tennessee Waters, an activity that would cause degradation of habitat above the level of de minimis will only be authorized if the applicant has demonstrated to the Department that there are no practicable alternatives to prevent or lessen degradation associated with the proposed activity, and the degradation is necessary to accommodate important economic or social development in the area and will not violate the water quality criteria for uses existing in the receiving waters. If one or more practicable alternatives is

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identified, the Department shall only find that a lowering is necessary if those alternative(s) are selected for implementation.

(d) Determination of Economic/Social Necessity - The Department's determination that degradation above a de minimis level of Exceptional Tennessee Waters resulting from a proposed new or increased discharge, new or expanded habitat alteration, or new or increased water withdrawal is, or is not, necessary to accommodate important economic or social development in the area shall be subject to review by the Board of Water Quality, Oil and Gas under the following procedures.

1. If the Department determines after completion of the public notice and comment procedures established in subparagraph (1)(c) of this rule that an activity that would cause degradation above a de minimis level of Exceptional Tennessee Waters is necessary to accommodate important economic or social development in the area, it shall give notice to the applicant, the public, and federal and State agencies with jurisdiction over fish, wildlife, shellfish, plant and wildlife resources, parks, and advisory councils for historic preservation. This notice shall be given by being posted on the Department's website and by sending email to persons who have asked to be notified of permit actions. Within 30 days after the date of the notification, any affected intergovernmental coordination agency or affected third person may petition the Board for a declaratory order under T.C.A. § 4-5-223, and the Board shall convene a contested case. After the Board has convened a contested case in response to a declaratory order petition under this part, the Department shall within five business days thereafter transmit the petition to the Administrative Procedures Division of the Secretary of State so the contested case may be docketed and an administrative law judge may be assigned to the case. If a declaratory order petition is timely filed, the Department shall not proceed further in processing the permit application until the petition has been resolved before the Board. In the contested case, the petitioner shall have the burden of proof, and the Department's determination shall carry no presumption of correctness before the Board. The applicant is a necessary party to the declaratory order contested case, and if the applicant does not participate in the contested case, the Board shall render a decision that degradation is not necessary to accommodate important economic or social development in the area. If no intergovernmental coordination agency or third person petitions for a declaratory order within 30 days of the notification date, or if one is filed after the 30 days expires, then the Department shall proceed with processing the permit application.

2. A declaratory order contested case conducted under this subparagraph shall be subject to the following procedures. Mediation may occur if all the parties agree. Any proposed agreed order resulting from mediation shall be subject to approval by the Board. In order to provide for an expedited proceeding, the contested case is subject to the following time limitations. The time periods specified in this part shall commence on the day after the contested case has been docketed by the Administrative Procedures Division of the Secretary of State and an administrative law judge has been assigned to the case. Any alteration of the time periods set out in this part shall be granted only upon agreement of all the parties, or when there have been unforeseen developments that would cause substantial prejudice to a party, or when the parties have agreed to mediation. Within 20 days, the parties shall confer to try and develop a proposed agreed scheduling order. If the parties are unable to agree, then each party shall submit a proposed scheduling order, and the administrative law judge, after a hearing, shall enter a scheduling order. All discovery shall be completed no later than 20 days prior to the date the hearing before the Board is to begin. Within 120 days, the hearing before the Board shall begin, but the Board on its own initiative may

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(Rule 0400-40-03-.06, continued)

exceed 120 days to complete the hearing and render its final decision. In order for degradation of Exceptional Tennessee Waters to proceed pursuant to these rules, the Board must make a finding approving degradation by a majority vote of the members of the Board present and voting.

3. If the Department determines that degradation is not necessary to accommodate important economic or social development in the area, it will notify the applicant, the federal and state agencies with jurisdiction over fish, wildlife, shellfish, plant and wildlife resources, parks, and advisory councils for historic preservation, and third persons who have asked to be notified of permit actions. The Department also will issue a tentative decision to deny the permit because degradation is not necessary. In accordance with paragraph (4) of this rule, the Department will provide the public with notice of and an opportunity to comment on its tentative denial decision. If no public hearing is requested within the 30 day public comment period, and if the Department does not alter its tentative decision to deny, the Department shall notify the applicant of its final decision to deny the permit because degradation is not necessary. Within 30 days after receiving notice of the final decision to deny the permit, the applicant may seek review of the decision that the degradation is not necessary to accommodate important economic or social development in the area in a contested case before the Board in accordance with T.C.A. § 69-3-105(i). Within five business days after the Department receives an applicant's written request for a contested case hearing before the Board, the Department shall transmit the written request to the Administrative Procedures Division of the Secretary of State so the contested case may be docketed and an administrative law judge may be assigned to the case. In the contested case, the applicant shall have the burden of proof, and the Department's determination shall carry no presumption of correctness before the Board. The federal and state intergovernmental coordination agencies, and third persons who requested notification of the Department's degradation determination will be notified by the Department of the applicant's permit appeal. The intergovernmental coordination agencies and third persons may seek to intervene in the contested case in accordance with T.C.A. § 4-5-310.

(5) Outstanding National Resource Waters

(a) The following streams or portions of streams are designated as ONRW:

	WATERBODY	PORTION DESIGNATED AS ONRW
1.	Little River	Portion within Great Smoky Mountains National Park.
2.	Abrams Creek	Portion within Great Smoky Mountains National Park.
3.	West Prong Little Pigeon River	Portion within Great Smoky Mountains National Park upstream of Gatlinburg
4.	Little Pigeon River	From the headwaters within Great Smoky Mountains National Park downstream to the confluence of Mill Branch.
5.	Big South Fork Cumberland River	Portion within Big South Fork National River and Recreation Area.
6.	Reelfoot Lake	Tennessee portion of the lake and its associated wetlands.

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(Rule 0400-40-03-.06, continued)

7. The portion of the Obed River that is designated as a federal wild and scenic river as of June 22, 1999, is designated as ONRW, provided however, that if the current search for a regional water supply by the Cumberland Plateau Regional Water Authority results in a determination that it is necessary to utilize the Obed River as its source of drinking water, for that purpose the Obed shall be designated as an Exceptional Tennessee Water and any permit issued for that project, whether state, federal, or otherwise, shall be considered under the requirements for Exceptional Tennessee Waters.

(b) The Department may recommend to the Board of Water Quality, Oil and Gas that certain waterbodies be designated as ONRWs. These shall be high quality waters which constitute an outstanding national resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. Designation of ONRWs must be made by the Board of Water Quality, Oil and Gas and will be accomplished in accordance with T.C.A. § 69-3-105(a)(1) of the Tennessee Water Quality Control Act and through the appropriate rulemaking process.

1. In surface waters designated by the Board of Water Quality, Oil and Gas as ONRWs, no new discharges, expansions of existing discharges, water withdrawals or mixing zones will be permitted unless such activity will not result in either measurable degradation or discernible effect. At the time of permit renewal, previously authorized discharges, including upstream discharges and withdrawals, which presently degrade an ONRW, will be subject to an analysis of alternatives. Public participation for these existing discharges will be provided in conjunction with permitting activities.

2. In waters designated by the Board of Water Quality, Oil and Gas as ONRWs, no new or expanded habitat alteration that would cause degradation of habitat above the level of de minimis or degrade water chemistry for more than a short duration will be authorized.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03. Amendments filed June 13, 2019; effective September 11, 2019.*

0400-40-03-.07 GROUND WATER CLASSIFICATION.

(1) Purpose and Intent

(a) It is one of the primary goals of the Tennessee Water Quality Control Act, T.C.A. §§ 69-3-101 et seq. (the "Act") to protect our valuable ground water resource. This rule classifies ground water across the state based on the factors stated in T.C.A. § 69-3-105(a)(2) of the Act and establishes ground water quality criteria. The quality of ground water varies in Tennessee. Some ground water is sufficient to be used by our citizens directly as a drinking water supply with limited or no treatment. Other ground water would require more extensive treatment before it could be used as a water supply. Further, some ground water may be of such value as to warrant special protection. The board recognizes that some water below the surface of the ground may be present in a zone of aeration between ground surface and the water table. The zone of aeration is where treatment from household septic systems occurs and water in the zone of aeration is not classified as ground water in these regulations. Perched water above the zone of saturation may, in some areas, be used as a water supply or may migrate to either ground water or surface water and is included in these regulations to protect for its direct use or impact on ground water or surface water. Additionally, some ground water has levels of naturally occurring constituents that make the resource unusable as a drinking water supply.

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(Rule 0400-40-03-.07, continued)

(b) The board recognizes these rules apply to both permitting activities and response actions that involve water beneath the surface of the ground. The permitting of underground injection is governed by Chapter 0400-45-06.

(c) These rules provide appropriate flexibility in the regulatory process to protect our ground water resource and to allow the productive use of land. Reuse of brownfield areas is encouraged and reduces the use of greenfield areas.

(d) The board recognizes that several divisions within the department have a role in protecting ground water resources. It is not the intent of these rules to change the responsibilities of those programs. It is, however, the intent of these rules to provide a basis for decisions involving ground water that may be applied by all divisions of the department. The board does not intend these rules to affect in any way the ability of the State to seek natural resource damages from responsible parties when ground water has been contaminated by human activity.

(e) Ground water that enters a stream or other water classified as surface water becomes surface water and is subject to respective criteria applicable to that water. The board expects that the department will use prudent judgment where ground water mixes with water on the surface of the ground.

(2) Definitions

(a) "Area of Control" means a volume designated by the commissioner underlying or surrounding a site, including the zone of aeration and the zone of saturation, containing water, some of which the commissioner has determined not to meet applicable criteria.

(b) "Ground Water" means water beneath the surface of the ground within the zone of saturation, whether or not flowing through known and definite channels.

(c) "Perched water" means water that accumulates above an aquitard that limits downward migration where there is an unsaturated interval below it, between the aquitard and the zone of saturation.

(d) "Point of Classification Change" means the boundary of the volume within which ground water is classified as Site Specific Impaired as established under Rule 0400-40-03-.09.

(e) "Response action" means a clean up, remedial action, remedy, remedial investigation or other action taken by the department to address the presence of contaminants at levels that have been determined by the Department to require an appropriate response.

(f) "Zone of Aeration" means a subsurface zone extending from the water table to the surface of the land.

(g) "Zone of Saturation" means a subsurface zone below the water table in which all of the interconnected voids and pore spaces are filled with water.

(3) Water in the Zone of Aeration

Water in the zone of aeration is not defined as ground water in this rule, but it may occur as perched water. This perched water may be above ground water of any of the classifications used in this rule. Perched water is protected under this rule in accordance with its use as follows:

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(Rule 0400-40-03-.07, continued)

(a) Perched water that is used for drinking water or reasonably anticipated to be used as a drinking water supply shall meet the criteria listed for General Use in paragraph (2) of Rule 0400-40-03-.08. Other perched water shall not contain constituents, other than of natural origin, that cause or are reasonably likely to cause a violation of criteria of underlying ground water or surface water where the perched water enters those waters.

(b) Except for naturally occurring levels, perched water shall contain no other constituents at levels and conditions that pose an unreasonable risk to public health or the environment.

(c) If perched water, such as in a cave system, is habitat for fish and aquatic life, it shall contain no constituents except for naturally occurring substances at levels and concentrations that violate the criteria of paragraph (3) of Rule 0400-40-03-.03 for fish and aquatic life.

(4) Water below the surface of the ground is classified as follows:

(a) Special Source Waters

This is ground water or perched water with exceptional quality or quantity, which may serve as a valuable source for water supply or which is ecologically significant.

When the board finds water to be Special Source Water, then through the rulemaking process, the board will amend these rules to include the specific location and the boundaries of ground water or perched water designated as Special Source Water. To initiate this process, a petition shall address the factors listed below for board consideration. Any cost involved in making the petition shall be borne by the petitioner. In making this decision, the board may consider the following factors and relevant public input:

1. The vulnerability of the water in the proposed area to contamination due to hydrogeologic characteristics;

2. The number of persons or the proportion of the population using the water as a drinking water supply;

3. Existing water quality in the proposed Special Source Water area;

4. An evaluation of the ecological and environmental impact should the quality of the Special Source Water be compromised; and

5. Other pertinent information as deemed necessary by the petitioner, department, or board. Because such action is a rulemaking procedure, public input may be made as provided in the Uniform Administrative Procedures Act, T.C.A. §§ 4-5-201 et seq., but not as a contested case under T.C.A. §§ 4-5-301 et seq.

(b) General Use Ground Water

Except for ground water in areas that have been designated as Special Source Water, Site Specific Impaired Ground Water, or meet the definition of Unusable Ground Water, all ground water is designated General Use Ground Water.

(c) Site Specific Impaired Ground Water

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(Rule 0400-40-03-.07, continued)

This is ground water that has been contaminated by human activity and the board finds that either it is not technologically feasible to remediate the ground water to the criteria required by other classifications or it is not reasonable to remediate to that criteria based on information provided in accordance with Rule 0400-40-03-.09. Ground water shall be classified as Site Specific Impaired upon approval of a petition to the Board of Water Quality, Oil and Gas and completion of the rulemaking process to amend these rules to identify the reclassified ground water. When ground water is reclassified to Site Specific Impaired the areal extent of the Site Specific Impaired Ground Water shall be delineated. The boundaries of the Site Specific Impaired Ground Water cannot extend beyond the perimeter and depth investigated with an appropriate safety factor as determined under Rule 0400-40-03-.09. Figures which clearly depict the horizontal and vertical boundaries of the Site Specific Impaired Ground Water must be submitted to the department in the plans/reports required by Rule 0400-40-03-.09.

(d) Unusable Ground Water

Ground water in the following areas are classified as Unusable Ground Water:

1. A "High Dissolved Solids Zone" is an area in which ground water has naturally occurring total dissolved solids of more than 10,000 ppm.

2. A "Historical Injection Zone" is an area in which the ground water and the injection zone designated to receive fluids and other substances from deep well injection initiated prior to September 1985 and operated under compliance with the Department at the time of injection is no longer subject to injection. The certification as a historical injection zone subclass of Unusable Ground Water does not provide authorization for future injection activities and shall not be construed as Class I zone designation under Chapter 0400-45-06, Underground Injection Control. The zone may be subsequently considered for Class I zone designation under that Chapter provided it meets the criteria based on naturally occurring conditions and not from changes as a result of the previously injected fluids.

3. A "Class I Injection Zone" is an area in which ground water has been demonstrated by a permit applicant as a part of a Class I operation under Chapter 0400-45-06, Underground Injection Control, to be suitable for Class I injection.

4. A "Class II or III Injection Zone" is an area in which ground water is mineral, hydrocarbon or geothermal energy producing, or has been demonstrated by a permit applicant as a part of a permit application for a Class II or III operation under Chapter 0400-45-06 Underground Injection Control to contain minerals or hydrocarbons that, considering their quality and location, are expected to be commercially producible. The designation as Class II or III injection zone subclass of Unusable Ground Water shall not be construed as a Class I zone designation under Chapter 0400-45-06, Underground Injection Control.

5. An "Acid Production Zone from Mining Activities" is an area in which ground water occurs within an excavated area where reaction with naturally occurring minerals generates acid rock drainage or acid mine drainage. An excavated area may be a surface or underground mined area as well as a subsidence area whether or not the mined area is backfilled. Ground water beyond the excavated area is classified as described elsewhere in this rule.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

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0400-40-03-.08 CRITERIA.

The water quality criteria for the different classes are as follows:

(1) Special Source Water

The board will consider the special protection needs of any water identified as Special Source Water and promulgate criteria at the time of designation.

(2) General Use Ground Water

Except for naturally occurring levels, General Use Ground Water:

(a) Shall not contain constituents that exceed those levels specified in subparagraphs (1)(j) and (k) of Rule 0400-40-03-.03; and

(b) Shall contain no other constituents at levels and conditions which pose an unreasonable risk to the public health or the environment.

(3) Site Specific Impaired Ground Water

Except for naturally occurring levels, Site Specific Impaired Ground Water:

(a) Shall contain no substances, whether alone or in combination with other substances , that are toxic, carcinogenic, mutagenic or teratogenic, other than those of natural origin, at levels and conditions which pose an unreasonable risk to public health or the environment;

(b) Shall contain no other constituents at levels and conditions which pose an unreasonable risk to the public health or the environment;

(c) Shall contain no constituents at levels that will prevent ground waters beyond the point of classification change from meeting the classification and criteria for those waters; and

(d) Other criteria established by the board as appropriate to the site.

(4) Unusable Ground Water

Except for naturally occurring levels, Unusable Ground Water:

(a) Shall contain no substances, whether alone or in combination with other substances, that are toxic, carcinogenic, mutagenic or teratogenic, other than those of natural origin, at levels and conditions which pose an unreasonable risk to the public health;

(b) Shall contain no other constituents at levels and conditions which pose an unreasonable risk to the public health;

(c) Shall not discharge to surface water causing a violation of surface water quality criteria or biological integrity; and

(d) Naturally occurring levels as used in subparagraph (a) of this paragraph shall include the natural minerals, mining wastes, and the reaction products of oxidation and reduction associated with these materials in Unusable Ground Water in an Acid Production Zone from Mining Activities. These substances shall not pose an

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(Rule 0400-40-03-.08, continued)

unreasonable public health or safety risk to the public. Physical barriers and institutional controls satisfy that requirement.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

0400-40-03-.09 SITE SPECIFIC IMPAIRED CLASSIFICATION PETITION PROCESS.

(1) Any person who encounters ground water that may meet the requirements for Site Specific Impaired, may petition the board to adopt a rule reclassifying that ground water as Site Specific Impaired, using the process set forth in this rule. Any costs involved in making the petition shall be borne by the petitioner. The petition shall include the following, unless it is determined by the department in writing that the site conditions render any of them unnecessary:

(a) An assessment of the horizontal and vertical extent of the contamination;

(b) An evaluation of the hydrogeology of the area including but not limited to the ground water flow rate and direction, permeability, recharge area, ground water classification and location of local water wells, springs and seeps;

(c) An evaluation of the area geology including, but not limited to, soil type, soil permeability, soil porosity, depth to bedrock, and identification of geologic formations;

(d) A description of the corrective actions or response actions taken or proposed;

(e) The chemical characteristics of the constituents(s) including, but not limited to, the constituent's solubility, mobility, toxicity, and carcinogenicity, the nature of and the level of constituents to remain or be present in the ground water and the calculations and rationale used in the determination;

(f) A feasibility study, which evaluates clean-up alternatives, the cost, and the time to complete each alternative;

(g) An evaluation of current and reasonably anticipated future ground water use within the proposed site specific impaired area and within a one-half (½) mile radius of the proposed Site Specific Impaired area; the impact of conduit flow shall be evaluated in karst areas;

(h) An evaluation of current and reasonably anticipated future land uses within the proposed Site Specific Impaired area and within a one-half (½) mile radius of the proposed Site Specific Impaired area;

(i) An evaluation of the potential of the constituent to migrate through soil and ground water to:

1. Homes;

2. Buildings;

3. Surface waters;

4. Subsurface utilities; and

5. Adjacent properties.

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(j) A description of any existing or proposed monitoring program to observe constituent levels in soil and ground water;

(k) Evaluation of the existing or anticipated actual exposure pathways (inhalation, ingestion, dermal contact, etc.) of the constituents and an assessment of the human health risks presented by exposure to the constituents as well as the impact, if any, of the constituents on fish and aquatic life pursuant to this Chapter;

(l) Consideration of the classification in Rule 0400-40-03-.07 that would apply to the ground water at the site if it were not contaminated;

(m) Analysis of the benefits of the restored resource;

(n) A description of how and when the contamination occurred, if known;

(o) A plat map with the proposed site-specific ground water area superimposed on it that shows all property owners for properties included in the Site Specific Impaired classification with contact information for owners of each property and identification and contact information for the parties paying property taxes on each property in the proposed Site Specific Impaired classification area; and

(p) Other items as requested by the department associated with the evaluation of the petition.

(2) Because Site Specific Impaired classification is a rulemaking procedure, public input may be made as provided in the Uniform Administrative Procedures Act, T.C.A. §§ 4-5-201 et seq., but not as a contested case under T.C.A. §§ 4-5-301 et seq. In addition to the requirements for public input under the Uniform Administrative Procedures Act, T.C.A. §§ 4-5-201 et seq., the petitioner shall, at a minimum, notify the party of record paying property taxes for each property subject to the Site Specific Impaired classification of the petition and the process for submitting comments on said petition. The petitioner shall provide a copy of such notification to the department.

(3) In the evaluation of a petition to classify ground water as Site Specific Impaired, the board may consider the following:

(a) The extent of any threat to human health or safety;

(b) The extent of damage to the environment;

(c) Technology commercially available to accomplish restoration;

(d) A comparison of the environmental and economic costs and benefits to be derived from ground water quality restoration with the environmental and economic costs and benefits to be derived from classification as Site Specific Impaired;

(e) Analysis of the restored resource;

(f) The point of classification change;

(g) Contaminant or pollution source identification and cleanup;

(h) Public comments; and

(i) Other appropriate information presented in the petition.

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(Rule 0400-40-03-.09, continued)
Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

0400-40-03-.10 REMEDIATION OF GROUND WATER OR PERCHED WATER.

(1) When a release or other event occurs that causes subsurface water to not meet the criteria in these rules, the commissioner has authority under a number of statutes to cause remediation of the water. These statutes include the Solid Waste Disposal Control Act, T.C.A. §§ 68-211-101 et seq., the Hazardous Waste Management Act, parts 1 and 2, T.C.A. §§ 68-212-101 et seq., and §§ 68-212-201 et seq., the Petroleum Underground Storage Tank Act, T.C.A. §§ 68-215-101 et seq., and the Drycleaner Environmental Response Act, T.C.A. §§ 68-217-101 et seq. The goals of all such remediation actions are:

(a) To return waters to meeting standards when practicable by such methods as source removal, bioremediation, pump and treat, and natural attenuation; and

(b) To protect the public from exposure to water that does not meet standards through such methods as physical and institutional controls.

(2) In order to accomplish these goals the Commissioner may establish an Area of Control when contamination has caused water to exceed the standards in these rules. In establishing an Area of Control, the Commissioner shall use the authorities of the remediation statutes and rules to;

(a) Describe the extent of an Area of Control; and

(b) Protect the public from exposure to the water in the Area of Control.

Where the Commissioner identifies the source of pollution or water of sufficient contamination as to warrant contaminant mass reduction, he may further prescribe the actions to be taken to reduce the levels of contamination within the Area of Control.

(3) The Commissioner may establish such an Area of Control for water contaminated by human activity prior to November 19, 1980 if there are no liable parties as defined in T.C.A. § 68-212-202(3)(B), (C), or (D) and the current property owner did not cause the water contamination. This could be done in conjunction with imposing land use restrictions to protect the public from any harm caused by the site whether or not the department expends funds to remediate the site. In establishing such an Area of Control, the Commissioner may use the authorities of the remediation statutes and rules to:

(a) Describe the extent of an Area of Control;

(b) Prescribe the actions to be taken to reduce the levels of contamination within the Area of control; and

(c) Protect the public from exposure to the water in the Area of Control.

(4) Any current or future "alternate concentration limit" or "ground water protection standard" established within a Tennessee Hazardous Waste Management enforceable document in accordance with Rule 0400-12-01-.06 identifies an Area of Control in accordance with this rule. Compliance with the enforceable document constitutes compliance with the remediation actions identified in paragraph (1) of this rule.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

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0400-40-03-.11 CLASSIFIED SITE SPECIFIC IMPAIRED GROUND WATER AND RESPECTIVE CRITERIA.

The following ground water is classified as site specific impaired ground water with the respective criteria:

(1) Porter Cable

(a) Description of the site

The area of ground water classified is the ground water within the boundaries of the Porter Cable/Rockwell facility that is within the rectangle with the following boundary points to a depth equivalent to 250 feet mean sea level.

Northwest boundary point...35°44'27.5"N, 88°51'19.8"W

Northeast boundary point ...35°44'27.5"N, 88°51'05.7"W

Southwest boundary point...35°44'13.8"N, 88°51'19.8"W

Southeast boundary point....35°44'13.8"N, 88°51'05.7"W

A solvent plume under the western edge of the building is moving very slowly to the north-northwest. Since the plant began operation in the mid-1970's, the plume has migrated approximately 400 feet, with the property boundary another 1500 feet down gradient. Sampling has shown that the plume is degrading to a certain extent by natural and biologic processes, and this process can be enhanced with the addition of nutrients to fuel the biologic activity in the contaminated zone.

(b) Criteria

Nutrient addition is allowed to promote enhanced natural attenuation of the plume in accordance with the remediation remedy being used at the site. Deed restrictions will insure the site will not be used as residential and that ground water will not be used for potable purposes. The point of classification change is totally within the boundaries of the Porter-Cable facility. The plume shall not cross the point of classification change at levels exceeding general use criteria.

(2) Isabella Mine Pit

(a) Description of the site

The area of ground water classified is the ground water in mined areas of the former Isabella/Eureka Mine, the connected Isabella pit, ground water between the Isabella pit and North Potato Creek, and an approximate 500 foot buffer around the mined areas. This ground water classification applies to part of the land that was previously abandoned by the bankruptcy court and is now either under control of a court-appointed receiver or trustee for the Irrevocable Trust of the Tennessee Chemical company (receiver or trustee). If the 500 foot buffer boundary would extend beyond a property line, then the property line shall be the point of classification change. The depth of ground water classification is from ground surface to 1400 feet. The mined areas are delineated as shown on the former mining company's mine maps. The point of classification change for this area is the outer boundary of the area classified as described above and a depth of 1400 feet.

There is a bulkhead or plug between the Isabella/Eureka Mine and the Burra Burra Mine and this Site Specific Impaired classification includes the drift between the

(Rule 0400-40-03-.11, continued)

Isabella and Burra Burra Mines on the Isabella side of the drift plug but does not apply to water in the Burra Burra Mine. The drift does not require a 500-foot wide buffer zone.

(b) Criteria

The Site Specific Impaired Ground Water criteria for the water in the Isabella pit, associated Isabella/Eureka mine workings, and ground water between the Isabella pit and North Potato Creek shall be:

1. Any concentration of inorganic constituents or elements associated with acid mine drainage and any pH or other physical standard associated with acid mine drainage;

2. Any concentration of inorganic constituents or elements associated with approved backfilling or addition of ore, waste rock, calcine, concentrate, granulated slag, tailings, or other acid-generating materials from historic mining and ore beneficiation processes in the Copper Basin;

3. Criteria for other constituents are those required for General Use Ground Water as of November 3, 2004;

4. The continued use of institutional controls to avoid the potential for human contact with this ground water; and

5. Institute a monitoring program, acceptable to TDEC, that monitors the water level in the pit and is sufficient to assure protection of human health and the environment.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

0400-40-03-.12 REPORTING REQUIREMENT.

(1) The Board acknowledges that the General Assembly has given it the authority to promulgate rules for the prevention, control, and abatement of pollution in T.C.A. § 69-3-105(b). The board finds a necessary first step toward controlling and abating pollution is becoming aware of the situation. This is especially needed in the case of ground water, as it is not in plain view as surface water often is. Furthermore, once the department has documents relating to an instance of pollution, they are generally going to be open to the public. Making the public aware of pollution both increases the likelihood that the pollution will be abated and that the public will be able to take appropriate action to reduce harmful exposure. These findings, in addition to the provision of T.C.A. § 69-3-114(b) making it unlawful to refuse to furnish any information required by the Board, are the basis for the requirement stated in paragraph (2) of this rule.

(2) Owners or prospective purchasers of property used for commercial or industrial purposes who test the ground water or perched water on the property shall notify the Commissioner of any contamination of such water if it is currently used as potable water and it exceeds general use criteria or if an environmental professional engaged by such owner or prospective purchaser reasonably concludes that it poses some other substantial risk to health or safety, including but not limited to, situations in which vapors released from the water are causing an explosion hazard or a current inhalation hazard with a hazard quotient of greater than 1 or a cancer risk of greater than 1×10^{-6}.

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(Rule 0400-40-03-.12, continued)

(3) Routine sampling and reporting of ground water or perched water data required by an agency of the Department as part of a regulatory program obligation shall constitute reporting for the purposes of this rule.

Authority: *T.C.A. §§ 4-5-201, et seq., and 69-3-101, et seq.* ***Administrative History:*** *Original rule filed September 17, 2013; effective December 16, 2013. Rule originally numbered 1200-04-03.*

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