

General Comments

- **Chapters 62-302 and 62-303, F.A.C.** Regarding the determination of compliance using annual geometric means (AGM), many of the numeric nutrient criteria (NNC) used for compliance in estuarine and coastal regions are represented as AGM. These values are used as a not-to-exceed threshold where 2 out of 3 years cannot exceed the NNC. Because the NNC were derived as a representation of the AGM, the assumption in tying the NNC to annual data used to calculate an AGM is that the data used in this calculation of the central tendency is not statistically different from a log-normal distribution (which is typically right-skewed). However, if the data used to assess compliance, with respect to the NNC, for a given year does not follow a log-normal distribution (i.e., it is left-skewed), then the geometric mean will underestimate the central tendency of the data set based on this metric (AGM) potentially resulting in a Type II error. With this in mind, are there procedures that the FDEP has in place if such a situation occurs? It seems that a test of distributional assumptions (for both log-transformed and untransformed) data needs to be made before annual data are summarized as a geometric mean and assessed against a criterion derived from log-normal data.

Specific Comments

1. Definitions. [Note: Suggested revisions are shown below in red.]
 - a. Paragraph 62-302.200(21), F.A.C.: “Natural background” shall mean the condition of waters in the absence of man-induced alterations based on the best scientific information available to the Department. The establishment of natural background for an altered waterbody may be based upon a similar unaltered waterbody, historical pre-alteration data, paleolimnological examination of sediment cores, **water quality modeling**, or examination of geology and soils, **or other scientifically valid approaches.**” The statement of other scientifically valid approach seems vague. Is there a guideline for determining if an approach is scientifically valid and who will make the determination regarding the validity of the scientific approach?
 - b. Paragraph 62-302.202(24), F.A.C.: “Nutrient” shall mean total nitrogen (TN), total phosphorus (TP), or their organic or inorganic forms.” Should the statement read: “shall mean total nitrogen (TN), total phosphorus (TP), and their organic and inorganic forms”?
 - c. Inconsistencies in definitions for the same terms in 62-302 and 62-303, F.A.C.:
 - Predominantly fresh water:
 - 62-302.200(31), F.A.C.: “shall mean surface waters in which the chloride concentration is less than 1,500 milligrams per liter or specific conductance is less than 4,580 μ mhos/cm. Measurements for making this determination shall be taken within the bottom half of the water column.”
 - 62-303.200(20), F.A.C.: “shall mean surface waters in which the chloride concentration is less than 1,500 milligrams per liter or specific conductance is less than 4,580 μ mhos/cm. **If there are depth profile data, then measurements** ~~Measurements~~ for making this determination shall be **those** taken within the bottom half of the water column.”
 - Why are these two definitions different?

South Florida Water Management District Comments on
Triennial Review of Florida's Water Quality Standards:
Ch. 62-4, Ch. 62-302, Ch. 62-303, and Ch. 62-304, F.A.C.
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- Predominantly marine waters:
 - 62-302.200(32), F.A.C.: “shall mean surface waters in which the chloride concentration is greater than or equal to 1,500 milligrams per liter or specific conductance is greater than or equal to 4,580 μ mhos/cm. Measurements for making this determination shall be taken within the bottom half of the water column.”
 - 62-303.200(21), F.A.C.: “shall mean surface waters in which the chloride concentration is greater than or equal to 1,500 milligrams per liter or specific conductance is greater than or equal to 4,580 μ mhos/cm. **If there are depth profile data, then measurements Measurements** for making this determination shall be **those** taken within the bottom half of the water column.”
 - Why are these two definitions different?
- 2. Section 62-302.530, F.A.C, Surface Water Quality Criteria Table. Specific conductance units in this table use microsmhos per centimeter (μ mhos/cm), and suggest updating to reflect the more current term, microsiemens per centimeter (μ S/cm) or, at a minimum, acknowledge the equivalency between these two units.
- 3. Paragraph 62-302.531(6), F.A.C. For nitrate plus nitrite, please use the correct term as “nitrate+nitrite” (instead of nitrate-nitrite).
- 4. Tables in Section 62-302.532, F.A.C., Estuary-Specific Numeric Interpretations of the Narrative Nutrient Criterion.
 - a. For Sarasota Bay, suggest replacing equation for annual TN target to a more legible version.
 - b. Chlorophyll a are in μ g/L at all sites, except Little Hickory Bay. For consistent units, should Little Hickory Bay be in μ g/L rather than mg/L?
 - c. For Clam Bay Collier County, the equation uses μ S as units for conductivity (assume this is specific conductance); should the units be μ S/cm?
 - d. Suggest removing “practical salinity unit, or PSU,” as salinity has never contained this unit by definition. Classically, salinity was expressed as a ratio between the weight of salt in grams in one kilogram of seawater. Presently, the salinity value is an equation-based value calculated as a ratio of a sample conductance to an equivalent conductance of standard seawater. In either case, the units cancel out. The old part per thousand (ppt) often used refers to per mille. Just as % is not a unit per mille or ‰ is not a unit.
 - e. Geometric means, harmonic means and arithmetic means are all averages. Please clarify the “arithmetic average” term used (e.g., see Suwannee Offshore).
 - f. Why are load units expressed in both lbs/day, lbs/year and kg/year?
- 5. Sub-Paragraph 62-303.532(1)(d), F.A.C. Regarding nutrients in freshwater lakes, it seems that that the units for AGM of TN and TP may be incorrectly presented; should these units be mg/L? Also, for consistency regarding micrograms per liter, please use μ g/L (instead of μ g/L).