# Triennial Review of Florida's Water Quality Standards

**Division of Environmental Assessment & Restoration**

**December 6, 2019**

# Presentation Outline

- Introduction to the Triennial Review (TR)
- Key Topics of Interest to FSA
  - Clarification of Bacteria Criteria
  - Revisions to Turbidity Criterion
  - Cyanotoxin Criteria
  - Revisions to NNC Implementation Document
- Tentative Schedule

# Background

- Under the Federal Clean Water Act, states are required to periodically conduct a comprehensive review of their surface water quality standards
  - Known as “Triennial Review” because must conduct review at least once every three years
- Department adopted revisions for last TR on Dec. 9, 2015, and EPA approved the revisions on July 24, 2017

# Background
(continued)

- General expectation is that States consider adoption of any new or revised EPA recommended water quality criteria
  - "304(a) criteria"
- States are not required to adopt EPA recommendations, but under recent revisions to 40 CFR 131.20(a), States must explain basis for the decision if they decide not to adopt

# Scope

- Notices of Rule Development for TR included all rules with surface water quality standards
  - Chapter 62-4 (Permits),
  - Chapter 62-302 (Surface Water Quality Standards),
  - Chapter 62-303 (Identification of Impaired Surface Waters, or "IWR"), and
  - Chapter 62-304 (Total Maximum Daily Loads)
- Published on March 29, 2019
- Notices listed all rule sections related to surface water quality standards
  - All surface water quality standards are open for potential revision and public comment

# Public Participation to Date

- DEP held “kickoff” public workshops in Tallahassee (May 14), Jupiter (May 15), and Orlando (May 16)
  - Shared topics that DEP planned to address, and solicited public input on topics to address
- DEP held public workshops in Tallahassee (Nov. 4), Ft. Myers (Nov. 5), Ft. Lauderdale (Nov. 6), and Jacksonville (Nov. 7)
  - Presented details of all revisions proposed by DEP and provided opportunity for public comments

# Bacteriological Quality (*Escherichia coli* Bacteria)

- For both E. coli and Enterococci criterion, revised rule to clarify that if there are fewer than 10 samples for a given month, the Ten Percent Threshold Value (TPTV) is assessed as a single sample maximum
  - Still requires at least 10 samples in a month for monthly geometric mean criterion
  - Need to add similar language to text for Class I (sample size is different) and II waters

# Turbidity Criterion

- **Applicable to Class I, II, and III waters**
- **Proposing to add a narrative that would apply to all Florida waters and a narrative that applies in specific areas with corals, hardbottom and worm rock communities**
- **For all waters**
  - Turbidity shall not be increased more than 29 NTU above natural background, nor shall turbidity levels be increased to levels that negatively affect designated uses or result in increased sedimentation or reduced light transmission to the point that the normal growth, function, reproduction, or recruitment of aquatic life is impaired.

# Statewide Turbidity Criterion

- DEP has not yet developed guidance for implementing/interpreting the narrative, and stakeholders have expressed concerns
- We acknowledge we need to better describe how it would be implemented
- DEP would like feedback and suggestions

# Coral Turbidity Criterion Literature Review

- DEP conducted comprehensive search for studies addressing effects of turbidity on corals
- Found LARGE amount of literature indicating negative impacts to corals due to increased sedimentation, total suspended solids (TSS), and turbidity
- Majority of research conducted in Australia
  - Species used to develop criteria must be representative of sensitive resident (Florida) species
  - Criteria should be based on Florida or Caribbean species

# Turbidity Literature Review Conclusions

- Clearly conclude from literature that 29 NTU is not protective of corals/hard bottom
- However, there are insufficient data to establish a numeric criterion
  - Criteria cannot simply be incremental improvement
  - Must demonstrate that criterion is protective
- Must also address complexity of natural spatial and temporal variability
  - Resident corals are adapted to the natural variability

# Coral Turbidity Criterion

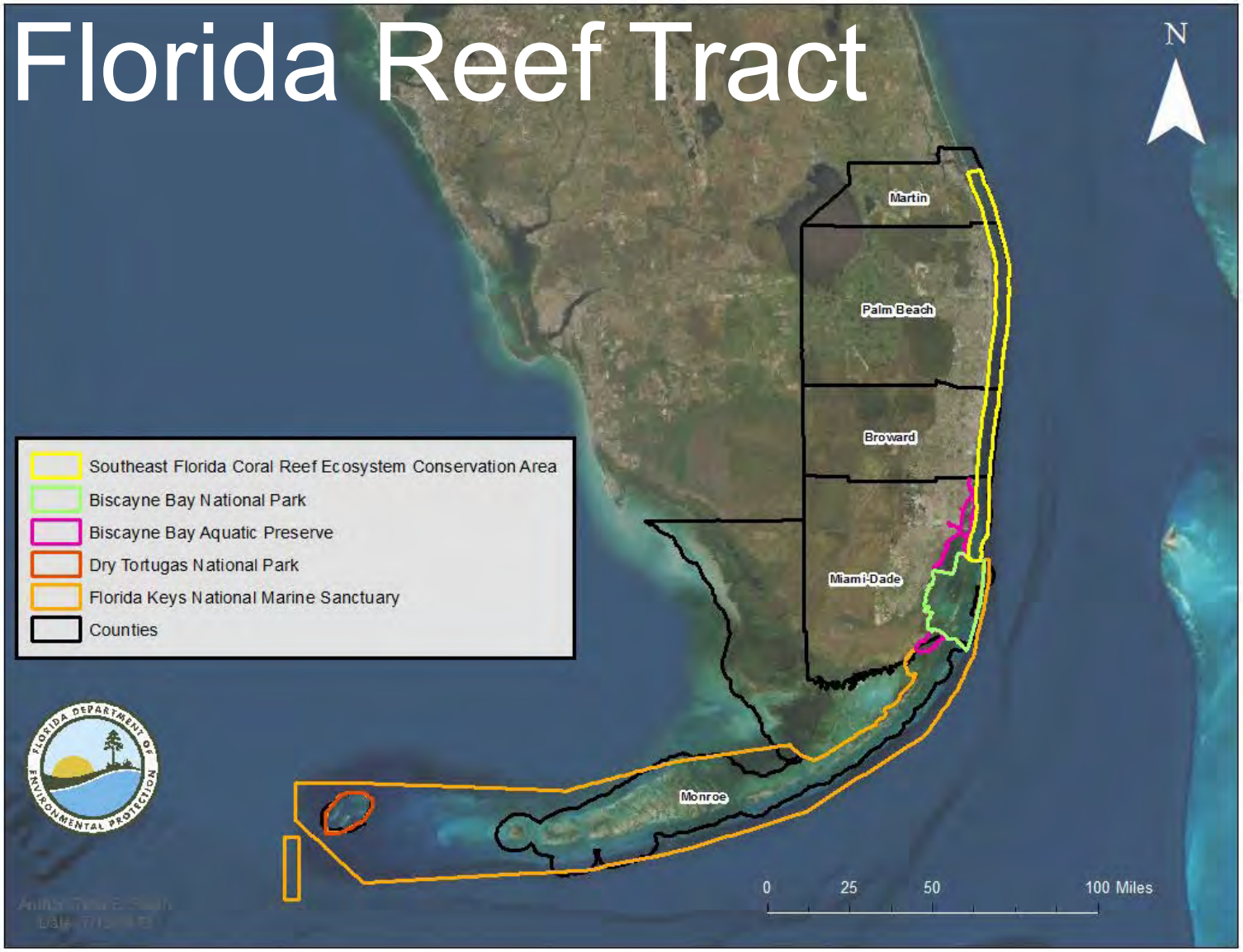
- **For corals, hardbottom and worm rock communities**

Turbidity shall not be increased above background conditions within the Southeast Florida Coral Reef Ecosystem Conservation Area, Biscayne Bay National Park, Biscayne Bay Aquatic Preserve, Florida Keys National Marine Sanctuary excluding canals, and Dry Tortugas National Park, as shown on the map titled "Florida Reef Tract", July 2019, which is incorporated by reference herein, or other areas of the state where coral reef and hardbottom communities are currently found. For the purposes of evaluating this criterion, background conditions shall take into account the natural variability of turbidity levels and shall be established following the methods described in the document Implementation of the Turbidity Criterion for the Protection of Coral Reef and Hardbottom Communities, dated September 2019, which is incorporated by reference. Note: criterion only applies within predominately marine Class II and III waters.

# Spatial Extent

- All marine waters within the Florida Reef Tract (FRT)
  - Coral and hardbottom communities are known to either currently or historically occur within the FRT
  - Most of the FRT has been designated as critical habitat for the threatened staghorn and elkhorn coral
- Other marine waters where coral reef or hardbottom communities are present
  - These communities are patchy outside of the FRT
  - Generally, coastal waters from Brevard to Manatee Counties

# Florida Reef Tract



# Turbidity Implementation Document

- DEP developed implementation document to be adopted by reference for coral narrative component
- Addresses application in permits (dredging and beach nourishment) and Impaired Waters Rule (IWR)
- For permits, document describes
  - Establishing background variability based on pre-project turbidity data collected at “baseline” stations
  - Expressing permit limits as an allowable increase between project background and compliance stations
    - Allowable increase calculated as an upper confidence interval of the mean difference between min and max turbidity at baseline station

# Determining Background for Other Sources

- DEP acknowledges that implementation focused on dredging and beach nourishment projects, and is now working with stormwater and MS4 Programs to address stormwater discharges
- Would like input from FSA and it's membership on this issue!

# Cyanotoxin Criteria

- EPA finalized national recommended recreational water quality criteria and swimming advisories for cyanotoxins in May 2019
  - Addressed both Microcystin (8 µg/L), and cylindrospermopsin (15 µg/L)
- Final recommended criteria were ~ double EPA's draft criteria because
  - EPA used an updated, lower incidental ingestion rate (0.21 L/day instead of 0.33 L/day), and
  - EPA increased the "Relative Source Contribution" (RSC) from 0.8 to 1, which assumes all exposure due to incidental ingestion during swimming

# Cyanotoxin Criteria

(continued)

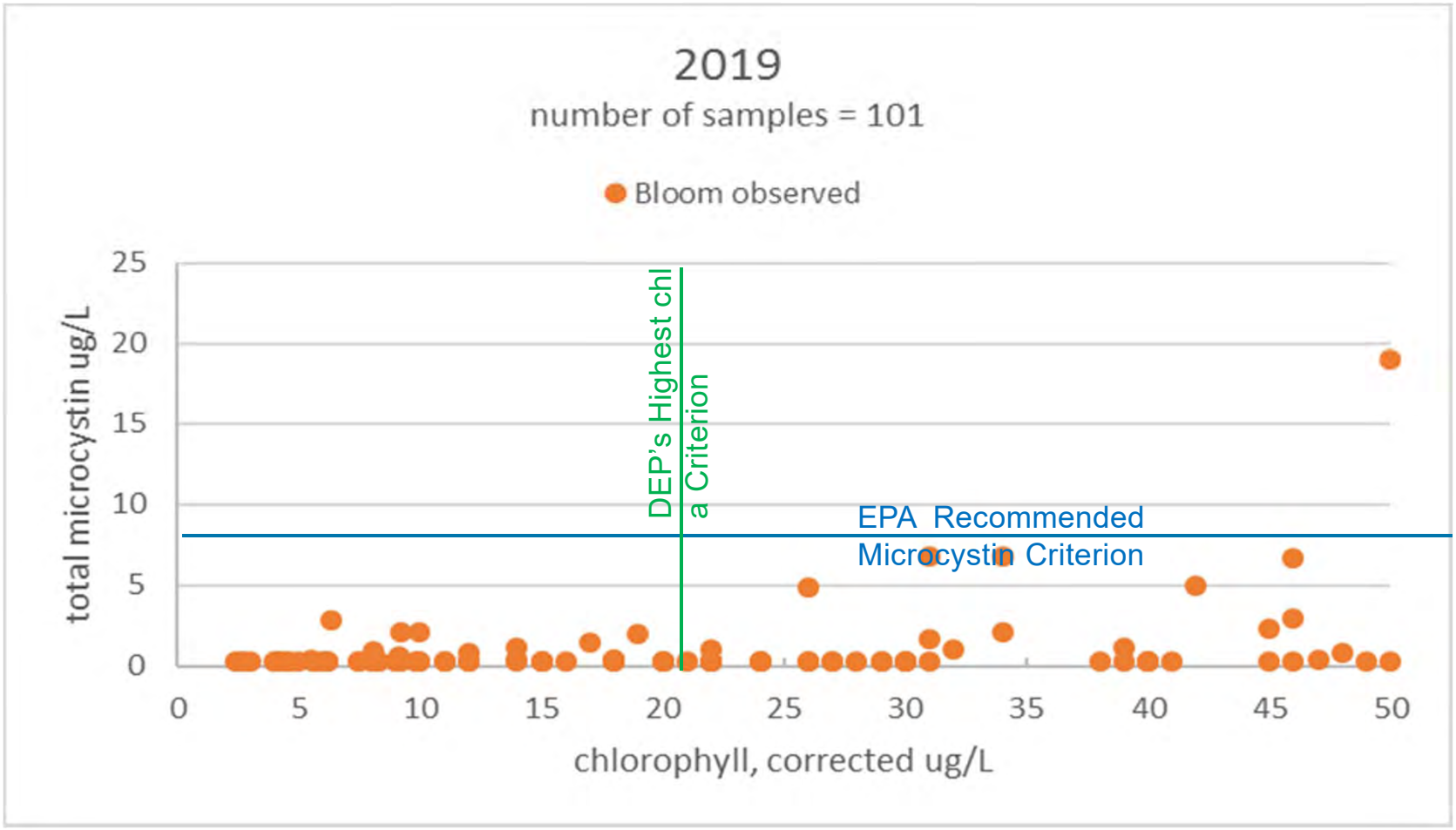
- DEP received a petition requesting that we adopt EPA 2016 draft thresholds as water quality criteria (WQC)
- DEP is considering the issue and would like public comments on
  - Whether to adopt as WQC or recommend that Dept. of Health (DOH) adopt as swimming advisory threshold
  - And if adopted as WQC, whether to adopt draft or final criteria, or develop hybrid

# Cyanotoxin Criteria

(continued)

- EPA recommended cyanotoxin criteria are specifically designed to protect human health
- DEP has already adopted Numeric Nutrient Criteria (NNC) designed to be protective of aquatic life use support, which was determined to be most sensitive use
  - Adopted NNC for streams, springs, lakes and estuaries
- Highest adopted chlorophyll *a* criterion is 20 µg/L (for colored lakes), and data indicate that microcystin concentrations are well below recommended cyanotoxin criteria at 20 µg/L chl *a*

# 2019 CyanoHAB Sampling Results



# Current Florida Practice for Algal Bloom Response

- DEP and DOH use visual presence of an algal bloom as one threshold
  - Used as a trigger by DEP to perform Algal Bloom Response Sampling (cyanotoxins, algal ID, Nutrients, and Chl *a*)
  - If cyanobacteria are present, but no toxins detected, DOH encourages local county health units to issue a Caution Advisory
- If cyanotoxins are detected (at all), DOH encourages local county health units to issue an Alert Advisory
  - DEP performs repeat sampling at sites with detectable toxin levels until toxins are no longer detected
  - Alerts are removed once cyanobacteria bloom or toxins are no longer present per DEP HAB Dashboard

# Current Florida Practice for Algal Bloom Response

(continued)

- Visual presence of bloom used as threshold instead of numeric toxin value because:
  - Lag time between sample collection and dissemination of results
  - Allows the public to make decisions about recreating in a water at the time of use
  - High spatial and temporal variability in algal cell and toxin concentrations
  - Very low incidence of toxins in waters without visible bloom present
  - Concerns regarding EPA's derivation of cyanotoxin thresholds

# Proposed Changes to NNC Implementation Document

- Proposing updates to the "Numeric Nutrient Criteria Implementation Document," which was incorporated by reference in 2012
  - Want to clarify key issues, streamline document, and make corrections
- Plan to only incorporate specific portions
  - Floral Metrics (Sections 6.3 to 6.8), and
  - Stream Exclusions (Chapter 12)
- These portions were considered by EPA as changes to Florida water quality standards

# Changes to "Numeric Nutrient Standard for Streams"

(continued)

## Section 6.3 – Floral Evaluation

- Propose that streams that fail Linear Vegetation Survey (LVS) be placed on Study List (rather than VL) to evaluate if nutrients contributed to failure
  - Exotic or tolerant plants can occur even without anthropogenic nutrient enrichment
  - Study List also considered part of federal 303(d) list
- Added requirement that Rapid Periphyton Survey (RPS) and LVS be conducted in different hydrological seasons
  - May-Sept and Oct-April
  - Previously only required 2 temporally independent surveys (collected ≥ 3 months apart)

# Changes to "Numeric Nutrient Standard for Streams"

(continued)

## Section 6.3 – Floral Evaluation (continued)

- Added text summarizing overall assessment approach
- Assessment based on two most recent samples
  - If both pass an evidentiary threshold, then passes
  - If both fail, then site fails
  - If one passes and one fails, then either look at third most recent assessment or conduct additional assessment
    - For RPS, third most recent or new sample must be conducted in hydrologic season that failed
  - Assessment determination based on third assessment

# Proposed Changes to NNC Implementation Document

(continued)

## Section 10 – Implementing the NNC in the IWR

- Added Section 10.1 to address assessment of floral metrics of the numeric nutrient standard for streams
  - If any station within a WBID conclusively fails a floral evidentiary threshold, WBID is listed as impaired

# Proposed Changes to NNC Implementation Document

(continued)

## Section 10.4 Evaluation of Trends

- Use same statistical method (Mann-Kendall) and still looking at trends in annual geometric means (AGMs)
- No longer place waters on Study List to assess for "confounding factors" nor extrapolate into the future
- In draft distributed before workshops, list on VL if
  - Increasing trend in nutrients or chl *a* over the Period of Record (POR) and last 7.5 years, and
  - Annual slope of trend of POR is > 10% of applicable NNC

# Proposed Changes to NNC Implementation Document

(continued)

## Section 10.4 Evaluation of Trends

- Considering new change to second part such that annual slope over last 7.5 years must be ≥ 10% of applicable NNC or > 20% of difference between current levels and NNC
  - Current levels defined as average of AGMs for last 7.5 years
- Previously, could only list on VL due to increasing trend in chl *a*, but now can be TN, TP or chl *a*
- Establish minimum requirements for POR (10 years with sufficient data) and 7.5 year (5 years with data)

# Proposed Changes to NNC Implementation Document

(continued)

## Section 12 – Basic Info Needs for Distinguishing Flowing Waters (Stream Exclusion)

- Added new introductory paragraph that notes
  - The numeric nutrient standards for streams only applies to "flowing waters" meeting the stream definition, but
  - Default assumption is that any flowing water meets the definition unless demonstration is made that the waterbody meets one of the exclusions, and
  - All exclusions will be tracked/documented

# Proposed Changes to NNC Implementation Document

(continued)

## Section 12 – Basic Info Needs for Distinguishing Flowing Waters (Stream Exclusion) (continued)

- Exclusions for
  - Non-perennial streams, wetlands, lake-like portions of streams, and tidal creeks, and
  - Ditches, canals, and other conveyances that are man-made or predominantly channelized or physically altered, and primarily used for water management purposes and have marginal or poor stream habitat or habitat components
- If excluded, water still assessed for nutrient impairment using nutrient impairment thresholds
  - Chl *a* > 20 µg/L for freshwater and > 11 µg/L for marine
  - "Other information" and Trends

# Proposed Changes to NNC Implementation Document

(continued)

## Section 12.1 – Non-Perennial Water Segments

- Previously could only demonstrate non-perennial based on taxa present, but now can also demonstrate based on
  - Stream flow data, or
  - Drainage area using the HydroBioGeomorphic (HGB) classification system developed by John Kiefer of Amec Foster Wheeler, Inc.

# Proposed Changes to NNC Implementation Document

(continued)

## Section 12.1.1 – Stream Flow as an Indicator

- Define several terms:
  - Perennial – measurable flow for at least 180 consecutive days in at least 90% of years
  - Likely Perennial – measurable flow for at least 180 consecutive days in at least 50% of years
  - Seasonally Perennial – measurable flow for at least 90 consecutive days in at least 75% of years
  - Non-perennial – flows less than any of the above
- Meet stream exclusion if neither perennial nor likely perennial
- Minimum flow record is five years
- Can estimate using nearby gages

# Proposed Changes to NNC Implementation Document

(continued)

## Section 12.1.2 – Geomorphology as an Indicator

- Text describes HBG as 4-step process that breaks streams out by regions and classes (karst, highlands, and flatwoods)
- Lists regions and provides a map
- Describes how soils are used to determine stream class using GIS
- Describes flow characteristics of each class in each region
- Summarizes perenniality information in table
  - Only non-perennial streams clearly meet stream exclusion
  - If seasonally non-perennial, need biology or flow data

# Hydrophysio-graphic Regions

# Non-Perenniality based on HBG

| Region | Water Source | Drainage Area (DA) sq. miles | Perenniality | NNC Guidance |
|---|---|---|---|---|
| Peninsula | Flatwoods | DA <5 | Non-perennial | Stream NNC not applicable. |
| | | ≥5 DA <20 | Seasonally Perennial | Need biological or hydrologic demonstration. |
| | | ≥20 DA <50 | Likely Perennial | NNC applies. |
| | | DA ≥50 | Perennial | NNC applies. |
| | Highlands | DA <1 | Non-perennial | Stream NNC not applicable. |
| | | ≥1 DA ≤5 | Likely Perennial | NNC applies. |
| | | DA ≥ 5 | Perennial | NNC applies. |
| Northeast | Flatwoods | DA <1 | Non-perennial | Stream NNC not applicable. |
| | | ≥1 DA <5 | Seasonally Perennial | Need biological or hydrologic demonstration. |
| | | ≥5 DA <20 | Likely Perennial | NNC applies. |
| | | DA ≥20 | Perennial | NNC applies. |
| | Highlands | DA <3 | Seasonally perennial | Need biological or hydrologic demonstration. |
| | | 3 ≥DA ≥5 | Likely Perennial | NNC applies |
| | | DA ≥5 | Perennial | NNC applies |
| Northwest | Flatwoods | DA <1 | Non-perennial | Stream NNC not applicable. |
| | | ≥1 DA <5 | Seasonally Perennial | Need biological or hydrologic demonstration. |
| | | ≥5 DA <10 | Likely Perennial | NNC applies. |
| | | DA ≥10 | Perennial | NNC applies. |
| | Highlands | DA <1 | Seasonally Perennial | Need biological or hydrologic demonstration. |
| | | ≥1 DA <5 | Likely Perennial | NNC applies. |
| | | DA ≥5 | Perennial | NNC applies. |

# Proposed Revisions to Chapter 62-303, F.A.C.

- Propose variety of revisions to IWR, with most designed to clarify, but some new provisions:
  - Revising the trend test for nutrients and chlorophyll *a*
  - Adding assessment of the proposed turbidity criterion for certain South Florida marine and open coastal waters
  - Revisions to streamline the biological health assessments
  - Assessment of additional expressions of NNC to accommodate TMDLs
  - Revisions that incorporate portions of the NNC Implementation Document in the IWR Rule
  - Revising the listing methodology for the LVS floral metric
  - Revisions related to data uploads to WIN
  - Revising text for listings based on FDOH fish consumption advisories

# Schedule

- Written comment period ended Nov. 22. but DEP still evaluating comments
- Will decide whether another round of workshops is needed based on comments received
- If not needed, would bring to Environmental Regulation Commission (ERC) for adoption early next year
  - 45-day notice period prior to adoption hearing


FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION