Life with Numeric Nutrient Criteria

Getting to Hierarchy 1

URS

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Florida DEP Rules

- Following EPA approval in November 2012, changes in Florida law by the 2013 legislature, and myriad litigation-related hurdles, FDEP rules still appear on track to implementation
- Context is numeric interpretation of the narrative nutrient standard, with reference numbers as default
- Requires confirmation by biological effect for a finding of impairment – cannot be done on the numbers only
- Intent is to implement new criteria for permittees at renewal
- Impaired Waters Rule review cycles continue
- Criteria are for water bodies, effectively averaged over the water body and over time – will have to translate into permit limits for dischargers
- **Rules incorporate defined structures to establish site-specific criteria**

Florida DEP Rules

62-302.531(2)(a), Florida Administrative Code:

1. The primary site specific interpretations are as follows:

   a. Total Maximum Daily Loads (TMDLs) adopted under Chapter 62-304, F.A.C., that interpret the narrative water quality criterion for nutrients in paragraph 62-302.530(47)(b), F.A.C., for one or more nutrients or nutrient response variables;

   b. Site specific alternative criteria (SSAC) for one or more nutrients or nutrient response variables as established under Rule 62-302.800, F.A.C.;

   c. Estuary-specific numeric interpretations of the narrative nutrient criterion established in Rule 62-302.532, F.A.C.; or

   d. Other site specific interpretations for one or more nutrients or nutrient response variables that are formally established by rule or final order by the Department, such as a Reasonable Assurance Demonstration pursuant to Rule 62-303.600, F.A.C., or Level II Water Quality Based Effluent Limitations (WQBEL) established pursuant to Rule 62-650.500, F.A.C.

Implementation Challenges & Opportunities

Criteria will be established one of these ways:

- **Hierarchy 1**: Site-specific interpretations as TMDL, SSAC, WQBEL Level II, or other order of the Department

  This is where you want to be

- **Hierarchy 2**: Establishment of criteria based on "quantifiable cause-and-effect relationships"

  Both EPA and DEP went to considerable expense to prove this is not possible

- **Hierarchy 3**: Default to reference values by region

  Nobody wants to go here

Designing a Hierarchy 1 Study

- Engage DEP – District and Tallahassee – WMD, and local agencies – add NGOs if appropriate
- Identify the timeline
- Understand the waterbody
  - Physical setting
  - Available data
- Set the data collection network and parameters
- Pick the regulatory endpoint
- Convert results to criteria

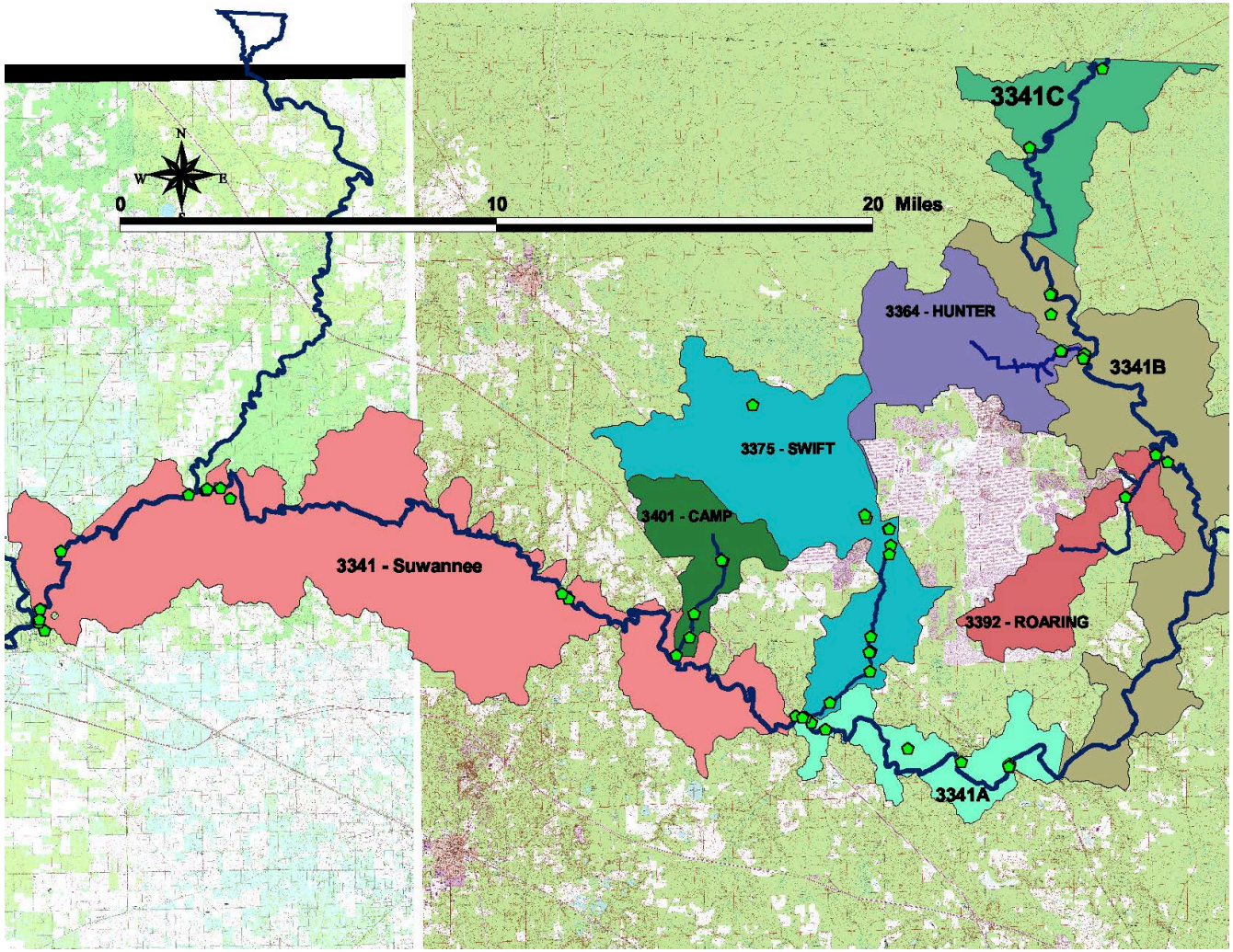
Designing a Hierarchy 1 Study

Identify the Timeline

- DEP and EPA have expressed intent to implement for point sources at permit renewal
- SSAC requires 3 years of data
- Impaired Waters review cycles will continue, and permits typically have re-openers for impairment issues
- Statistical analysis will be improved with more data (usually)

Designing a Hierarchy 1 Study

Understand the Waterbody (WBID / Ecoregion / Basin / Data)



Designing a Hierarchy 1 Study

Set the Network and the Parameters

Water Quality Parameters	Biological Parameters
Total Phosphorus	Stream Condition Index
Ortho-Phosphorus	Rapid Periphyton Survey
Total Nitrogen	Linear Vegetation Survey
Total Kjeldahl Nitrogen	
Nitrate-Nitrite	NPDES Permit:
Ammonia	Biological Integrity
Dissolved Oxygen	Chronic & Acute Toxicity
Temperature	
Specific Conductivity	
pH	
Turbidity	
Total Suspended Solids	
BOD5	
True Color	
Corrected Chlorophyll-a	

Location Description	Weekly Permit Monitoring	Monthly Water Quality	Quarterly Biological
Suwannee R above SR 6		X	X
Suwannee R above Swift Creek		X	X
Suwannee R below Swift Creek		X	X
Suwannee R at Hwy 129		X	X
Hunter Creek ~ ¾ mile W of CR 135		X	
Hunter Creek at CR 135		X	X
Roaring Creek at CP 003	*	X	
Roaring Creek at CR 182		X	X
Swift Creek at CP 001	X	X	X
Swift Creek at CR 25		X	
Camp Branch at CP 004	X	X	
Camp Branch at Trail		X	X

Designing a Hierarchy 1 Study

Pick the Regulatory Endpoint

- TMDL
- SSAC
- WQBEL Level II
- Other order of the Department

Designing a Hierarchy 1 Study

Convert the Data to Criteria

- Rigorous statistical analysis
  Conversion to annual geometric mean not to be exceeded more than once in three years – may be outside the range found during the study period
- Potential use of models
  Particular consideration for downstream values
- Availability of mixing zones
- Assessment of representativeness of data during the study period
  Consideration of flow and water quality compared against historical data

Designing a Hierarchy 1 Study

Questions remain…

- Assessment of discharge values during the study compared to historical values and future expectations
- Application to systems including artificial waterbodies with naturally elevated TP, elevated chlorophyll-*a*, and different use expectations
- Translating Hierarchy 1 waterbody values to permit limits
- Effect of findings of non-impairment (e.g. “other order of the Dept.”)
- Criteria for intermittent discharges and/or discharges to intermittent streams or wetlands
- WBIDs that include both perennial and intermittent segments
- Determining biological health where rule-listed measures are not available (data gaps) or appropriate (flow characteristics do not allow for an SCI)
- Implementation in Outstanding Florida Waters

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