

Florida Department of Environmental Protection



Water Quality Assessment under Numeric Nutrient Criteria (NNC)

Division of Environmental
Assessment and Restoration





Summary of Presentation

- **Effects of DEP's NNC**
- **Effects of DO criteria**
- **Monitoring priority strategy**
- **TMDL priority strategy**



Effects of Nutrient Criteria

Better able to identify nutrient issues:

- Multiple parameters to assess
 - Total Nitrogen
 - Total Phosphorus
 - Chlorophyll-a
 - Nitrate+nitrite (springs)
 - Abundant algae or plants
 - Bioassessments



Effects of Nutrient Criteria

Additional Data Requirements for streams, lakes and estuaries:

- At least 2 years of TN, TP or chlorophyll-a data in a 3-year period
 - Minimum of 4 samples per year
 - More than 1 week apart
 - At least 1 sample collected between May-Sept of that year



Effects of Nutrient Criteria

Additional Data Requirements for streams only:

- Necessity of biological data
 - Stream Condition Index (SCI)
 - Rapid Periphyton Survey (RPS)
 - Linear Vegetation Survey (LVS)
 - Two temporally independent samples
 - Collected at least 3 months apart



Effects of Nutrient Criteria

Exclusions for streams:

- Information to support exclusions may be provided to the Department for consideration
 - Must include the technical basis for the proposed exclusion and geographic extent of the excluded area.
- Ditches, canals and other conveyances that are man-made, or predominantly channelized or predominantly physically altered are excluded from the streams definition if they:
 - Are primarily used for water management purposes, such as flood protection, stormwater management, irrigation, or water supply; **and**
 - Have marginal or poor stream habitat or habitat components, such as a lack of habitat or substrate that is biologically limited, because the conveyance has cross sections that are predominantly trapezoidal, has armored banks, or is maintained primarily for water conveyance



Effects of Nutrient Criteria

- Data Sufficiency
 - For lake classification:
 - Lake color and alkalinity shall be long-term geometric means
 - Minimum of 10 samples from at least 3 years, at least 1 sample per year.
 - If there is insufficient alkalinity, can use specific conductance data

Lake Classification Code	Lake Classification
1	Color > 40 PCU
2	Color \leq 40 PCU and Alkalinity > 20 mg/L CaCO ₃
3	Color \leq 40 PCU and Alkalinity \leq 20 mg/L CaCO ₃



Effects of Nutrient Criteria

TMDLs adopted as criteria:

- FDEP adopted TMDLs submitted to EPA
 - Some have been approved
 - Review by TMDL and WQS groups
 - LSJR TMDLs approved for WBIDs 2213A, 2213B, 2213C, 2213E, and 2213F



Effects of DO Criteria Rule Changes

- Replaces the mg/L with a percent saturation
- Revised criteria apply differently to:
 - Class 1 and Class 3F
 - Class 2 and Class 3M waters
- Allows for diel monitoring
 - More robust data set, but not necessary
- For streams and lakes, includes a time of day translation
- SSACs remain unchanged



BioRegions for DO Criteria

Technical Support Document

Derivation of DO Criteria for Florida's Fresh and Marine Waters

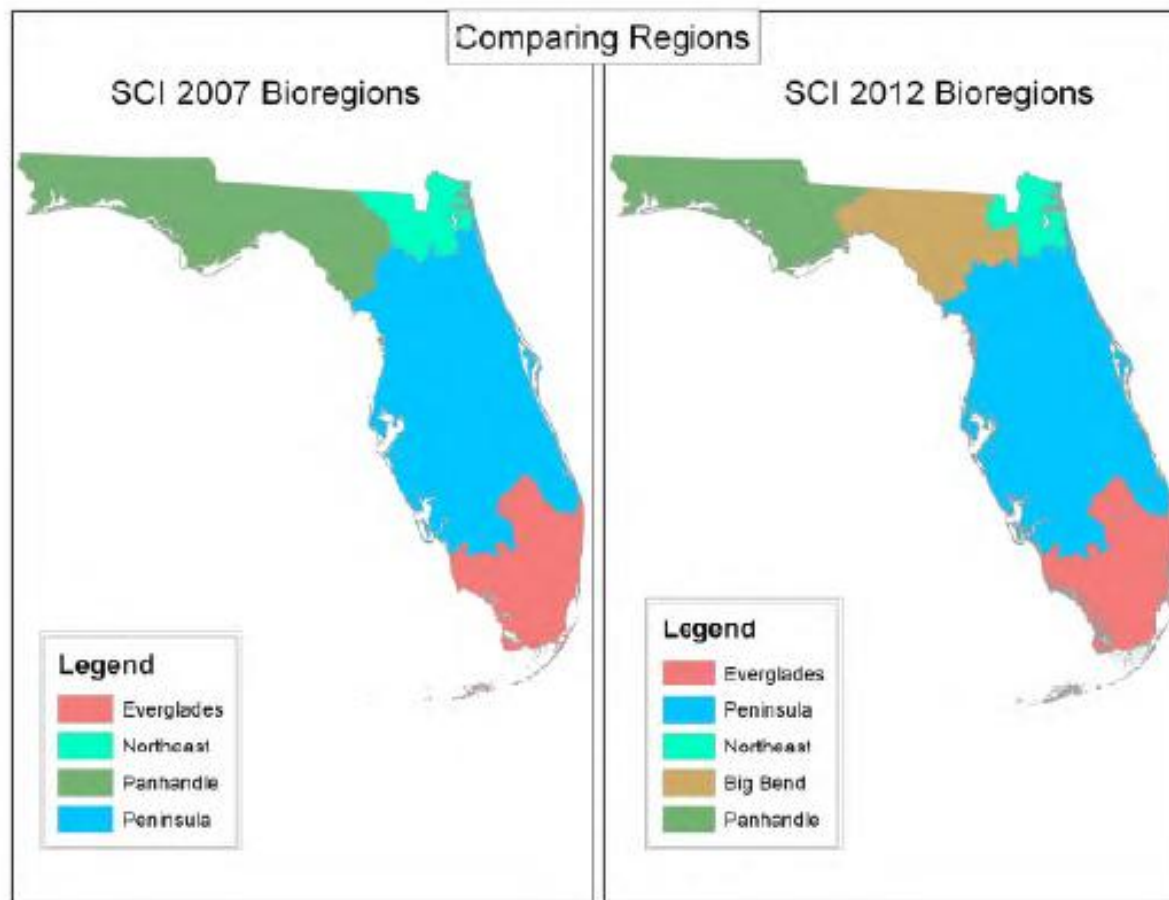


Figure B7. A comparison of the current SCI 2007 bioregions (on right) with the new 2012 bioregions for BioRecon and SCI (on left).



Effects of DO Criteria Rule Changes

- Data Sufficiency:
 - **Freshwater and marine daily average assessment:**
 - Minimum 20 samples, 5 temporally independent samples
 - Do not have to be one week apart
 - Can be collected with by diel monitoring or grab samples



Effects of DO Criteria Rule Changes

- Data Sufficiency cont'd:
 - **7-day average marine DOSAT assessment:**
 - Three daily average DO samples calculated from 3 full-days of diel data. Diel measurements should be collected at least once every hour, with a minimum of 24 measurements per day, or
 - Ten grab samples, collected over at least 3 days of the week and at least four hours apart. For example: morning and afternoon.



Effects of DO Criteria Rule Changes

- Data Sufficiency, cont'd.
 - **30-day average marine DOSAT assessment:**
 - Three daily average DO concentrations calculated from 3 full-days of diel measurements collected during 3 different weeks of the month.
 - Diel measurements should be collected at least once every hour, with a minimum of 24 measurements per day, or
 - Ten grab samples, collected from a minimum of 10 different days of the month.



Effects of DO Criteria Rule Changes

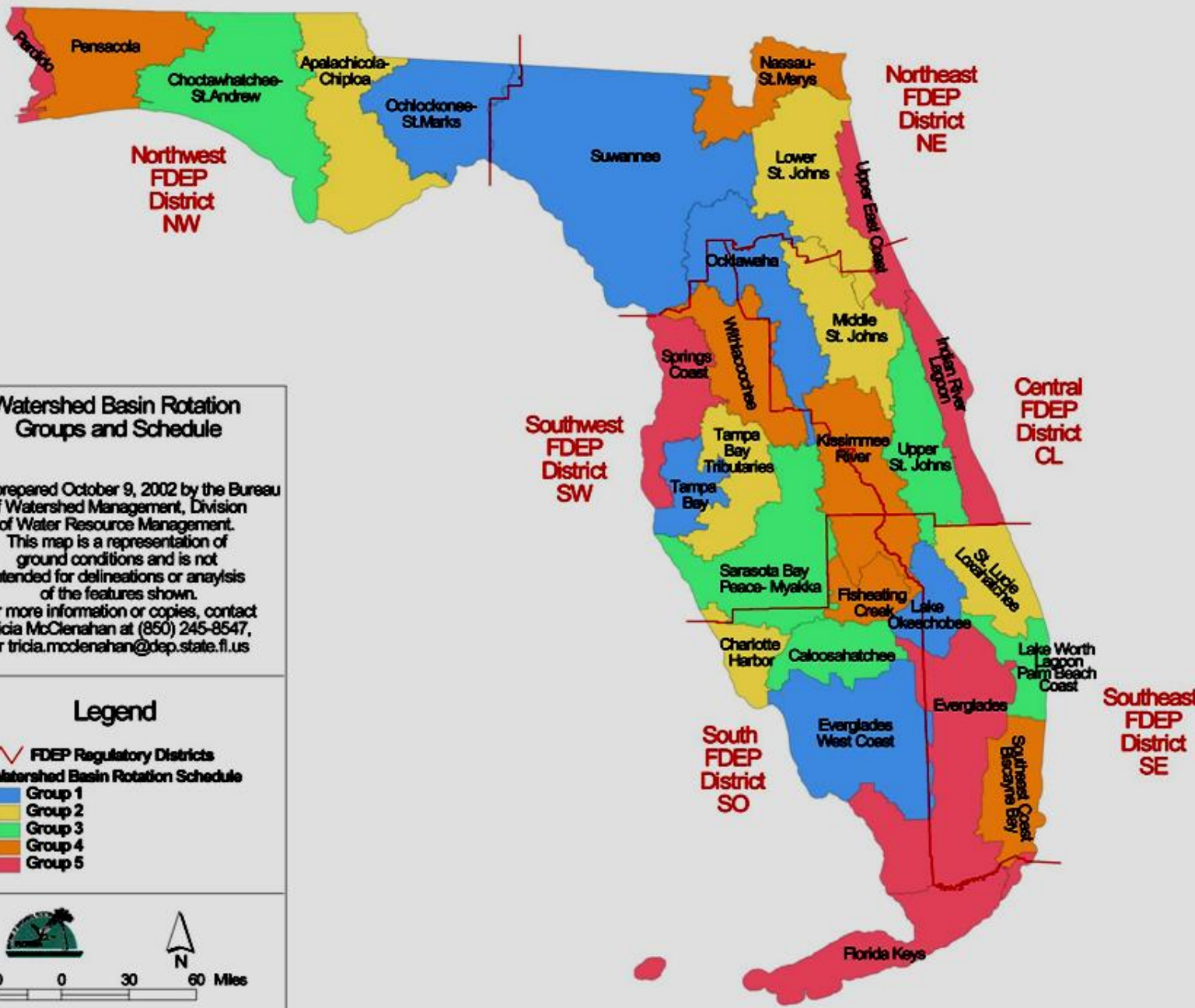
- Additional data specifications:
 - **For lakes** - Data used in water quality assessments performed under the IWR be measured in the **upper 2 meters of the water column**
 - **62-303.320(6)(a)**: Specifies that if any individual DO measurement is greater than 100% saturation, 100% shall be used for the calculation of the **daily, weekly, and/or monthly** averages



Effects of Criteria Revisions

Assessment Schedule:







Cycle Rotation	Basin Group	Planning Period	Verified Period
1	1	1989 - 1998	1/1/1995 - 6/30/2002
1	2	1991 - 2000	1/1/1996 - 6/30/2003
1	3	1992 - 2001	1/1/1997 - 6/30/2004
1	4	1993 - 2002	1/1/1998 - 6/30/2005
1	5	1994 - 2003	1/1/1999 - 6/30/2006
2	1	1995 - 2004	1/1/2000 - 6/30/2007
2	2	1996 - 2005	1/1/2001 - 6/30/2008
2	3	1997 - 2006	1/1/2002 - 6/30/2009
2	4	1998 - 2007	1/1/2003 - 6/30/2010
2	5	1999 - 2008	1/1/2004 - 6/30/2011
3	1	2000 - 2009	1/1/2005 - 6/30/2012
3	2	2002 - 2011	1/1/2007 - 6/30/2014
3	3	2003 - 2012	1/1/2008 - 6/30/2015
3	4	2004 - 2013	1/1/2009 - 6/30/2016
3	5	2005 - 2014	1/1/2010 - 6/30/2017



Watershed Basin Rotation Groups and Schedule

Map prepared October 9, 2002 by the Bureau of Watershed Management, Division of Water Resource Management. This map is a representation of ground conditions and is not intended for delineations or analysis of the features shown. For more information or copies, contact Tricia McClenahan at (850) 245-8547, or tricia.mcclenahan@dep.state.fl.us

Legend

-  FDEP Regulatory Districts
- Watershed Basin Rotation Schedule**
-  Group 1
-  Group 2
-  Group 3
-  Group 4
-  Group 5





2014 Strategic Monitoring Activities

- **Basin Group 4**
 - Pensacola
 - Nassau – St. Marys
 - Withlacoochee
 - Kissimmee River
 - Fisheating Creek
 - Southeast Coast – Biscayne Bay
- **Other NE Basin Groups**
 - Suwannee River
 - Lower St. Johns
 - Upper East Coast
- **Begin sampling in Jan/Feb 2014 and will sample through December 2014**
- **Results uploaded to Florida STORET and SBIO database**

- **Additional data**
 - Sucralose – source identification
 - Pesticides

Plans available on website:

<http://www.dep.state.fl.us/water/watersheds/assessment/smplan.htm>



2014 Strategic Monitoring Plans

- **Plan Development**
 - WBID-parameters potentially impaired based on the planning or study list assessment provisions
 - WBID-parameters previously identified as category 4d (i.e. cycle 2 for DO or biology)
 - WBID-parameters needing additional data to allow assessment for attainment of the numeric nutrient criteria



Assessment Under New Criteria

- Reassess waters going forward as part of the watershed basin rotation
 - Possible changes in impaired status
 - Assessments will include TMDLs adopted as criteria
 - Previously impaired waters may remain impaired



Group 2 Listing Schedule

- March-April - WAS produce draft lists
- May-June - Post Draft Lists, hold public meetings, comment period
- July-August - Incorporate comments to produce Revised Lists
- September - Post Revised Lists, may hold additional public meetings, comment period
- Oct. - Produce Final Lists for public review
- Nov. - Final Lists presented for upper management review
- Dec. - Secretarial Adoption of Final Lists (Verified and Delist); Followed by a 21 -day challenge period



Prioritizing TMDLs

- Rule 62-303.500
 - "Prioritization for TMDL Development"
 - Part of impaired waters rule (IWR)
 - High, medium, low

Class I – Drinking water supplies

Class II – Shellfish propagation or harvesting

Class III – Fish consumption, recreation, well-balanced fish and wildlife

Class III Limited – Class III with limited aquatic life support and habitat

Class IV – Agricultural water supplies

Class V – Navigation, utility, and industrial uses (no current designations)



EPA Consent Decree Era

- EPA/Earthjustice consent decree (1999 – 2013*)
 - Detailed schedule for TMDL development
 - Required EPA to adopt TMDLs (if no state TMDL)
- Some decree-listed waterbodies were not "verified impaired" (so no state TMDL possible)
 - Mix of state and federal TMDLs



Post Consent Decree Era

- New approach needed
 - DEP portion of consent decree schedule completed
 - New standards for dissolved oxygen and nutrients
 - Potential changes in impaired status



Recovery Potential Screening

- EPA tool to assist in prioritizing TMDLs
 - Areas with the greatest chance of success
 - Based on analysis of various selected indicators
 - Ecological
 - Stressor
 - Social

<http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/>



Phased Approach

Phase 1

- Remove Bacteria and Mercury WBIDs

Phase 2

- Numeric Indicators

Phase 3

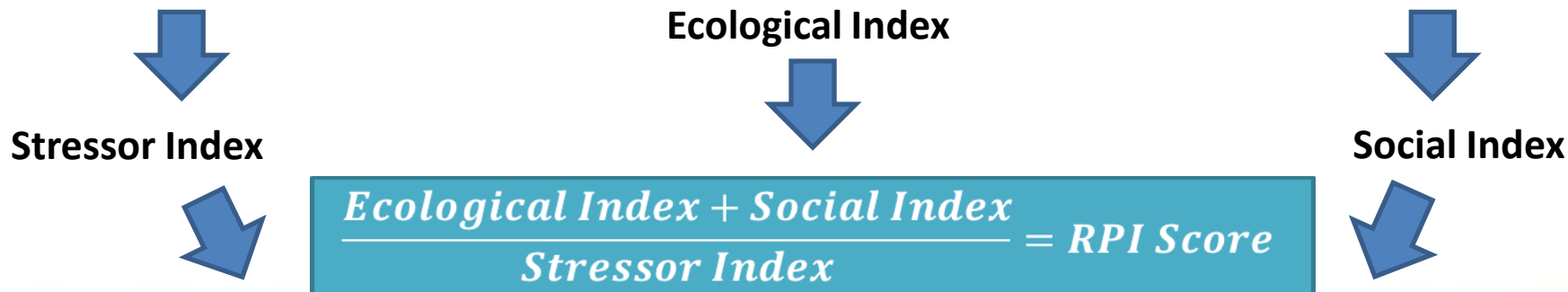
- Non-Numeric Indicators

List of Waters to Develop TMDLs



Indicators Overview

Stressor	Ecological	Social
Severity of impairment	Presence of Outstanding Florida Water (OFW)	Listing priority/age of the listing
Proximity to other impaired waterbodies	EPA/UF Watershed Index	
Number of point source outfalls		(BMAP effectiveness)
Effluent dominated waterbody		(Presence of EPA TMDL)
Number of verified listings		(Economic importance)
Number of impairment/waterbody combinations		(Likelihood of reasonable assurance plan or other approach)
Designated use		(Public access)





Stressor Indicators

- Severity of impairment
 - Concentration above criteria
- Proximity to other impaired waterbodies
 - Allows one research project for multiple TMDLs
 - Calculated as number of impairments within HUC-8
- Number of NPDES point source outfalls
 - One TMDL instead of multiple WQBEL analyses
- Effluent dominated waterbody
- Number of impairment/waterbody combinations
- Designated Use
 - Lower classifications prioritized, in keeping with rule



Ecological Indicators

- Presence of Outstanding Florida Water (OFW)
- EPA/University of Florida Watershed Index
 - Landscape analysis of ecological significance
 - Decision tool to help guide conservation priorities





Social Indicators

- Age of the listing
 - Promotes older listings
- Other social indicators addressed in "Phase 3"
 - Largely non-numeric, potential metrics for next year





2014 – 2016 TMDL Plan

2014-2016 TMDL Development Work Plan for Northeast Florida:

- Some to start studying, some to start TMDLs
- Shows 16 waterbodies in these basins:
 - Suwannee
 - Nassau-St. Marys
 - Lower St. Johns
 - Upper East Coast
 - Ocklawaha



Questions??

