

Upper Wakulla River Regulations, Restoration,Rethink for Future

American Planning Association

Webinar - The Issue of Water:
Quality and Quantity and Implications for
Florida's Growth
January 16, 2015

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Water Resources Engineering Division



City of Tallahassee, Florida



Wakulla Springs



Wakulla Springs



Wakulla Spring - The Problem



Algae and hydrilla covering the Wakulla Spring basin near the platform

- Hydrilla and Algae at Wakulla Springs
- High Nitrate Concentration
- TMDL Regulation



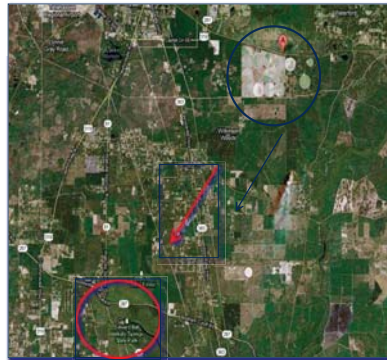
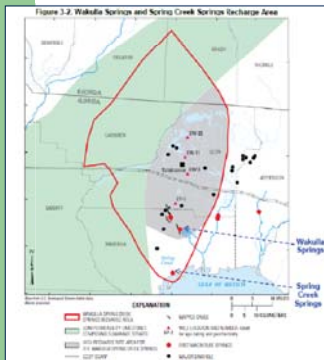
Regulations - 2012 TMDL Goal

“The applicable water quality standard for nitrate concentration in the Wakulla River, per the TMDL and state standards is 0.35 mg/L.” (56.2% Reduction)



Compare to drinking water (groundwater) nitrate standard of 10 mg/L

Early Studies - The Connections



Restoration

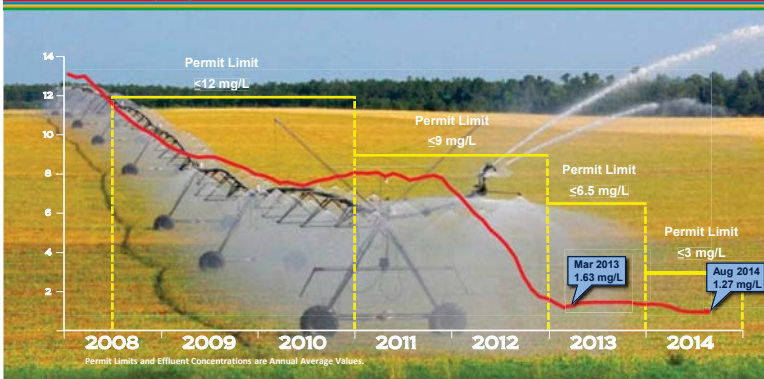
Part of the Problem – Part of the Solution

- The City of Tallahassee and its residents are paying for a \$227 million upgrade to Advanced Waste Water Treatment (Total Nitrogen = 3 mg/L).
- Output from a Septic System Drainfield is approximately TN = 20-40 mg/L

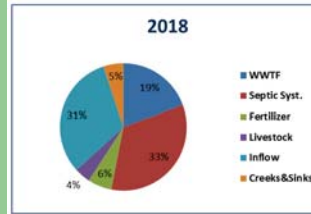
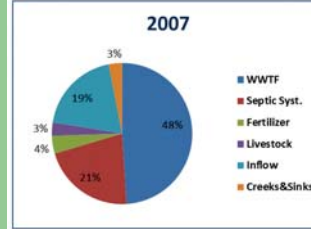


Results from AWT Investment

- Achieved Nitrogen Reduction Far Ahead of Schedule
- Nitrogen from Treatment Plant - less than 3 mg/L
- Lowered Nitrogen "footprint" of 170,000 residents - far lower than others in the Springshed.



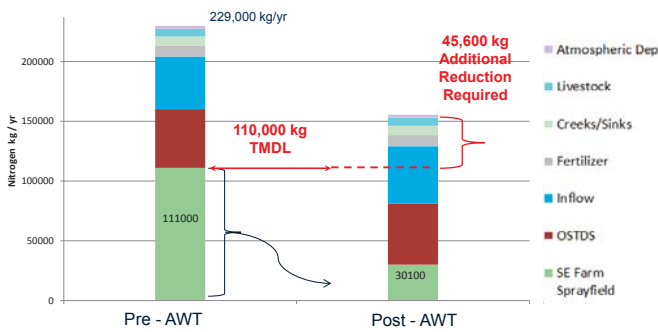
Post AWT – New “Largest Contributor”



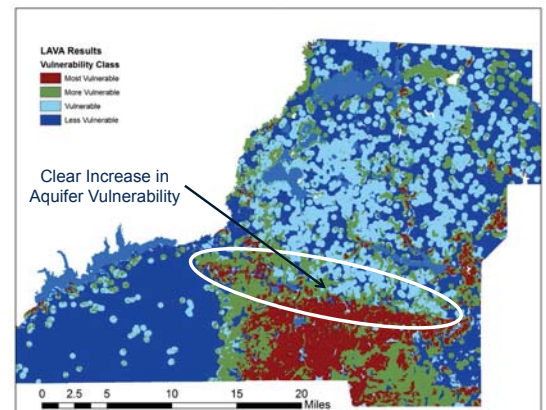
1. **Septic Systems**
2. **WWTF Sprayfield**
3. **Inflow**
4. **Fertilizer**
5. **Creeks & Sinks**
6. **Livestock**

Impact of AWT Project

75% Load Reduction - - Exceeded 52% Load Reduction
Additional Nitrate Reduction Required (45,600 kg)



The Cody Scarp Important Planning Landmark



Planning - Awards

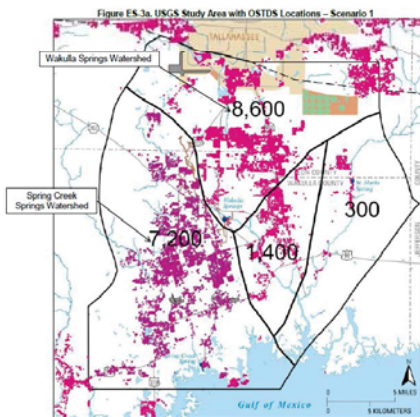
In June of 2009 the Tallahassee-Leon County Planning Department received the Florida Planning and Zoning Association's Excellence in Environmental Planning Award for the work associated with the Comprehensive Plan policies to protect Wakulla Springs



Planning - Details

- Both Leon County and the City of Tallahassee adopted Wakulla Springs protection Comprehensive Plan policies on January 7, 2009
- Both the City and County adopted Primary Springs Protection Zone (SPZ) ordinances effective April 10, 2009
- Wakulla County adopted Comprehensive Plan policies for Performance-Based Septic Systems and Advanced Central Wastewater Treatment in Specific Areas
- Currently (2014), state legislation restricting local governments' ability to require performance-based systems and mandatory inspections of all systems – if not grandfathered.

Leon and Wakulla Septic Tanks South of The Cody Scarp



Recent Studies - Recommendations



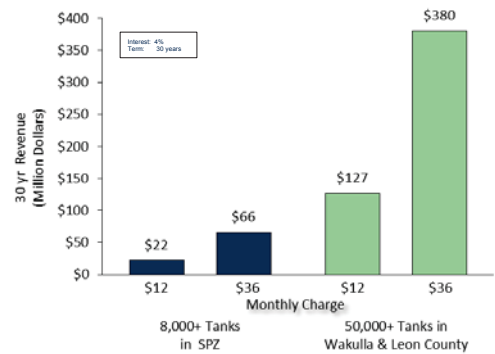
AWT Cluster System

Central Sewer

The Numbers

- Cost to build and connect OSTDS to central sewer is approximately \$20,000/parcel
- Lombardo report – upgrade OSTDS to high performance septic systems = \$20,000
- Leon & Wakulla County OSTDS 8,600 * \$20,000 = \$172M
- Local engineer/installer estimates retrofit ~\$5,000
- Leon & Wakulla County OSTDS 8,600 * \$5,000 = \$43M

Bonding Capacity on 30 Year OSTDS Fee Revenue Stream



Regulations - BMAP

Outstanding Issues with Current Basin Management Action Plan



Restoration

The Next Low Hanging Fruit



Rethink

Be Part of the Solution, Not Part of the Problem

- Part of Planning - reach out to your local & state water resource professionals
- Support local wastewater policies to promote nitrogen (pollutant) reduction
- New Paradigm: All are wastewater contributors
- Need cooperation among state agencies for water resource and septic tank regulations
- The technology is there



Environmental Crossroads for Wakulla Springs



<http://www.youtube.com/watch?v=EnuQBVA1lws>

Questions ?



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City of Tallahassee
Your Own Utilities



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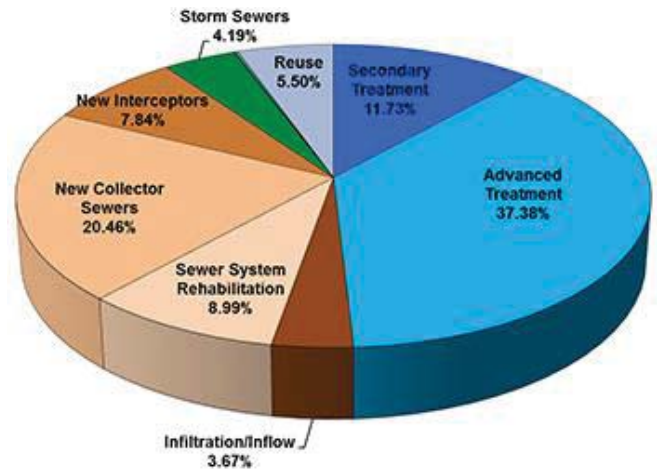
Financing Water Quality Infrastructure

Eric Draper edraper@audubon.org

Executive Director Audubon Florida

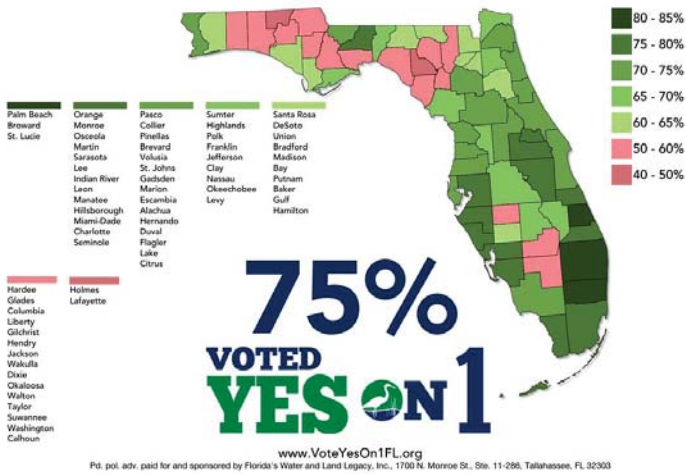
Legislative Chair

Amendment 1 Sponsoring Organizations

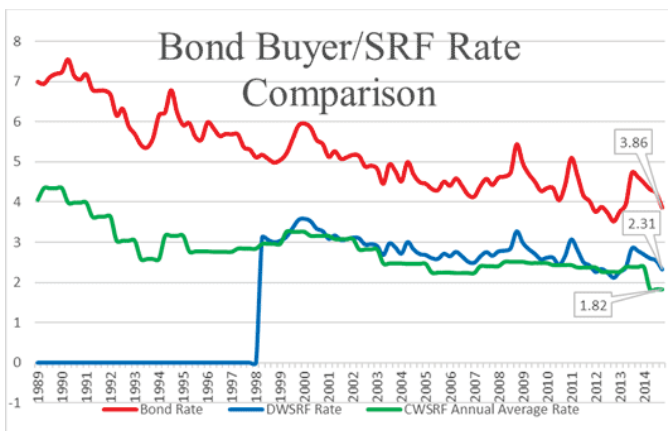


EPA Needs Category	Cumulative Amount
Secondary Treatment	\$462,494,842
Advanced Treatment	\$1,474,080,310
Infiltration/Inflow	\$144,817,980
Sewer System Rehabilitation	\$354,617,232
New Collector Sewers	\$806,997,384
New Interceptors	\$309,249,663
Storm Sewers	\$165,137,210
Agricultural Cropland	\$226,935
Agricultural Animals	\$270,636
Ground Water Protection	\$518,217
Brownfields	\$4,312,000
Hydromodification	\$4,144,972
Reuse	\$216,976,127
Total	\$3,943,843,508





For the FY 2015 priority list as presently adopted, Florida expects to provide assistance to 36 wastewater and stormwater infrastructure projects for a total of \$235,804,347.



Florida Department of Environmental Protection



Overview of TMDLs and Restoration

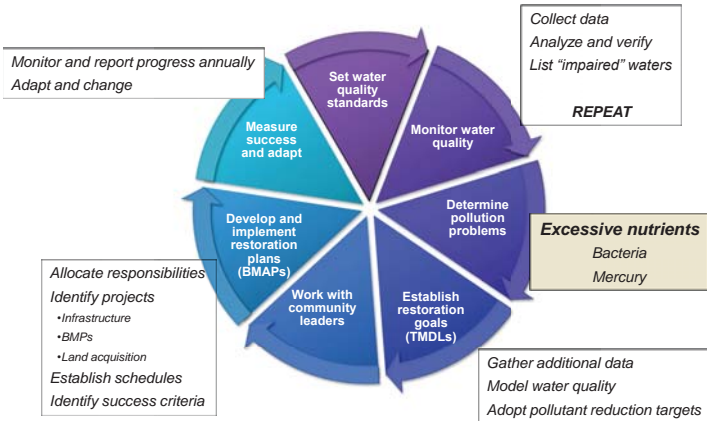
January 6, 2015

Tom Frick, Director
Division of Environmental Assessment and Restoration





Water Quality Framework



2



Restoration in Florida

- Watershed Restoration Act (403.067 F.S.)
- Enacted in 1999, amended in 2006
- Gives DEP clear legal authority for TMDLs
- Establishes Basin Management Action Plans (BMAPs)
- Requires "Good Science" - DEP to adopt methodology for determining impaired waters = Impaired Waters Rule (62-303, FAC)
- Requires "Public Participation"
 - 303(d) lists and BMAPs are adopted by DEP secretary
 - TMDLs are adopted by rule
- Requires "equitable allocation" of load reductions



What is a TMDL?

Formal definition: TMDLs identify the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards.

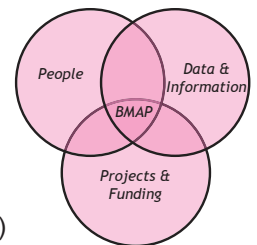
Informal definition: TMDLs set numeric water quality goals to restore the health of a lake, river, stream, spring, or estuary.

$$\text{TMDL} = \text{WLA} + \text{LA} + \text{MOS}$$



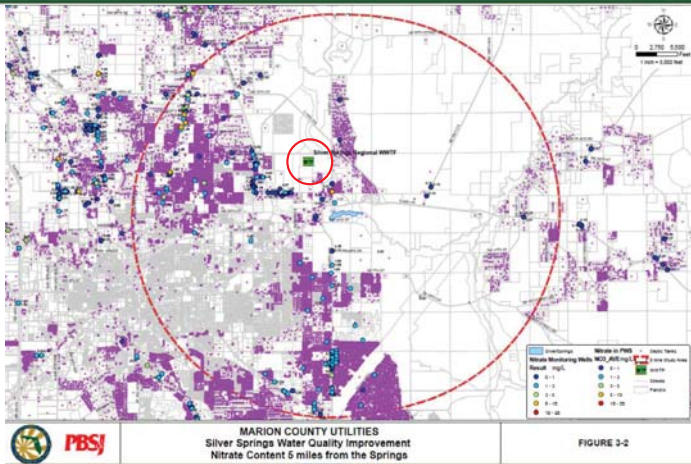
What is a BMAP?

- Refined source identification
- Allocations
- Restoration projects
- Monitoring (water quality & projects)
- Commitments: funding & implementation timelines





Silver Springs – Urban Setting



Water Quality Restoration Plans and Tools in Florida

Tiffany Busby, Wildwood Consulting
American Planning Association Webinar
January 16, 2015

Goal: Restore Water Quality

- ▶ Why do we restore water quality?
 - Recreation in and around beaches, rivers, lakes
 - Public health
 - Fishing
 - Shellfish consumption—public health
 - Drinking water supply
 - Agricultural water supply
 - Health of aquatic ecosystems
 - Tourism



Tools We Use

- ▶ Wastewater Upgrades
 - Treatment improvements
 - Collection system improvements
 - Disposal system changes/redirect to reuse
 - Redirect septic tank system discharges near surface waters to wastewater facilities
 - Springs areas—improve the quality of treated wastewater that is land-applied
 - Springs areas—improve or reduce contributions from septic tank systems into the ground water



Baffle walls, City of Atlantic Beach Plant

Tools We Use

- ▶ Urban Stormwater Improvements
 - Retrofitting older urban areas with stormwater treatment
 - Adding stormwater treatment or enhancements
 - Controlling pollution sources
 - Public education
 - Low impact development techniques
 - Ordinances—fertilizer use, irrigation, landscaping, pet waste, low impact design



City of Palm Bay Public Education

Tools We Use

- ▶ Reducing Runoff from Agriculture
 - Best management practices
 - Advanced management practices
 - Regional treatment facilities
 - Cost-share projects with land owners



Fertilizer banding equipment



Irrigation: Installation of sub-surface drip tape

Florida's Restoration Approach

- ▶ Develop a specific plan
- ▶ Engage
- ▶ Management actions
- ▶ Enforce
- ▶ Be fair and equitable
- ▶ Measure
- ▶ Funding
- ▶ Update the plans

Types of Specific Restoration Plans

- ▶ Basin Management Action Plans (BMAPs)
 - Applies to a particular geographic area
 - Implements one or more TMDLs
 - Specific actions are described
 - Timelines for projects and reductions
 - Monitoring plan
 - Enforceable/adopted by the Florida Department of Environmental Protection



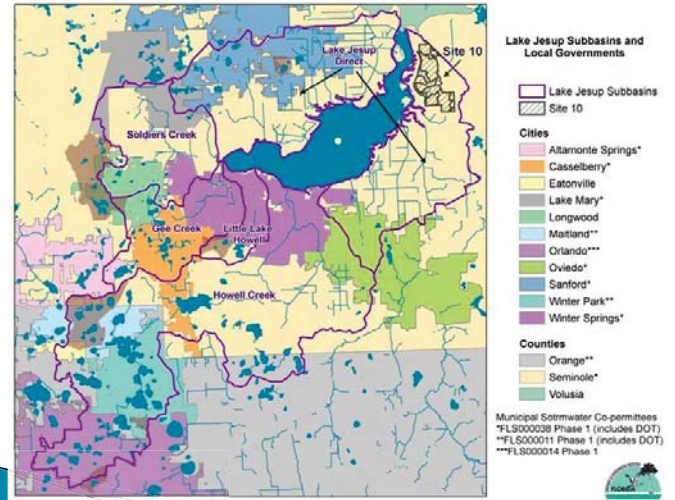
Algal scrubber, Indian River County

Example: Lake Jesup BMAP

- ▶ Orlando–area watershed—Lake Mary, Winter Springs, Seminole County, Orange County, etc.
- ▶ Includes the lake and its tributaries
- ▶ Focuses on reducing the nutrient *phosphorus*



Surface of Lake Jesup during an algal bloom



Casselberry's street sweeper



Lake Mary's rain garden



Maitland's drainage improvements

Other Types of Plans

- ▶ Locals can be proactive and initiate their own plans
 - Waterbodies that have declining water quality
 - Waterbodies that are impaired but do not have a state TMDL
- ▶ Reasonable Assurance Plans (4b Plan)
 - A lot like a BMAP but completed prior to a TMDL
 - Sets water quality targets and project schedule.
 - Examples:
 - The Florida Keys
 - Tampa Bay Estuary

Other Types of Plans

- ▶ 4e Water Quality Plans
 - Also like a BMAP, but somewhat less specific
 - May not establish a water quality target
 - Includes local activities to improve water quality
 - Monitors water quality progress
 - Postpones TMDL development while improvements are underway
- ▶ Examples:
 - Lake Tohopekaliga (Osceola County/Kissimmee area)
 - Central Drainage Ditch, City of Tallahassee
- ▶ Some planning assistance from FDEP is available for pro-active efforts to improve water quality.

Local Engagement

- ▶ All Florida restoration plans prioritize local involvement
 - Local governments
 - Regional entities (water management districts, planning agencies, FDOT, water control districts, National Estuary Programs, etc.)
 - Industrial sources
 - Agricultural owners and representatives
 - Wastewater treatment plants/utilities
 - Environmental groups
 - Local residents



BMAP public meeting

Planners can:

- ▶ Engage in or initiate water quality plans such as
 - BMAPs
 - Reasonable Assurance Plans
 - 4e Plans
- ▶ Know your waterbodies and their issues
- ▶ Promote thinking about water quality issues during redevelopment
- ▶ Promote policies and ordinances that reduce pollution sources
- ▶ Promote applying for state funding for projects
- ▶ Contact us if you have questions or problems

My Contact Information~

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