



Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration

***Wekiva River, Rock Springs Run, and
Little Wekiva Canal
Basin Management Action Plan
(BMAP)***

***Moira R. Homann
November 8, 2017***





Onsite Sewage Treatment and Disposal System (OSTDS) Committee Agenda

1. Welcome and Opening Remarks.
2. Recap Items.
 - a. Orange County Education Grant.
 - b. Review Draft BMAPs – Crystal River/Kings Bay, Volusia Blue Spring.
3. New Items/Discussion.
 - a. OSTDS Source Reductions Approaches.
4. Public Comments.
5. Adjourn OSTDS Committee.



Recap Items



Orange County Education Grant Update

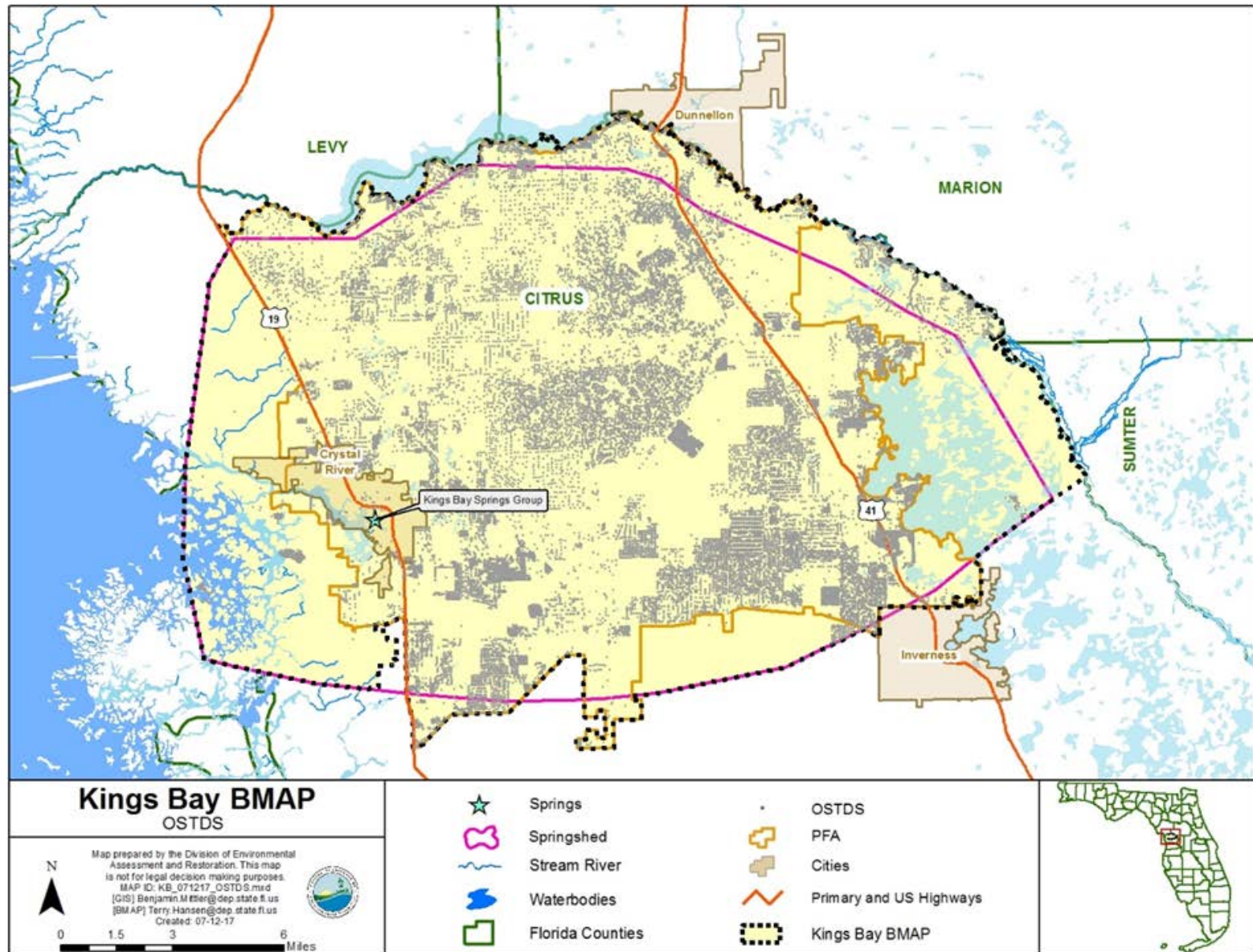


Review Draft BMAPs

- Crystal River/Kings Bay.
- Volusia Blue Spring.



Crystal River/Kings Bay OSTDS





OSTDS Reductions Approaches

- Draft Crystal River/Kings Bay BMAP
 - This BMAP lists 12 specific projects that reduce OSTDS loading by 103,868 pounds of nitrogen per year (lb-N/yr).
 - All OSTDS within the PFA must be enhanced or sewerred within 20 years.
 - If sewer is projected in a BMAP project, a conventional system can be installed or repaired in the meantime.





OSTDS Reductions Approaches

Draft Crystal River/Kings Bay BMAP (continued):

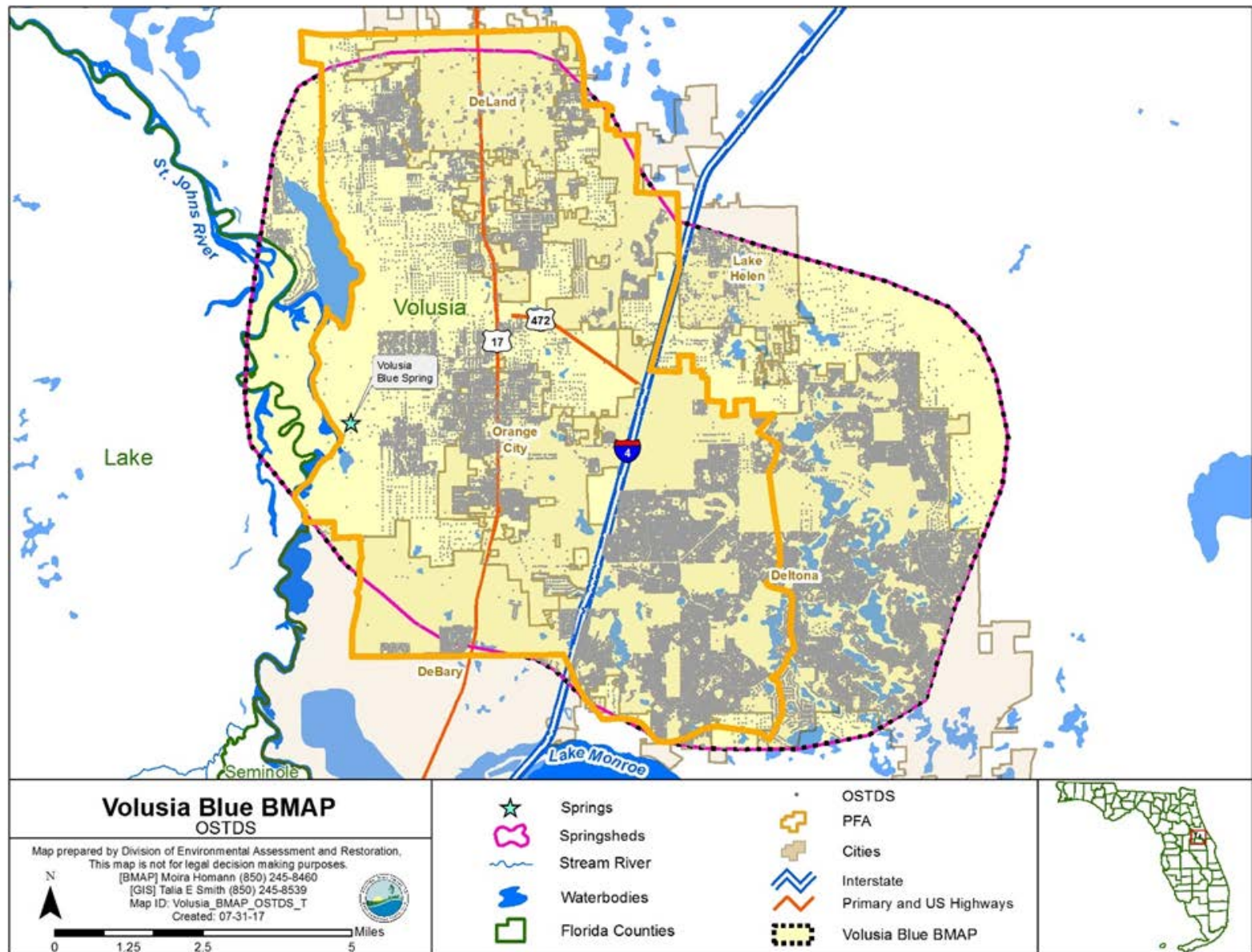
- OSTDS must be enhanced or sewerred on all lots within the PFA (less than one acre and over one acre).
- Enhanced OSTDS must meet or exceed the National Sanitation Foundation (NSF) Standard 245 nitrogen removal rate including:
 - Aerobic treatment units (ATUs).
 - Performance-based treatment systems (PBTS).
 - In-ground nitrogen reducing biofilters.
 - In-tank nitrogen removing biofilters.
 - A 24-inch separation between the bottom of the drainfield and the seasonal high water table may be necessary with certain technologies.

Example of an existing technology to enhance an OSTDS.





Volusia Blue OSTDS





OSTDS Reductions Approaches

- Draft Volusia Blue Springs BMAP
 - All OSTDS within the PFA on lots less than one acre must be enhanced or sewerred within 20 years.
 - If sewer is projected in a BMAP project, a conventional system can be installed or repaired in the meantime.



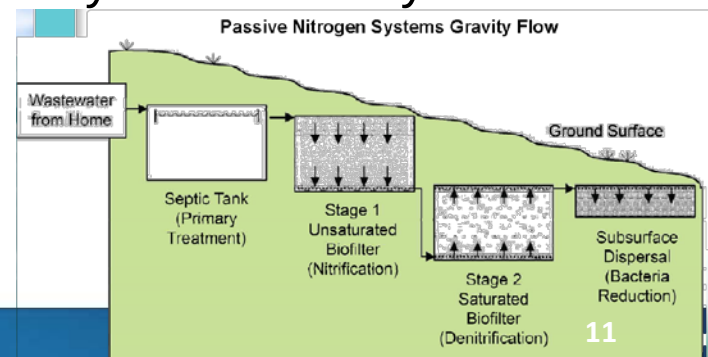


OSTDS Reductions Approaches

Draft Volusia Blue BMAP (continued):

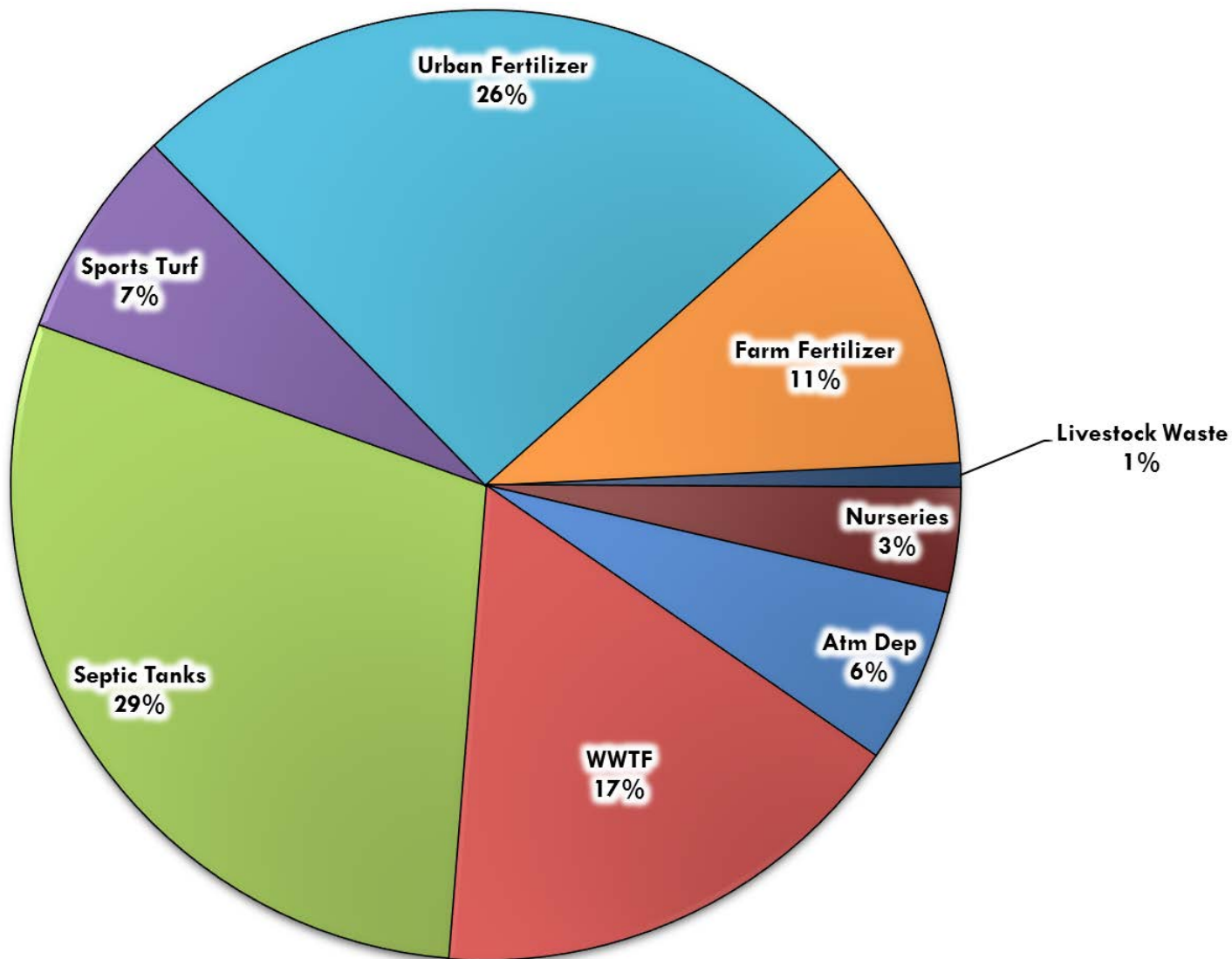
- OSTDS must be enhanced or sewerred on all lots less than one acre within the priority focus area ([PFA] not over one acre).
- Enhanced OSTDS must meet or exceed the NSF Standard 245 nitrogen removal rate including:
 - ATUs.
 - PBTS.
 - In-ground nitrogen reducing biofilters.
 - In-tank nitrogen removing biofilters.
 - A 24-inch separation between the bottom of the drainfield and the seasonal high water table may be necessary with certain technologies.

Example of an existing technology to enhance an OSTDS.





Wekiwa Nitrogen Source Inventory Loading Tool (NSILT) – Percent Load to Groundwater



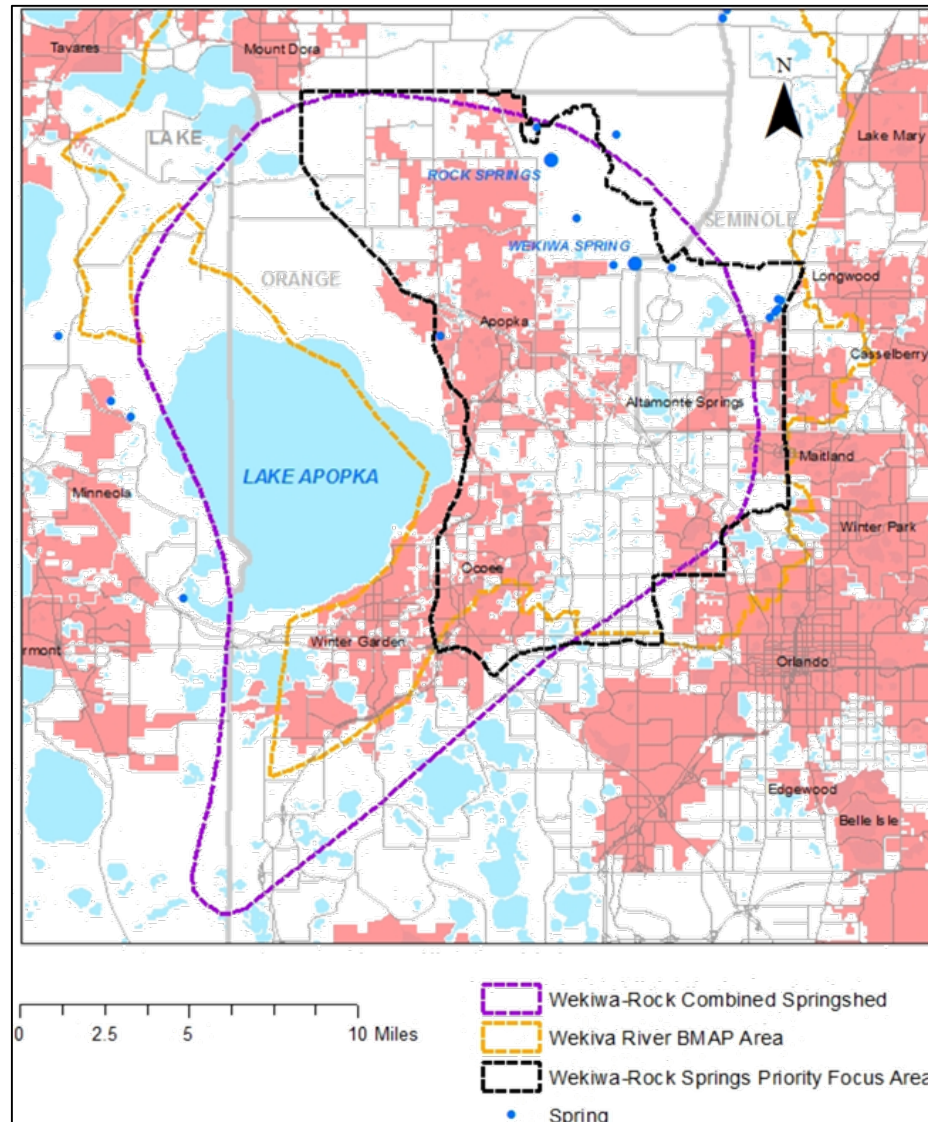


Wekiwa Load to Groundwater by Source

Source	Groundwater Load (lbs-N/yr)	Percent Contribution (%)
Atmospheric Deposition (AD)	61,328	6 %
Wastewater Treatment Facility (WWTF)	168,770	17 %
OSTDS	296,984	29 %
Sports Turfgrass Fertilizer (STF)	73,051	7 %
Urban Turfgrass Fertilizer (UTF)	261,552	26 %
Farm Fertilizer (FF)	110,089	11 %
Livestock Waste (LW)	8,318	1 %
Nurseries	35,760	4 %
Total	1,015,852	100 %
OSTDS PFA	232,184	23 %
OSTDS Outside PFA	64,800	6 %
Total	296,984	29 %

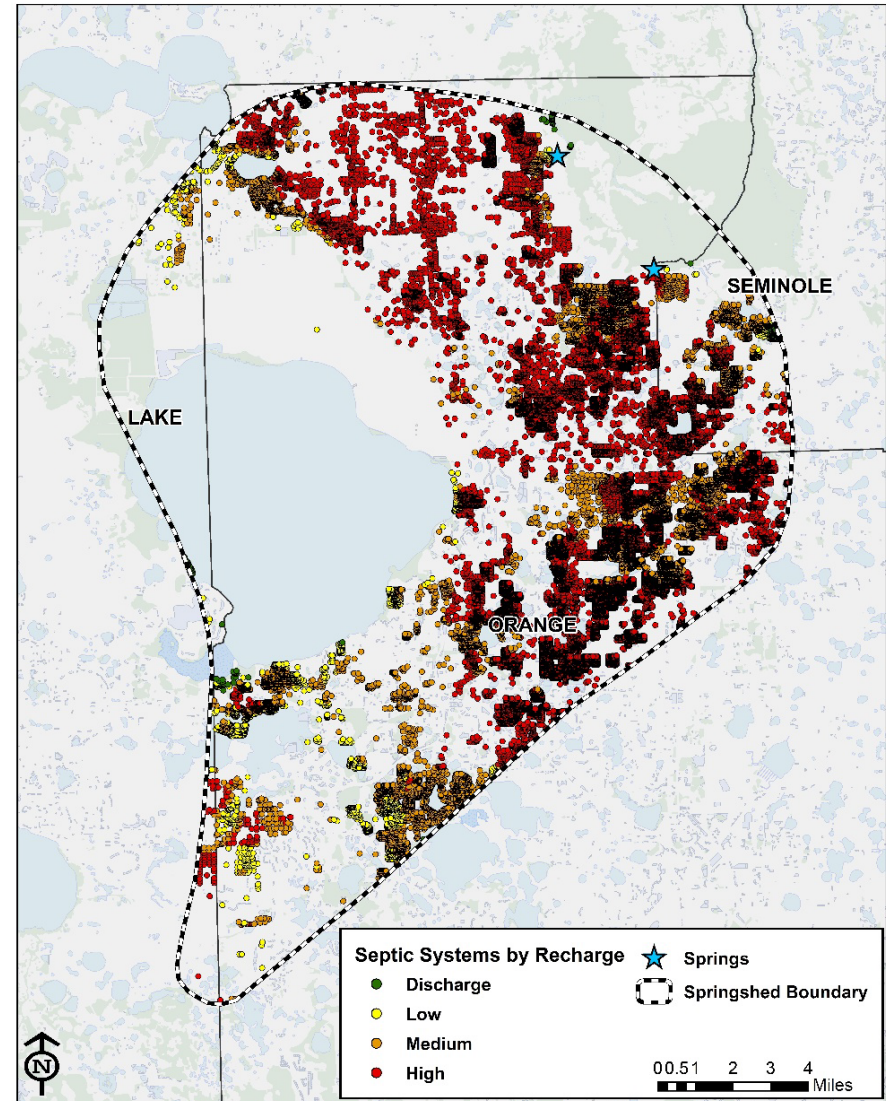
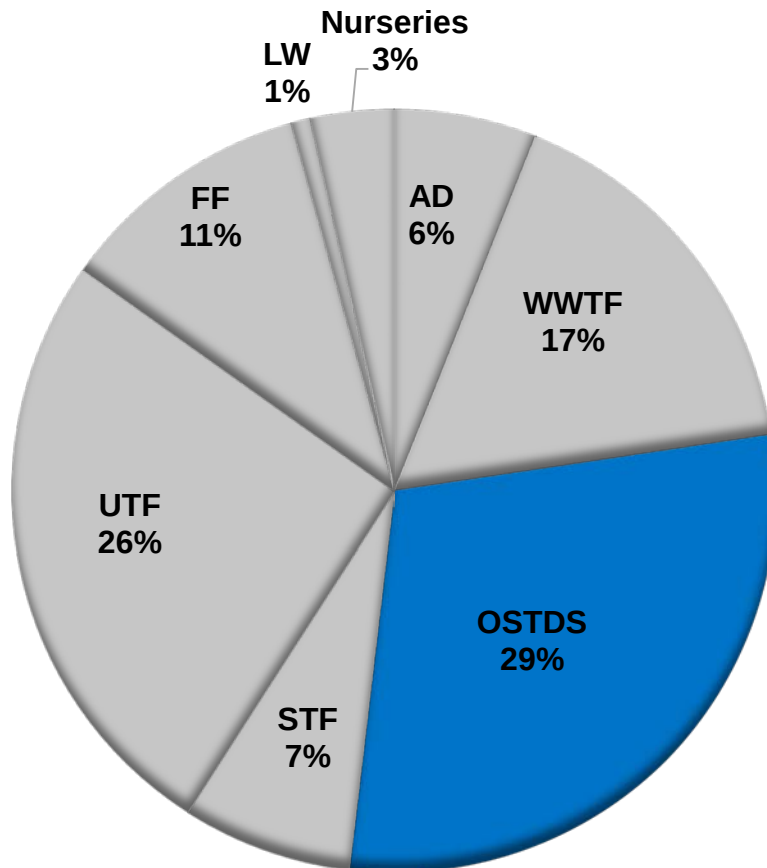


Springshed, PFA, BMAP Boundary





Wekiwa OSTDS



This map was prepared on 05/03/17 by FDEP Groundwater Management Section. For display purposes only. For more information: C.Lyon (850) 245-8652



OSTDS Calculations

Factors Applied to Land Inputs	Factors
Attenuation	0.43
Low Recharge	0.1
Medium Recharge	0.5
High Recharge	0.9

Recharge Category	Conventional OSTDS Load to Groundwater (lbs-N/yr/OSTDS)	Improvement to Groundwater (lbs-N/yr/OSTDS)	
		Enhanced OSTDS	Replaced OSTDS
Nitrogen Input	19		
Attenuation	8.1		
Low Recharge	0.8	0.5	0.8
Medium Recharge	4.0	2.6	3.8
High Recharge	7.3	4.7	6.9



Possible OSTDS Load Reductions

Recharge	PFA Lots Less than One Acre			PFA Lots Greater than One Acre		
	Number of OSTDS	Load Reductions Through Enhancement (lbs-N/yr)	Load Reductions Through Sewering (lbs-N/yr)	Number of OSTDS	Load Reductions Through Enhancement (lbs-N/yr)	Load Reductions Through Sewering (lbs-N/yr)
High	24,744	116,675	170,525	3,359	15,839	23,149
Medium	5,912	15,487	22,635	1,057	2,769	4,047
Low	238	125	182	47	25	36
Total	30,894	132,287	193,343	4,463	18,632	27,232

Recharge	Outside the PFA (In the Springshed) Lots Less Than One Acre			Outside the PFA (In the Springshed) Lots Greater than One Acre		
	Number of OSTDS	Load Reductions Through Enhancement (lbs-N/yr)	Load Reductions Through Sewering (lbs-N/yr)	Number of OSTDS	Load Reductions Through Enhancement (lbs-N/yr)	Load Reductions Through Sewering (lbs-N/yr)
High	880	4,149	6,065	425	2,004	2,929
Medium	2,172	5,690	8,316	973	2,549	3,725
Low	671	352	514	563	295	431
Total	3,723	10,191	14,894	1,961	4,848	7,085



Possible Wekiwa OSTDS Approaches

- All OSTDS must be enhanced or sewerred within 20 years.
- If sewer is projected in a BMAP project, a conventional system can be installed or repaired in the meantime.
- Determine geographic extent of enhancement / sewer requirement:
 - Less than 1 acre lots within PFA.
 - All lots within PFA.
 - Additional lots outside PFA.
- Enhanced OSTDS must meet or exceed the NSF Standard 245 nitrogen removal rate or another alternative.



Comments





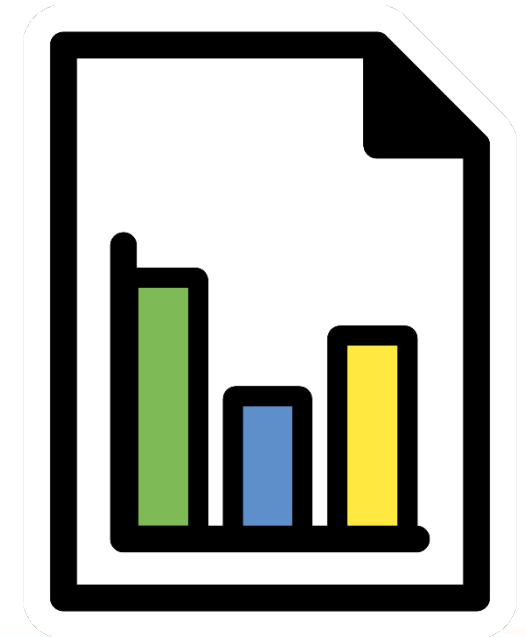
Agenda

- Draft Approaches to Achieve Reductions and Restoration.
 - Reductions.
 - BMAP Approaches.
- Timeline for BMAP Revision.
- Exploring Options for Additional Reductions from Fertilizer Ordinance - Seminole County.



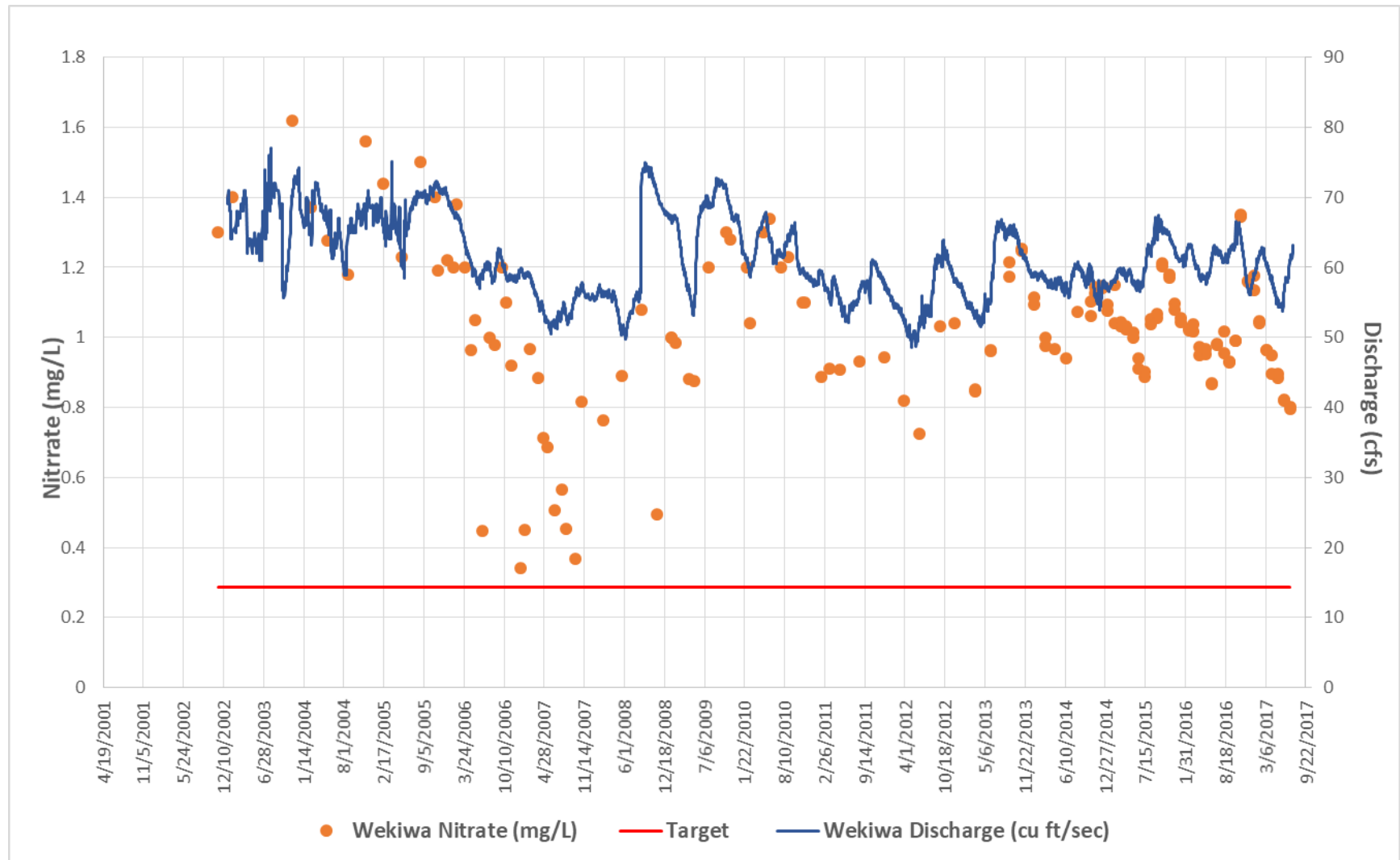
Draft Approaches to Achieve Reductions and Restoration

- Reductions.
- BMAP Policies.



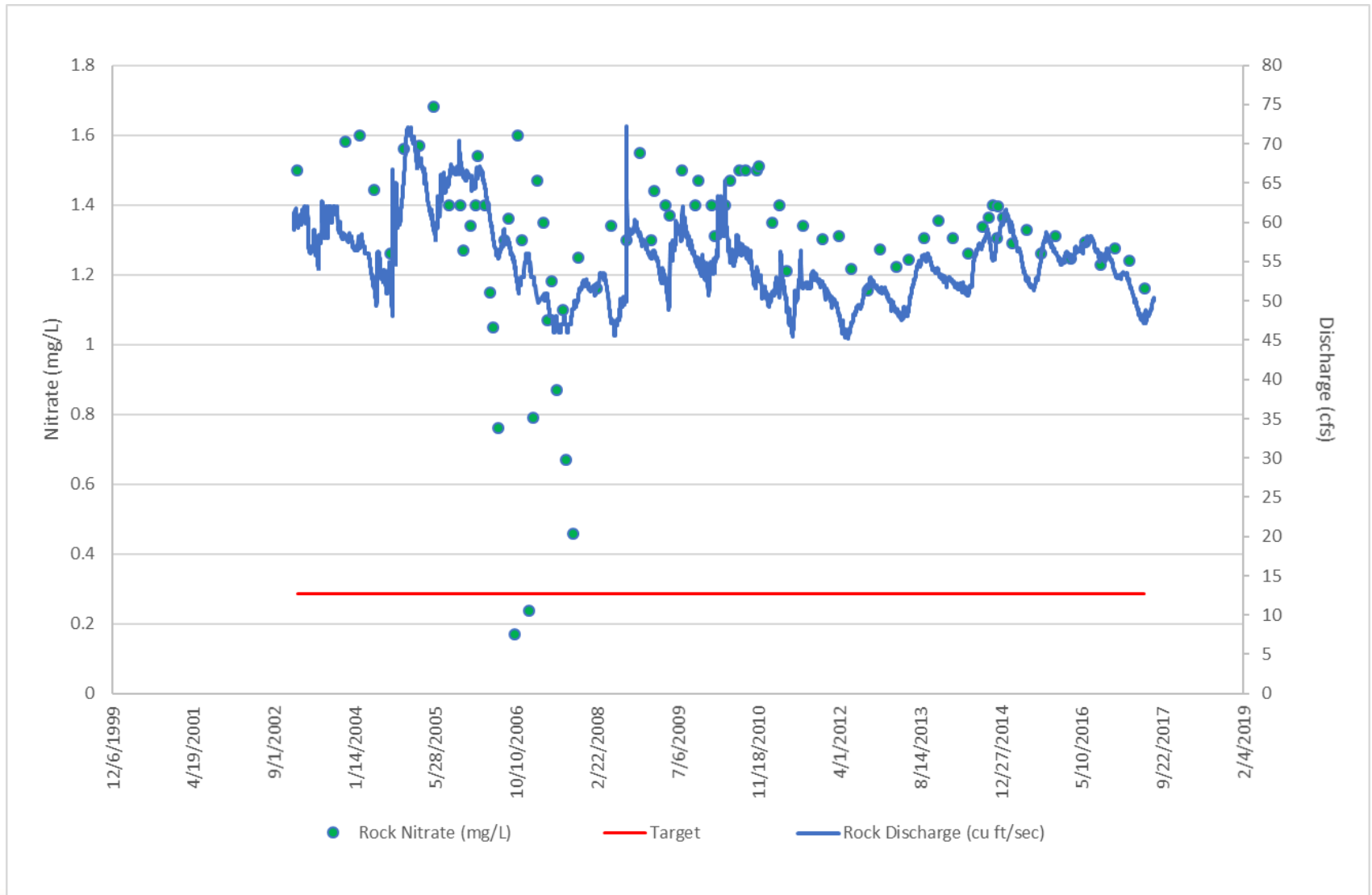


Wekiwa Discharge & Nitrate





Rock Discharge & Nitrate





Current Load Compared to the TMDL

Load	Nitrogen Loads (lbs-N/yr)	Data Source
Total Load at Spring Vent	275,065	Upper 95 % confidence interval - Nitrate data from 2000-2017 (headspring) and flow data from 2002-2017
TMDL	65,637	Upper 95 % confidence interval - flow data from 2002-2017 and 0.286 mg/L
Total Required Reduction	209,428	





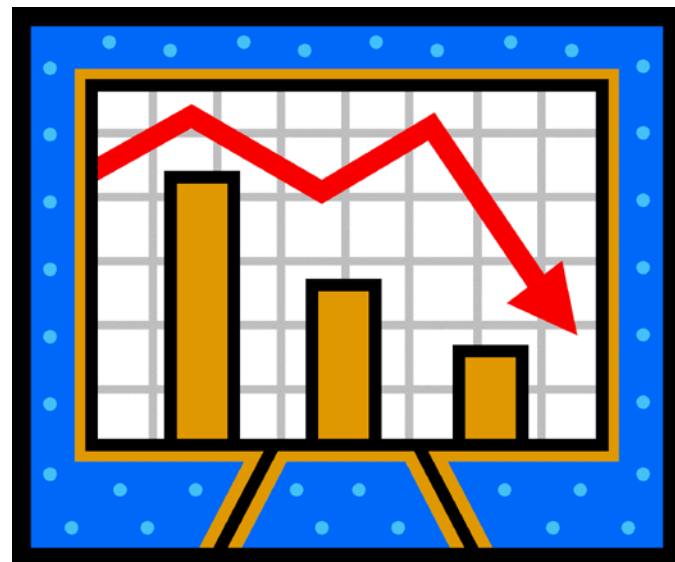
Reduction Milestones

- To achieve TMDL, BMAP implementation will be a 20-year process.
- Wekiwa/Rock Springs BMAP will define nitrogen reduction milestones:
 - 30 % reduction within 5 years – 62,828 lb-N/yr.
 - 50 % reduction within 10 years – 104,714 lb-N/yr.
 - 20 % reduction within 15 years – 41,886 lb-N/yr.
 - Total reduction – 209,428 lb-N/yr.



BMAP Approaches

- Total load reduction required to meet TMDL:
 - Difference between estimated total load at the spring vent (current concentration x current flow), and the TMDL load (target concentration x current flow).
- Reductions from projects:
 - Estimate reductions resulting from projects submitted by stakeholders.
 - Existing and planned efforts.
 - Attenuation and recharge discounts apply to reduction estimates at the ground surface.
- Remaining reduction balance (Gap):
 - Estimated by subtracting the total reduction required from the estimated reductions from projects submitted.





Example – Crystal River/ Kings Bay

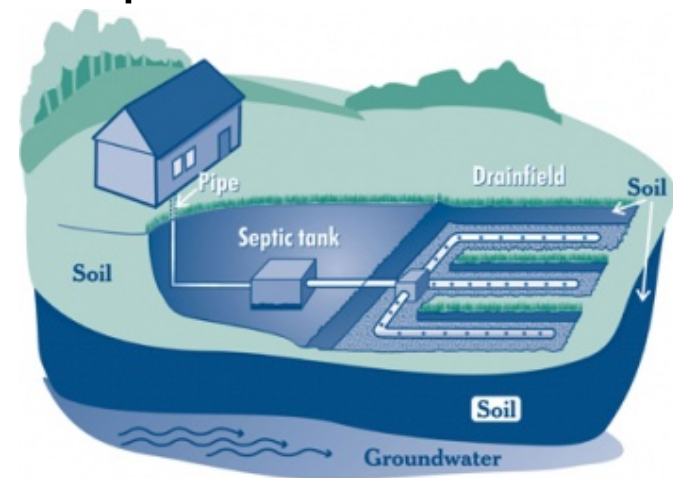
Gap Analysis		
Nitrogen Source	Credits Based on Projects Submitted (lb-N/yr)	Description
OSTDS	103,868	Credits identified for stakeholder OSTDS projects (enhancement or sewer)
UTF	4,050	DEP approved credits (up to 6%) for public education activities as well as credits identified for stakeholder stormwater projects
AD	–	No reduction
FF	10,604	15% BMP credit on FF load to groundwater, assuming 100% owner-implemented BMPs on all fertilized lands
STF	4,886	6% BMP credit for sports fields and 10% BMP credit for golf courses on STF load to groundwater, assuming 100% BMP implementation on golf courses and sports fields
Livestock	3,079	10% BMP credit on load to groundwater, assuming 100% owner-implemented BMPs at all livestock facilities
WWTF	9,322	Achieved by BMAP WWTF policy if BMAP-wide (achieving 3 or 6 mg/L)
Total Credits	135,810	
Required Reduction	274,000	
Load Remaining	138,190	

How to address the remaining 138,190 lbs/yr?



OSTDS Approaches to Achieve the Reduction

- Estimate reductions to groundwater from BMAP projects addressing OSTDS sources.
- Gap analysis: From the remaining OSTDS, evaluate the potential for nitrogen reductions based on OSTDS enhancement or replacement through remediation options.
 - Provides an estimate of what is possible, if additional projects were planned.





Wastewater Treatment Facilities (WWTFs) Approaches to Achieve the Reductions

- Estimate reductions to groundwater from BMAP projects provided by local entities.
- Apply the BMAP effluent policy for all WWTFs in the springshed.
- Estimate the additional load reductions that will be achieved when all facilities meet the BMAP policy.





BMAP WWTF Policy Example (Crystal River/Kings Bay/Volusia)

95 % of the Permitted Capacity (gallons per day [gpd])	Nitrogen Concentration Limits for RIBs and Absorption Fields (milligrams per liter [mg/L])	Nitrogen Concentration Limits for All Other Land Disposal Methods (mg/L)
Greater than 100,000	3	3
20,000 to 100,000	3	6
Less than 20,000	6	6



Urban Turfgrass Approaches to Achieve the Reductions

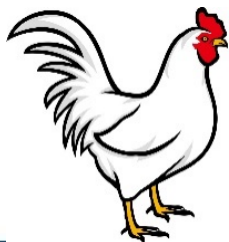
- *Urban/Sports Turfgrass Fertilizer (UTF)* –
 - Calculate the estimated reductions to groundwater for source control measures:
 - Florida Yards & Neighborhoods Program.
 - Local fertilizer ordinance.
 - Local pet waste ordinance.
 - Local irrigation ordinance.
 - Local Florida-friendly (low irrigation and fertilizer) landscape ordinance.
 - Sources have the option to collect and provide monitoring data to quantify reduction credits for additional measures.





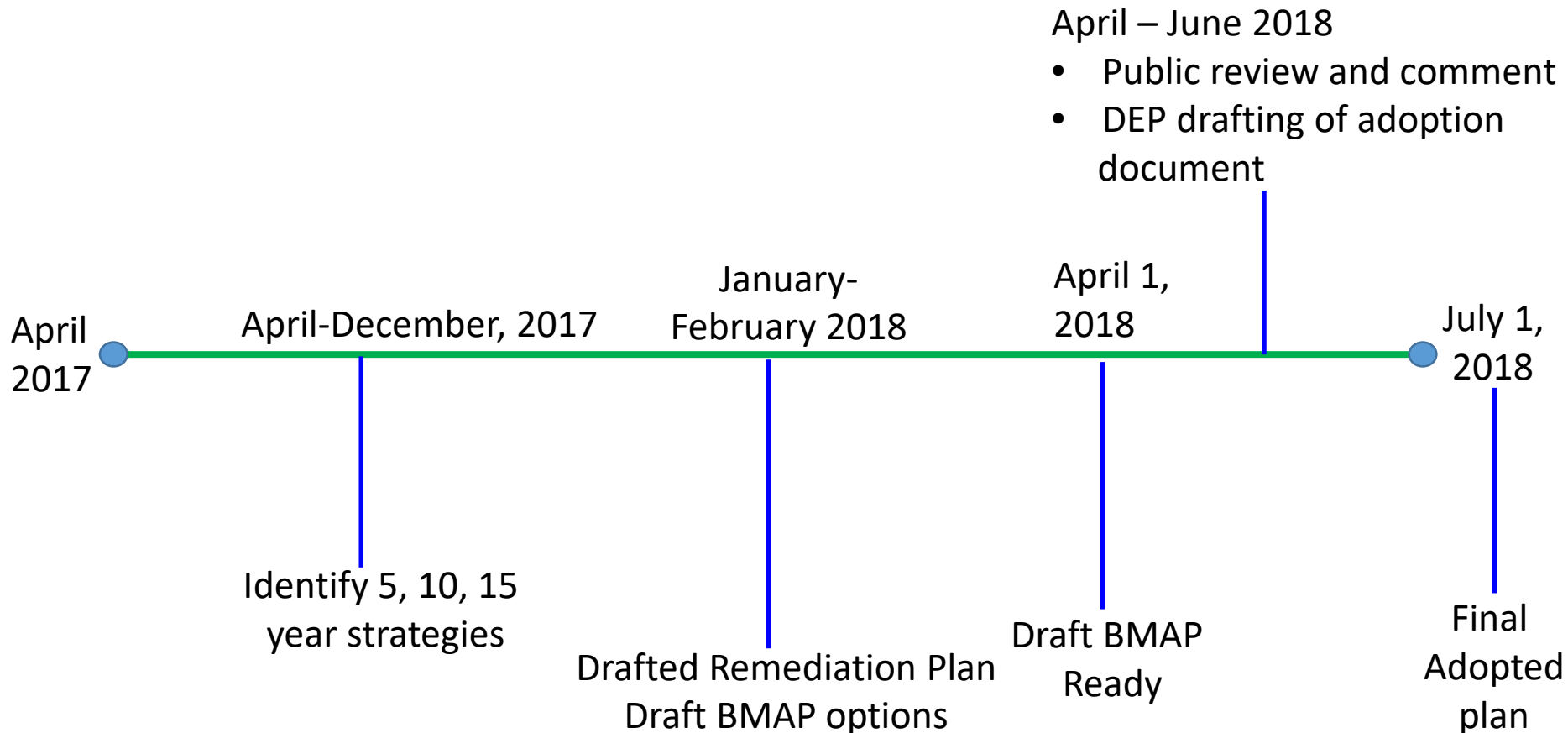
Agriculture Approaches to Achieve the Reductions

- *Farm Fertilizer (FF) and Livestock Waste (LW)*
 - Calculate the reductions to groundwater from 100% owner-implemented best management practices (BMPs).
 - Calculate the reductions to groundwater from additional cost-share BMPs and special projects.
 - Additional credits could be achieved through better documentation of reductions achieved through BMP implementation or implementation of advanced cost-share BMPs, such as precision irrigation, soil moisture probes, cover crops, and conservation easements.





Timeline for BMAP Revision





Statewide TMDL, BMAP, Minimum Flows and Levels (MFLs) Annual Report

- 403.0675(1), Florida Statute – will include status of MFLs, TMDLs, BMAPs.
- Replacement of individual BMAP annual progress reports.
- Annual meetings will continue.
- Calendar year reporting.
- Report will contain project information: funding, proposed priority ranking for implementation.
- Progress made towards restoration goals.
- Information will be requested in late November, due by the end of January.
- Info needed will include: entity activities, compliance, project information, and milestones.
- Report is due to Governor's Office July 1, 2018 and every year thereafter.

Seminole County Fertilizer Ordinance



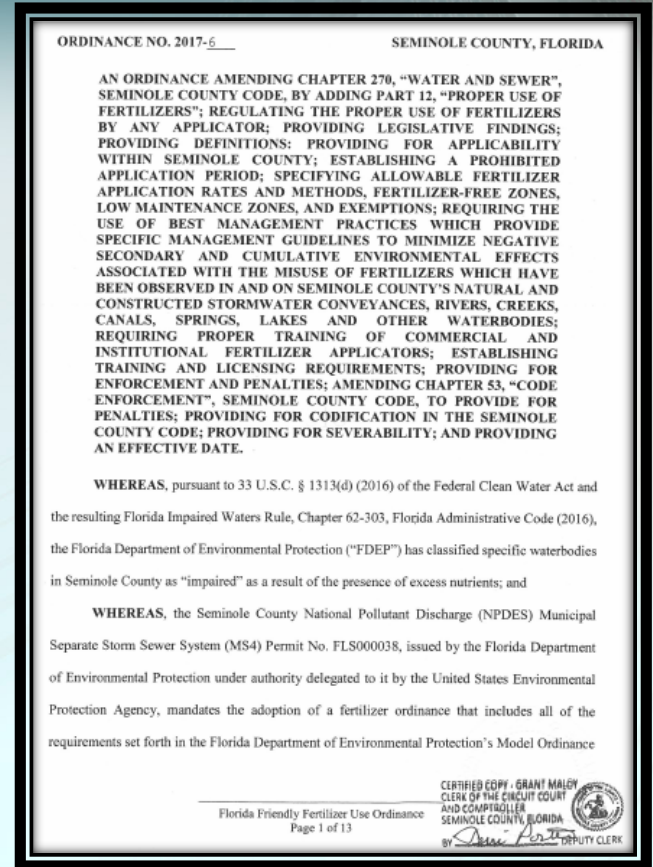
Fertilizer Ordinance

- Required by NPDES MS4 permit
- Adoption by 12/31/2013
- Minimum standard: “Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes” (FS 403.9337)



Fertilizer Ordinance

- The fertilizer ordinance *passed the BCC* on February 28, 2017
- The fertilizer ordinance became *effective* October 1, 2017



What are the key differences between the County and Model Ordinances?

Summer Restricted Period

- Do not use fertilizers containing nitrogen or phosphorus from June 1 – Sept 30
- Can use iron and other nutrients. “Summer Blends”

During the Non-Restricted season must use 50% or more slow release nitrogen (SRN)

- Increases to 65% SRN after 3 years (per FFL/FYN recommendation)

Do not use fertilizer within 15’ of any waterbody or wetland

Implementation Plan

- Focus on education, not enforcement
- Educational components:
 - Dedicated webpage
(seminolecountyfl.gov/fertilizer)
 - On-line calculators to help residents
 - FYN/FFL targeted workshops (regional, HOAs)
 - PSAs, billboards, vehicle wraps
 - Enlisted local advocacy groups to assist
 - Voluntary retail store cooperation (signage)

SAVE OUR WATERBODIES

Algae
Will grow and keep growing as long as there is Nitrogen and Phosphorus available.

Too much Algae

- Reduces clarity.
- Other plants can't get the light they need.
- Uses oxygen.
- Leads to fish kills.

Our waterways start at your front yard.
Fertilizers • Grass Clippings • Leaves • Sediment
These carry Nitrogen, Phosphorus & other pollutants.

Shoreline plants absorb nutrients.

WHAT WE CAN DO

FERTILIZE APPROPRIATELY

- Fertilizer containing nitrogen or phosphorus cannot be applied between June 1 –Sept 30. Use iron and other micronutrients or "summer blends".
- Never fertilize 24 hours before a rain event.
- If needed, apply fertilizer in April or October.
- You must use 50% or more slow-release nitrogen and phosphorus free fertilizers.

MANAGE GRASS CLIPPINGS

- Keep grass clippings and yard debris off sidewalks, roadways and drains.
- Leave grass clippings on yard or in compost.
- Do not mow or apply fertilizers within 15 feet of a waterbody.

REDUCE RUNOFF

- Clean up fertilizer spills and store safely.
- Do not overwater.
- Use a rain barrel.

Need to know more or learn how? Visit
www.seminolecountyfl.gov/fertilizer
Call 407-665-5575.

Fertilizer Calculator	
Look at the fertilizer bag for the Total Nitrogen. This is on the front of the bag, the first of the three large numbers, or on the back of the bag on the label.	
Enter Total Nitrogen:	15 %
Also on the label, sometimes beneath the total nitrogen or at the bottom of the label, is the percent of slow release nitrogen.	
Enter Slow-Release Nitrogen:	10 %
Seminole County requires your fertilizers be 50% slow-release nitrogen. This fertilizer is a slow-release product. You can apply up to 1 pound of Nitrogen per 1000 sq ft.	
Slow-Release Nitrogen Percentage:	66.67 %
This is the pounds of fertilizer you need in order to apply 1 pound of Nitrogen per 1000 sq ft.	
Fertilizer per 1,000 sq ft:	6.7 lbs
Calculate length x width or try to visualize how many parking spaces or volleyball courts would fill your yard. A parking space is about 100 square feet and half a volley ball court is 1000 square feet.	
Enter sq ft of yard:	1600 sq ft
This is how many pounds of fertilizer you need for your yard. Measure out the pounds with a scale or take the portion of fertilizer you need based on how many pounds are in one bag.	
Amount of Fertilizer to apply:	11 lbs

GUARANTEED ANALYSIS

TOTAL NITROGEN (N)..... 14.00%	
SOLUBLE POTASH (K ₂ O)..... 26.00%	
SULFUR (S) Total..... 4.70%	
10.00% Free sulfur (S)	
IRON (Fe) Total..... 0.50%	
0.10% Water Soluble Iron (Fe)	
MANGANESE (Mn) Total..... 0.40%	
0.1% Water Soluble Manganese (Mn)	

DERIVED FROM: Polymer Coated Sulfur Coated Urea, Sulfate of Potash, Iron Oxide, Manganese Oxide.

2.00% Slowly Available Urea Nitrogen from Polymer Coated Sulfur Coated Urea.

Click image above for additional examples.

WHAT GOES ON HERE... ENDS UP IN HERE

FERTILIZE WISE

Unique Program Components

- 319 Grant for Fertilizer Educational Outreach
- Three Interconnected Online Calculators:
 - SRN %
 - Application amount (lbs of fertilizer)
 - Reclaimed water adjustment (still in process)
- Quantifying Long Term Impact

Fertilizer Ordinance Study Area

- Wekiva Sub-basin (Sweetwater Cove)
- Pre-Fertilizer Ordinance Survey
- Targeting outreach in the community
- Follow Up Residential Surveys
- Multi-Year Detailed Nutrient Study

Our waterways start at your front yard



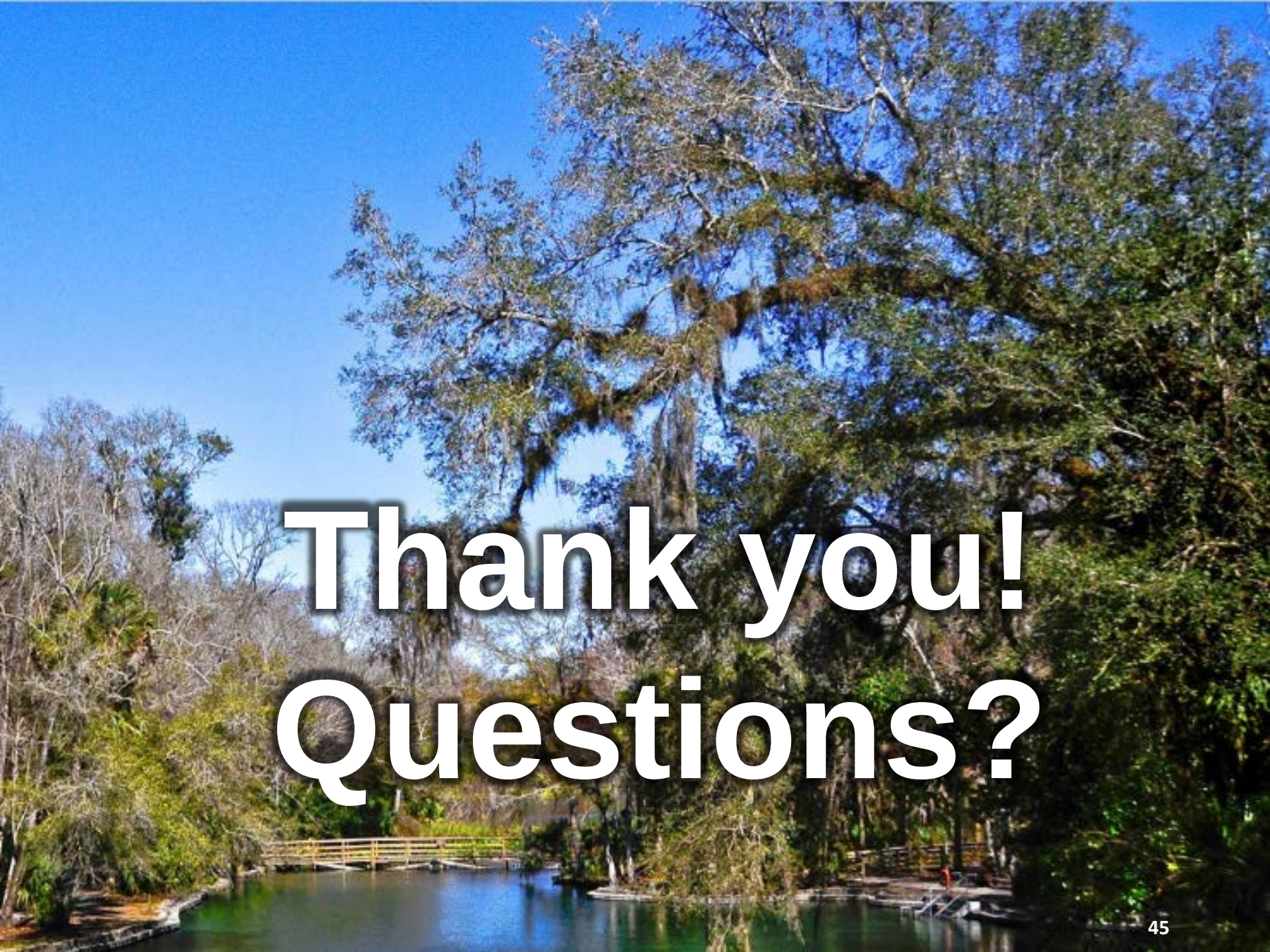
QUESTIONS?





Wrap Up

- Action Items.
- Next meeting late January/early February time frame.
- Other comments/announcements.

A scenic view of a pond surrounded by lush green trees and a wooden bridge in the background. The text "Thank you! Questions?" is overlaid in large white letters with a black outline.

Thank you!
Questions?