



Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration

***Upper Wakulla River and
Wakulla Springs
Basin Management Action Plan
(BMAP)***

***Moira R. Homann
May 9, 2017***





Agenda

1. Welcome and Opening Remarks.
2. Recap Items.
3. New Items/Discussion.
 - a. Review of Onsite sewage Treatment and Disposal System (OSTDS) Reduction Numbers – *Moira Homann*.
 - b. Decentralized Onsite Systems – *Roxanne Groover*.
4. Public Comments.
5. Adjourn.



Recap Items

- Annual report will be posted for comments and review.
 - Please send comments by May 31, 2017.
 - Provide any specific corrections using “track changes,” if possible.



Florida Springs and Aquifer Protection Act



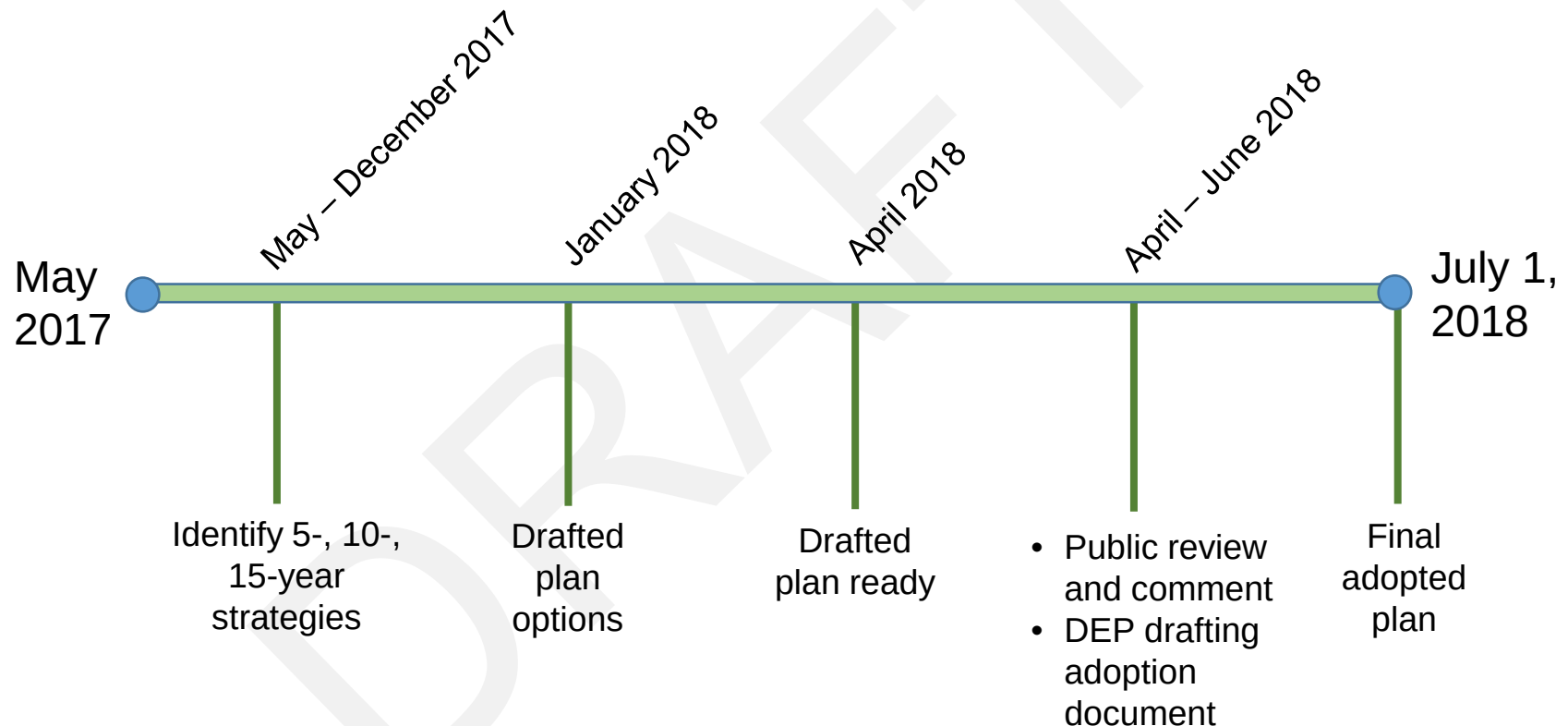
Chapter 2016-1 Laws of Florida

- Florida Springs and Aquifer Protection Act.
- Requires 5-, 10-, 15-, and 20-year goals to achieve TMDLs for each source identified in Nitrogen Source Inventory and Loading Tool (NSILT).
- Revise or adopt new BMAPs to include source specific goals as well as OSTDS Remediation Plan by [July 1, 2018](#).
- Delineate priority focus areas (PFA[s]).



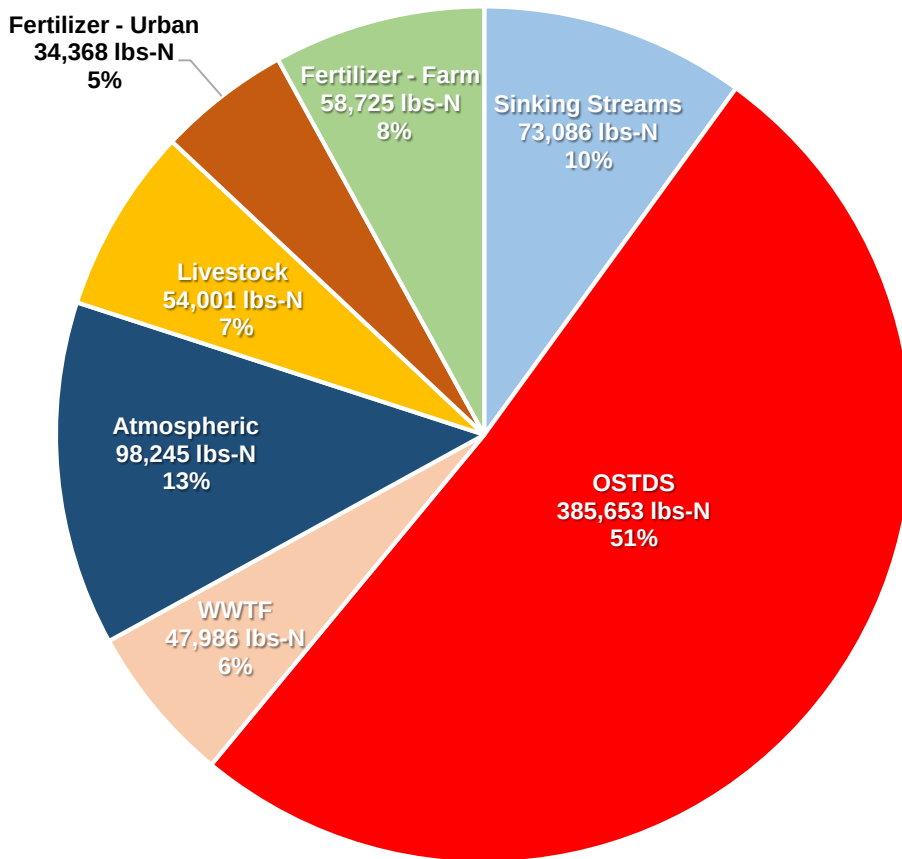


DRAFT **Timeline BMAP Revision and Adoption**





Wakulla Springs NSILT Estimated Loads to Groundwater



- Estimated input of nitrogen loading to Upper Floridan aquifer: 752,063 pounds of nitrogen per year (lbs-N/yr).
 - OSTDS 51 %.
 - Agriculture 15 % (Livestock+Farm Fertilizer).
 - Urban 11 % (wastewater treatment facilities [WWTF]+Urban Fertilizer).
- NSILT provides basis for sources contribution to overall loading.



Nitrogen Source Reduction Strategy - Loads to Groundwater by Source

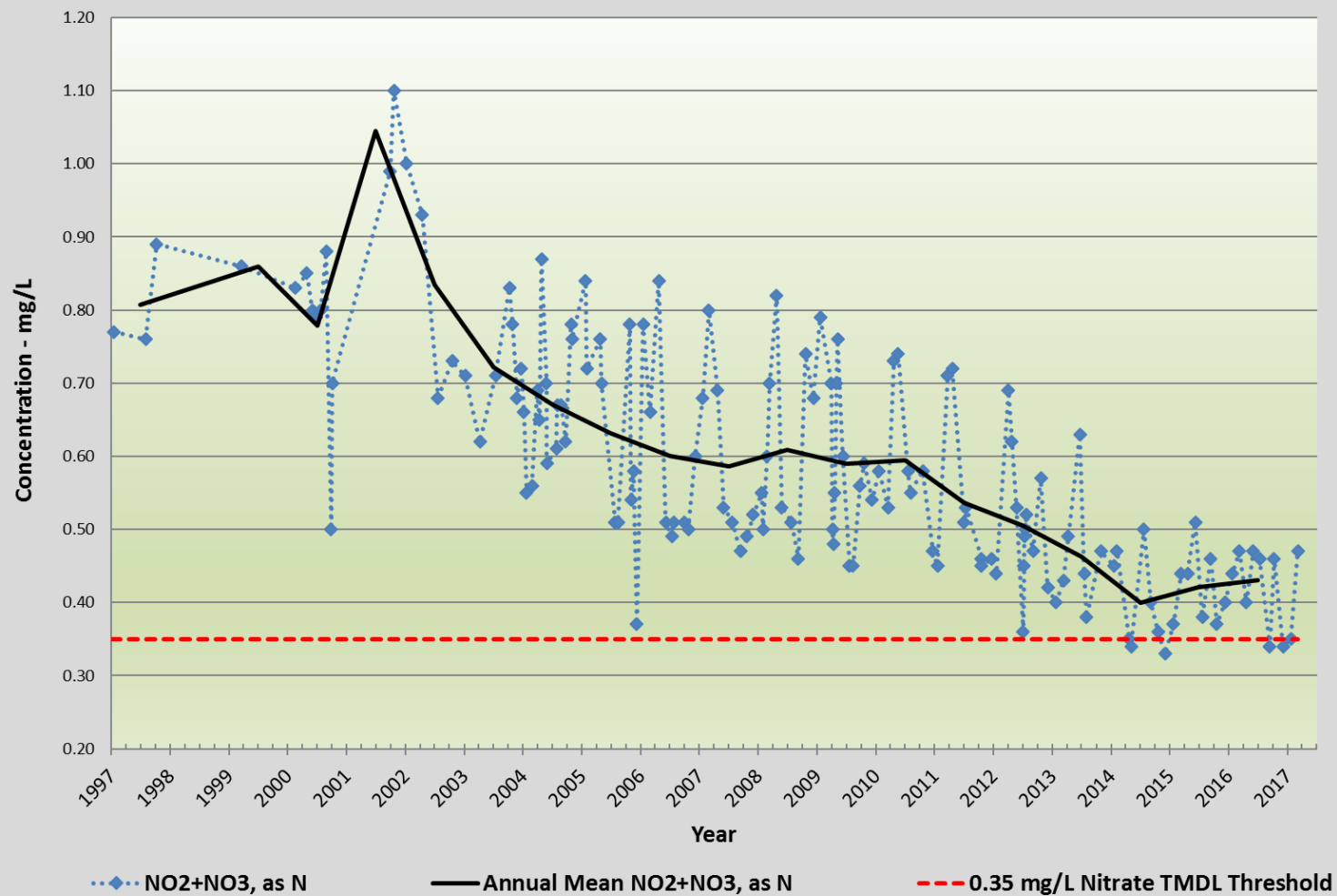
Source	Groundwater Load (kg-N/yr)	Groundwater Load (lbs-N/yr)	Notes
Septic Systems	175,297	385,653	
Urban Turfgrass Fertilizer (UTF)	15,622	34,368	
Atmospheric Deposition	44,657	98,245	
Farm Fertilizer (FF)	26,693	58,725	
Sports Turfgrass Fertilizer	0	0	Included in UTF
Livestock	24,546	54,001	
Wastewater Treatment Facility (WWTF)	21,812	47,986	
Sinking Streams	33,221	73,086	
Total	341,848	752,066	

Total = estimated load to groundwater from NSILT



Nitrate Concentrations (1997- early 2017)

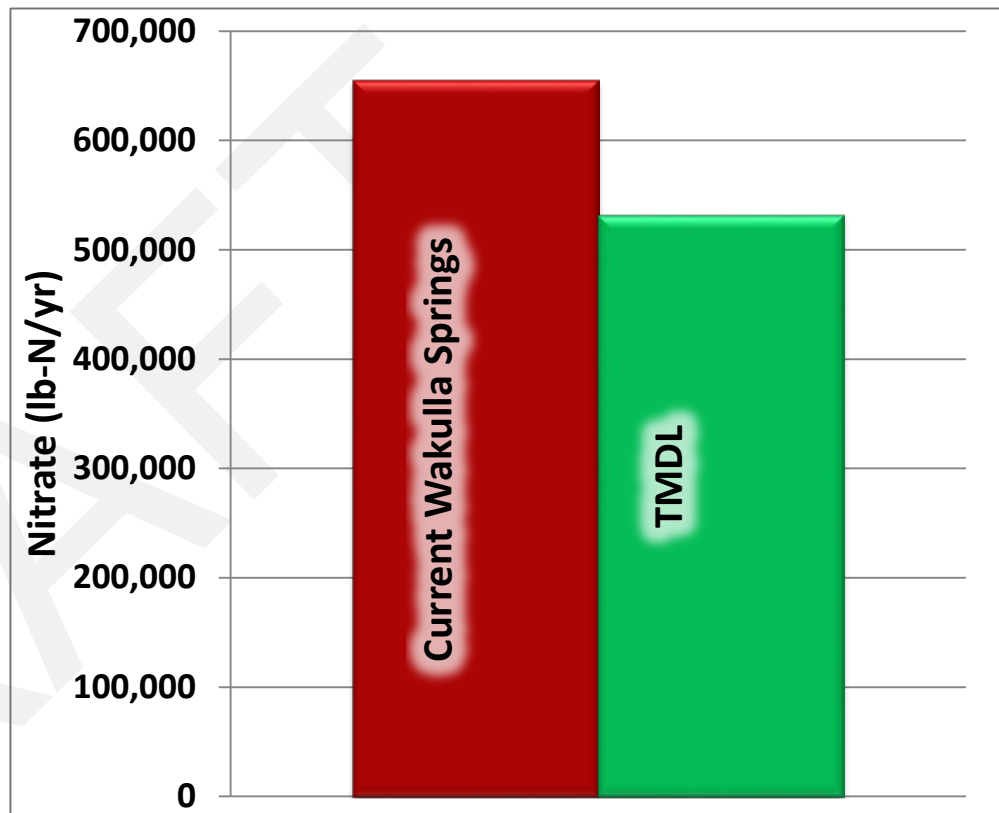
Wakulla Main Spring Nitrate Concentrations





DRAFT - Nitrogen Source Reduction Strategy – Loads: Current and TMDL

- Current (red):
 - Discharge = 772 cubic feet per second (ft³/sec).
 - Nitrate = 0.43 milligrams per liter (mg/L).
 - Load = **655,203 lbs-N/yr.**
- TMDL (green):
 - Discharge = 772 ft³/sec.
 - Nitrate = 0.35 mg/L.
 - Load = **531,523 lbs-N/yr.**



Required Load Reduction to Achieve TMDL:

$$655,203 \text{ lbs-N/yr} - 531,523 \text{ lbs-N/yr} = \underline{\underline{123,680 \text{ lbs-N/yr}}}$$

Required Percent Reduction to Achieve TMDL:

$$(123,680 \text{ lbs-N/yr} / 655,203 \text{ lb-N/yr}) * 100 = \underline{\underline{19\%}}$$



DRAFT - Nitrogen Source Reduction Strategy - Reduction Milestones by Source (Options)

Minimum Required Reduction from OSTDS = **67,196 lbs/yr**

- Load Reduction Targets:

- 5 year--30 % of total.
- 10 year--Additional 50 % (80 % of total).
- 15 year--Remaining 20 % (100 % of total).

- Load Reduction Targets:

- 5 year-- 50 % of total.
- 10 year--Additional 50 % (100 % of total).

	Five Years	Ten Years	Fifteen Years	Twenty Years
Source/Milestone	30%	50%	20%	Total
OSTDS	20,159	33,598	13,439	67,196
UTF	1,797	2,994	1,198	5,988
AD	*	*	*	17,118
FF	3,070	5,116	2,046	10,232
Livestock	2,823	4,705	1,882	9,409
WWTF***	1,001	0	0	1,001
Sinking streams	**	**	**	12,735
Total	28,849	46,413	18,565	123,680

	Five Years	Ten Years	Twenty Years
Source/Milestone	50%	50%	Total
OSTDS	33,598	33,598	67,196
UTF	2,994	2,994	5,988
AD	*	*	17,118
FF	5,116	5,116	10,232
Livestock	4,705	4,705	9,409
WWTF***	501	501	1,001
Sinking streams	**	**	12,735
Total	46,914	46,914	123,680



DRAFT - Reduction Calculations – Existing OSTDS Loads and Expected Loads from Enhanced OSTDS or Replaced OSTDS

- **Existing OSTDS** - Existing loading from OSTDS is 24.3 lbs-N/year (source: NSILT; ~9 lbs/person [EPA #] with 2.7 persons/septic system)

Existing OSTDS Load	Attenuation (.4)	Confined (0.1)	Semi-confined (.4)	Unconfined (.9)
24.3	14.6	1.46	5.8	13.1

- **Enhanced OSTDS**

Load to Groundwater (lbs-N/yr/OSTDS)

Existing OSTDS Load	Enhancement (.35)	Attenuation (.4)	Confined (0.1)	Semi-confined (.4)	Unconfined (.9)
24.3	8.5	5.1	0.51	2.0	4.6

Credits to Groundwater due to Enhanced OSTDS (lbs-N/yr/OSTDS)

Existing Load-Confined	Existing Load-Semi-confined	Existing Load-Unconfined	Reduction in Confined Area	Reduction in Semi-confined Area	Reduction in Unconfined Area
1.46	5.8	13.1	0.95	3.8	8.5

- **Replaced OSTDS (Sewer Service)**

Credits to Groundwater due to Replaced OSTDS (lbs-N/yr/OSTDS)

Existing Load-Confined	Existing Load-Semi-confined	Existing Load-Unconfined	Reduction in Confined Area	Reduction in Semi-confined Area	Reduction in Unconfined Area
1.46	5.8	13.1	1.39	5.5	12.5



DRAFT - Reduction Calculations – Number and Type of OSTDS Conversions Needed to Meet Load Reduction Milestones

For 5-yr/10-yr/15-yr Approach

OSTDS/ Milestone	5 Years	10 Years	15 Years	Total
Enhancement-Semi-confined	5,311	8,851	3,541	17,703
Enhancement-Unconfined	2,360	3,934	1,574	7,868
Replacement-Semi-confined	3,634	6,056	2,422	12,112
Replacement-Unconfined	1,615	2,692	1,077	5,383

For 5-yr/10-yr Approach

OSTDS/ Milestone	5 Years	10 Years	Total
Enhancement-Semi-confined	8,851	8,851	17,703
Enhancement-Unconfined	3,934	3,934	7,868
Replacement-Semi-confined	6,056	6,056	12,112
Replacement-Unconfined	2,692	2,692	5,383

Total # of septic systems in Wakulla BMAP area: 52,446

Total # of septic systems in PFA 1 and PFA2 (unconfined): 13,977



DRAFT - Reduction Calculations – Number of Septic Systems and Improvement to Groundwater

of Septic Tanks in PFAs by Recharge Area

Recharge Area	# of OSTDS in the PFAs
Unconfined	13,977
Semi-confined	0
Confined	0
Discharge	-
Total No. of OSTDS in PFAs	13,977

of Septic Tanks in PFAs by Recharge Area
by Jurisdiction

Septic Systems in PFA1 and PFA2*	Number of OSTDS
City of Tallahassee	80
Leon County	6,778
Wakulla County	7,119
Total	13,977

Credits to Groundwater Per OSTDS (lbs-N/yr/system)

Improvement	Unconfined	Semi-Confined	Confined
Enhanced OSTDS	8.5	3.8	0.95
Replaced OSTDS	12.5	5.5	1.39
Minimum Required Reduction OSTDS	67,196 lbs/yr		

How do we get to this number? Or achieve a higher reduction?

*There are no septic systems in the semi-confined or confined recharge areas within the PFAs.



DRAFT - Reduction Calculations – Maximum Reductions Achieved

OSTDS PFA Reductions, By Entity	# of Septic Systems	Maximum Reduction From System Enhancement (lbs-N/yr)*	Maximum Reduction from Sewer (lbs-N/yr)*
Tallahassee			
Unconfined	80	683	999
Semi-confined	0	0	0
Confined	0	0	0
Tallahassee Total	80	683	999
Leon			
Unconfined	6,778	57,889	84,607
Semi-confined	0	0	0
Confined	0	0	0
Leon Total	6,778	57,889	84,607
Wakulla			
Unconfined	7,119	60,801	88,863
Semi-confined	0	0	0
Confined	0	0	0
Wakulla Total	7,119	60,801	88,863
Grand Total	13,977	119,373	174,468

MINIMUM Required Reduction from OSTDS = 67,196 lbs-N/yr
TOTAL Required Reduction to achieve TMDL = 123,680 lbs-N/yr



Wrap Up

- Action Items.
 - Comments/feedback on source reduction numbers by [May 31, 2017](#).
 - Next meeting, July/August time frame.
 - Annual report comments by [May 31, 2017](#).
- Other comments/announcements.

An aerial photograph of a winding river or lake, likely Wakulla River, surrounded by a dense, lush green forest. The water is a deep blue color. On the right bank, there is a small dock with several boats moored. The text "Thank you!" is overlaid in large, white, bold letters across the center of the image.

Thank you!