Research Review & Advisory Committee (RRAC) Meeting

October 20, 2017

Environmental Health Staff

Disease Control and Health Protection

Bureau of Environmental Health

Onsite Sewage Programs

Agenda

1:00 – 1:15	Introductions and housekeeping
1:15 – 1:25	Review of minutes from October 21, 2016 meeting
1:25 – 1:40	Old business & research program news
1:40 – 3:00	Update from the Florida Department of Health on several projects
3:00 – 4:00	Update from the Florida Department of Environmental Protection
4:00 – 4:30	New business Method to prioritize research projects
4:30 – 4:50	Public comment
4:50 – 5:00	Closing comments, next meeting, and adjournment

Introductions & Housekeeping

- Committee roll call
- Identification of audience
- How to view web conference
- Mute / unmute phone line = *6
- Do not put phone on hold
- Download meeting material:

  http://www.floridahealth.gov/environmental-health/onsite-sewage/research/rrac.html

Research Program News

Elke Ursin was promoted to be the Section Administrator of the Toxicology Group

Research Program News

Restructuring of program: Research & Engineering section

Eberhard Roeder
Environmental Manager

- Coordinates program
- Manages research projects

Debby Tipton
Environmental Consultant

- Product review
- Technical assistance

Alan Willett
Environmental Consultant

- Product review
- Technical assistance

Xueqing Gao
Environmental Consultant

- TMDL/BMAP
- RRAC Liaison
- Technical assistance

Review of minutes from October 21, 2016 meeting

Old Business

Review of October 21, 2016 Meeting Minutes Action Items

1. Comments on the draft final report for the Florida Water Management Inventory project: Completed.
2. RRAC member to attend National Onsite Wastewater Recycling Association (NOWRA) Board of Governors meeting regarding funding from the federal Environmental Protection Agency to the onsite systems.
3. Rules and regulations related to the Clean Water Act State Revolving Funds.
4. Past research project ideas
5. Student project on correlations between water quality, onsite sewage treatment and disposal system (OSTDS), and health effects
6. OSTDS Research Program budget information

Federal Funding Sources for Decentralized Systems

Federal Funding Sources for Decentralized Systems

1. U.S. Environmental Protection Agency (EPA) Clean Water State Revolving Fund (https://www.epa.gov/cwsrf)
2. EPA Nonpoint Source Section 319 Grants (https://www.epa.gov/nps/319-grant-program-states-and-territories)
3. EPA Water Infrastructure Finance and Innovation Act (https://www.epa.gov/wifia/learn-about-wifia-program)
4. EPA Environmental Finance Center Network (https://www.epa.gov/waterfinancecenter/efcn)

Federal Funding Sources for Decentralized Systems continued

5. U.S. Department of Agriculture, Rural Development (https://www.rd.usda.gov/newsroom/notices-solicitation-applications-nosas)
6. U.S. Department of Housing and Urban Development (https://www.hud.gov/program_offices/comm_planning/communitydevelopment/programs)
7. U.S. Economic Development Administration (https://www.eda.gov/funding-opportunities/)
8. Catalog of Federal Funding Sources for Watershed Protection (https://ofmpub.epa.gov/apex/watershedfunding/f?p=fedfund:1)

Old Business

Review of October 21, 2016 Meeting Minutes Action Items

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6. OSTDS Research Program budget information

Onsite Sewage Research Budget (B9)

Fiscal Year 2016-2017:

Beginning Cash Balance	**$156,994**
Total Revenue	**$87,416**
Total Expenditures	**$109,334**
Ending Cash Balance	**$135,076**

Research Review and Advisory Committee Meeting

DOH Activity Update

Environmental Health Staff
Bureau of Environmental Health
Division of Disease Control and Health Protection
Florida Department of Health

October 20, 2017

Topics

1. OSTDS Remediation Plan Development Update (**Xueqing Gao**)
2. 64E-6, F. A. C. Rule Revision (**Ed Barranco**)
3. Septage Ban (**Ed Barranco**)
4. Florida Water Management Inventory (**Elke Ursin**)
5. Innovative System Update (**Eb Roeder**)
6. Florida Onsite Sewage Nitrogen Removal Strategies (FOSNRS) Study and Continued Monitoring (**Xueqing Gao**)

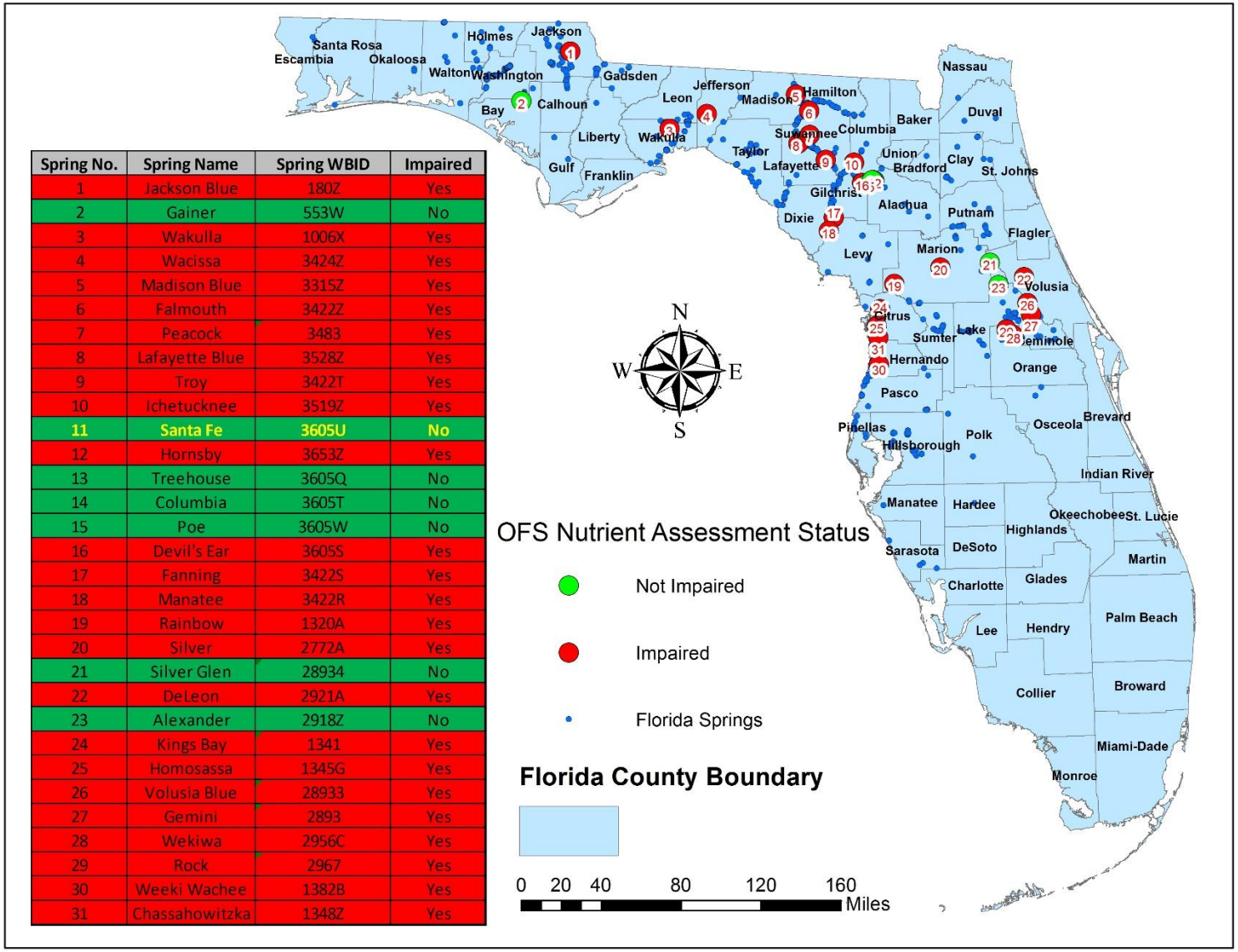
OSTDS Remediation Plan Development Update

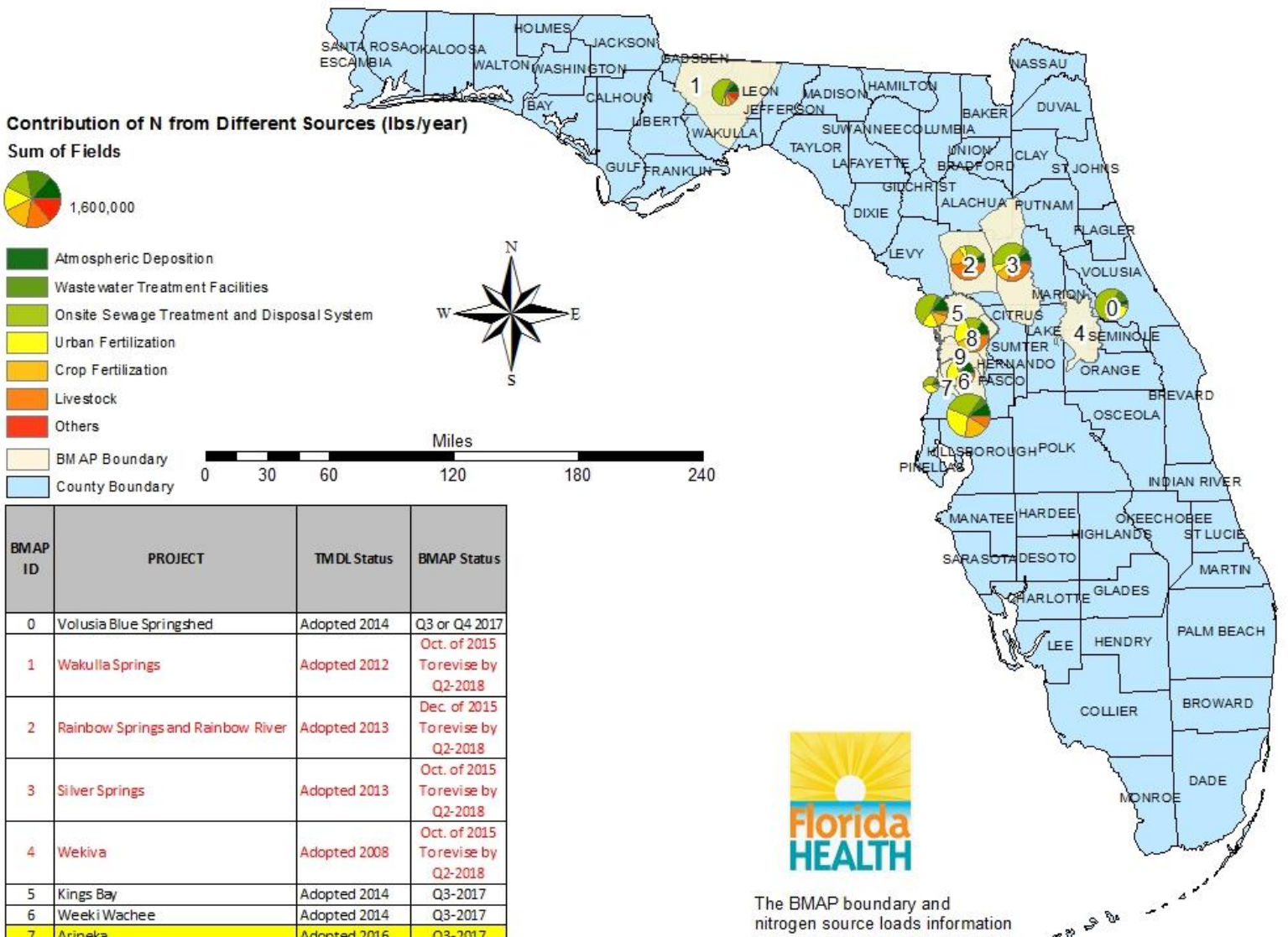
Statutory Mandate

Protection of Water Quality in Outstanding Florida Springs (OFSs)
(Florida Statute Section 373.807)

- Identify all OFSs impaired for nutrients by July 1 of 2018
- Adopt basin management action plan (BMAP) within two years of adoption of the total maximum daily load (TMDL) (the latest July 1, 2018)
- Target achieving TMDL goals in 20 years
- Establish milestone targets for 5, 10, and 15 years
- Develop OSTDS remediation plans for basin where OSTDSs contribute more than 20% of nonpoint source loads or if FDEP considers an OSTDS plan is needed
- Re-adopt BMAPs previously adopted without an OSTDS remediation plan by July 1, 2018
- Delineate priority focus areas (PFAs) for impaired springs (Section 373.803)

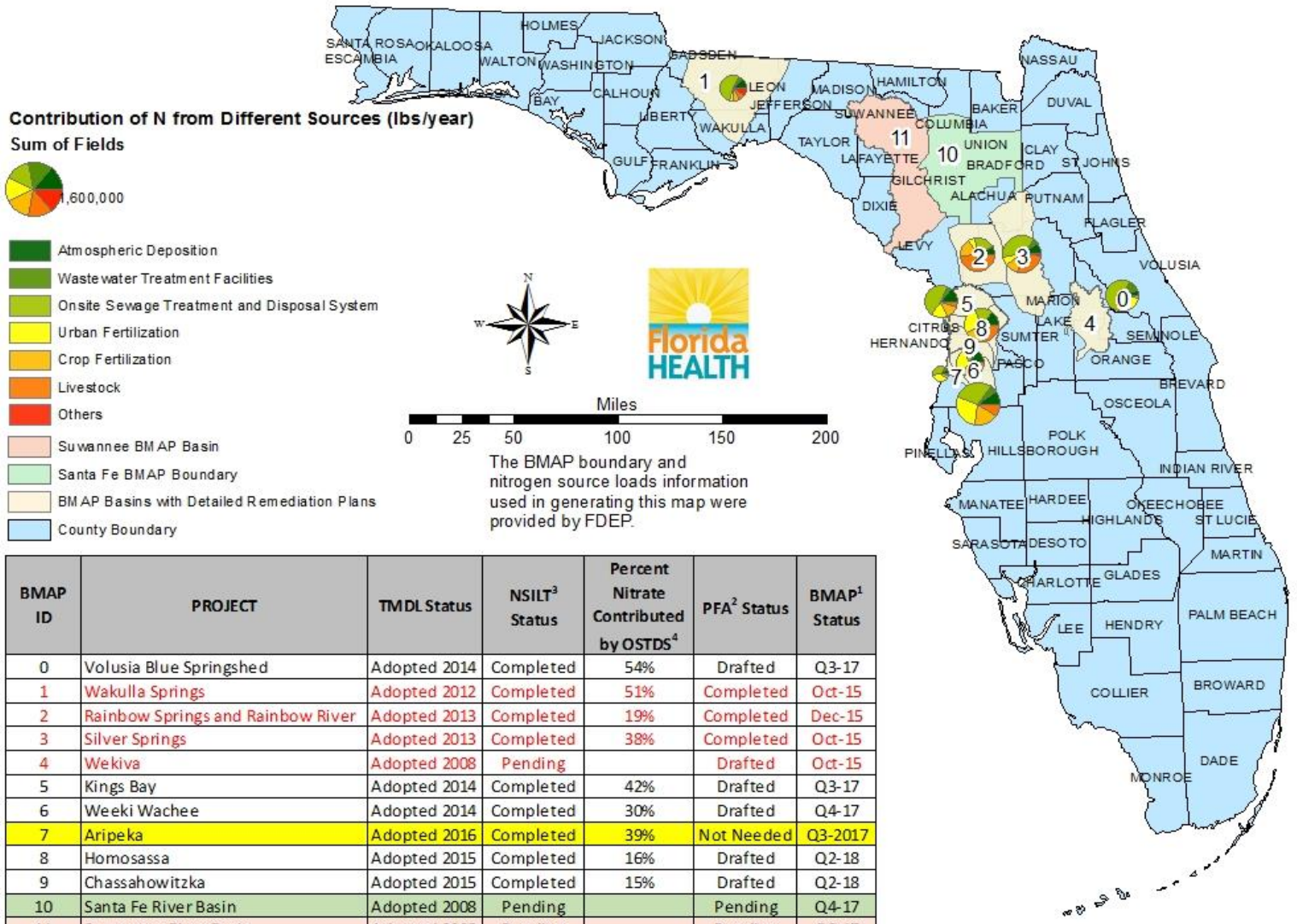
Spring No.	Spring Name	Spring WBID	Impaired
1	Jackson Blue	180Z	Yes
2	Gainer	553W	No
3	Wakulla	1006X	Yes
4	Wacissa	3424Z	Yes
5	Madison Blue	3315Z	Yes
6	Falmouth	3422Z	Yes
7	Peacock	3483	Yes
8	Lafayette Blue	3528Z	Yes
9	Troy	3422T	Yes
10	Ichetucknee	3519Z	Yes
11	Santa Fe	3605U	No
12	Hornsby	3653Z	Yes
13	Treehouse	3605Q	No
14	Columbia	3605T	No
15	Poe	3605W	No
16	Devil's Ear	3605S	Yes
17	Fanning	3422S	Yes
18	Manatee	3422R	Yes
19	Rainbow	1320A	Yes
20	Silver	2772A	Yes
21	Silver Glen	28934	No
22	DeLeon	2921A	Yes
23	Alexander	2918Z	No
24	Kings Bay	1341	Yes
25	Homosassa	1345G	Yes
26	Volusia Blue	28933	Yes
27	Gemini	2893	Yes
28	Wekiwa	2956C	Yes
29	Rock	2967	Yes
30	Weeki Wachee	1382B	Yes
31	Chassahowitzka	1348Z	Yes



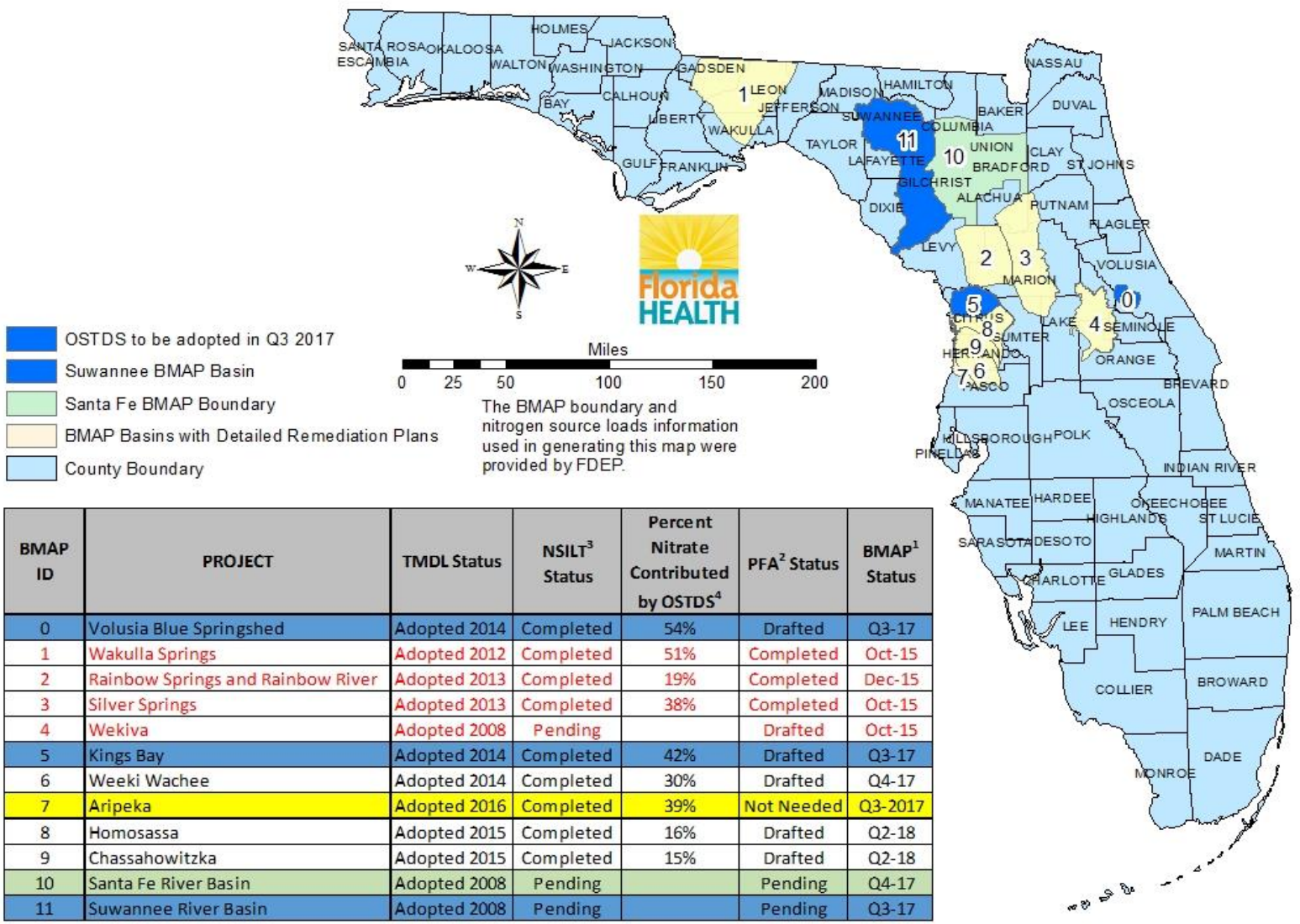


BMAP ID	PROJECT	TMDL Status	BMAP Status
0	Volusia Blue Springshed	Adopted 2014	Q3 or Q4 2017
1	Wakulla Springs	Adopted 2012	Oct. of 2015 To revise by Q2-2018
2	Rainbow Springs and Rainbow River	Adopted 2013	Dec. of 2015 To revise by Q2-2018
3	Silver Springs	Adopted 2013	Oct. of 2015 To revise by Q2-2018
4	Wekiva	Adopted 2008	Oct. of 2015 To revise by Q2-2018
5	Kings Bay	Adopted 2014	Q3-2017
6	Weeki Wachee	Adopted 2014	Q3-2017
7	Aripeka	Adopted 2016	Q3-2017
8	Homosassa	Adopted 2015	Q2-18
9	Chassahowitzka	Adopted 2015	Q2-18

The BMAP boundary and nitrogen source loads information used in generating this map were provided by FDEP.



BMAP ID	PROJECT	TMDL Status	NSILT[3] Status	Percent Nitrate Contributed by OSTDS[4]	PFA[2] Status	BMAP[1] Status
0	Volusia Blue Springshed	Adopted 2014	Completed	54%	Drafted	Q3-17
1	Wakulla Springs	Adopted 2012	Completed	51%	Completed	Oct-15
2	Rainbow Springs and Rainbow River	Adopted 2013	Completed	19%	Completed	Dec-15
3	Silver Springs	Adopted 2013	Completed	38%	Completed	Oct-15
4	Wekiva	Adopted 2008	Pending		Drafted	Oct-15
5	Kings Bay	Adopted 2014	Completed	42%	Drafted	Q3-17
6	Weeki Wachee	Adopted 2014	Completed	30%	Drafted	Q4-17
7	Aripeka	Adopted 2016	Completed	39%	Not Needed	Q3-2017
8	Homosassa	Adopted 2015	Completed	16%	Drafted	Q2-18
9	Chassahowitzka	Adopted 2015	Completed	15%	Drafted	Q2-18
10	Santa Fe River Basin	Adopted 2008	Pending		Pending	Q4-17
11	Suwannee River Basin	Adopted 2008	Pending		Pending	Q3-17



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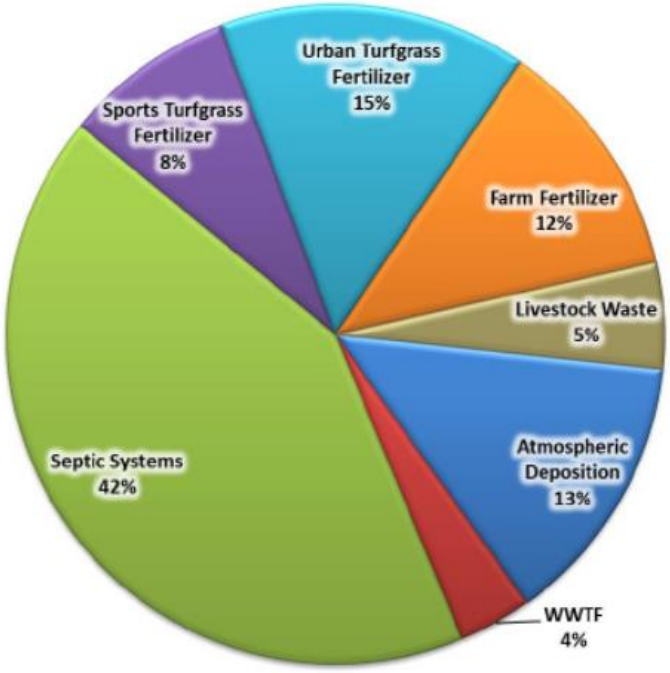
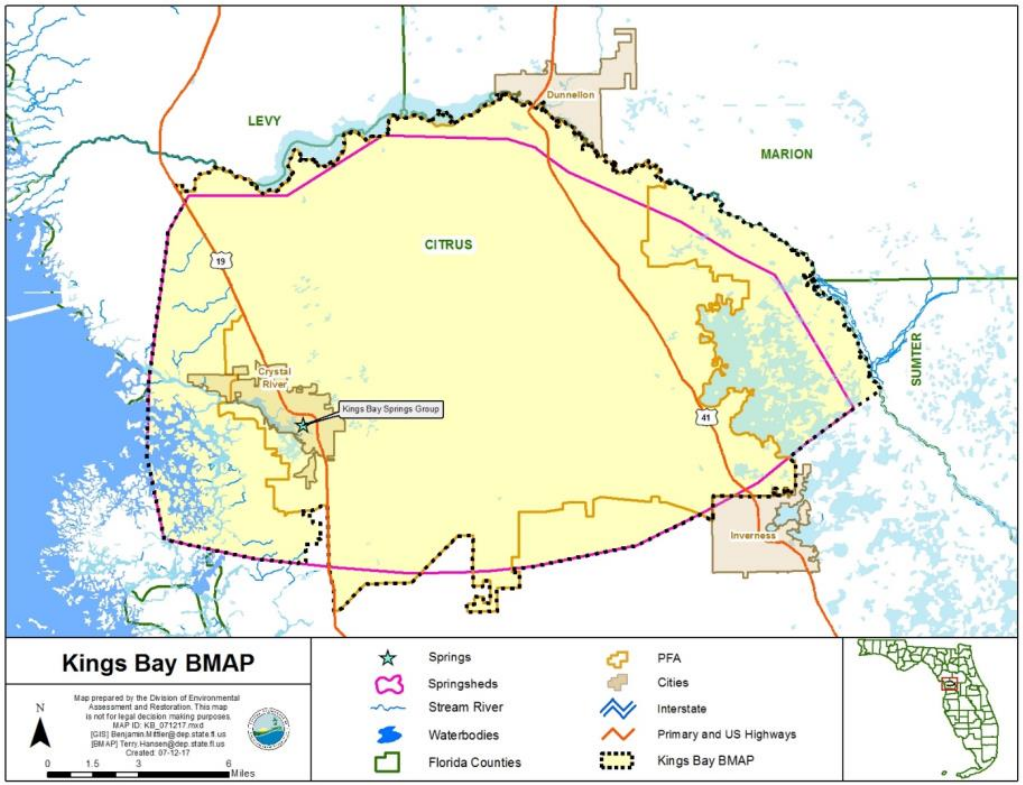
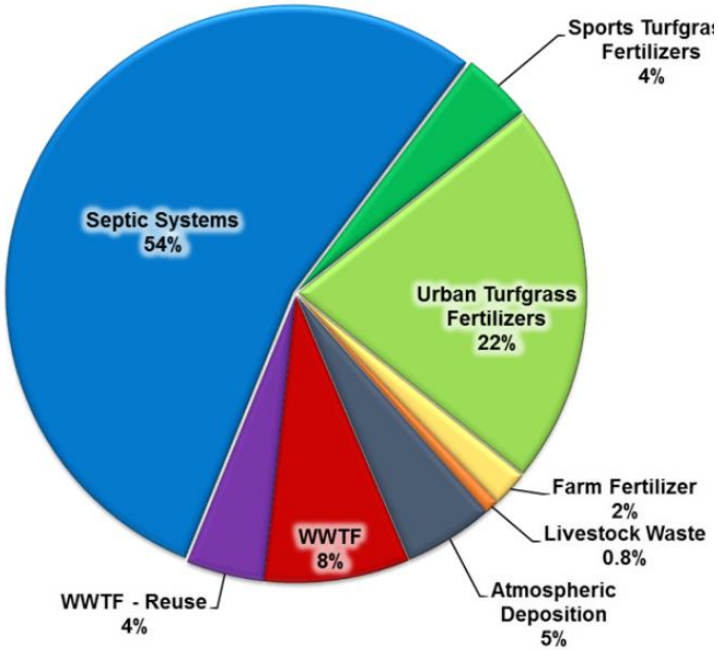
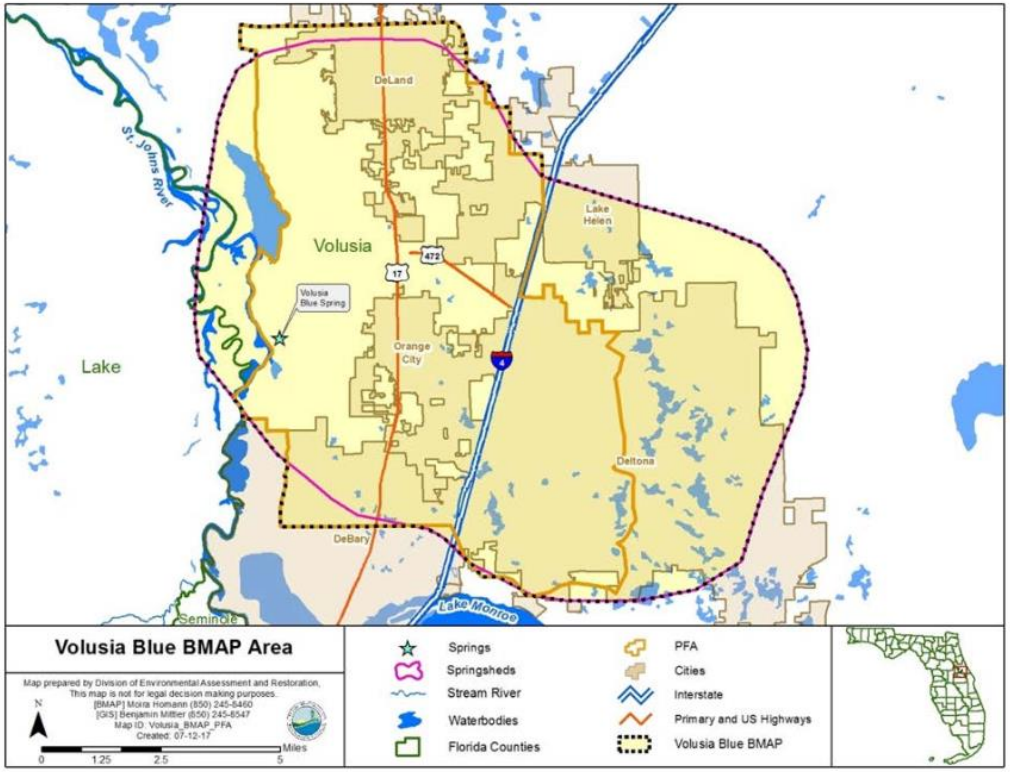




Kings Bay – Crystal River BMAP Area, PFA, and Percent Contributions from All Sources

Total Load Reduction Needed: 274,000 lbs-N/year
Total Project Credits: 135,942 lbs-N/year
Remaining Needed Load Reduction: 138,058 lbs-N/year





Volusia Blue BMAP Area, PFA, and Percent Contributions from All Sources

Total Load Reduction Needed: 48,743 lbs-N/year
Total Project Credits: 47,745 lbs-N/year
Remaining Needed Load Reduction: 997 lbs-N/year

OSTDS Remediation Plan Requirements

1. **Volusia Blue Spring** (public workshop on August 31, 2017): Requires connection to sewer or nitrogen-removing OSTDS for:
   a) New constructions on lots one acre, or less in the priority focus area (PFA).
   b) Repairs/modifications on lots one acre or less in PFA, unless sewer will be available within five years.
   c) All lots one acre or less with an OSTDS in PFA, within 20 years after BMAP adoption.
2. **Kings Bay-Crystal River** (public workshop on September 25, 2017): Requires connection to sewer or nitrogen-removing OSTDS for:
   a) New constructions on lots of any sizes in PFA.
   b) Repairs/modifications on lots of any sizes in PFA, unless sewer will be available within five years.
   c) All lots with an OSTDS in PFA within 20 years after BMAP adoption.

Update on the 64E-6 Rule Revision

Proposed Rule Revisions

- Phased-in implementation of in-ground nitrogen–reducing biofilters as a prescriptive design (TRAP Issue 15-02)
- Inclusion of aerobic treatment units certified for 50% nitrogen reduction (NSF 245) in the permitting category for ATUs (TRAP Issue 16-03)

TRAP – Technical Review and Advisory Panel to the Department Of Health
NSF – National Sanitation Foundation International
ATU – Aerobic Treatment Unit

64E-6, F. A. C. Rule Revision for the Liner System In-ground Nitrogen-reducing Biofilters

- Allows the introduction of a nitrogen-reducing media layer beneath the drainfield.
- Draws from the concept developed in the FOSNRS study.
- Provides for a standard system and three variants:
  - Standard Liner
  - Variant One (No Liner)
  - Variant Two (Liner with Underdrain)
  - Variant Three (Dual Liner)

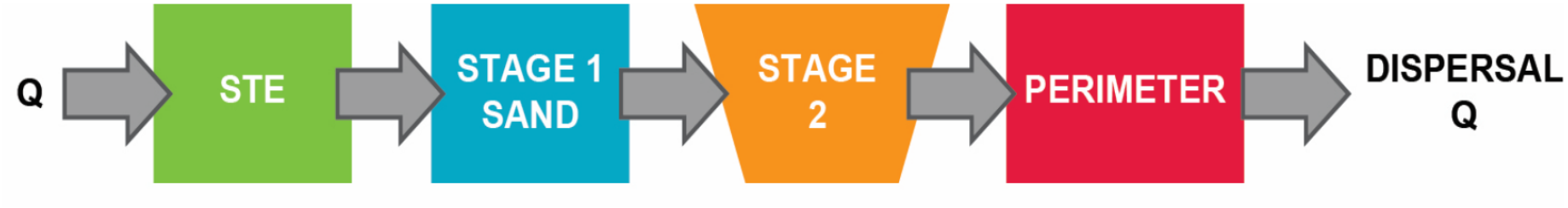
64E-6, F. A. C. Rule Revision for the Liner System In-ground Nitrogen-reducing Biofilters

- Allows a pilot of five to 10 of each type to be installed and monitored for one year
- Allows an unlimited number of standard liner systems to be installed provided the first five are monitored and the results are encouraging
- Provides a target performance level (65% Nitrogen reduction)
- Allows the types that perform as well as the standard liner to be installed in unlimited number after the year of testing.

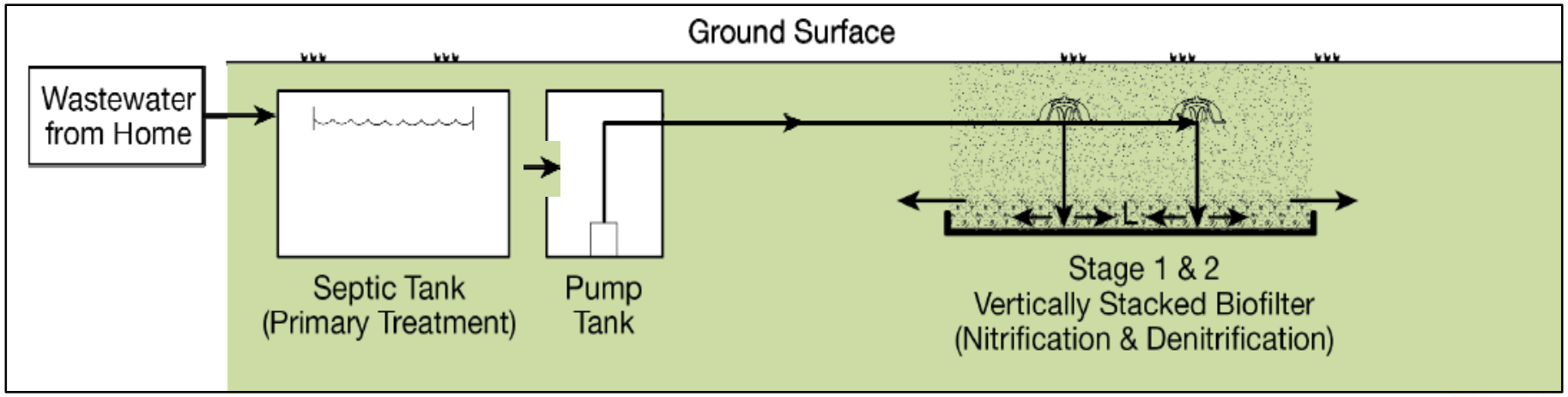
64E-6, F. A. C. Rule Revision for the Liner System In-ground Nitrogen-reducing Biofilters

- Allows test systems that do not perform to the target to continue operating until they require repair at which time they will need to meet current standard for nitrogen reduction
- Requires low-pressure distribution or other method demonstrated to achieve adequate nitrification
- Allows five to 10 of the standard liner and each variant to be installed with gravity flow
- Requires filing a public records notice

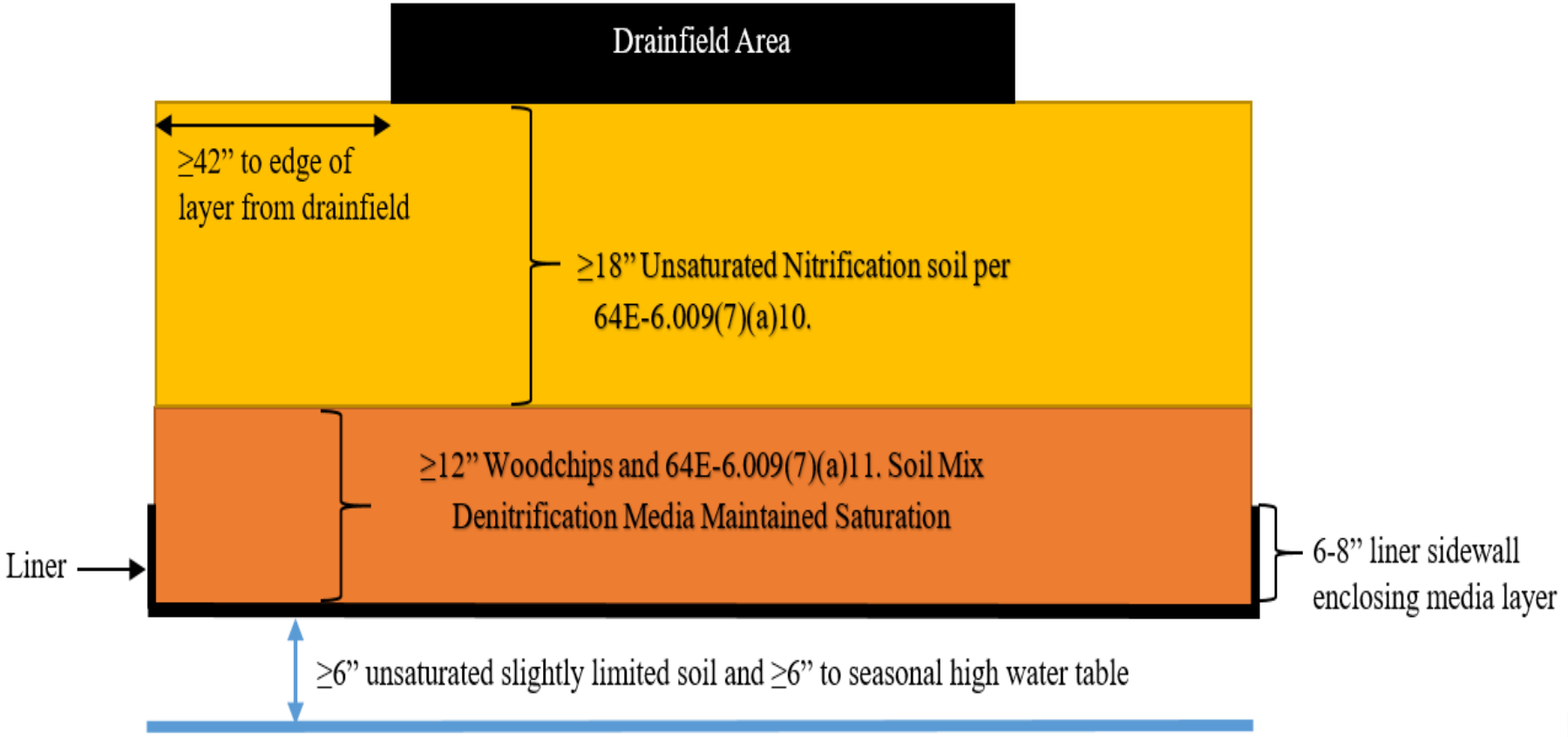
In-Ground Passive Nitrogen System



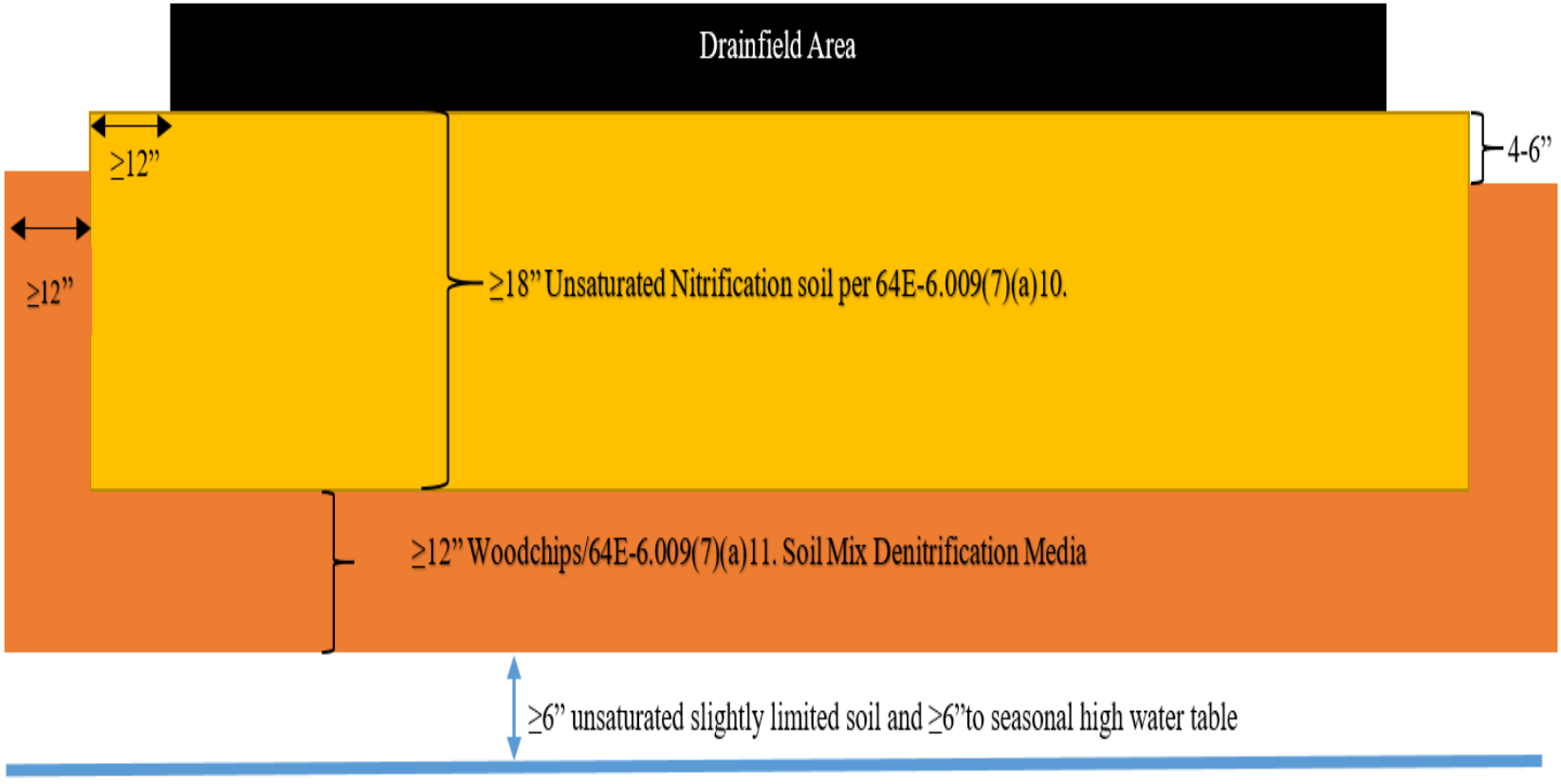
Conventional OSTDS + In-Ground Two Stage System: Stage 1 Sand, and Stage 2 Lignocellulosic Materials



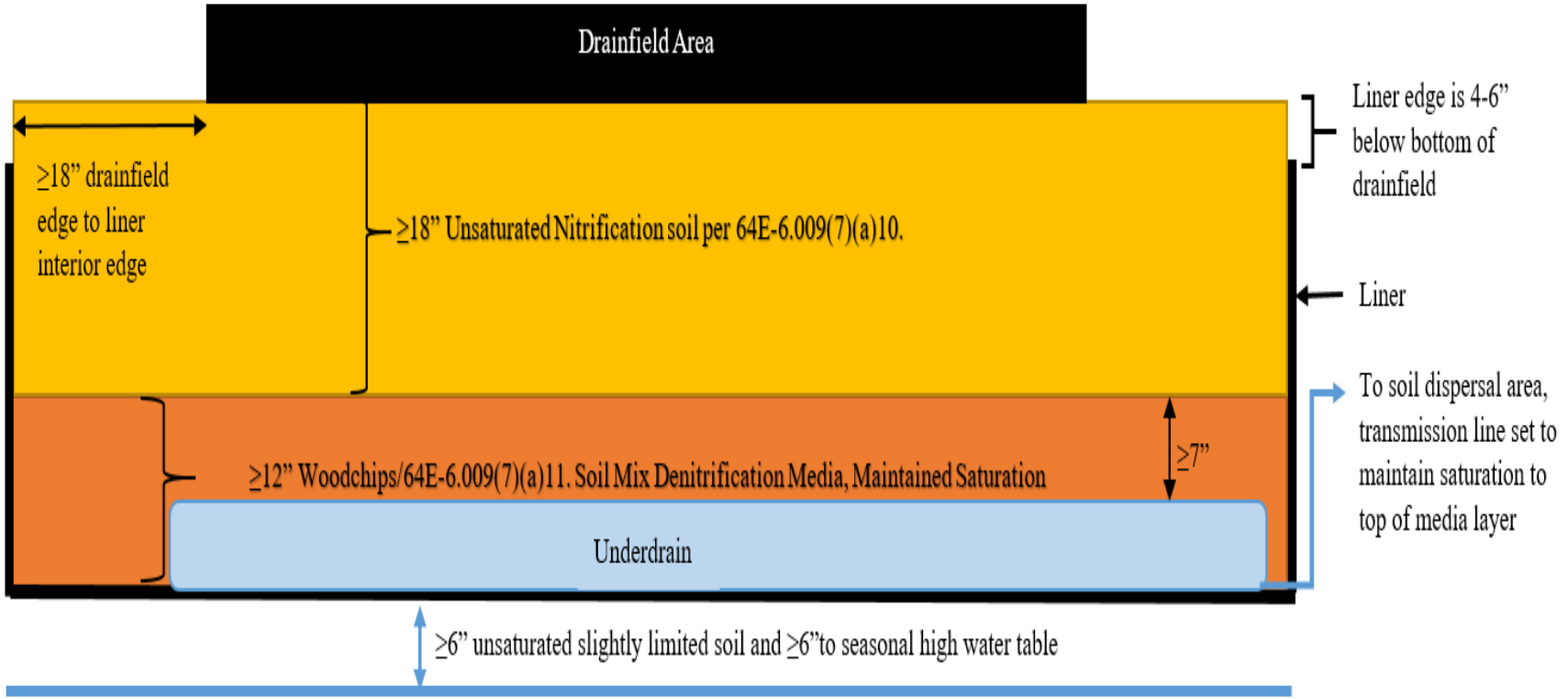
Standard Layer Nitrogen Reducing System



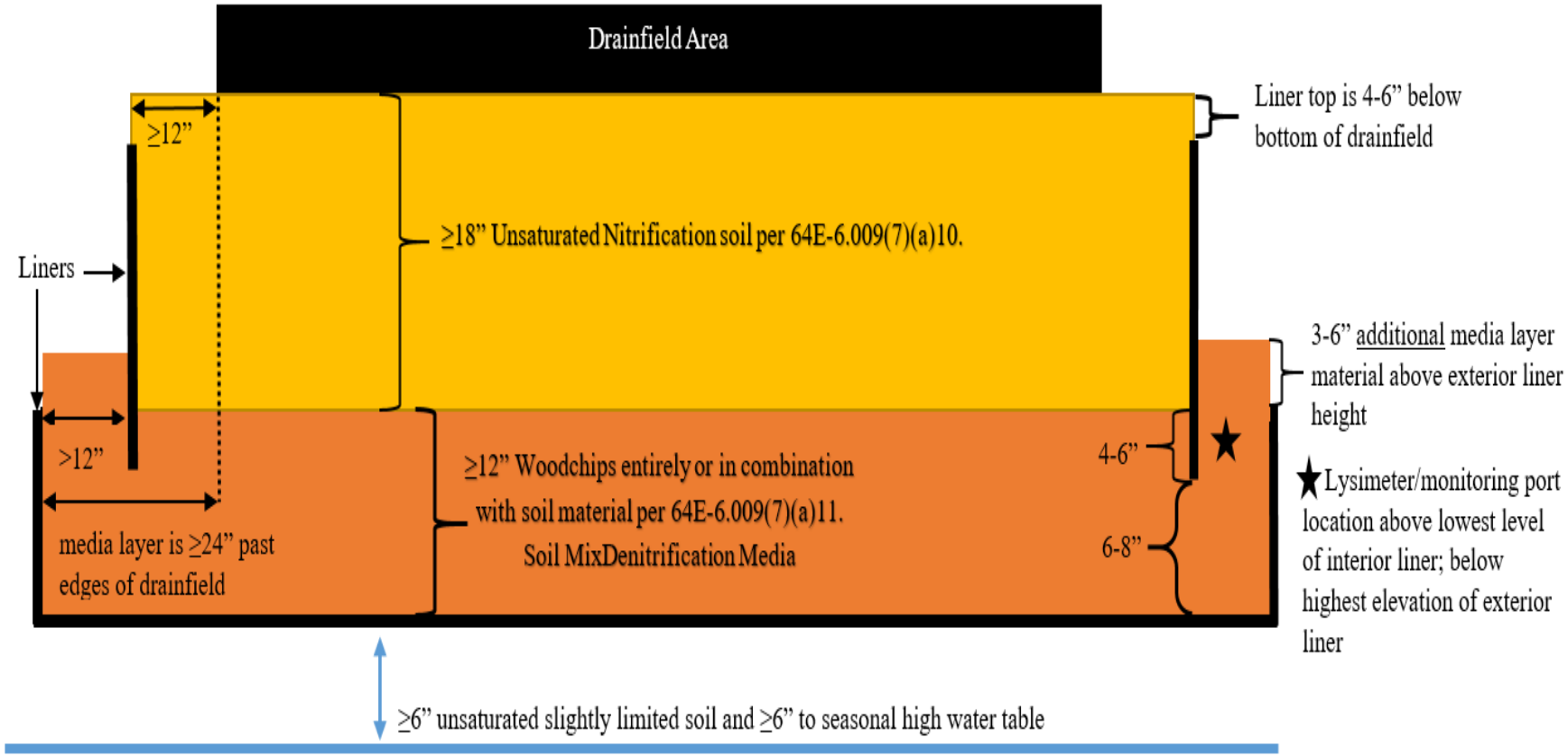
Variant One – No Liner



Variant Two - Underdrain



Variant Three – Dual Liner



64E-6.012, F. A. C. - Aerobic Treatment Units

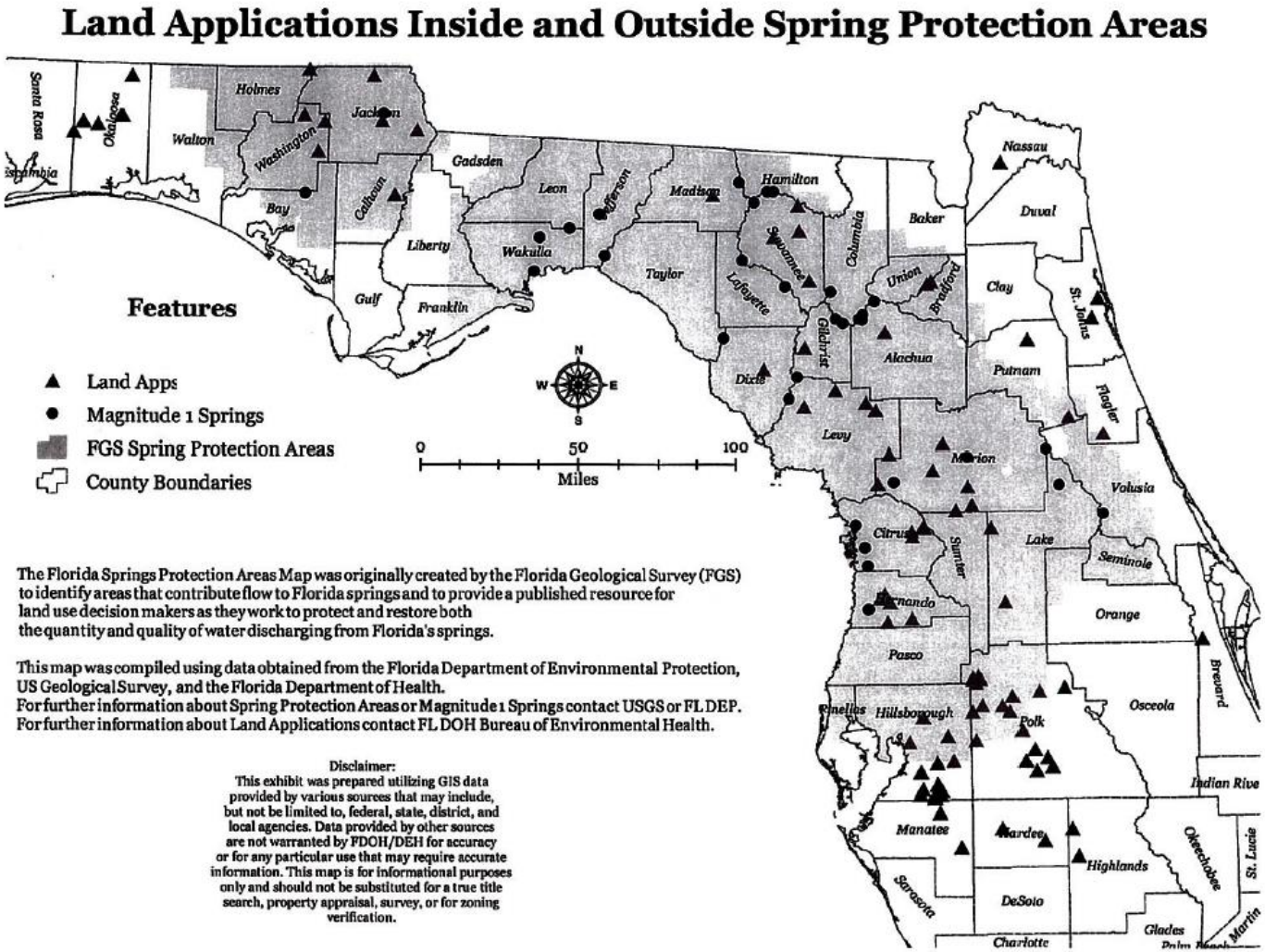
- Inclusion of aerobic treatment units certified for 50% nitrogen reduction (NSF 245) in the permitting category for ATUs

64E-6.012, F. A. C. - Aerobic Treatment Units

Manufacturer	Equipment Series	Model Tested
Treatment Systems Approved as ATUs in Florida that are ALSO NSF245-certified by either NSF or Gulf Coast Testing LLC		
Acquired Wastwater Technologies, LLC	Cajun Aire Advanced	500
Bio-Microbics, Inc.	MicroFast	0.5
Bio-Microbics, Inc.	BioBarrier	MBR 0.5-N
Delta Environmental Products, Inc.	ECOPOD-N	E50-N
Fuji Clean USA	Fuji Clean CEN	CEN 5
Norweco, Inc.	Singulair TNT	Singulair TNT
Norweco, Inc.	Hydro-Kinetic	600 FEU
Orenco Systems	Advantex	AX20N

Update on Septage Ban

Septage Prohibition



The Florida Springs Protection Areas Map was originally created by the Florida Geological Survey (FGS) to identify areas that contribute flow to Florida springs and to provide a published resource for land use decision makers as they work to protect and restore both the quantity and quality of water discharging from Florida's springs.

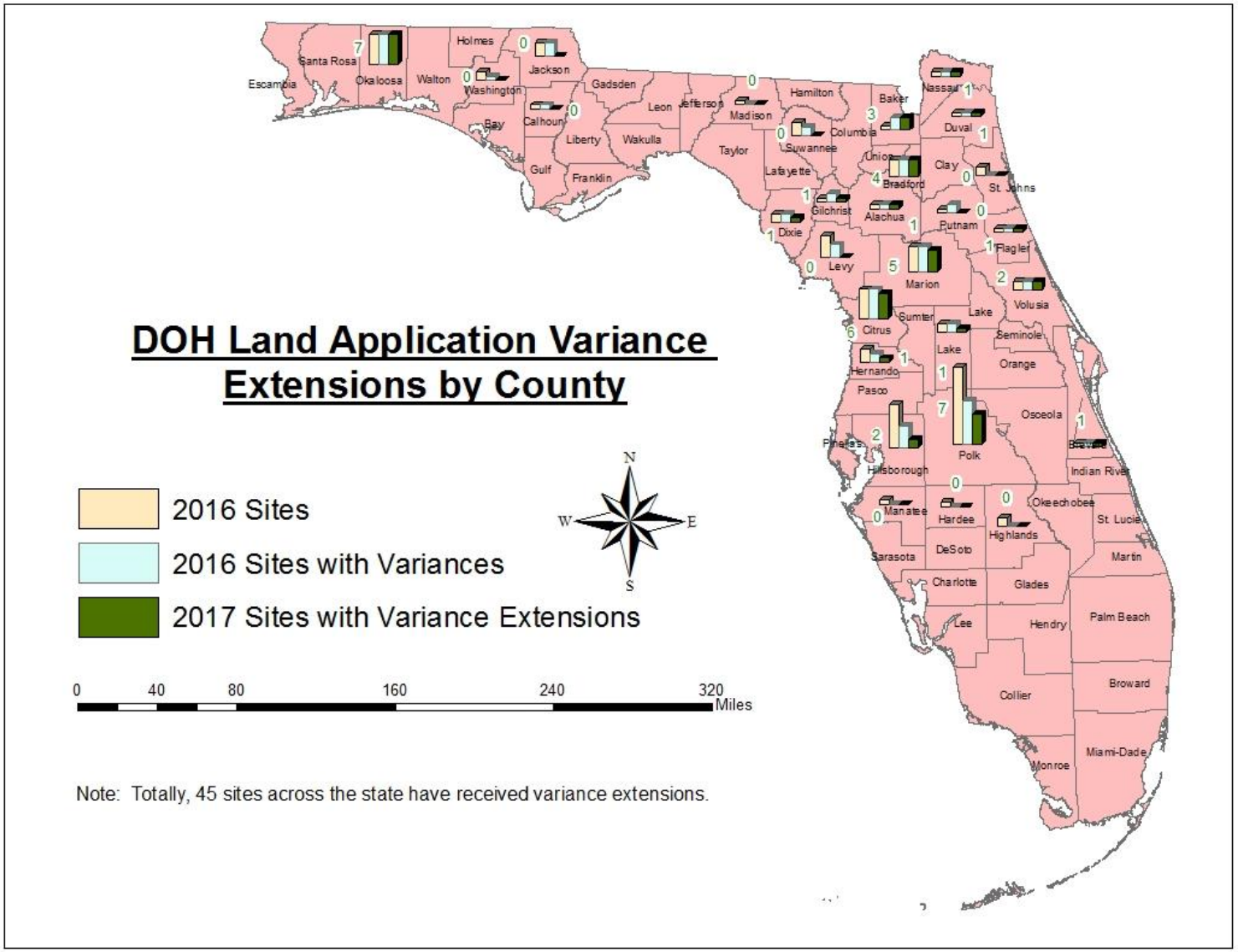
This map was compiled using data obtained from the Florida Department of Environmental Protection, US Geological Survey, and the Florida Department of Health.
For further information about Spring Protection Areas or Magnitude 1 Springs contact USGS or FL DEP.
For further information about Land Applications contact FL DOH Bureau of Environmental Health.

Disclaimer:
This exhibit was prepared utilizing GIS data provided by various sources that may include, but not be limited to, federal, state, district, and local agencies. Data provided by other sources are not warranted by FDOH/DEH for accuracy or for any particular use that may require accurate information. This map is for informational purposes only and should not be substituted for a true title search, property appraisal, survey, or for zoning verification.

Prohibition of Land Application of Septage

- Laws of Florida 2010-205 – Amended 381.0065, FS Prohibited Land Application
  - Effective January 1, 2016
  - Delayed to June 30, 2016
- May 27, 2016, DOH/DEP – Guidance to Request A *Temporary One Year* Variance From DOH
  - 69 Variances Granted
- May 18, 2017, DOH/DEP – Guidance For A 180-Day Maximum Variance Extensions
  - 45 Variance Extensions Granted

Prohibition of Land Application of Septage



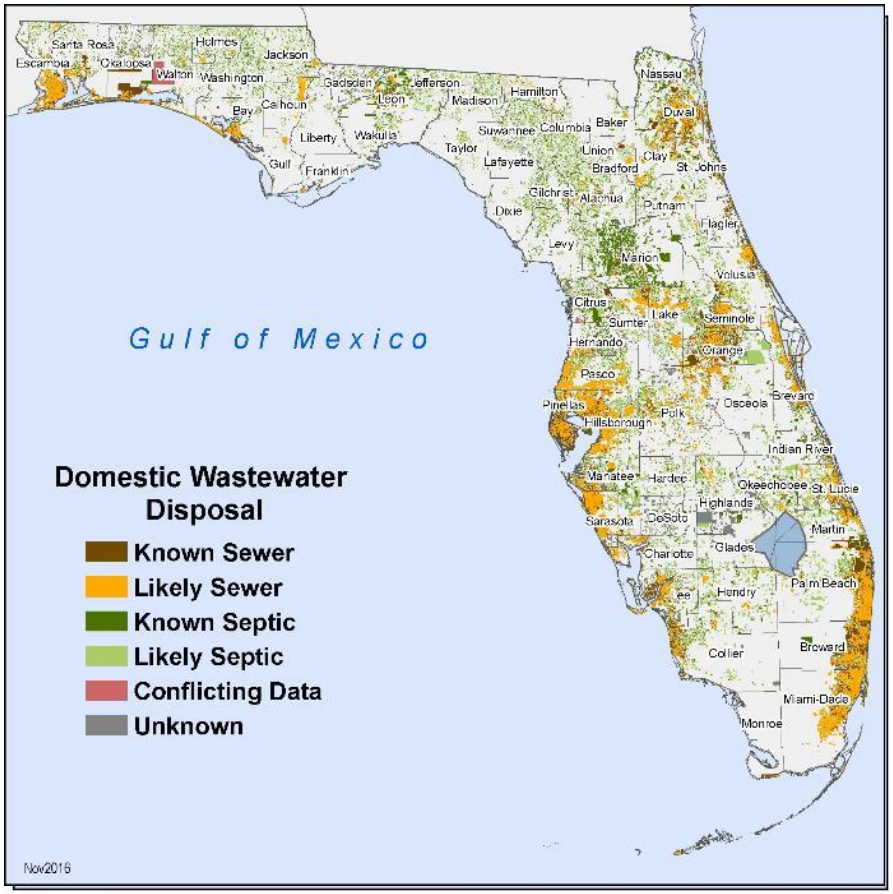
Update on Florida Water Management Inventory

Inventory Website

http://floridahealth.gov/flwmi

Maps and Data

All completed maps and data are available for public use.



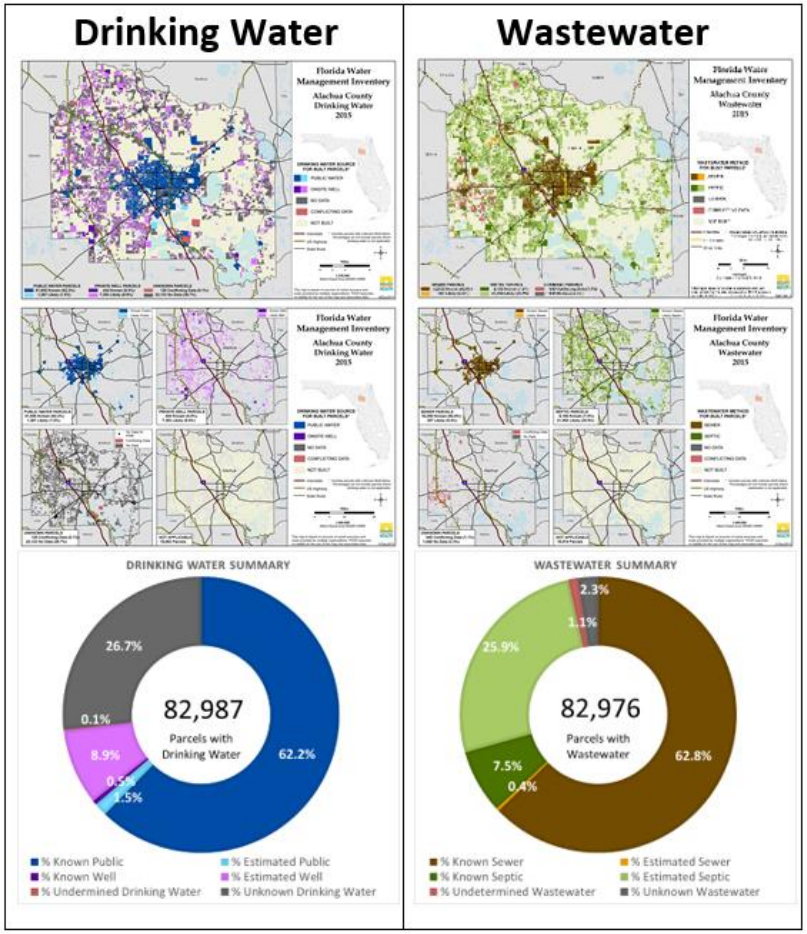
Inventory Website – County Page

Alachua County

The mapping for this county was completed on 5/1/2015.

Download the project maps and data.

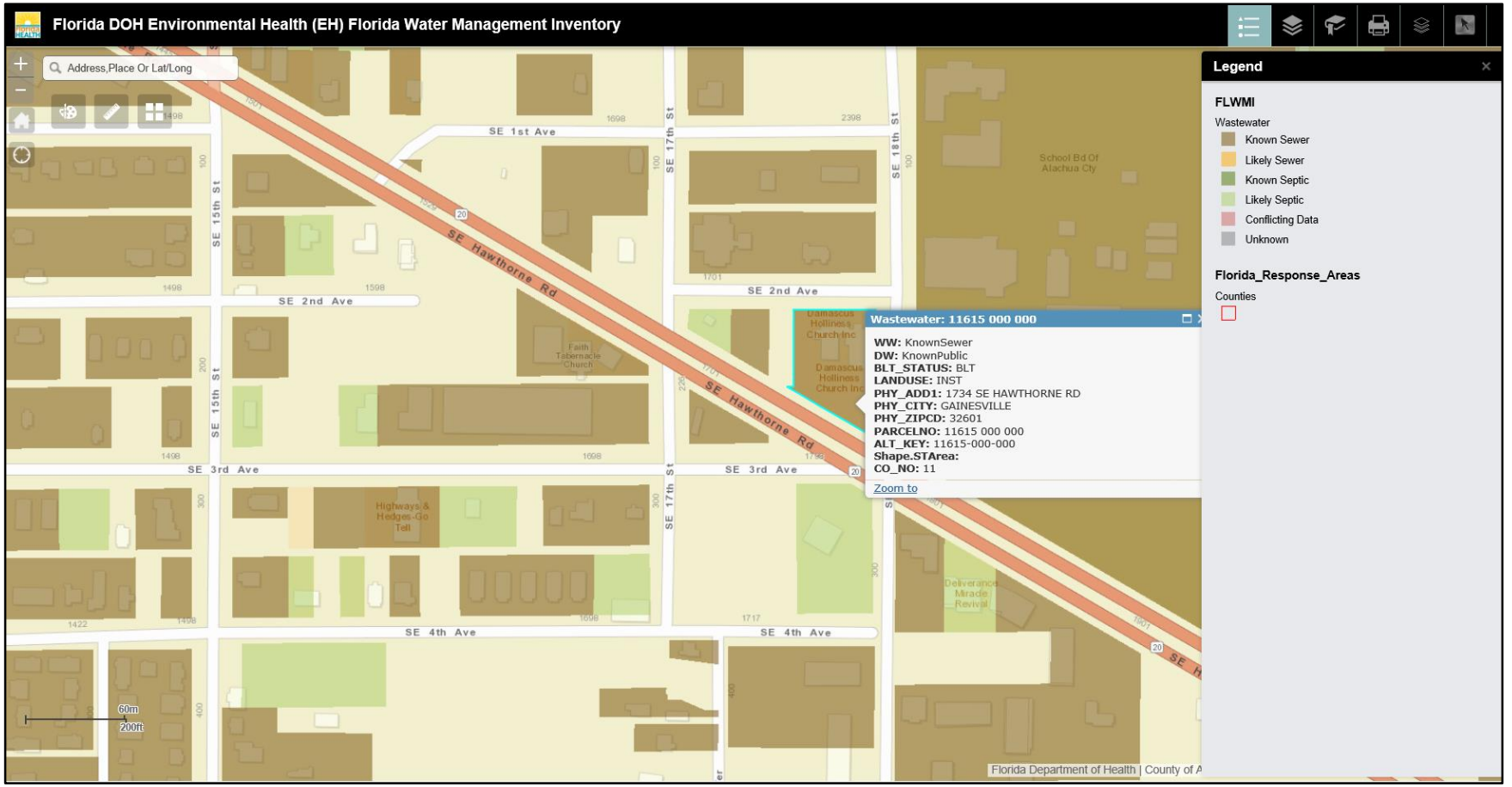
View data on our interactive web map.



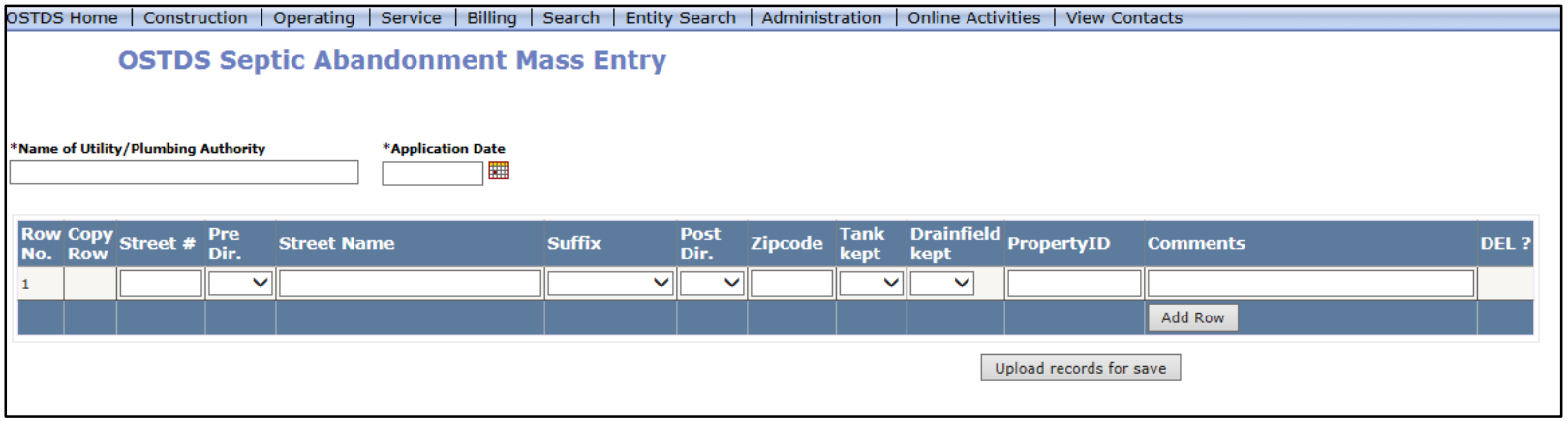
Inventory Website - FTP

Name	Last modified	Size	Description
Parent Directory		-	
Alachua_DW.pdf	04-Dec-2015 10:02	2.4M	
Alachua_DW_singlePanel.pdf	04-Dec-2015 10:09	3.0M	
Alachua_WW.pdf	04-Dec-2015 10:19	1.4M	
Alachua_WW_singlePanel.pdf	04-Dec-2015 10:26	3.0M	
FLWMI_Alachua.xlsx	21-Apr-2016 14:25	12M	
READme.pdf	14-Dec-2016 10:03	312K	
alachua_fre.xlsx	07-Dec-2015 04:38	11K	
alachua_public.zip	07-Dec-2015 06:59	14M	

Web Application



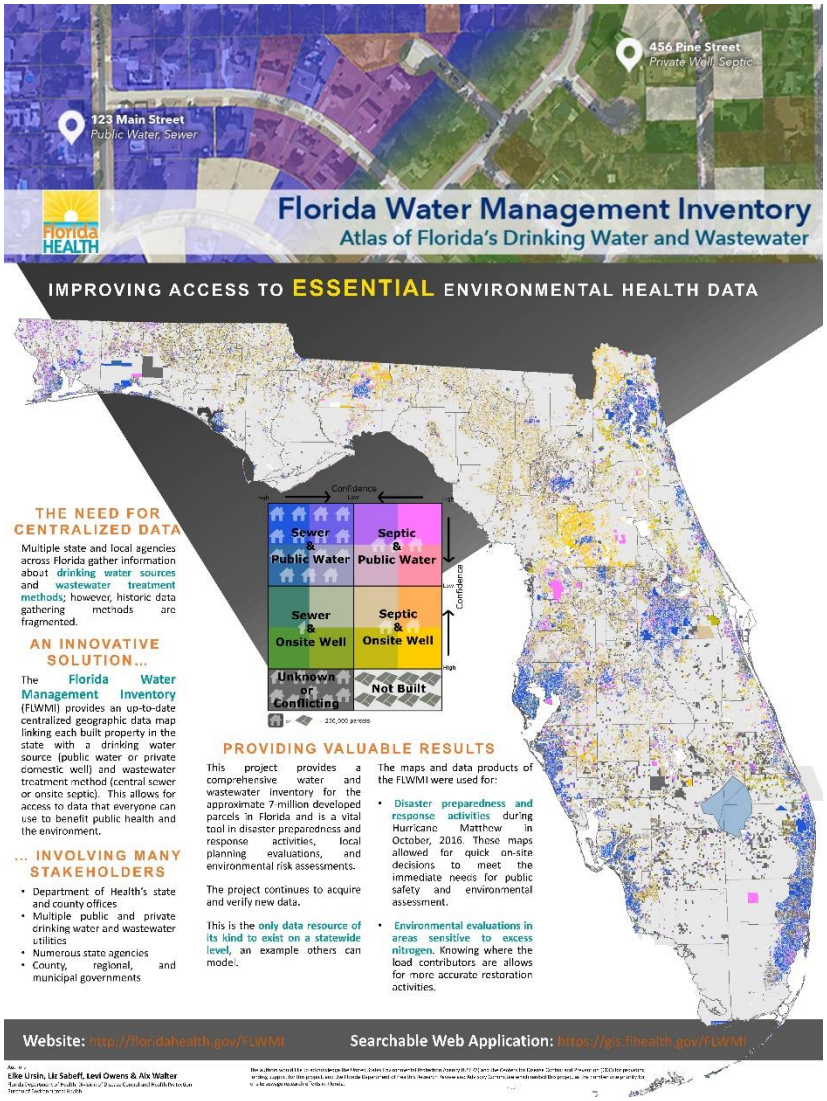
EHD Septic Abandonment by Utility



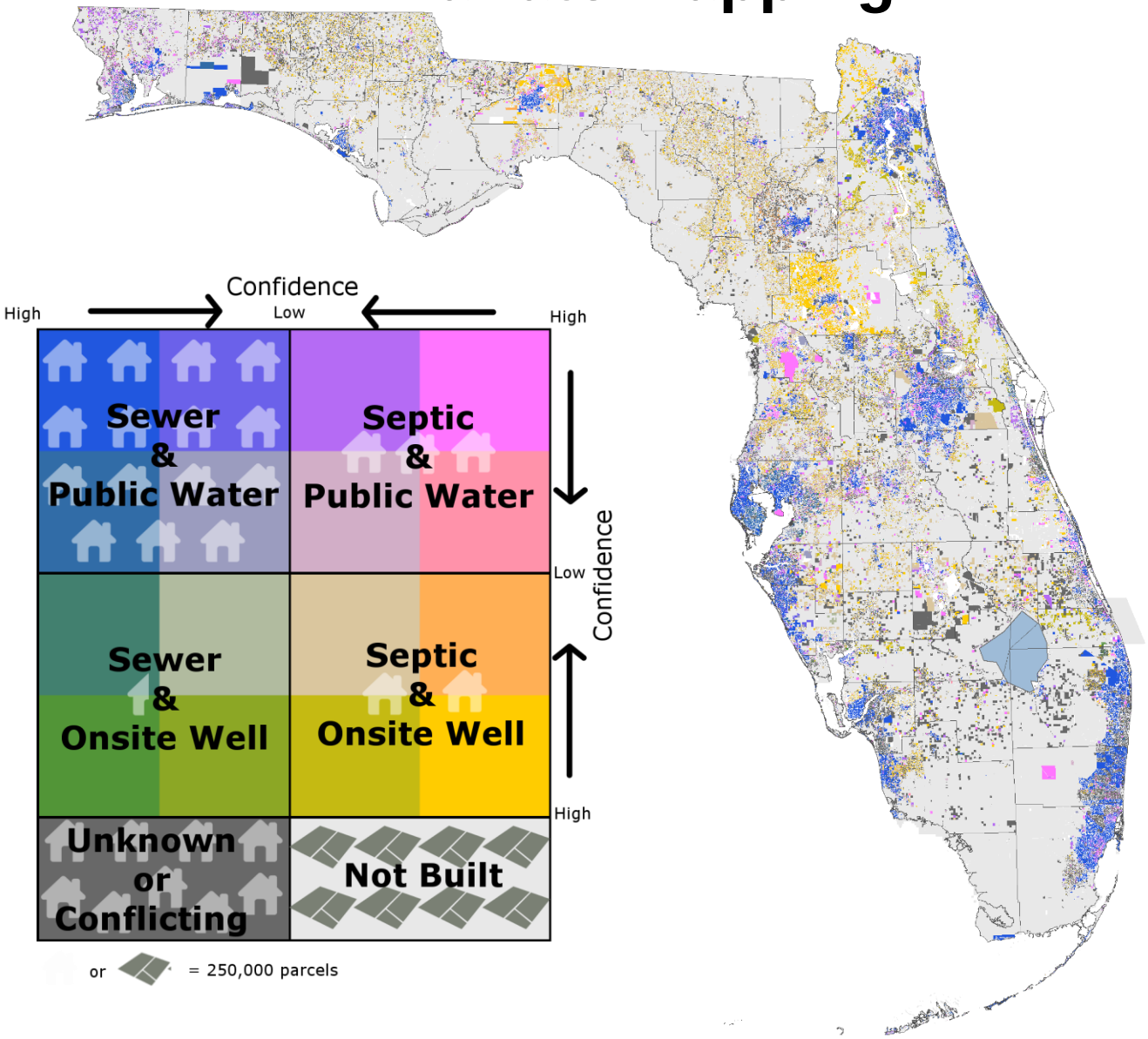
The 1st Cycle Project Achievement

1. The 1st Cycle of the Florida Water Management Inventory (FLWMI) completed in September 2016
2. All Project deliverables available at: http://ww10.doh.state.fl.us/pub/bos/Inventory/Deliverables/
3. The 1st Cycle mapped 91% and 81% of the population served by permitted Wastewater facilities and drinking water facilities statewide, respectively
4. Resulted in a more accurately defined number of OSTDS in Florida (2,096,941 properties with known/likely/somewhat likely septic)
5. Still many unknown parcels

Summary Sheet



Bivariate Mapping



The 2nd Cycle Goal

1. The 2nd Cycle of the FLWMI focused on closing information gaps and will result in:
   a) Depicting a greater percentage of the population served by permitted Wastewater and Drinking Water facilities
   b) Increasing accuracy of the count and location of OSTDS statewide
2. The 2nd Cycle runs from October 2016 through September 2018 and is partly funded by the federal 319 Grant managed by FDEP and CDC Environmental Public Health Tracking
3. For a summary of the FLWMI, see summary sheet in meeting materials

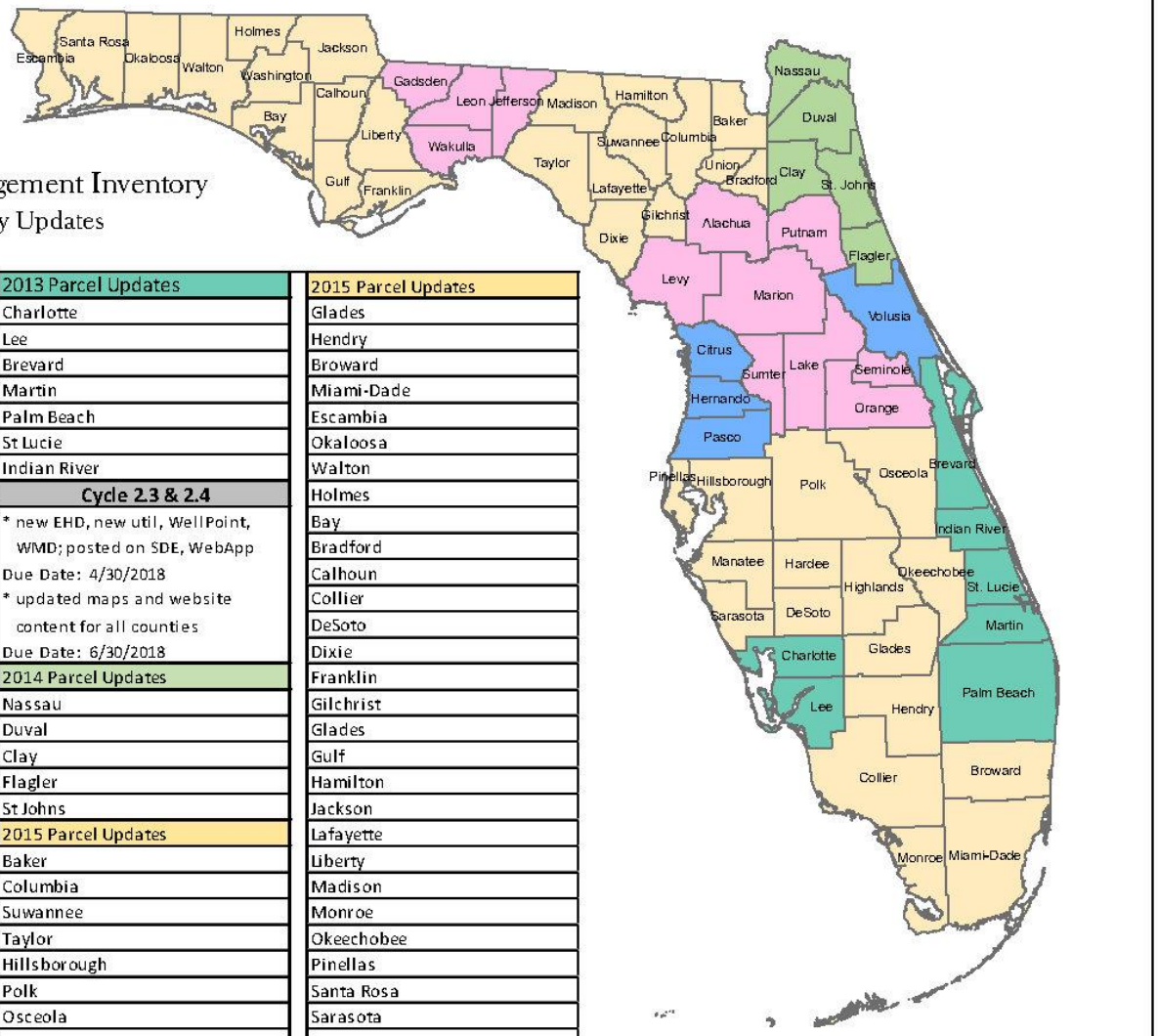
Florida Water Management Inventory

Cycle 2 Inventory Updates

Cycle 2.1
* 2016 statewide parcels
* create/update GIS models
* inventory cross-walk, new EHD, new util, Wellpoint, WMD; posted on SDE, WebApp,
* updated maps and website
Due Date: 9/30/2017
Priority BMAPS
Citrus
Hernando
Pasco
Volusia
Cycle 2.2
* Inventory cross-walk all counties
* new EHD, new util, WellPoint, WMD; posted on SDE, WebApp
Due Date: 1/30/2018
Other BMAPs and springs
Marion
Sumter
Alachua
Levy
Lake
Orange
Seminole
Putnam
Jefferson
Leon
Wakulla
Gadsden

2013 Parcel Updates
Charlotte
Lee
Brevard
Martin
Palm Beach
St Lucie
Indian River
Cycle 2.3 & 2.4
* new EHD, new util, WellPoint, WMD; posted on SDE, WebApp
Due Date: 4/30/2018
* updated maps and website content for all counties
Due Date: 6/30/2018
2014 Parcel Updates
Nassau
Duval
Clay
Flagler
St Johns
2015 Parcel Updates
Baker
Columbia
Suwannee
Taylor
Hillsborough
Polk
Osceola
Highlands
Manatee

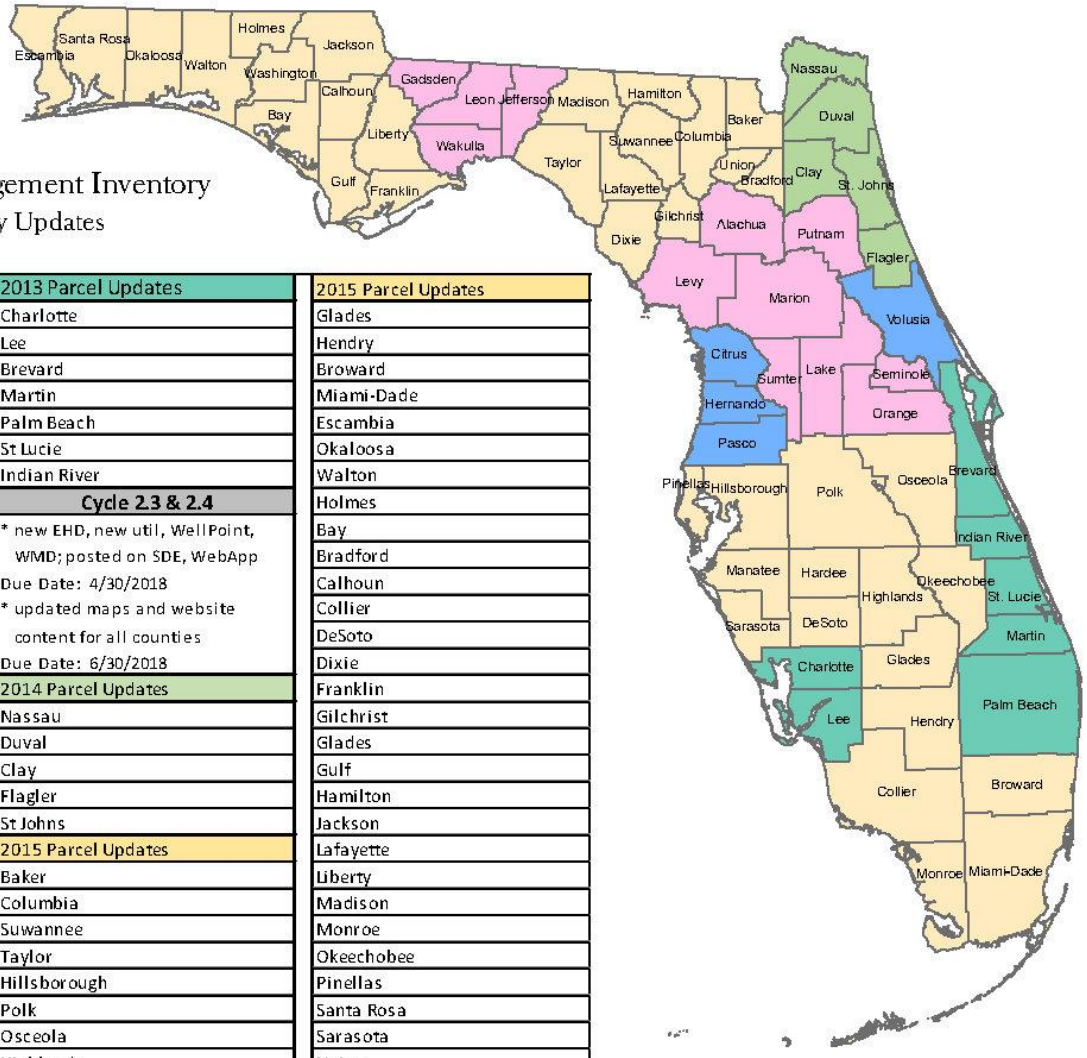
2015 Parcel Updates
Glades
Hendry
Broward
Miami-Dade
Escambia
Okaloosa
Walton
Holmes
Bay
Bradford
Calhoun
Collier
DeSoto
Dixie
Franklin
Gilchrist
Glades
Gulf
Hamilton
Jackson
Lafayette
Liberty
Madison
Monroe
Okeechobee
Pinellas
Santa Rosa
Sarasota
Union
Washington



updated: 22July17

Florida Water Management Inventory

Cycle 2 Inventory Updates



Cycle 2.1
* 2016 statewide parcels
* create/update GIS models
* inventory cross-walk, new EHD, new util, Wellpoint, WMD; posted on SDE, WebApp,
* updated maps and website
Due Date: 9/30/2017
Priority BMAPS
Citrus
Hernando
Pasco
Volusia

Cycle 2.2
* Inventory cross-walk all counties
* new EHD, new util, WellPoint, WMD; posted on SDE, WebApp
Due Date: 1/30/2018
Other BMAPs and springs
Marion
Sumter
Alachua
Levy
Lake
Orange
Seminole
Putnam
Jefferson
Leon
Wakulla
Gadsden

2013 Parcel Updates
Charlotte
Lee
Brevard
Martin
Palm Beach
St Lucie
Indian River
Cycle 2.3 & 2.4
* new EHD, new util, WellPoint, WMD; posted on SDE, WebApp
Due Date: 4/30/2018
* updated maps and website content for all counties
Due Date: 6/30/2018
2014 Parcel Updates
Nassau
Duval
Clay
Flagler
St Johns
2015 Parcel Updates
Baker
Columbia
Suwannee
Taylor
Hillsborough
Polk
Osceola
Highlands
Manatee

2015 Parcel Updates
Glades
Hendry
Broward
Miami-Dade
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Okaloosa
Walton
Holmes
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Collier
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Gilchrist
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Pinellas
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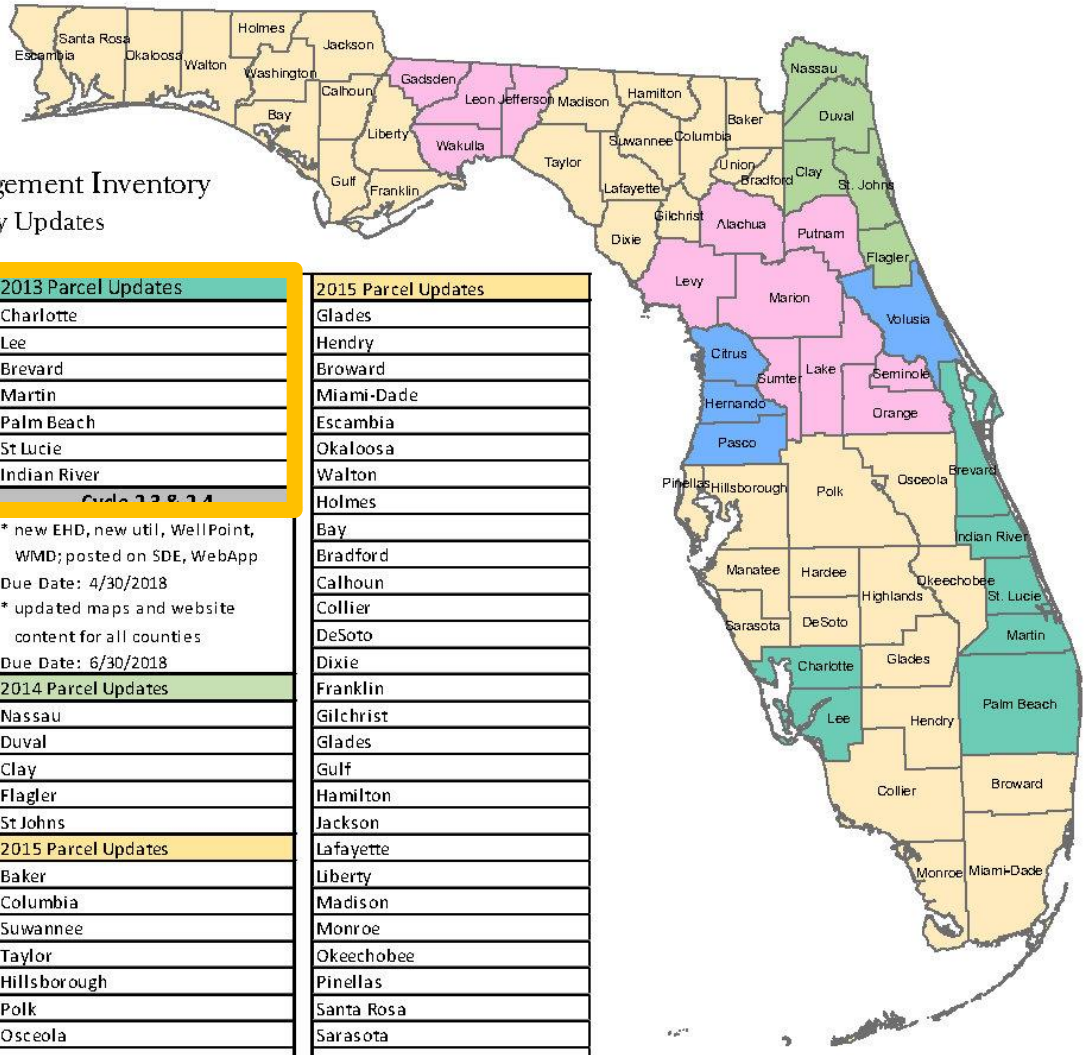
Sarasota
Union
Washington

updated: 22July17

Florida Water Management Inventory

Cycle 2 Inventory Updates



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updated: 22July17

Florida Water Management Inventory

Cycle 2 Inventory Updates

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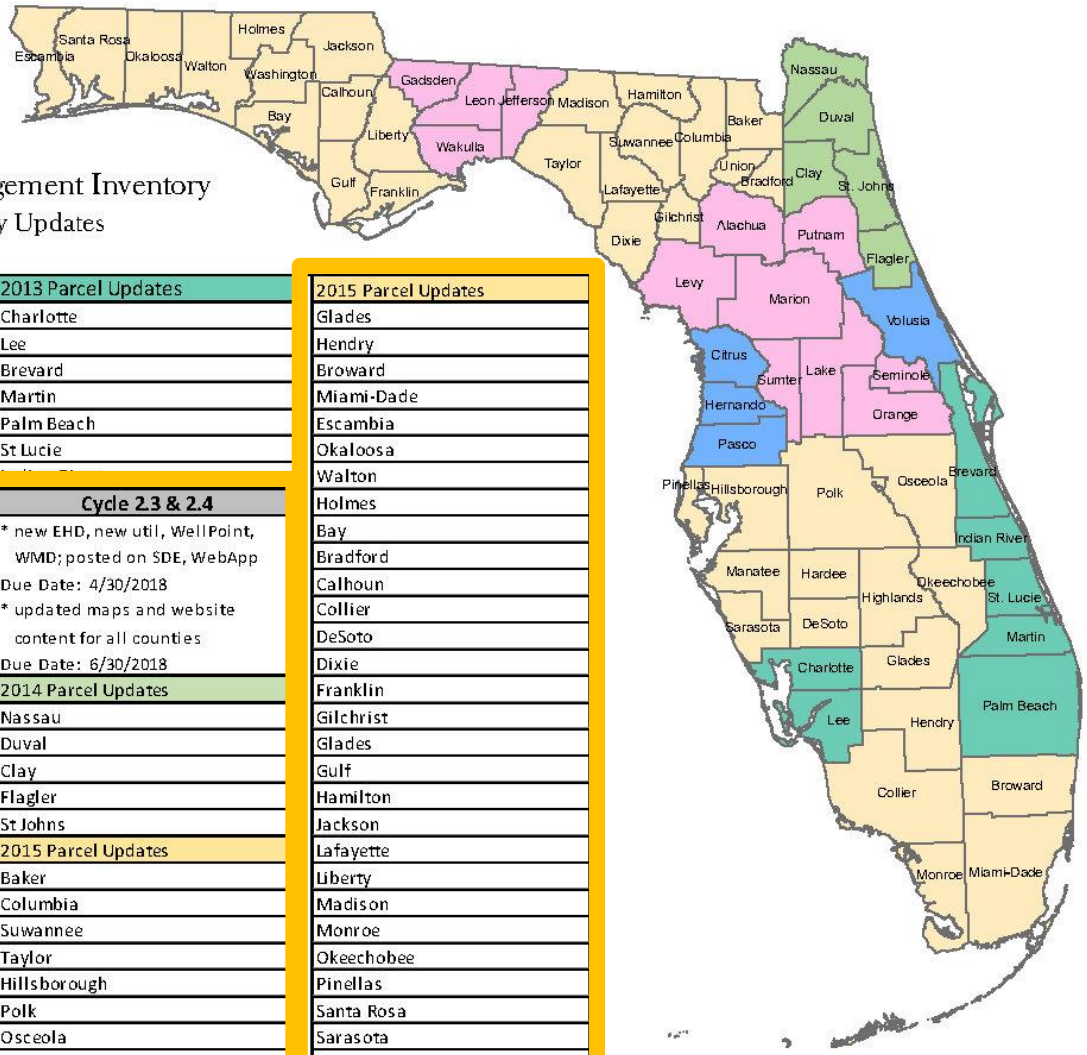


updated: 22July17

Innovative Systems Update Nitrogen Reduction

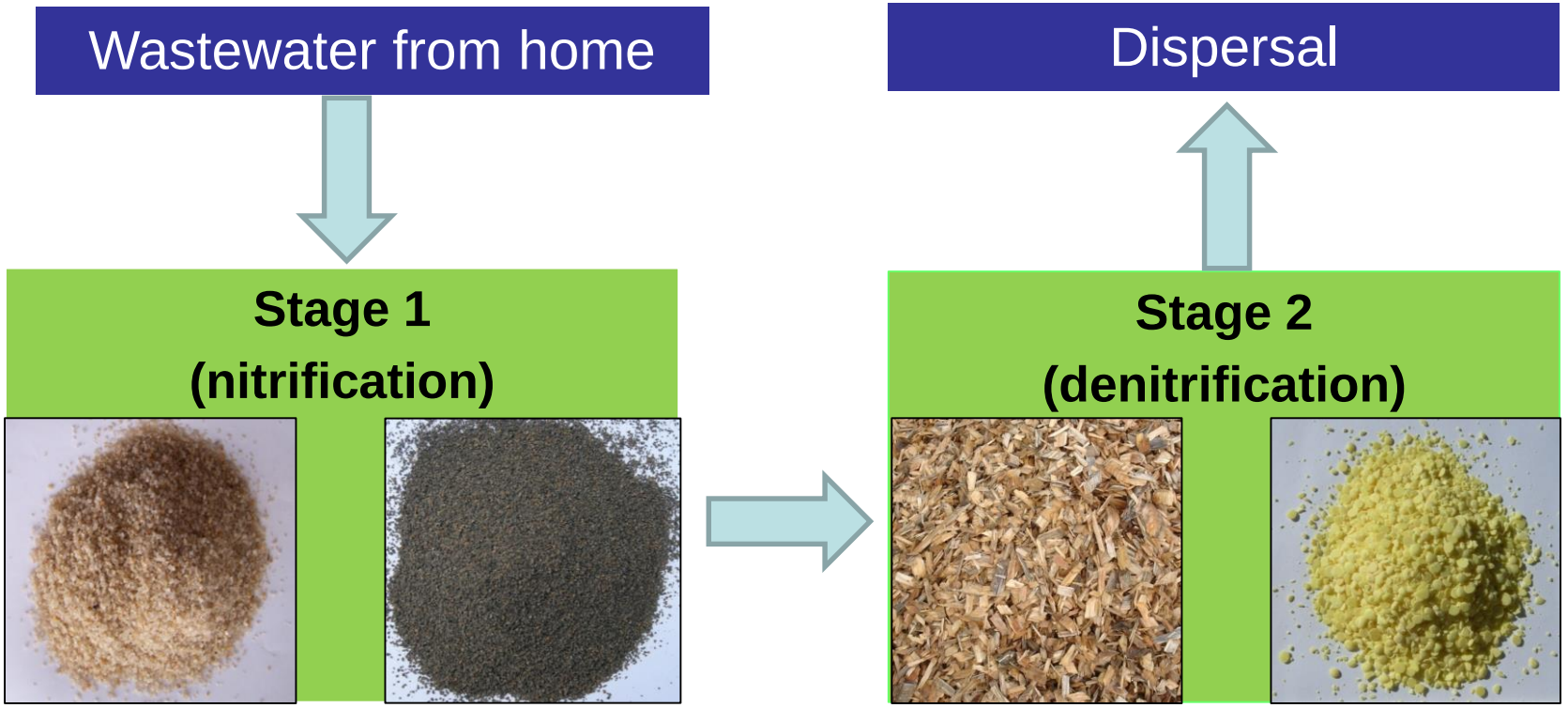
Innovative System Permits including Nitrogen Reduction

Manufacturer	Technology
Anua (formerly Bord-na-Mona)	Puraflo
Clearstream	Clearstream D
Ecological Tanks	AquaSafe
Environmental Conservation Solution	POTS (passive onsite treatment system)
Fuji-Clean	CEN, CE
Lombardo	Nitrex (second stage)
Norweco	Hydro-Kinetic
Orenco	Advantex
Quanics	Aerocell

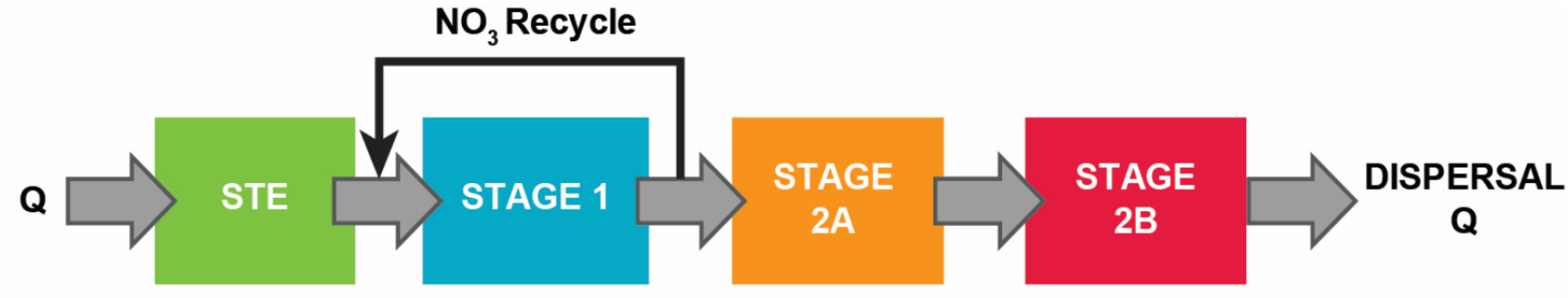
Florida Onsite Sewage Nitrogen Reduction Strategies (FOSNRS) Study and Continued Monitoring

“Passive” Nitrogen Reduction Systems

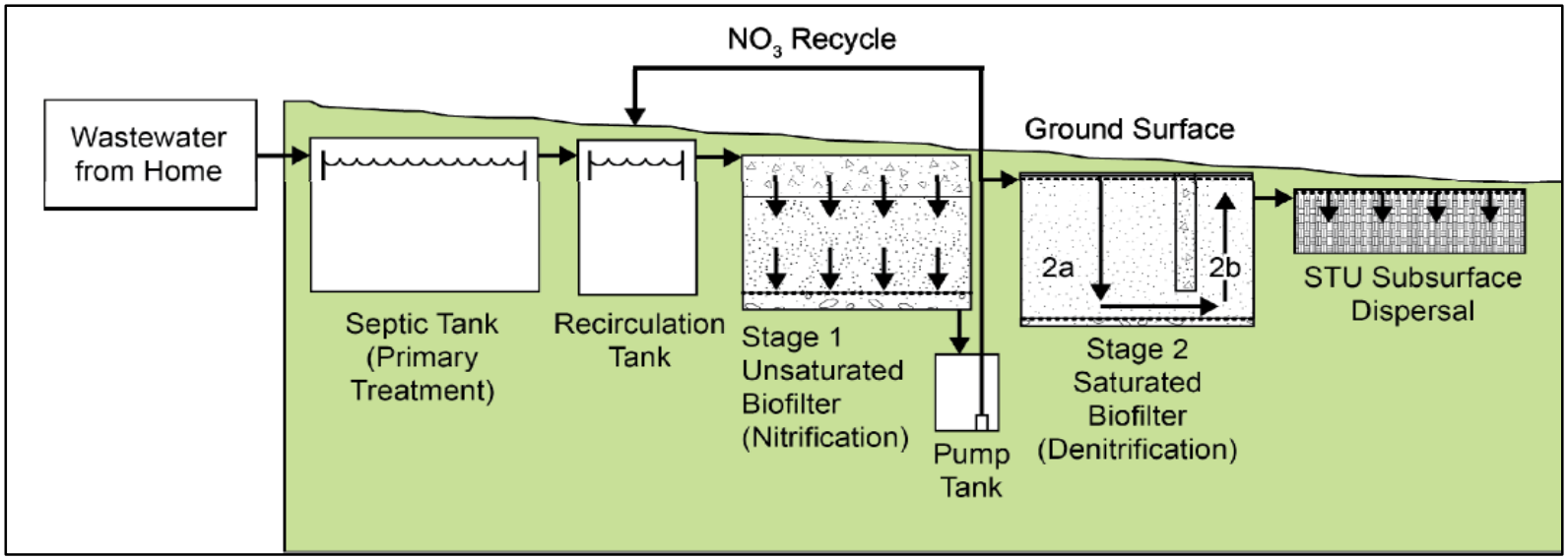
Reduce effluent N using **reactive media** for denitrification and a **single liquid pump**, if necessary.



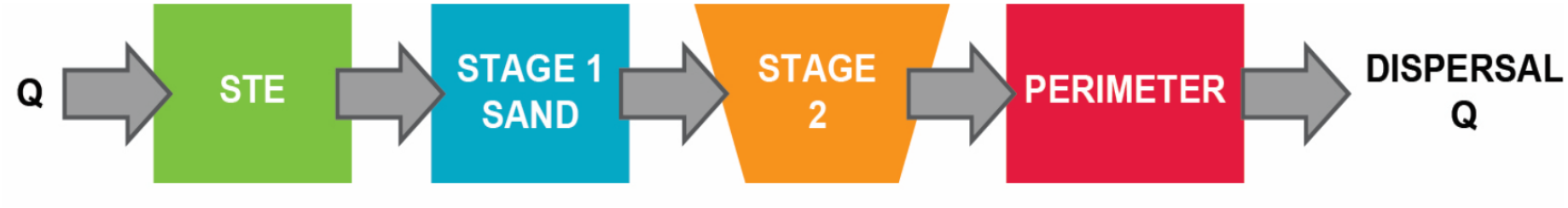
In-Tank Passive Nitrogen System



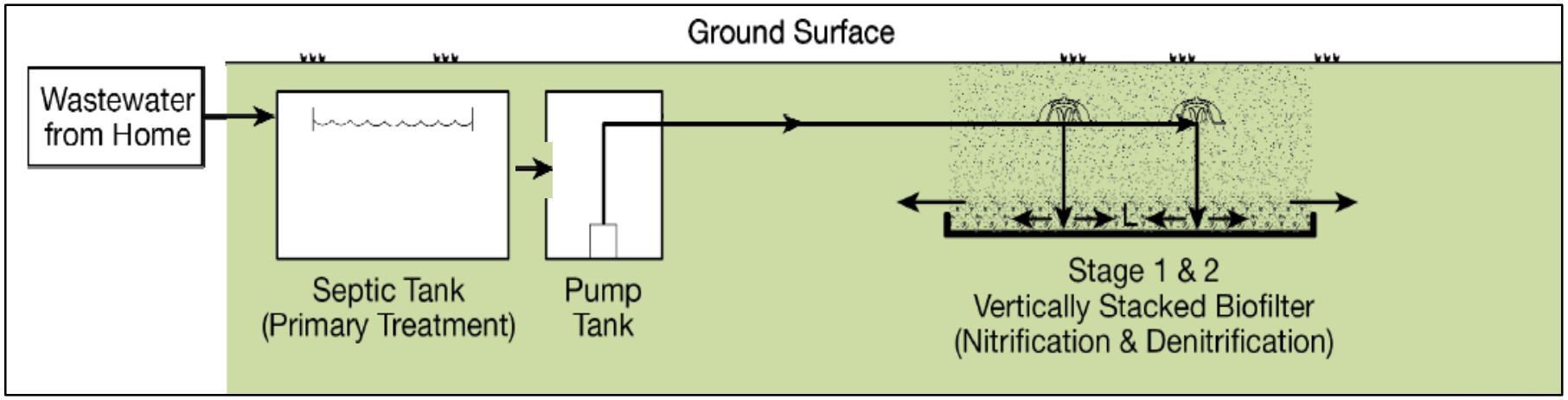
In-Tank Two Stage Biofilter with Recirculation Stage 1, Dual Media Stage 2 Lignocellulosic (2a) followed by Elemental Sulfur (2b)



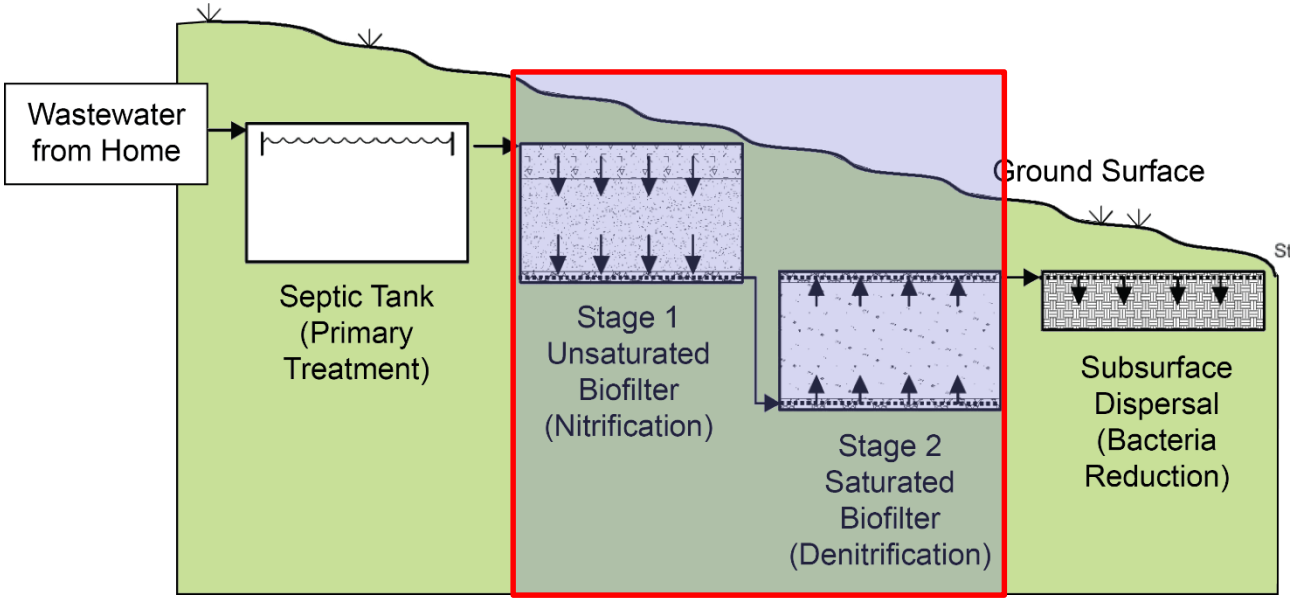
In-Ground Passive Nitrogen System

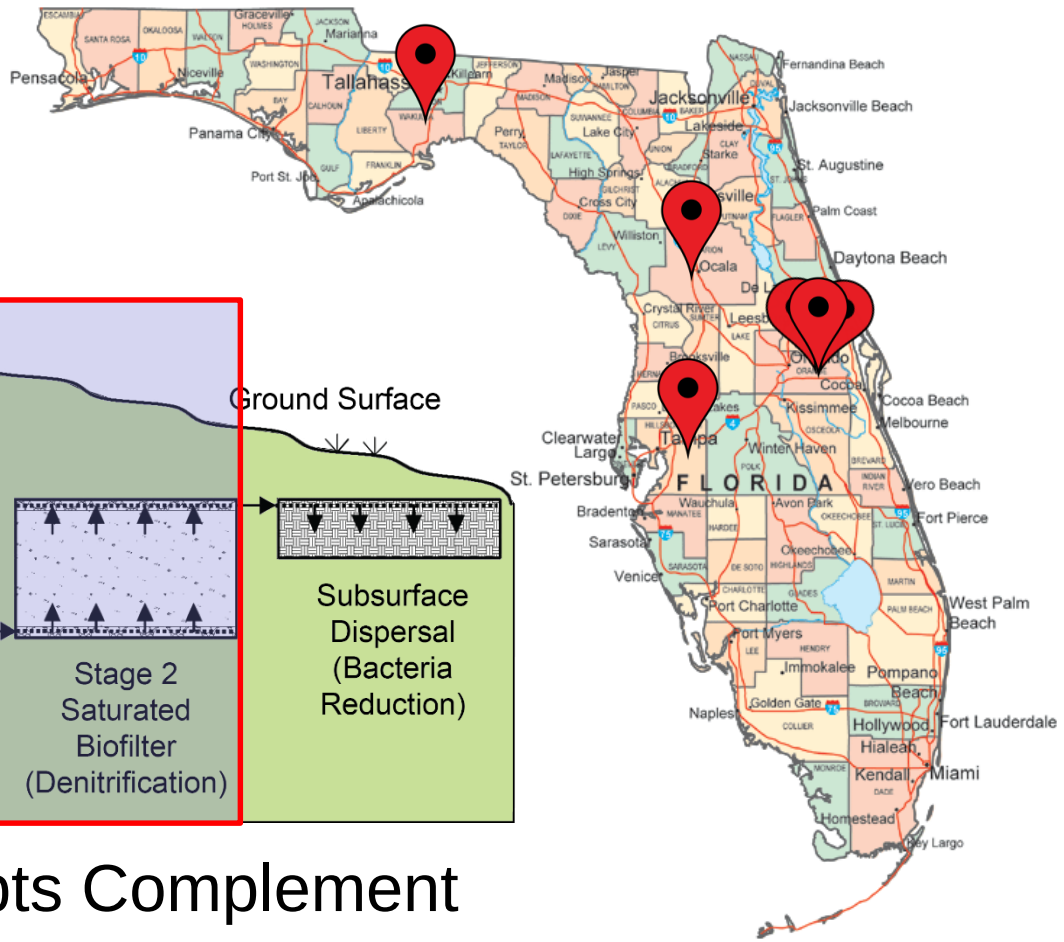


Conventional OSTDS + In-Ground Two Stage System: Stage 1 Sand, and Stage 2 Lignocellulosic Materials



Nitrogen Reduction at Field Sites





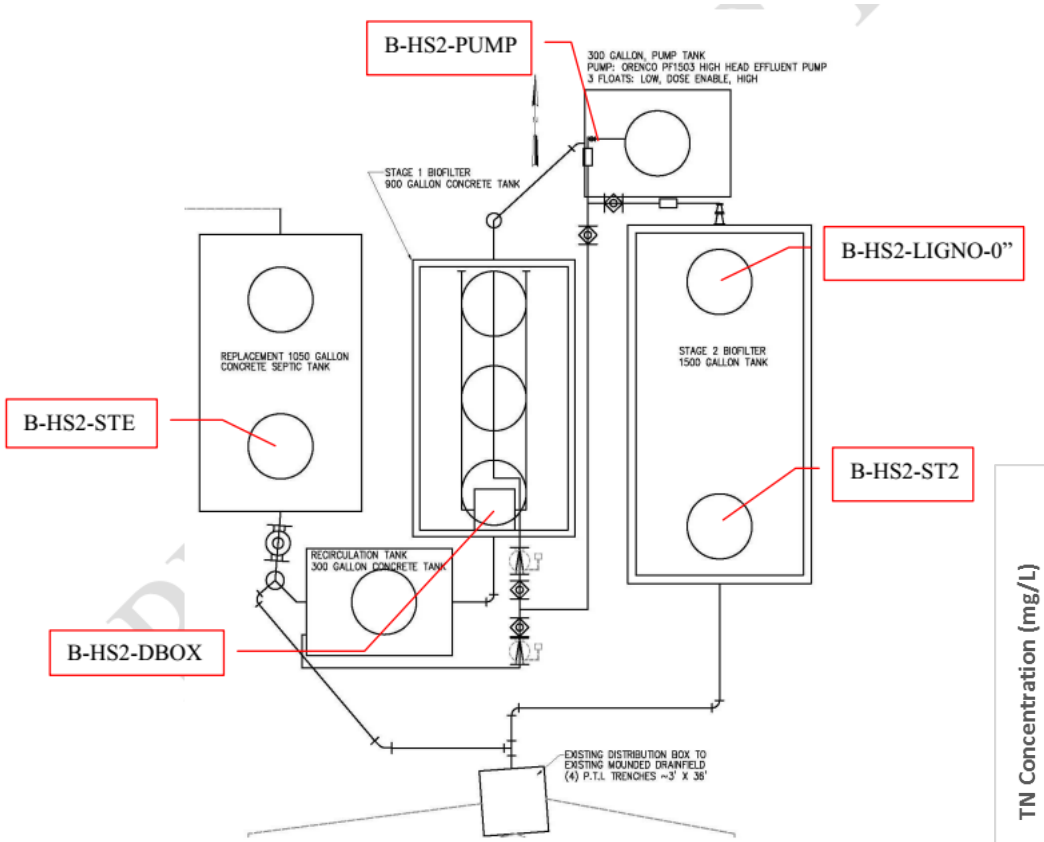
Full Scale Concepts Complement Existing Septic Systems

Goals and Objectives of the Monitoring Project

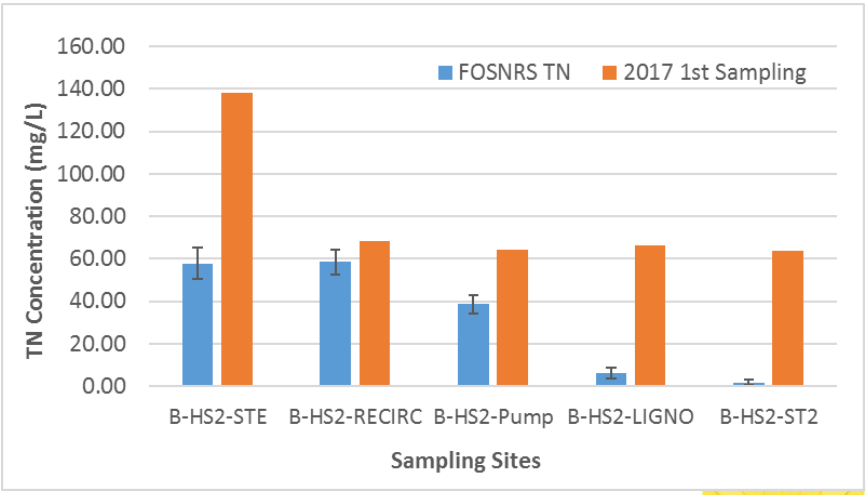
1. Goals
   - Establish long-term performance of the two-stage passive nitrogen removal technology
   - Provide guidance for possible system refinement and future implementation
2. Objectives
   - Continue monitoring the performance of these systems
   - Document the maintenance needs and operation costs
   - Monitor nitrogen species concentrations at influent, effluent, and intermediate locations of these systems and evaluate nitrogen removal efficiency
   - Monitor the treatment efficiencies other pollutants including 5-day carbonaceous biochemical oxygen demand (cBOD5), total suspended solid (TSS), total phosphorus (TP), and bacteria.

Hillsborough County System B-HS2

Hillsborough County System B-HS2



Site	Nitrogen Parameters (mg/L)			
	TKN	NH4	NO3/NO2	TN
B-HS2-STE	138.00	121.00	<0.05	138.00
B-HS2-RECIRC	68.20	68.20	0.03	68.23
B-HS2-Pump	56.00	55.40	8.20	64.20
B-HS2-LIGNO	66.10	69.40	<0.025	66.10
B-HS2-ST2	61.70	69.10	2.00	63.70

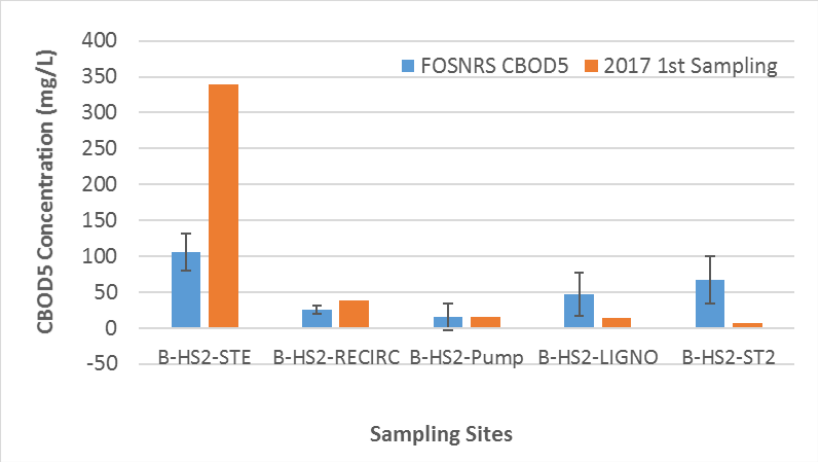


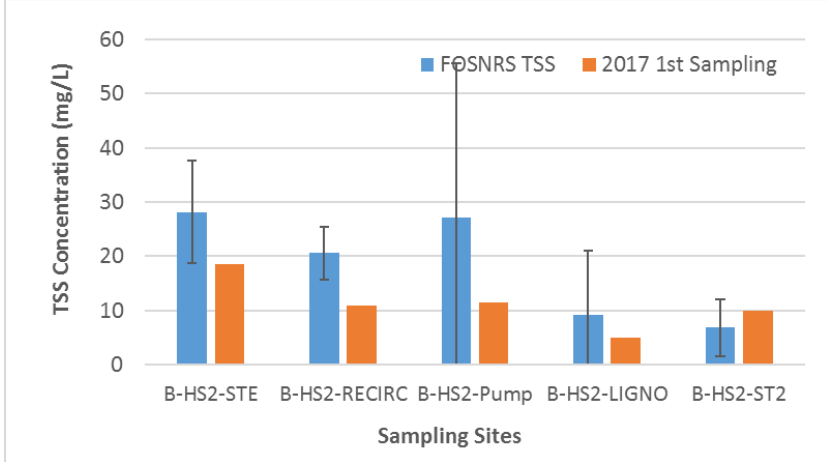
TKN: total kjeldahl nitrogen; NH4: ammonium;
NO3/NO2: nitrate/nitrite; TN: total nitrogen
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

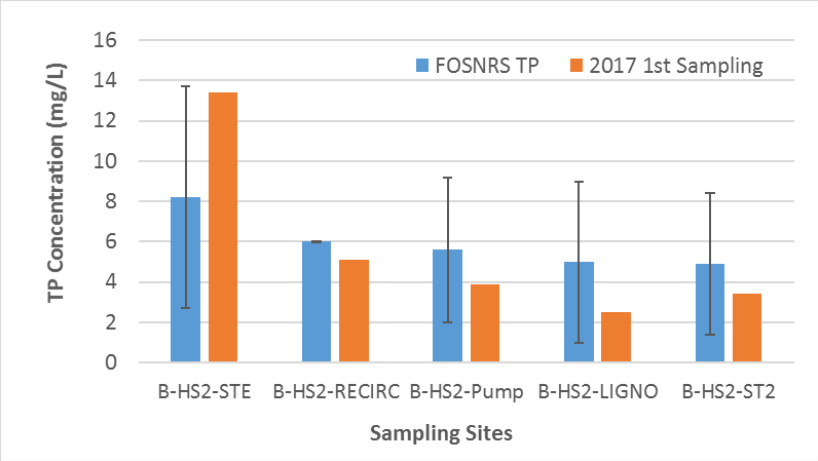
Stage One Tank of the Hillsborough System B-HS2 Flooded

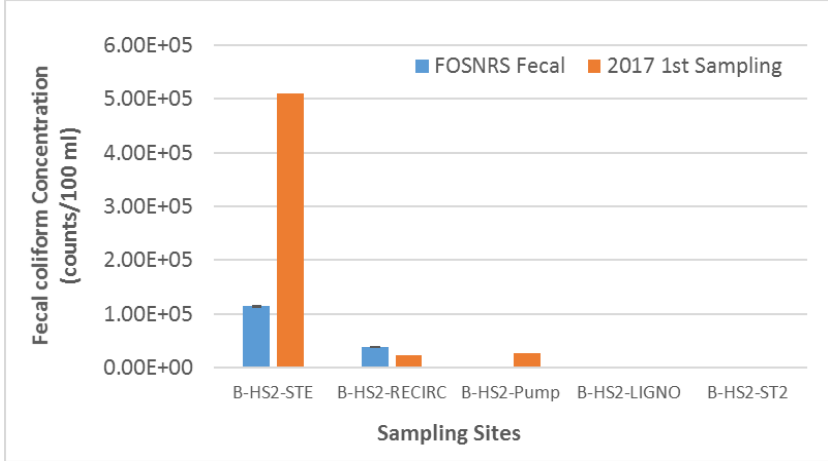
Stage One Media of the Hillsborough System B-HS2 after Being Flooded

Hillsborough County System B-HS2





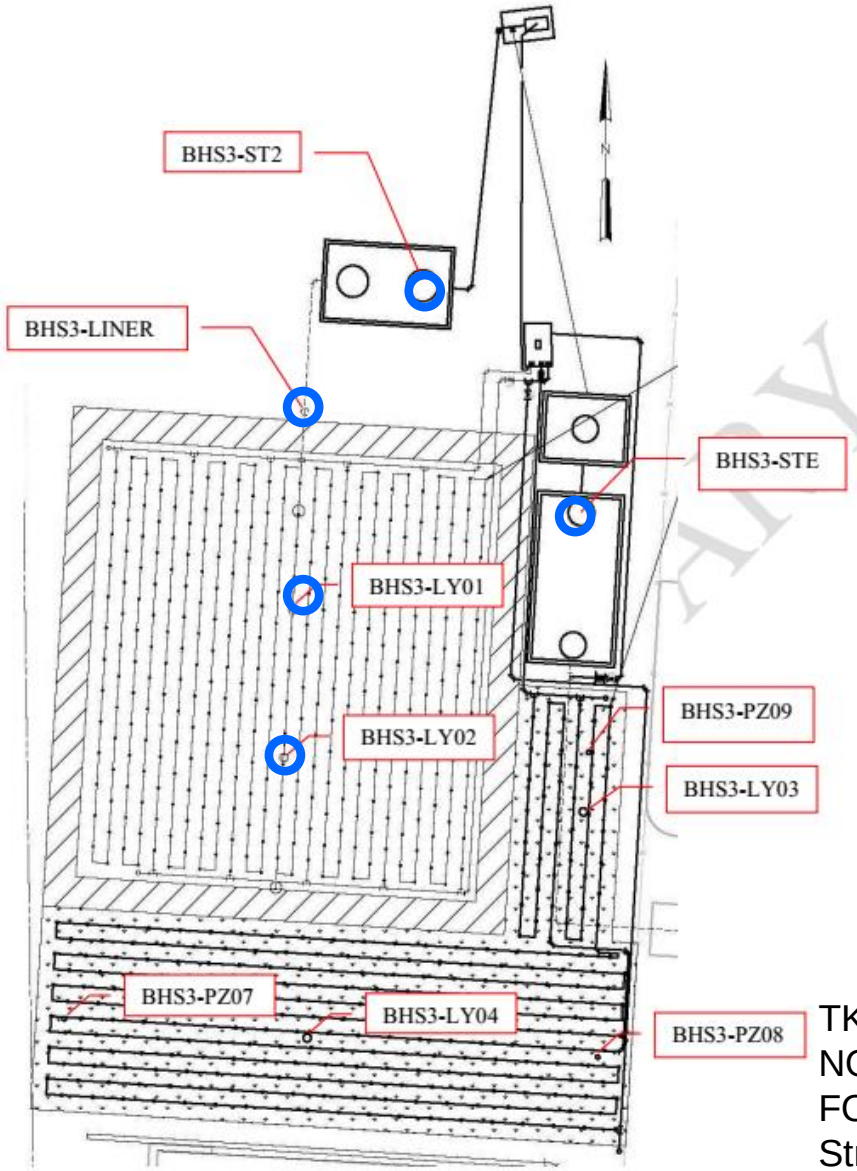




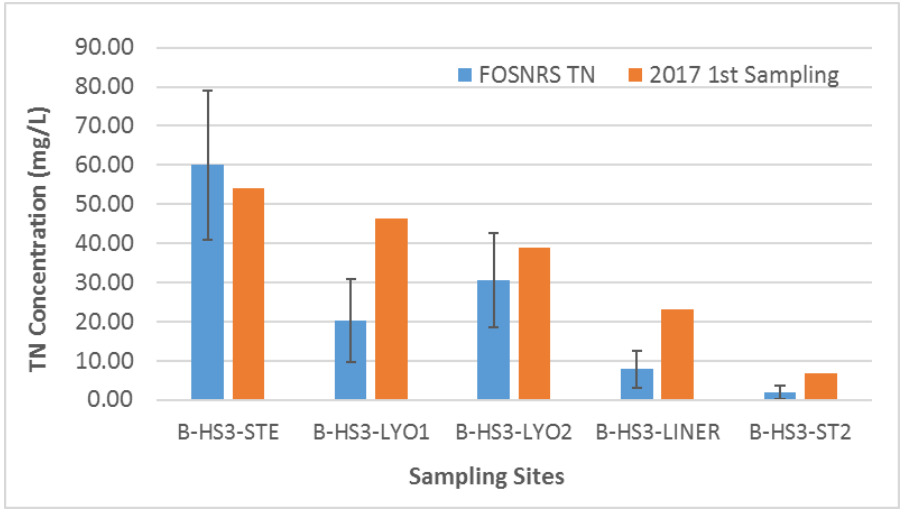
CBOD5: 5-day carbonaceous biochemical oxygen demand;
TSS: total suspended solid; TP: total phosphorus;
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

Seminole County System B-HS3

Seminole County System B-HS3

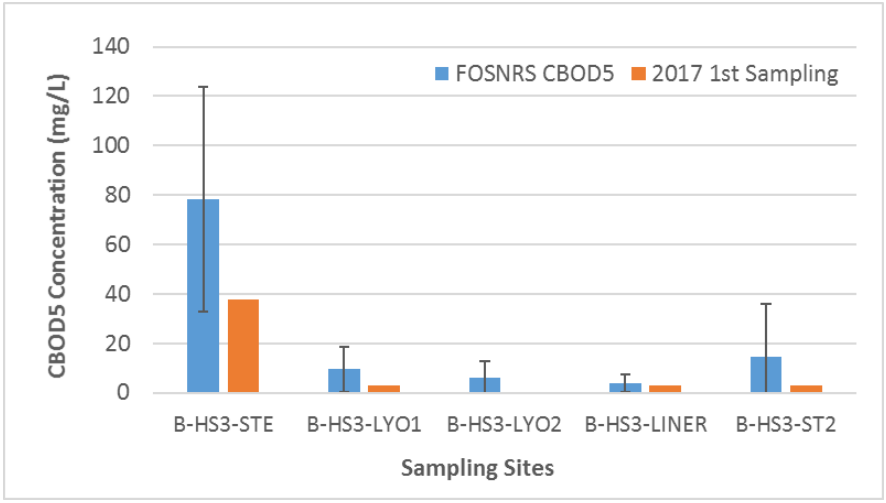


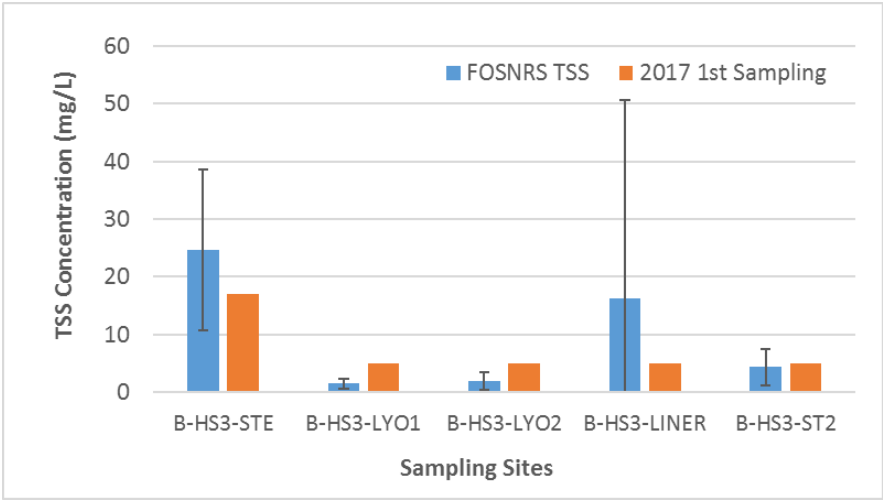
Site	Nitrogen Parameters (mg/L)			
	TKN	NH4	NO3/NO2	TN
B-HS3-STE	54	55.3	<0.025	54.00
B-HS3-LYO1	<0.086	<0.020	46.30	46.30
B-HS3-LYO2	<0.086	<0.020	39.00	39.00
B-HS3-LINER	<0.086	0.21	23.10	23.10
B-HS3-ST2	1.00	0.14	5.90	6.90

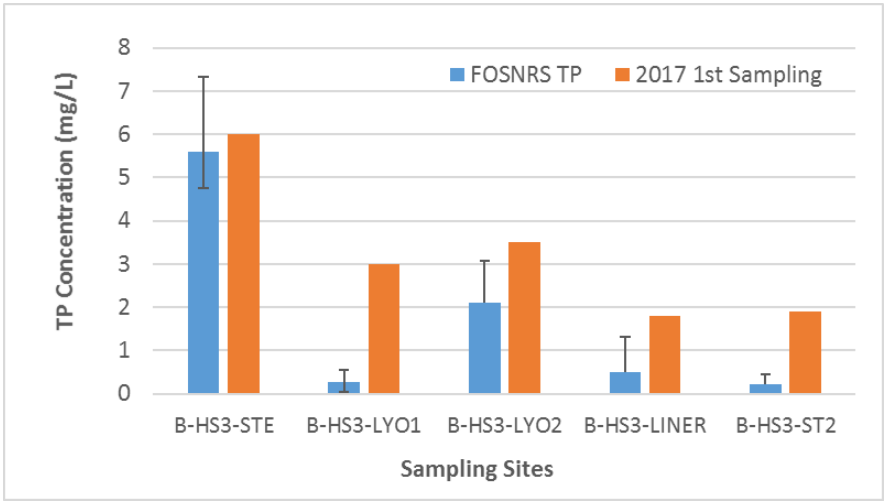


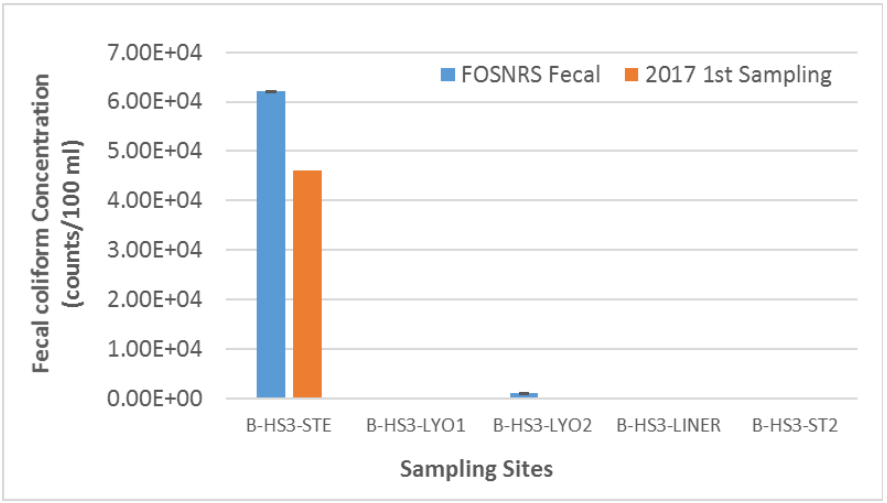
TKN: total kjeldahl nitrogen; NH4: ammonium; NO3/NO2: nitrate/nitrite; TN: total nitrogen
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

Seminole County System B-HS3







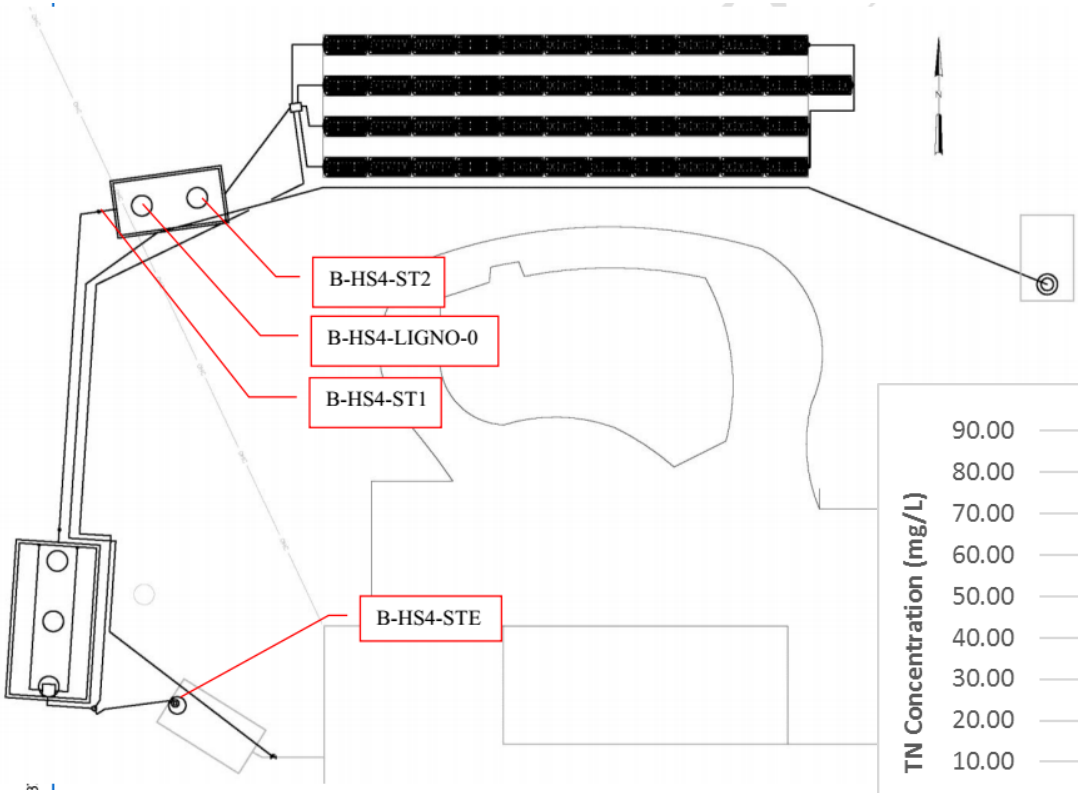


CBOD5: 5-day carbonaceous biochemical oxygen demand;
TSS: total suspended solid; TP: total phosphorus;
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

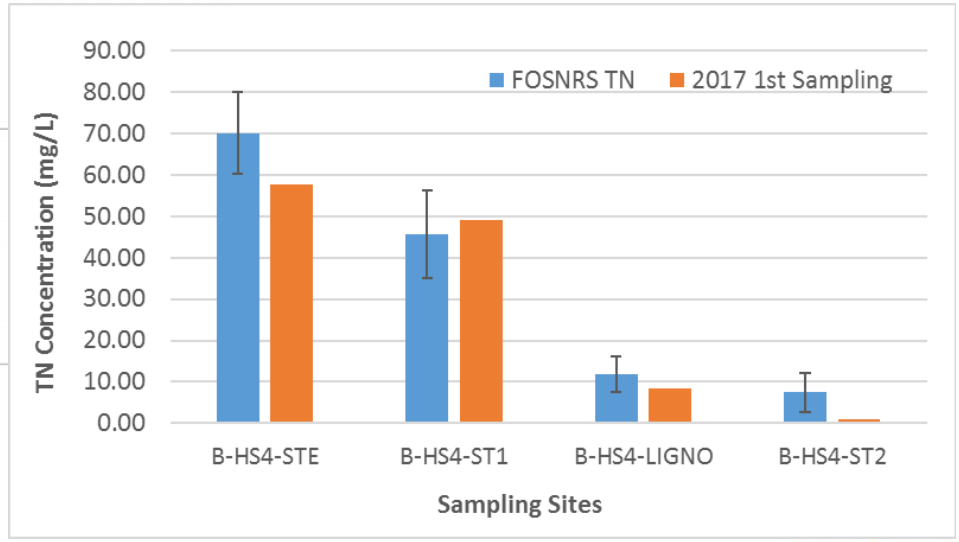
Seminole County System B-HS4 Stage Two Tank

Seminole County System
B-HS4 Stage One Tank

Seminole County System B-HS4

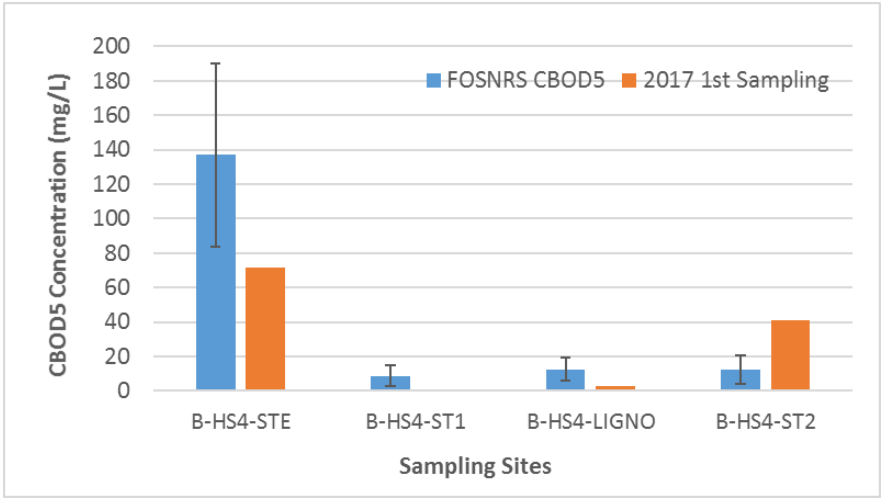


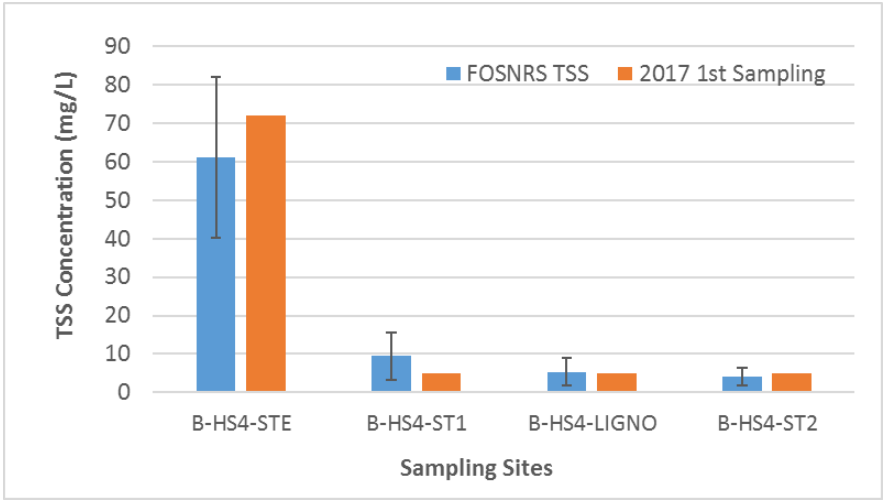
Site	Nitrogen Parameters (mg/L)			
	TKN	NH4	NO3/NO2	TN
B-HS4-STE	57.8	57.7	<0.025	57.80
B-HS4-ST1	0.35	<0.020	48.70	49.05
B-HS4-LIGNO	<0.086	0.02	8.50	8.50
B-HS4-ST2	0.97	0.28	<0.025	0.97

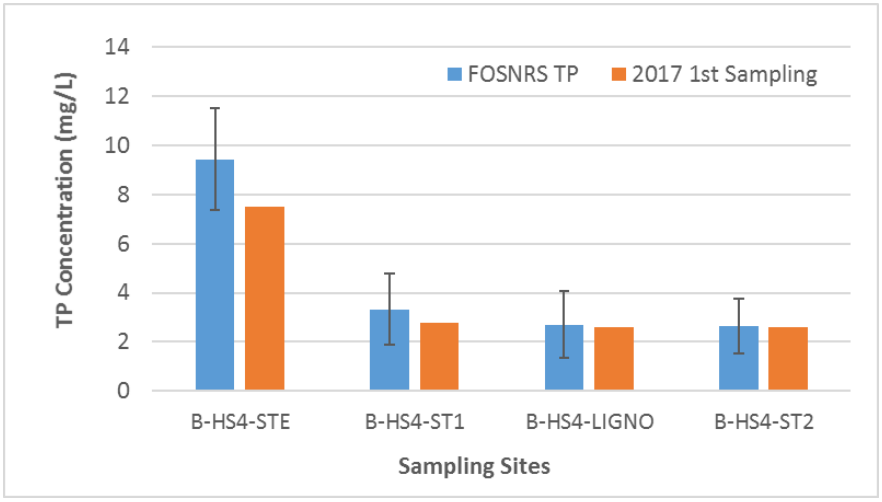


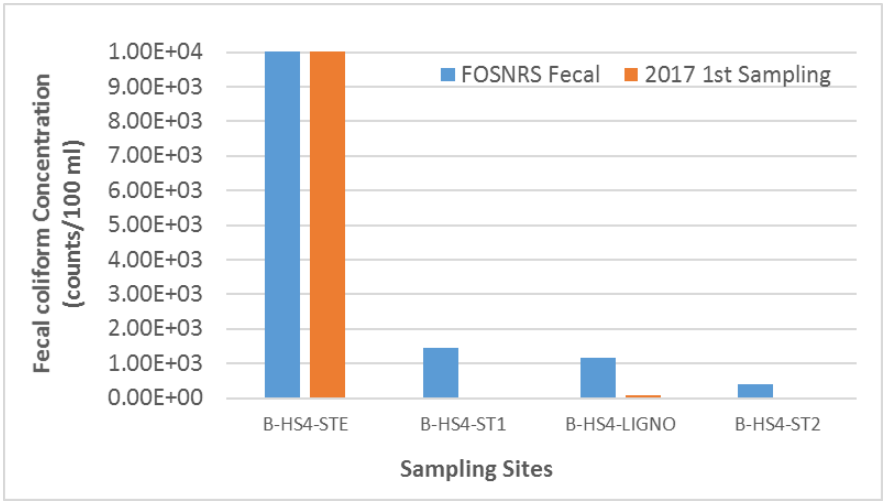
TKN: total kjeldahl nitrogen; NH4: ammonium;
NO3/NO2: nitrate/nitrite; TN: total nitrogen
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

Seminole County System B-HS4







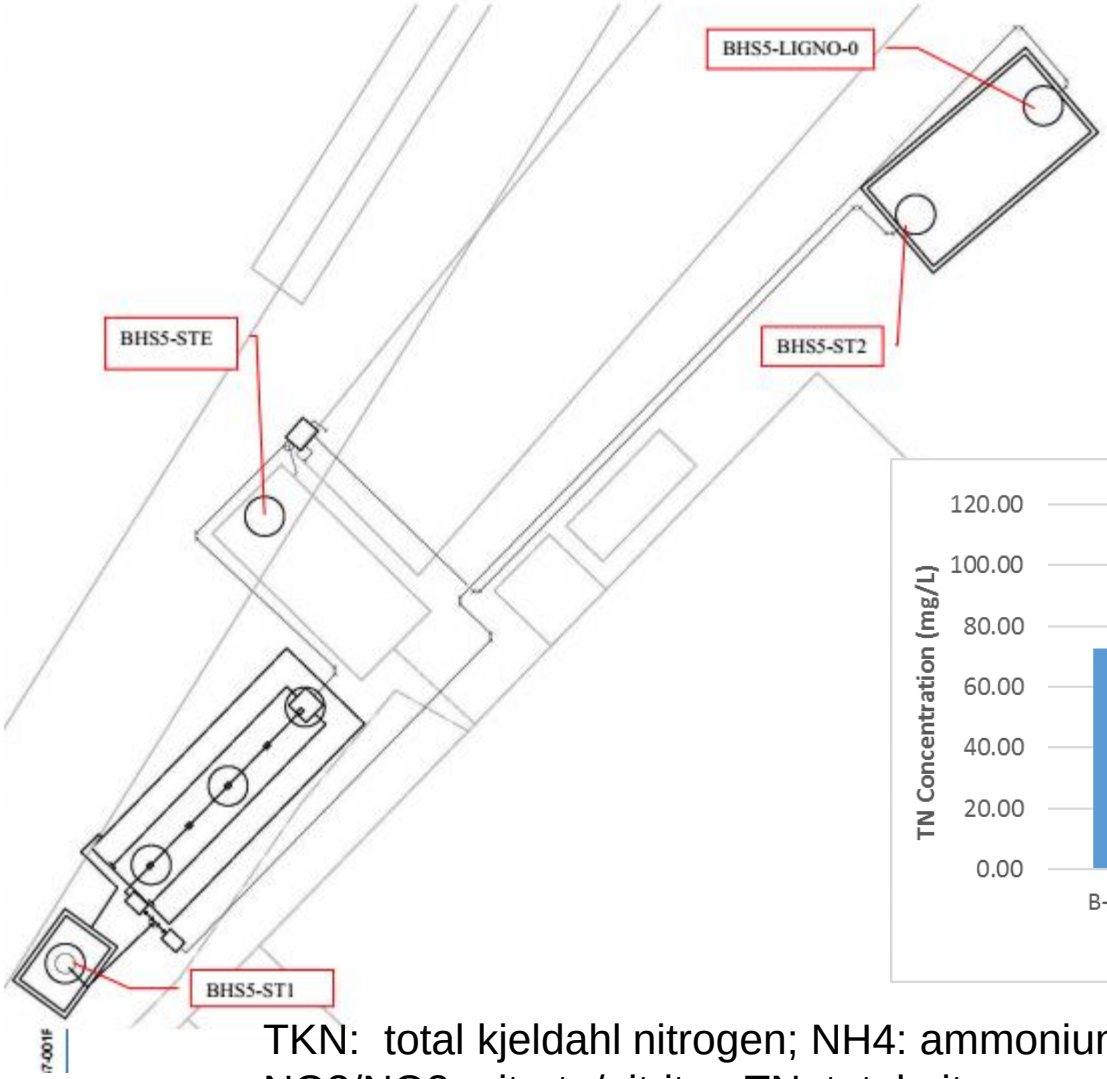


CBOD5: 5-day carbonaceous biochemical oxygen demand;
TSS: total suspended solid; TP: total phosphorus;
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

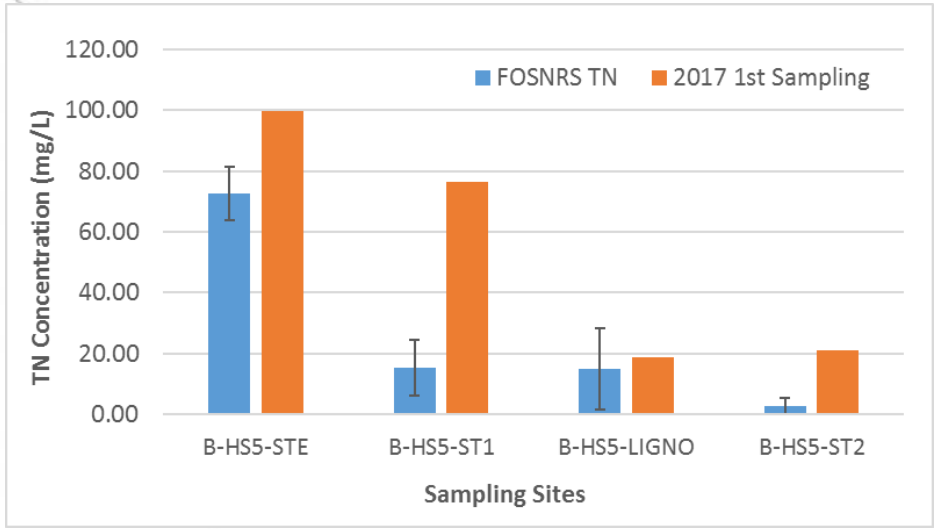
Seminole County System B-HS5

Seminole County System B-HS5

Seminole County System B-HS5

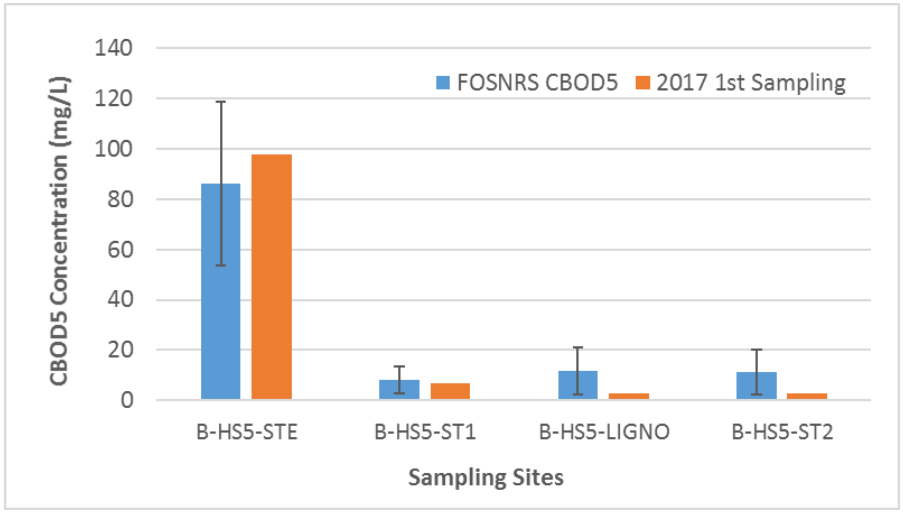


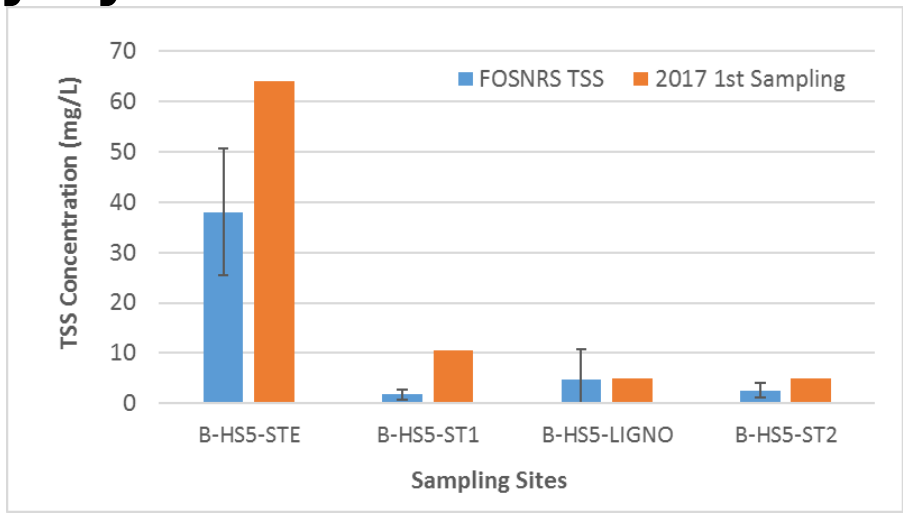
Site	Nitrogen Parameters (mg/L)			
	TKN	NH4	NO3/NO2	TN
B-HS5-STE	99.8	107	<0.025	99.80
B-HS5-ST1	<0.086	7.90	76.60	76.60
B-HS5-LIGNO	<0.086	0.31	18.80	18.80
B-HS5-ST2	1.9	2	19.10	21.00

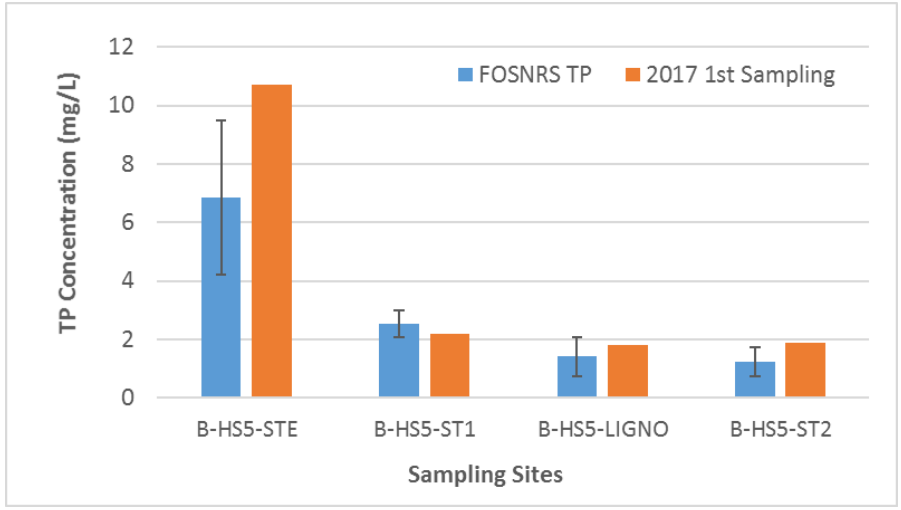


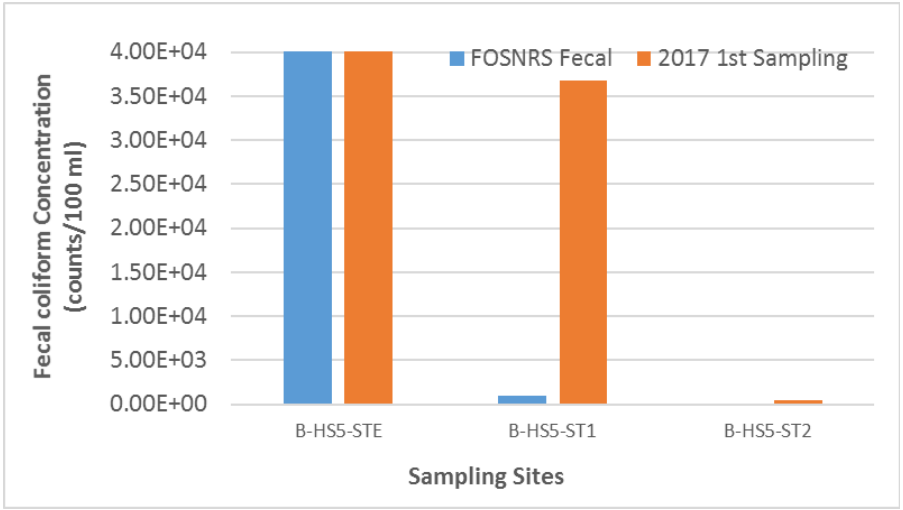
TKN: total kjeldahl nitrogen; NH4: ammonium;
NO3/NO2: nitrate/nitrite; TN: total nitrogen
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

Seminole County System B-HS5







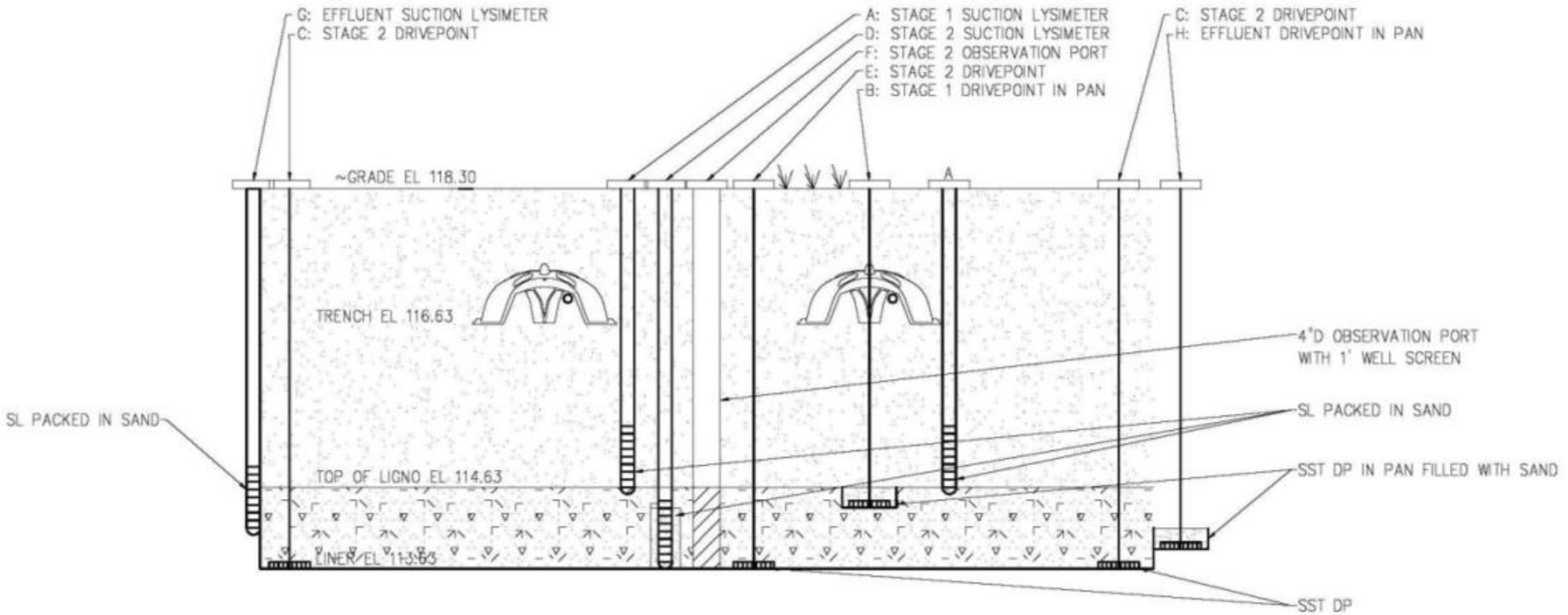


CBOD5: 5-day carbonaceous biochemical oxygen demand;
TSS: total suspended solid; TP: total phosphorus;
FOSNRS: Florida Onsite Sewage Nitrogen Removal Reduction Study

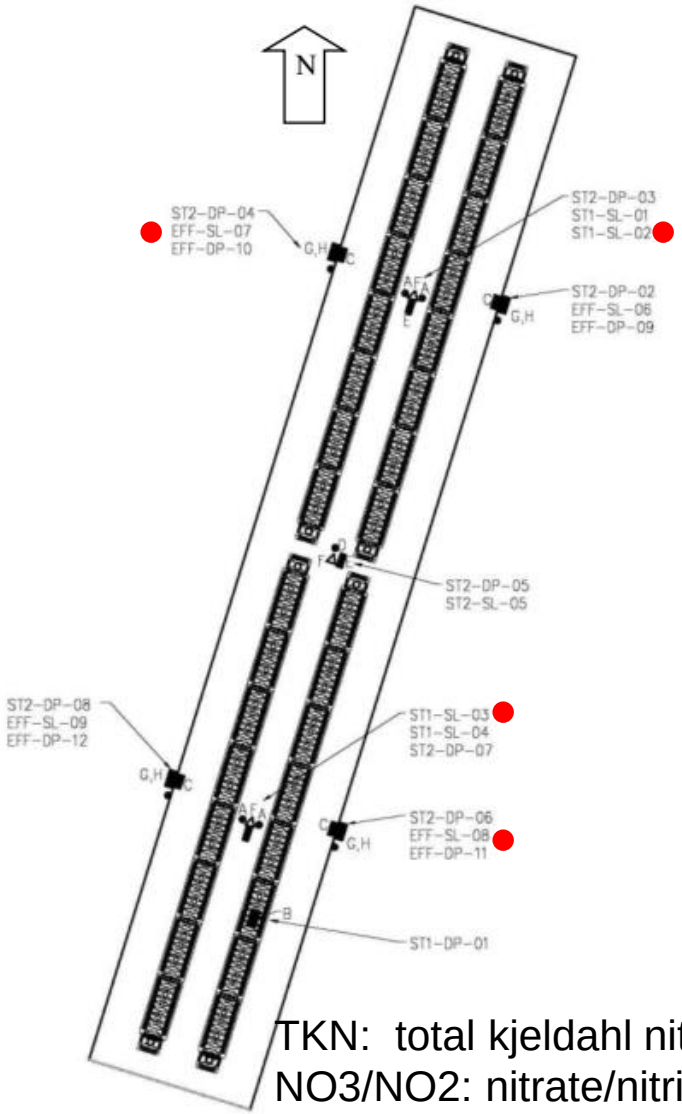
Marion County System B-HS7

Marion County System B-HS7 Drainfield

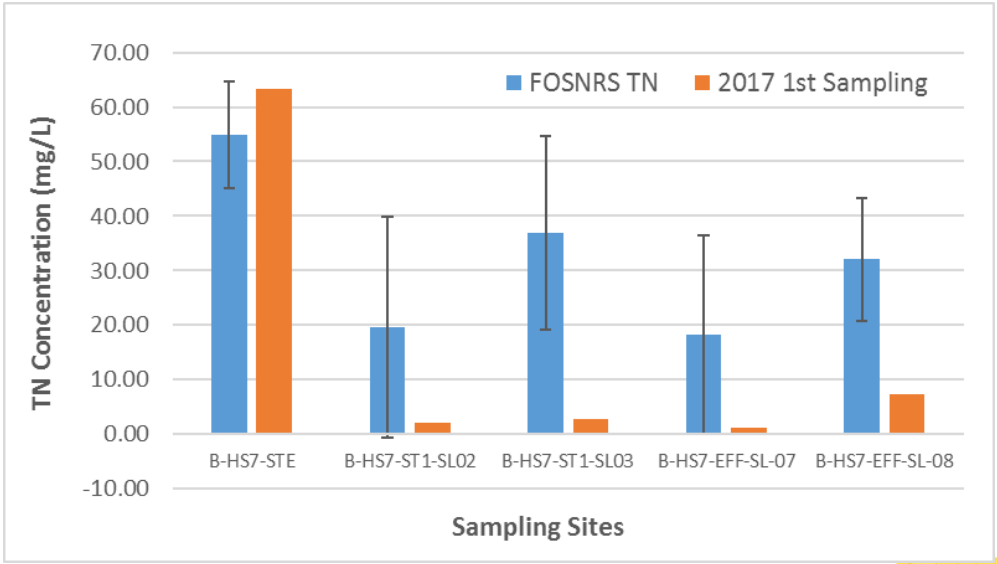
Marion County System B-HS7 Drainfield Cross Section



Marion County System B-HS7



Site	Nitrogen Parameters (mg/L)				
	TKN	NH4	NO3/NO2	TN	Conductivity
B-HS7-STE	63.4	66.7	<0.025	63.40	2282
B-HS7-ST1-SL02	1.30	0.02	0.67	1.97	4937
B-HS7-ST1-SL03	2.50	0.05	0.16	2.66	No Data
B-HS7-EFF-SL-07	1.2	0.055	0.03	1.23	No Data
B-HS7-EFF-SL-08	7.1	0.52	0.18	7.28	No Data



TKN: total kjeldahl nitrogen; NH4: ammonium;
NO3/NO2: nitrate/nitrite; TN: total nitrogen
FOSNRS: Florida Onsite Sewage Nitrogen Reduction Strategies Study

Questions?

New Business

1. Update on RRAC positions up for renewal in January 2018:
   - Septic Tank Industry
   - Environmental Interest Group
   - Restaurant and Hotel Industry
   - Florida Department of Health

2. Project priority ranking

Project Number	2011 Project Ranking Long List
1	Continuation of Inventory of OSTDS in Florida
2	Grease Sludge Waste Reduction and Reuse Study
3	Correlations Between Water Quality, OSTDS, and Health Effects
4	Introducing and Evaluating Improved Treatment Methods in OSTDS (Other Than Nitrogen)
5	Urine Separation in OSTDS
6	Growth Management and Septic Systems Symposium
7	Linkages Between Optical Brighteners and Other Wastewater Indicators Such as Coliforms and Nutrients
8	Effectiveness of Outlet Filters
9	OSTDS Wastewater Strength & Flow Study
10	Literature Review on Other OSTDS Research
11	Fate and Transport of Nitrogen and Bacteria from OSTDS as it Relates to EPA Nutrient Criteria Rules, TMDLs, and State-Wide Water Quality Rules
12	Pros and Cons of Using Cisterns for Potable Water Use
13	Life Expectancy of Onsite Systems
14	Drip Disposal With Septic Tank Quality Effluent
15	Loading Rates and Effective Soil Depths Between Drip Irrigation, Low Pressure Dosing, Lift Dosing, and Conventional OSTDS
16	Disparities in OSTDS Management
17	Pharmaceuticals, Personal Care Products, and Other Organic Compounds in OSTDS: Occurrence, Persistence, Effects

2011 RRAC Research Priorities

Ranking	Project
1	Continuation of Inventory of OSTDS in Florida
2	Effectiveness of Outlet Filters
3	Life Expectancy of Onsite Systems
4	Drip Disposal With Septic Tank Quality Effluent
5	Correlations Between Water Quality, OSTDS, and Health Effects

Possible New Research Projects

For example, examining the long-term performance of field-scale media filter nitrogen removal systems through continued monitoring.

RRAC member may propose more…

Update Research Priorities

1. RRAC review past project considerations
2. RRAC submit new project ideas
3. DOH summarizes the proposed projects and compiles a new project list
4. RRAC ranks the priority of the new project list during next meeting

PROJECT DESCRIPTION #	
Project Title	
Proposed by	
Background	
Objectives and Outcomes	
Research Approach	
Potential Collaboration	
Duration	
Estimated Budget ($)	
Ease of implementation	
Comments	

Method of Ranking – A Two Step Process

1. Step 1:
   - Each member selects 5 projects from the long project list. Rank the 5 selected projects from 1 to 5 with 5 being the top priority.
   - The rankings from all members for all projects will be summed. Top 10 projects will be selected.
2. Step 2:
   - Repeat Step 1 on the 10 projects selected for the final priority list.

Public Comment

Closing Comments, Next Meeting, and Adjournment

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