



Florida Department of Environmental Protection

**Silver Springs and Rainbow Springs
Basin Management Plan Onsite
Sewage Treatment and Disposal System
(OSTDS) Remediation Plan Meeting**

**July 22, 2016
Mary Paulic**





Agenda

- Welcome and Opening Remarks
- Advisory Committee
 - Introductions
 - Operating Procedures and Guidance
 - Sunshine Law
- Review of Silver Springs BMAP
- Review of Rainbow Springs BMAP
- Priority Focus Areas (PFAs) Boundaries
- Identification of Three Main "Prongs" of the OSTDS Remediation Plan
 - Projects
 - Scientific Information
 - Data availability and sufficiency
 - Florida Department of Environmental Protection (DEP)
 - Florida Department of Health (FDOH)
 - Research/studies (planned/underway/completed)
 - Education
- Public Comments
- Summary and Action Items
- Adjourn



OSTDS Advisory Committee



Purpose of OSTDS Committee

- OSTDS Remediation Plan.
 - Advise/provide DEP with opinions or direction on Wastewater/OSTDS Remediation Plan.
 - Assist with specialized technical discussions and topics to be researched.
 - Provide information back to community leaders, decision makers, and homeowners.
 - Projects.
 - Science questions.
 - Education.
 - First area of interest is Priority Focus Area.

NOTE: Other source categories will be considered outside this committee.



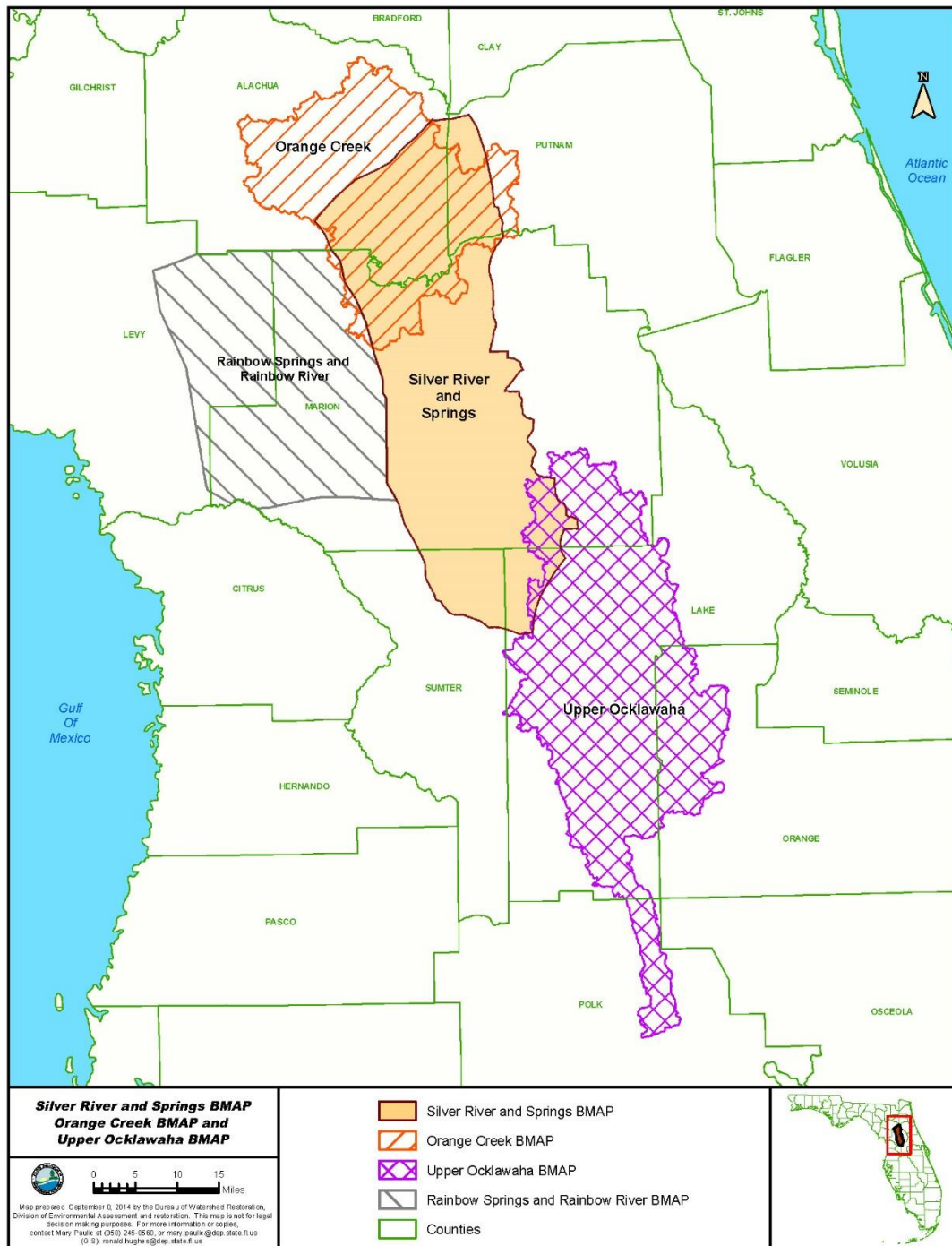
Remediation Plan

- Plan needs to:
 - Provide for BMAP revision by July 2018.
 - Include development of 5-year, 10-year, and 15-year goals.
 - *20 year plan started at adoption of BMAPs in 2015.*
 - Include detailed plan to meet TMDL in 20 years.
 - Include elements of each of the three “prongs”.
- OSTDS Advisory Committee members:
 - Represent the sectors that are affected by the OSTDS Remediation Plan.
 - Have expertise to lend to the process and to successful outcomes to reduce nitrogen loadings from OSTDS sources.



Area Covered

- Merges Rainbow Springs and Silver Springs BMAP areas.





Area Covered

- Covers Marion County and additionally portions of Levy, Lake, Sumter, Putnam, and Alachua counties.
- Private Utilities (limited number).
- Cities and community development districts.

Name	Name	Name
Ocala	Williston	The Villages
Bellevue	Fruitland Park	On Top of the World
Dunnellon	Lady Lake	Reddick
Hawthorne	McIntosh	Micanopy
Bronson		



Advisory Committee Members

Sector	Name of Representative	Entity/Group
DOH	Dan Dooley, Anthony Dennis, Wesley Asbell	FDOH in Marion County, Alachua County, and Levy County
County	Tracy Straub	Marion County
City	Bruce Phillips	Bellevue
City	Sean Lanier, Rusella Johnson	Ocala
City	Nathan Whitt	Dunnellon
Public/Private Utility	Bryan Schmalz	Bay Laurel Center CDD (On Top of the World)
Environmental Interest Rainbow Springs	Burt Eno	Rainbow River Conservation, Inc.
Environmental Interest Silver Springs	Russ Melling	Oklawaha Valley Audubon
Other Interests	Dave Harden Robert Himschoot Roxanne Groover	Marion County Building Industry Association Florida Home Builders Association Florida Onsite Wastewater Association (FOWA)



Advisory Committee Sunshine Law

- OSTDS Advisory Committee operates under the Sunshine Laws (Article 1, Section 24, Florida Constitution and Section 286.011, F.S.)
- Discussion or any form of communication between committee members on matters reasonably expected to come before the committee is **prohibited** outside of a publicly noticed meeting.
 - Communication includes but not limited to phone calls, writing, texting, and emailing another committee member.
 - Discussion between a committee member and non-committee members, including staff, is permissible.
 - Discussion of committee topics between a committee member and their alternate representative is permissible.



Advisory Committee Operating Procedures and Guidance

- Purpose:
 - Provide ideas, comments, suggestions and concerns to DEP toward reducing nitrogen loads from on-site treatment and disposal systems (OSTDS) sources through development of an effective and cost-efficient OSTDS Remediation Plan.
- Key Operating Procedures:
 - Members will generally not vote or create recommendations as a group, but will relay the concerns and comments from the individual sectors represented on the committee to DEP.
 - Members are expected to come prepared to share their suggestions and comments during the meetings for the benefit of the other members and for the public in attendance.
 - DEP will give consideration to all comments and recommendations submitted by committee members for inclusion in the plan.

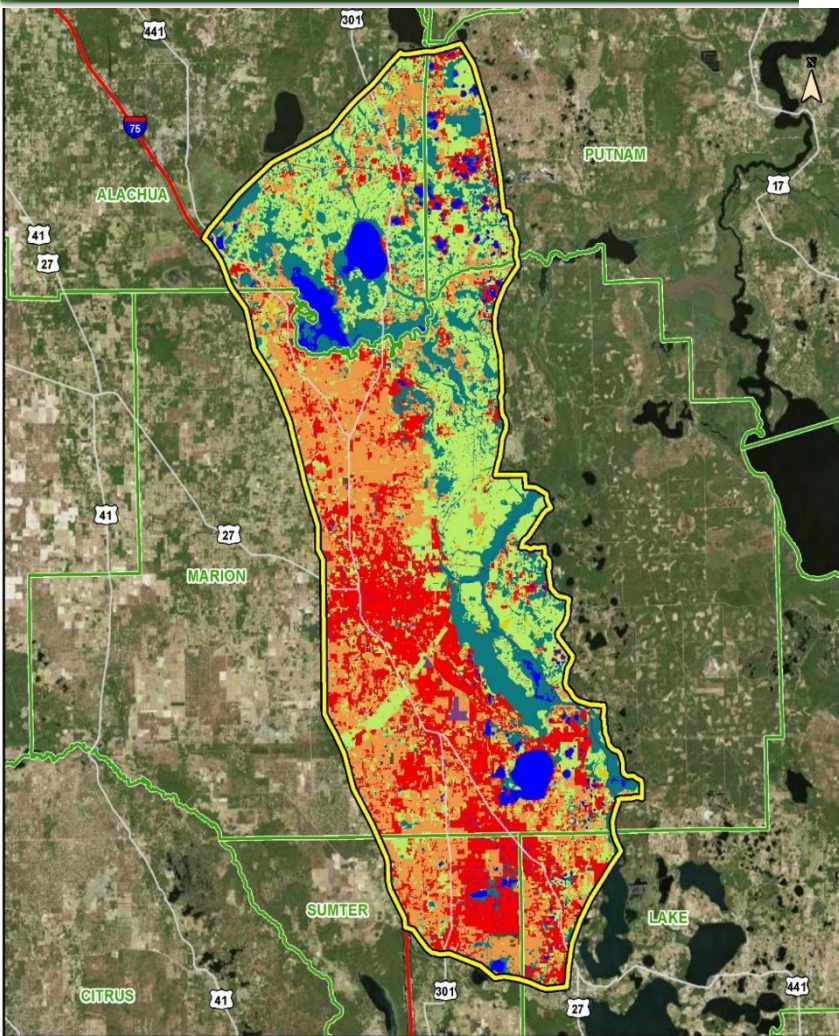




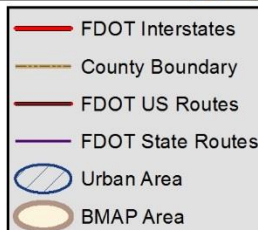
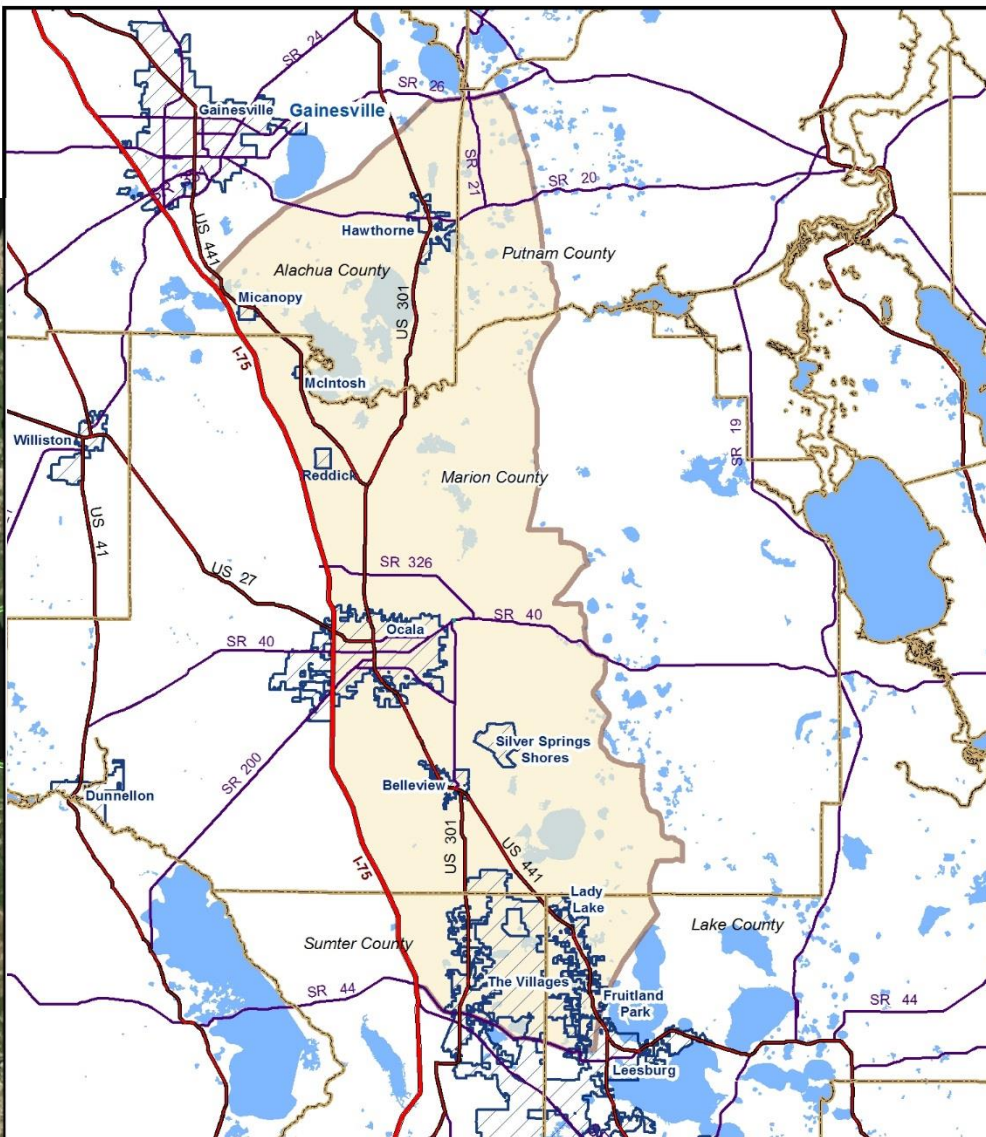
Review of Silver Springs BMAP



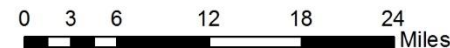
BMAP Area



**Silver River and Springs BMAP
Oklawaha Group 1 Basin
Level 1 Landuse**



Silver Springs BMAP Boundary

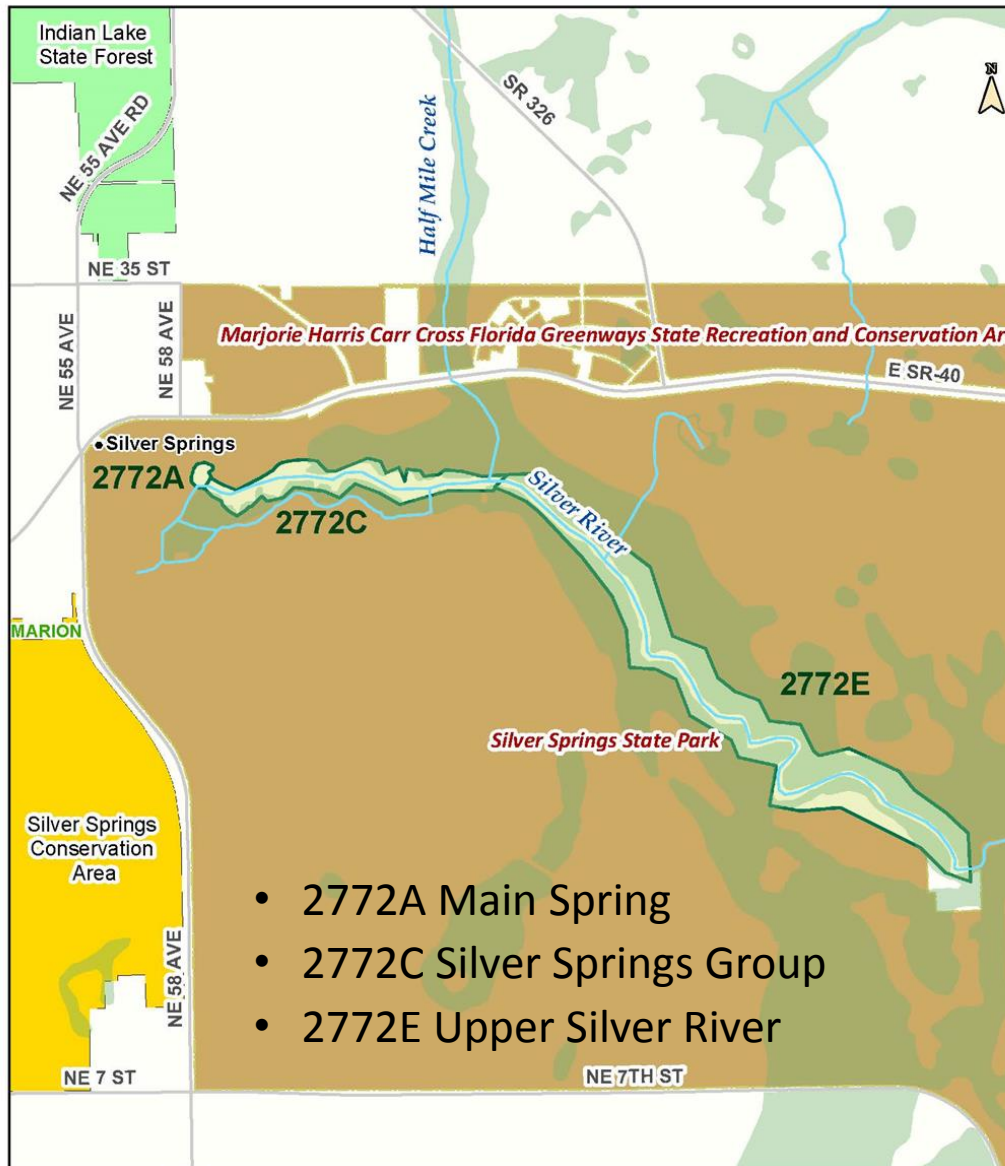


This MAP is not for legal decision making purposes. Prepared September 2, 2014, contact Mary Paulic at mary.paulic@dep.state.fl.us for details.

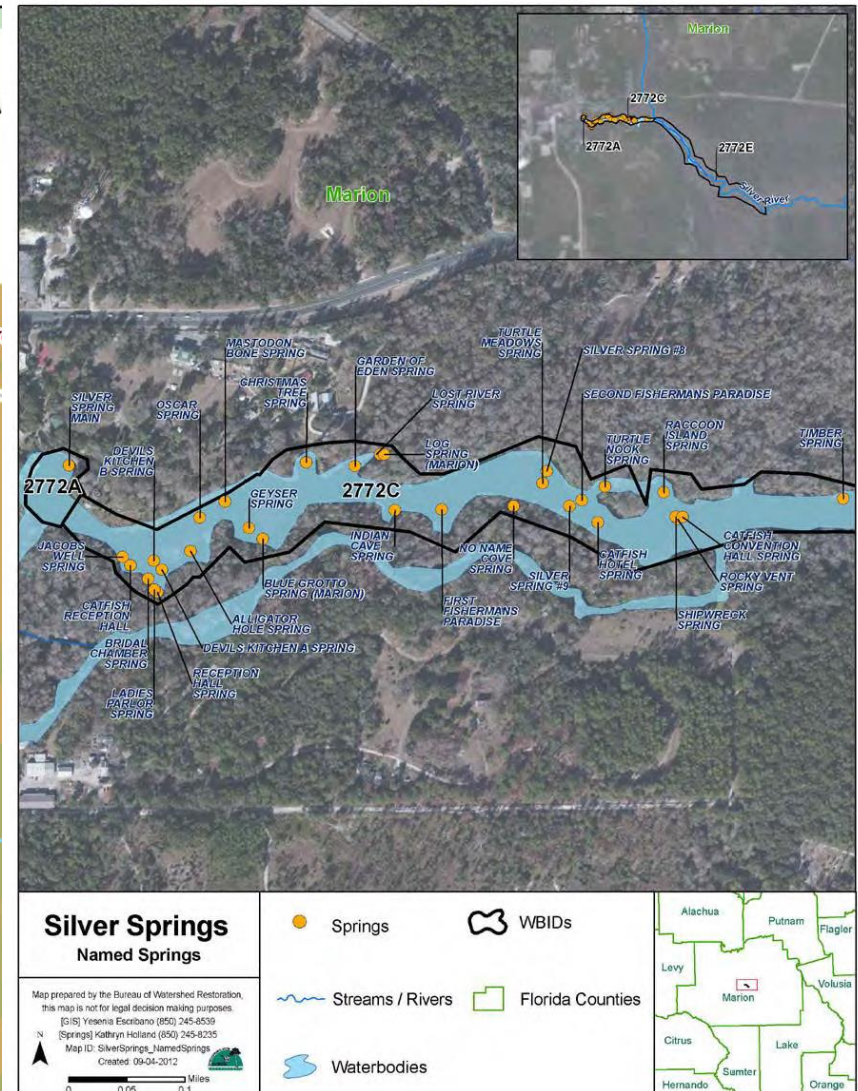




Silver Springs Impaired Waters



- 2772A Main Spring
- 2772C Silver Springs Group
- 2772E Upper Silver River





Silver Springs TMDL

- Target nitrate concentration of 0.35 mg/L.
- To meet TMDL requires 79% reduction in concentration.
 - Applied to all 3 WBIDS.
- Algal mats cover SAVs.



Circa 1940(©Bruce Mozert)





BMAP Approach

- BMAP covers strategies to address nitrogen loading from agriculture (animals and fertilizer), wastewater, drainage wells, urban stormwater, and OSTDS.
- Phased BMAP.
 - Total reductions addressed in five-year increments.
 - Implementation of management strategies. Projects that implement strategy.
 - Simultaneously monitor and conduct studies.
- First BMAP Iteration.
 - OSTDS Management strategies will start with the PFAs.
- In 2018 the BMAP will be revised to include requirements set forth in Chapter 2016-1 Laws of Florida.
 - Set 5, 10, and 15 year goals.



Adopted Silver Springs Projects

SOURCE CATEGORY	TOTAL NUMBER OF PROJECTS	PLANNED PROJECTS	CONCEPTUAL PROJECTS
Urban Fertilizer (Urban Stormwater)	58	6	2
Drainage Wells	3	3	-
Wastewater (WWTFs)	34	2	2
Septic Systems	6	1	1
Agriculture (not including BMPs)	7	3	-
Conservation Lands	14	1	1



Wastewater Projects

Wastewater Management Actions Summary from BMAP

MANAGEMENT STRATEGY	TOTAL NUMBER OF PROJECTS	NUMBER OF PLANNED PROJECTS	NUMBER OF CONCEPTUAL PROJECTS	TN LOADING REDUCTION AT LAND SURFACE (LBS-N/YR)
Reuse	6	-	-	173,893
Wastewater Collection System Maintenance	11 ¹	-	-	-
Wastewater Service Area Expansion	4	-	-	17,396
Wastewater System Upgrade	13	2	2	99,182
TOTAL WASTEWATER	34	2	2	290,471
CONNECTION TO SEWER	6 ¹	1 ²	1	24,300

- = Empty cell/no data

¹Includes projects located at Silver Springs State Park

²Includes OSTDS Remediation Plan or 9-1-1 Strategy



Wastewater Effluent Standards

Primary Protection Zone Standards Based on TN mg/L:

DESIGNED AVERAGE DAILY FLOW (MGD)	RAPID-RATE LAND APPLICATION (RRLA) EFFLUENT DISPOSAL SYSTEM	SLOW-RATE LAND APPLICATION EFFLUENT DISPOSAL SYSTEM	PUBLIC ACCESS REUSE EFFLUENT DISPOSAL SYSTEM
Greater than 0.5 MGD	3 mg/L	3 mg/L	10 mg/L
Less than 0.5 and greater than or equal to 0.01 MGD	3 mg/L	6 mg/L	10 mg/L
Less than 0.01 MGD	10 mg/L	10 mg/L	10 mg/L

Remaining BMAP Area Standards based on TN mg/L:

- Apply to all permitted facilities with permitted capacity of 10,000 gallons per day or greater.
 - 6 mg/L TN as an annual average or,
 - 10 mg/L TN for discharge to a public reuse system.
- Apply 10 mg/L TN standard to facilities with permitted capacity less than 10,00 GPD.



Nitrogen Source Inventory and Loading Tool (NSILT)

- Planning tool that provides the best available assessment of how nitrogen is currently being applied in BMAP area.
- Estimates nitrate loads from multiple sources:
 - Atmospheric deposition.
 - Agricultural and nonagricultural fertilizer.
 - Livestock waste.
 - Drainage wells.
 - Septic systems.
 - Wastewater application.
- Developed to accomplish the following:
 - Identify and quantify the most significant sources contributing nitrogen to ground water in BMAP areas.
 - Assist stakeholders and department in identifying locations (large scale) where future efforts will have the greatest impact in reducing nitrogen loads.



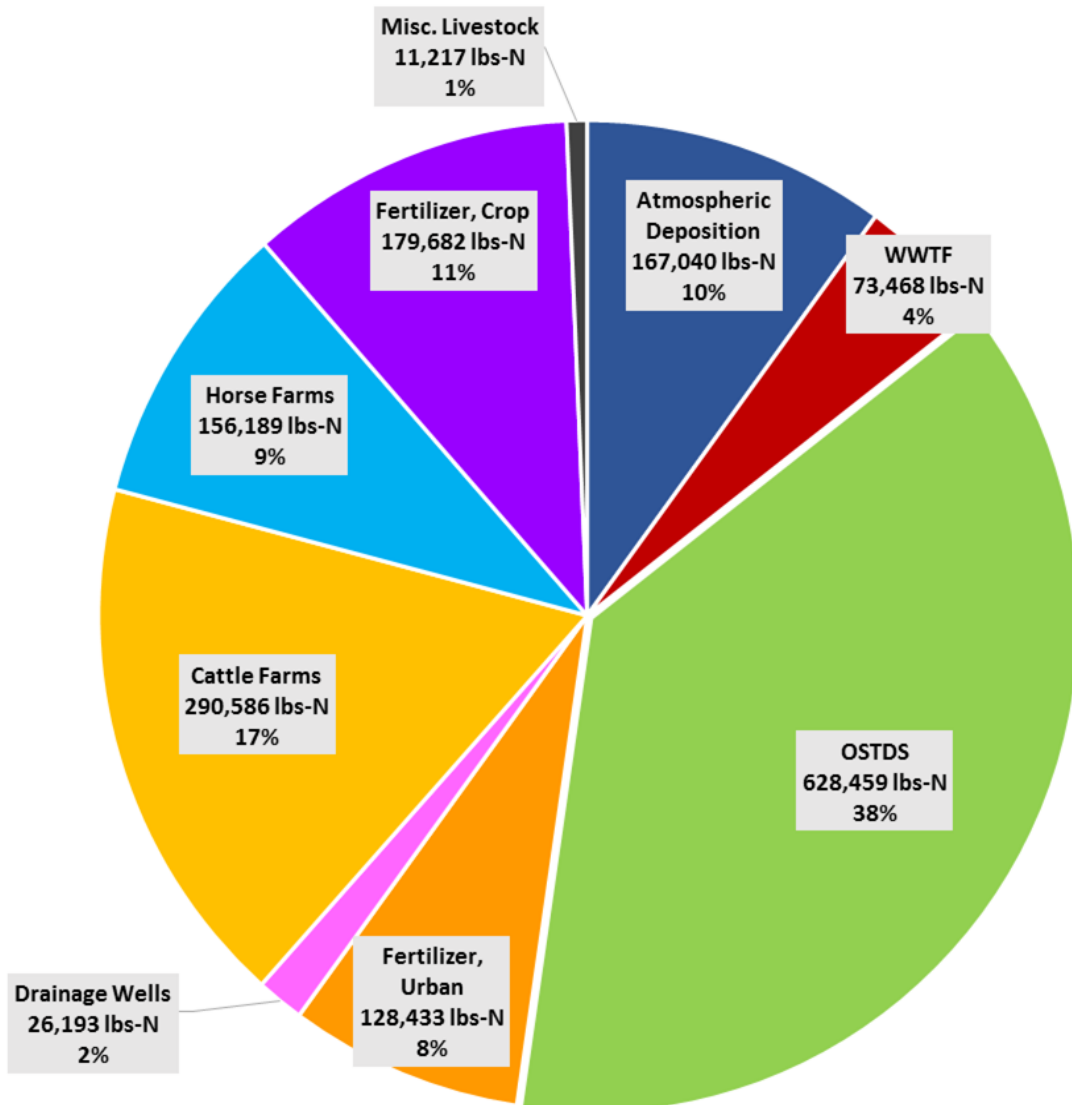
NSILT Details

- GIS and spreadsheet-based tool.
 - Estimate the relative contribution of nitrogen from various sources relative to each other.
 - Identifies general spatial distribution of nitrogen loading from different sources. Could be used to focus efforts for the most beneficial and cost-effective improvement of water quality.
- General approach.
 - Identify categories of land use that are potential nitrogen sources.
 - Estimate nitrogen input at the land surface.
 - Attenuation by type of source.
 - Apply attenuation based on ground water recharge.
 - Higher recharge rate lower attenuation.
 - Calculate the estimated nitrogen load to ground water.





BMAP Area NSILT Result

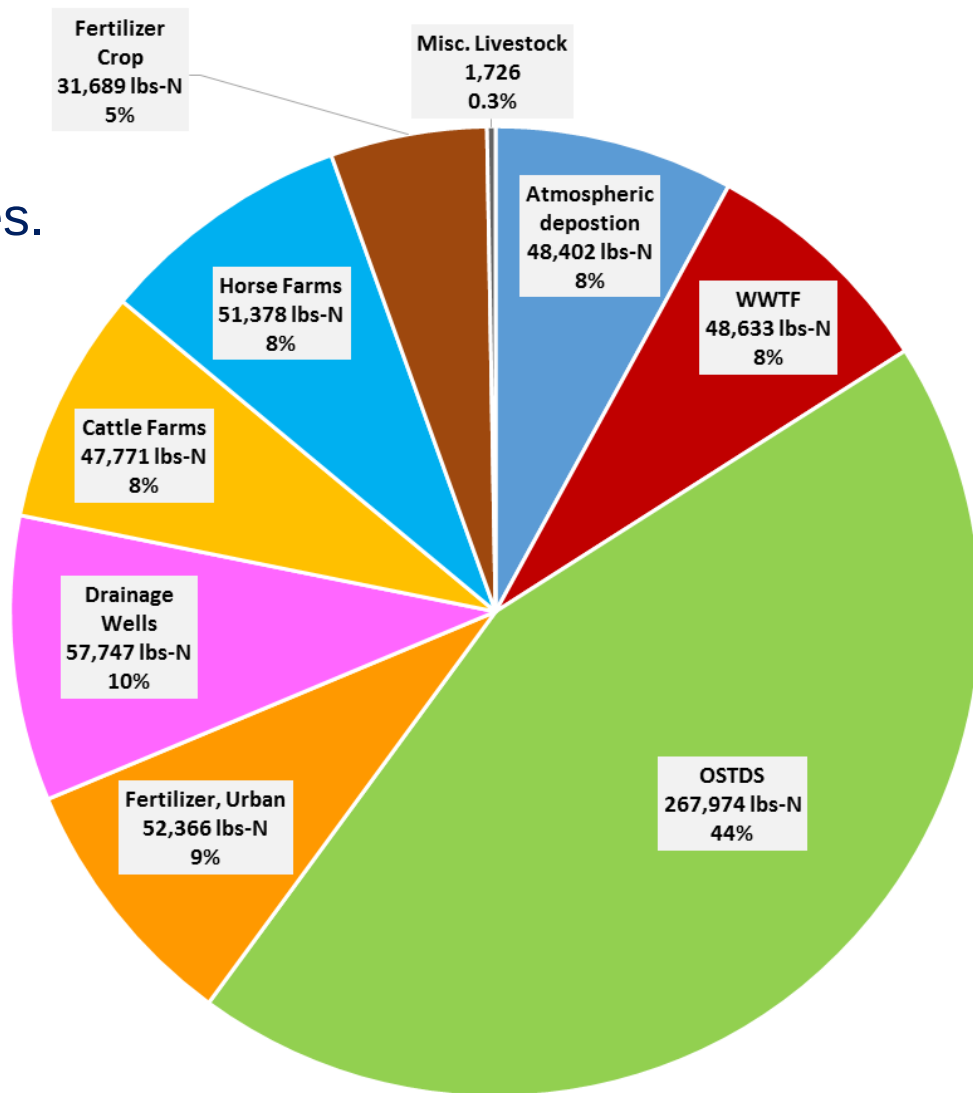


- Estimated input of nitrogen loading to Upper Floridan aquifer.
- Agriculture 38%.
- OSTDS 38%.
- Urban 14%.



NSILT 10 Year Time of Travel

- OSTDS portion of loading increases.
- Urban sources more prominent.
- Agriculture 21.3% of loading.
- Approximates Primary Protection Zone.

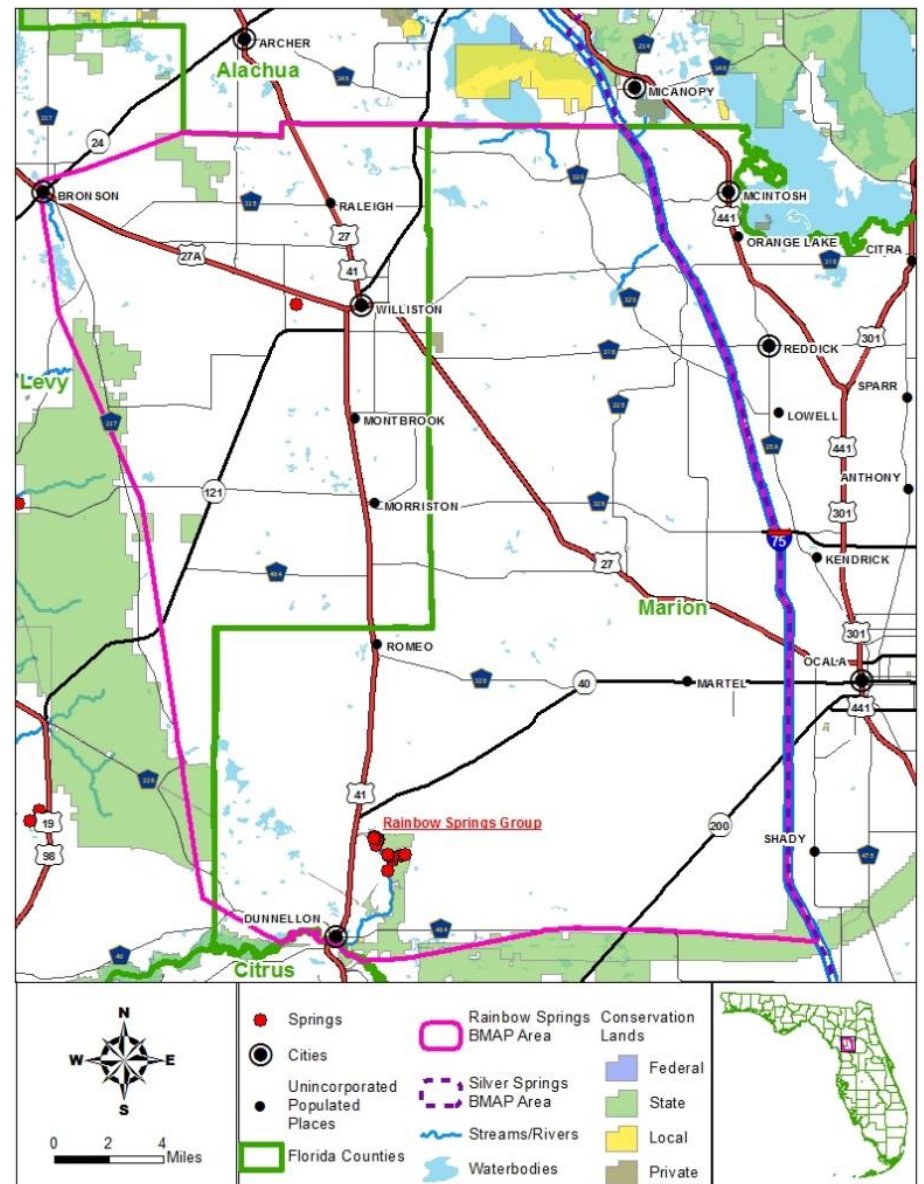
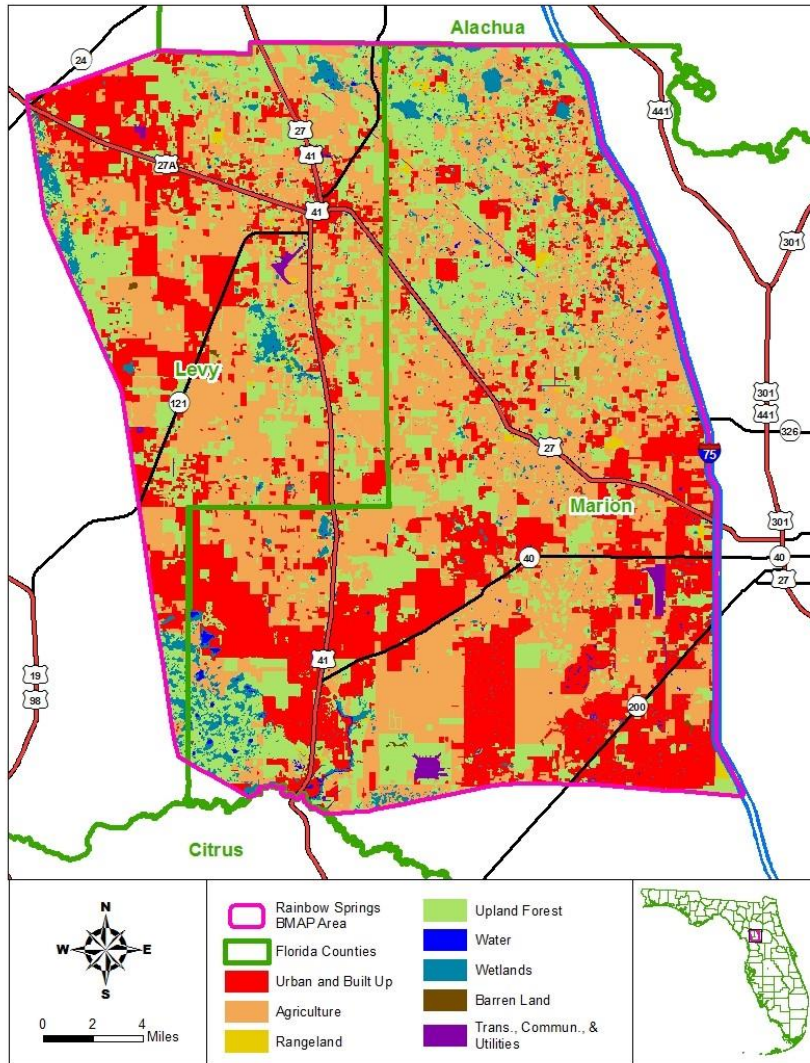




Review of Rainbow Springs BMAP



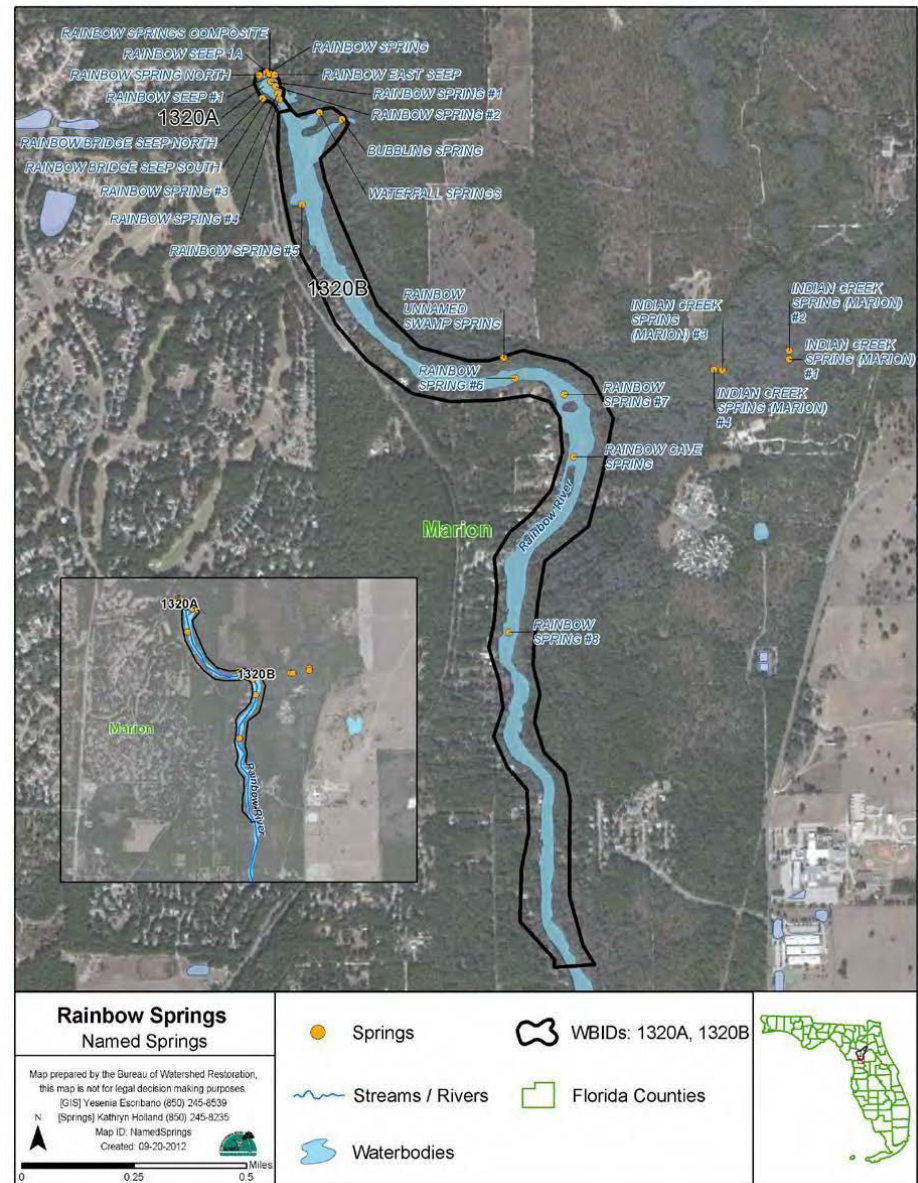
Rainbow Springs BMAP Area





Rainbow Springs Impaired Waters

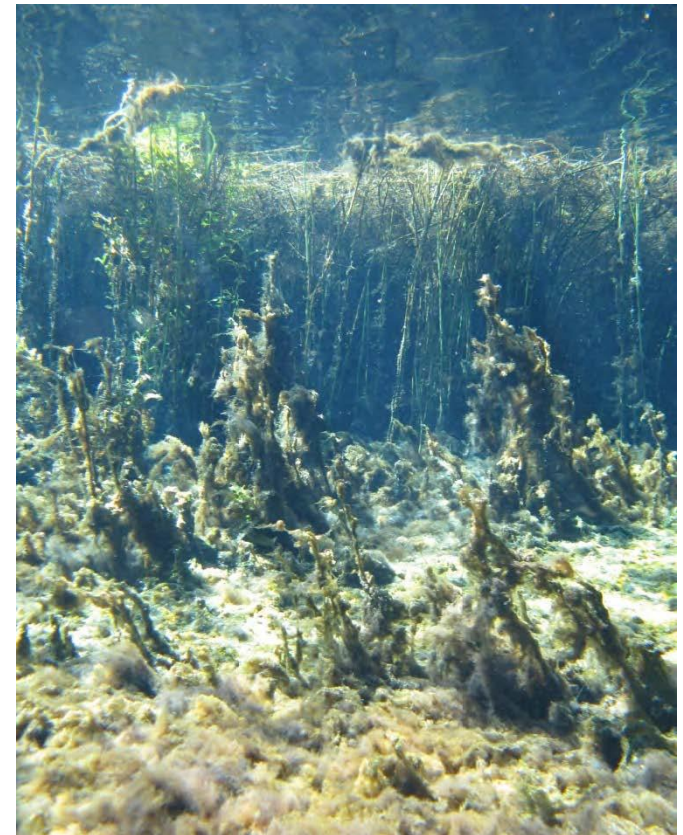
- 1320A Rainbow Springs Group
- 1320B Rainbow Springs Run





Rainbow Springs TMDL

- Target nitrate concentration of 0.35 mg/L.
- Algal mats a problem.
- To meet TMDL requires 82% reduction in concentration.
- Applied to both WBIDS.





Adopted Rainbow Projects

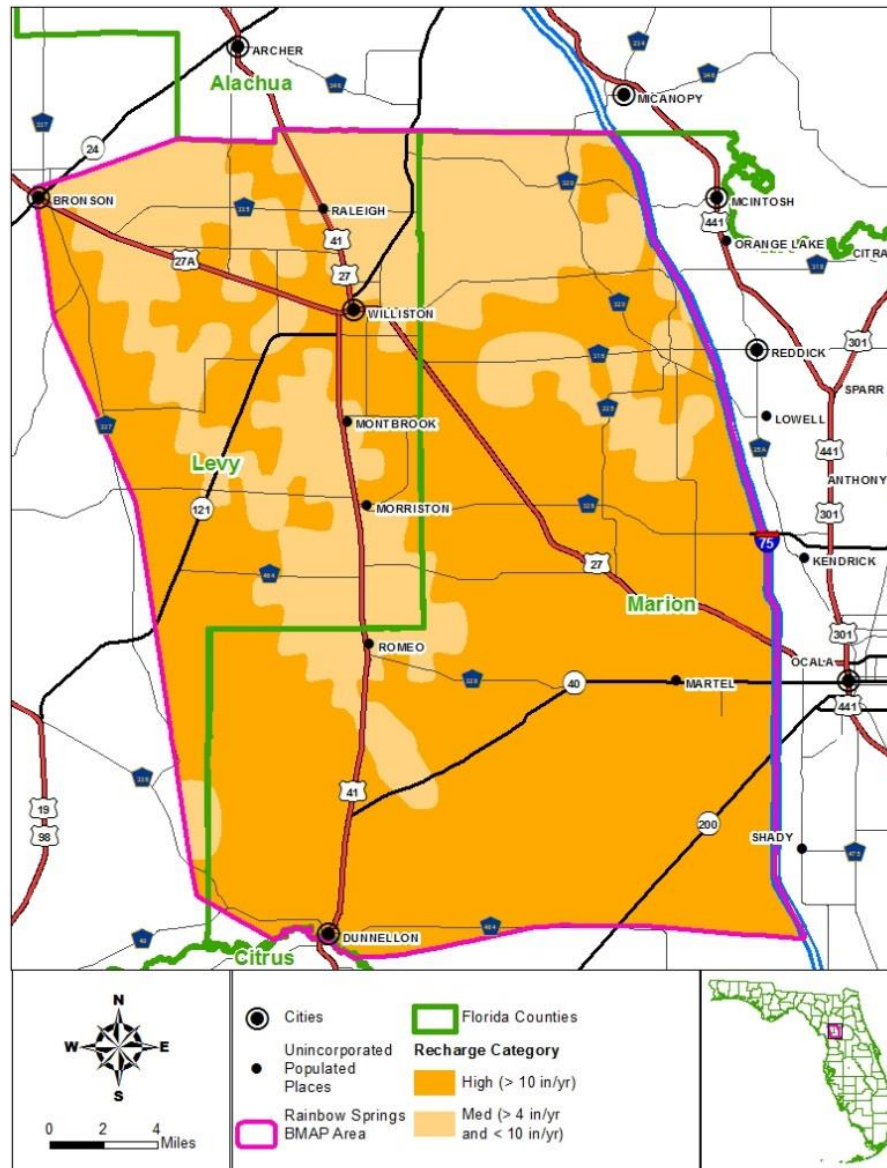
Wastewater Management Actions Summary from BMAP

MANAGEMENT STRATEGY	TOTAL NUMBER OF PROJECTS	NUMBER OF PLANNED PROJECTS	NUMBER OF CONCEPTUAL PROJECTS	TN LOADING REDUCTION AT LAND SURFACE (LBS-N/YR)
Reuse	1	-	-	6,025
Wastewater Collection System Maintenance	1	-	1	-
Wastewater Service Area Expansion	-	-	1 ¹	229
Wastewater System Upgrade	3	2	1 ²	17,582
TOTAL WASTEWATER	5	2	3	17,811³
CONNECTION TO SEWER	1	2 ⁴	1 ²	11,140

- = Empty cell/no data
- ¹Funding agreement being finalized
- ²Includes conceptual wastewater level of service coordination project that will not received funding
- ³Rainbow Springs BMAP considered load reduction from reuse as urban fertilizer reduction
- ⁴Includes OSTDS Remediation Plan or 9-1-1 Strategy

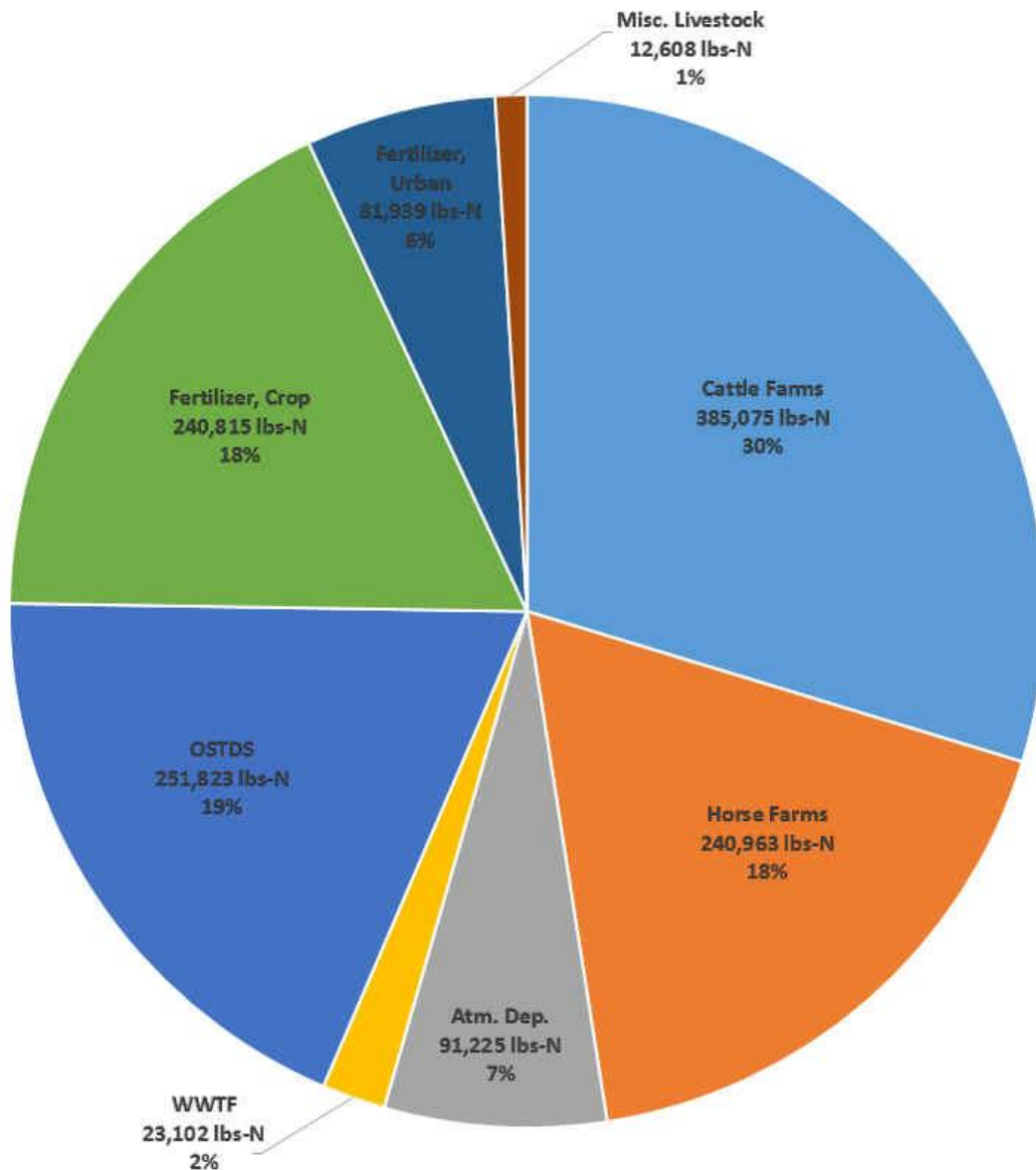


Rainbow Springs Recharge





Rainbow NSILT Results



- Estimated input of nitrogen Loading to Upper Floridan aquifer.
- Agriculture 67%.
- OSTDS 19%.
- Urban 6%.



Priority Focus Areas



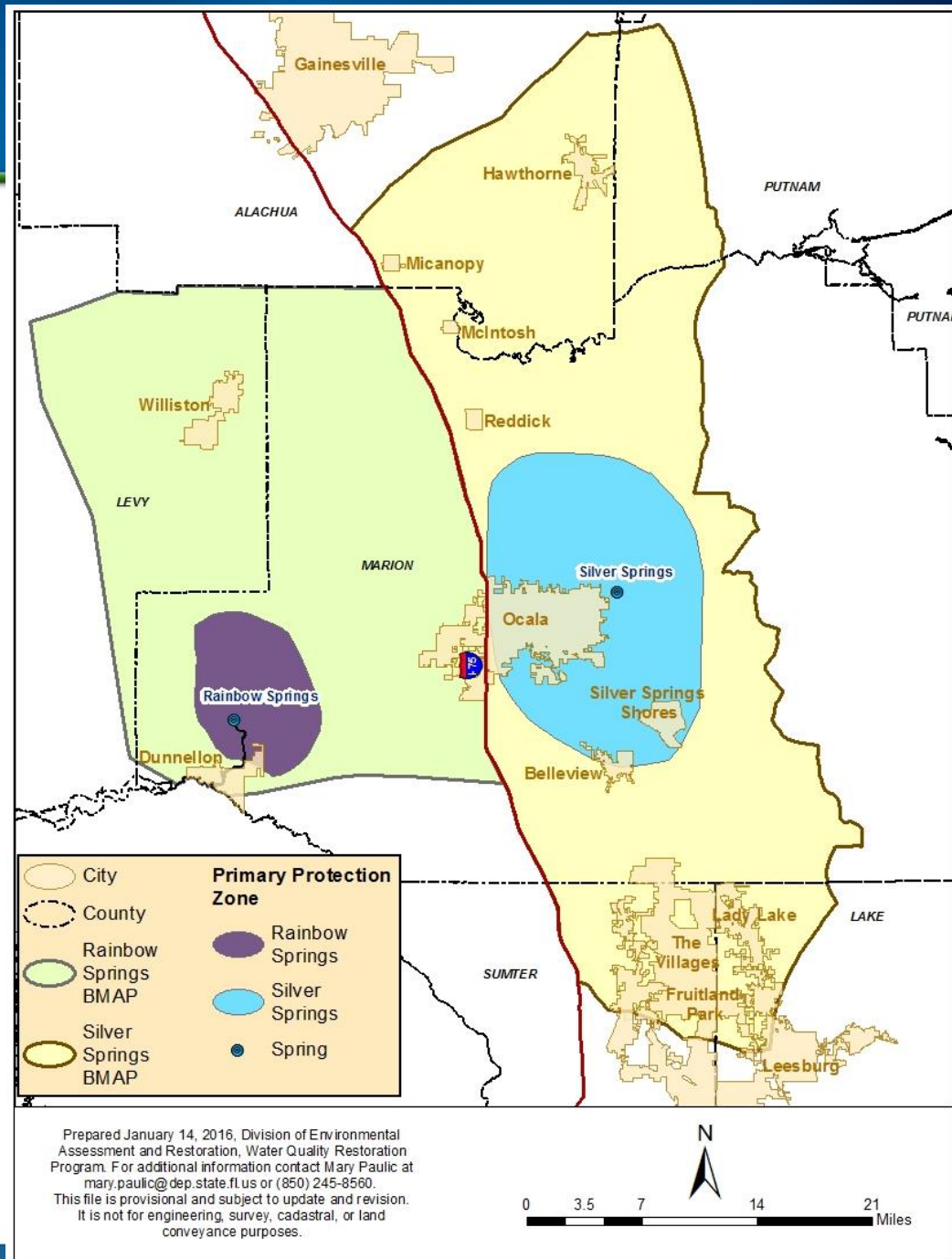
Priority Focus Areas Requirements of Chapter 2016-1 Laws of Florida

- Priority Focus Area (PFA)
 - Sub-Section 373.802, Chap. 2016-1 Laws of Florida:
 - Definition: Area or areas of a basin where the Floridan aquifer is generally most vulnerable to pollutant inputs where there is a known connectivity between ground water pathways and an Outstanding Florida Spring (OFS).
 - Sub-Section 373.803, Chap. 2016-1 Laws of Florida:
 - To be delineated considering factors that may lead to degradation of an OFS, such as:
 - Ground water travel time to the spring.
 - Hydrogeology.
 - Nutrient load, etc.
 - Must be completed by July 1, 2018.



Priority Focus Area

- Defined in Marion County Springs Protection Ordinance.
- Approximates 10 year time of travel.
- Includes known conduit flow for Silver.
- Meets requirements of law.



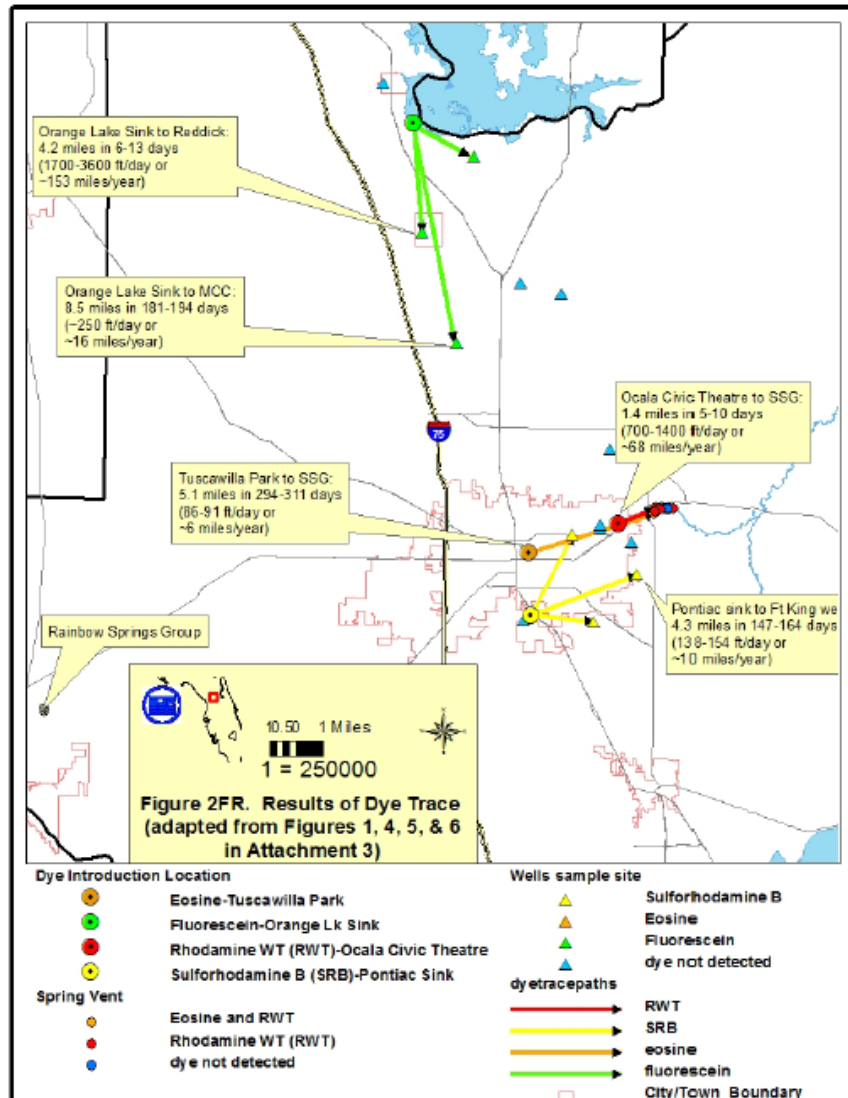


Marion County Springs Protection

- Marion County Spring Protection Resolution passed 2005.
 - Identified 2 different protection zones in county.
 - Only applicable in unincorporated county area.
- Adopted into land development code and includes:
 - Standards for effluent concentration limits for wastewater treatment plants.
 - Lot size restrictions for septic systems in new development.
 - Septic system maintenance requirements.
 - Ground water recharge requirements.
 - Stormwater management standard encouraging low impact development.



Silver Springs Time of Travel



Task3_DyeTrace_results_Fig2FR.mxd, 6/8/2011

- Orange Lake to Marion Correctional Institute (green)
- Tuscawilla Park to Silver Springs Group. (orange)
- Pontiac Sink to Ft. King (yellow)
- Ocala Civic Center to Silver Springs Group (red)



OSTDS Remediation Plan



OSTDS Remediation Plan “Prongs”

- Three prongs Projects, Scientific information, Education.
- Projects/Management Strategies.
 - Proposed or revised projects/management strategies funded/started since the adoption of the BMAP.

Project Number	Jurisdiction	Project Name	Description
S127	City of Belleview	Water main loop along SE 132nd from US 441/27 to CR 484	Economic engine to promote residential and commercial growth along SE 132nd Street (Belleview Beltway)
S128	City of Belleview	Sanitary Sewer Collection along SE 132nd from US 441/27 to CR 484	Economic engine to promote residential and commercial growth along SE 132nd Street (Belleview Beltway)
S129	City of Belleview	Provide reuse irrigation water to the Belleview Sportplex	Meets a requirement of the Springs Protection by reducing ground water withdrawals
S130	City of Belleview	Providing water & sewer to the residents in the Utility Service Area adjacent to and west of SE 92nd Loop	This would be a multi-year project to serve over 1200 single family units presently on septic tanks and individual wells between US 441 and the new SE 92nd Loop and from SE 105th Place south to SE 135th Street. Meets a requirement of the Springs Protection by reducing and/or eliminating ground water withdrawals and septic tank leachates. The first year would be a study to define the phases and estimate the construction costs of each phase.



Updated Project Information

- Identify additional cost-effective and financially feasible projects.
 - Needed for annual meeting reporting.
 - Potential ideas ready to go for Legislative funding in 2017.
- DEP working with Marion County will contact local governments and others for an update of recent and proposed projects.
 - Prior to next meeting.



Scientific Information

- Scientific information.
 - Collect and evaluate credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and springs systems.
 - Data availability and sufficiency – or what else we need. Quite a lot is already known about these systems.
 - Research/studies (planned/underway/completed).
 - SJRWMD Springs Protection Initiative.



Data Availability

- Data availability and sufficiency.
 - Municipal boundaries.
 - Septic system locations.
 - Information on new tanks being permitted.
 - Wastewater treatment facility (WWTF) information.
 - Utility lines/utility boundaries.
 - Method of disposal/location of disposal.
 - Soils.
 - Land use.
 - Aquifer vulnerability. Alachua County and Marion County vulnerability evaluations.
 - Other?
- Research/studies.
 - Planned.
 - Underway.
 - Completed.



Scientific Information Request

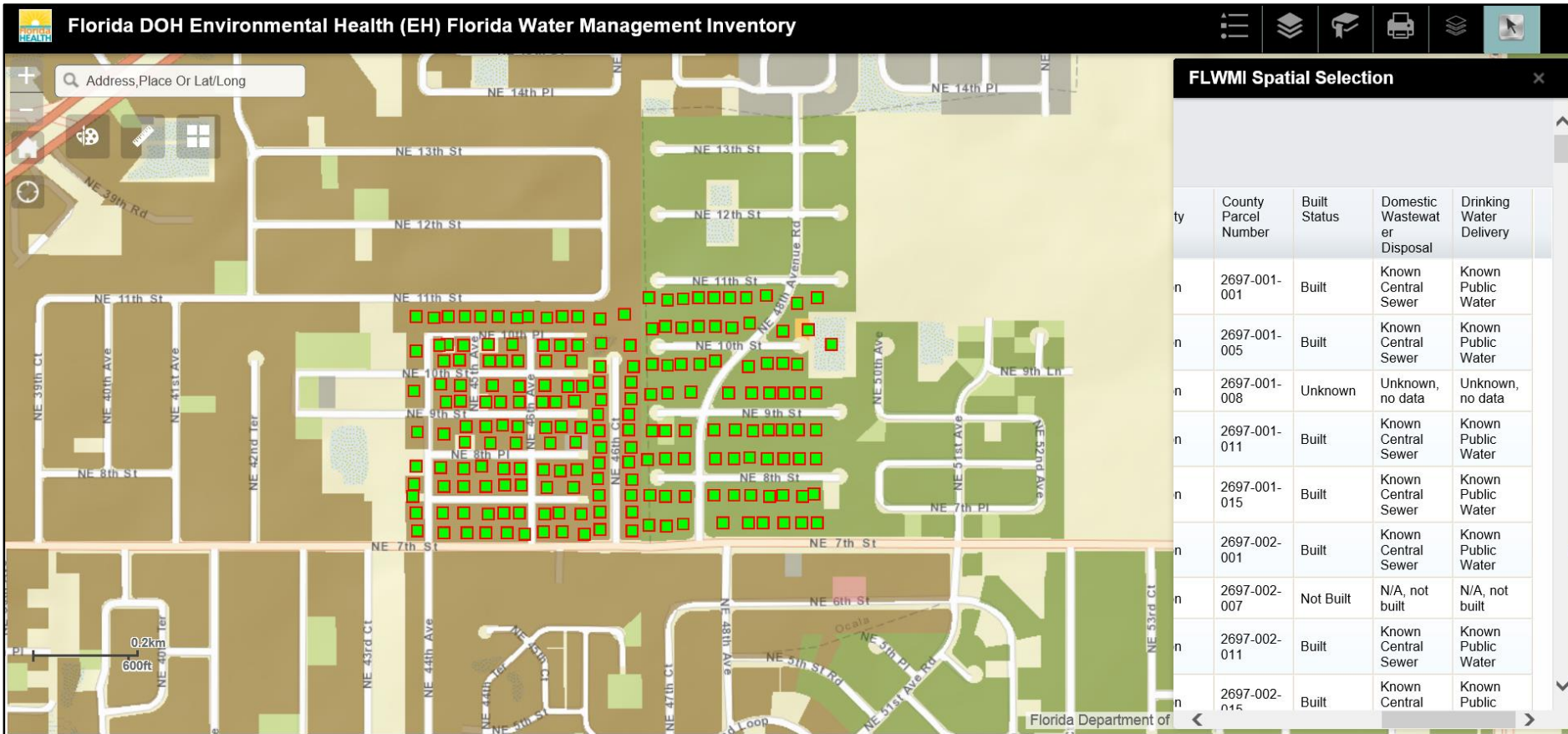
- Library of literature available at http://publicfiles.dep.state.fl.us/DEAR/BMAP/Silver_springs/Library/
- Please provide additional studies by **Friday, August 19, 2016**, to Mary Paulic at mary.paulic@dep.state.fl.us and Shane Williams at evan.williams@marioncountyfl.org.



Public Education

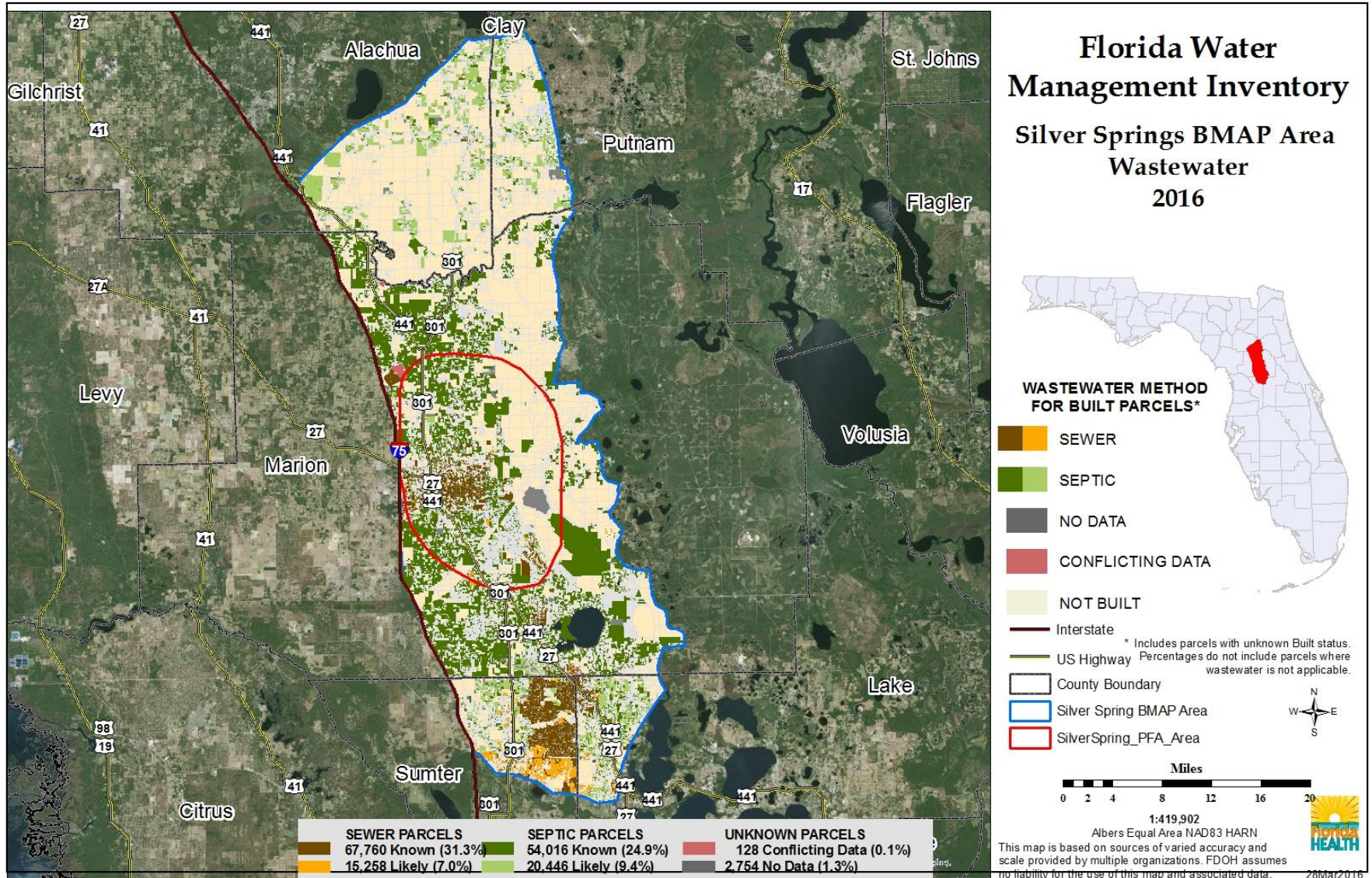
- BMAP timeline.
 - Draft outline of plan in one year.
- Inventory of public education components.
 - Ongoing education efforts.
 - Identify education needs.
- Overall goal:
 - Communicate consistent coordinated message to public.
 - Community and policy maker buy in.
 - Increase public education/awareness about:
 - Wastewater management issues including septic systems.
 - Springs protection.
 - Local groundwater systems and nutrient connections.

Searchable Web Application

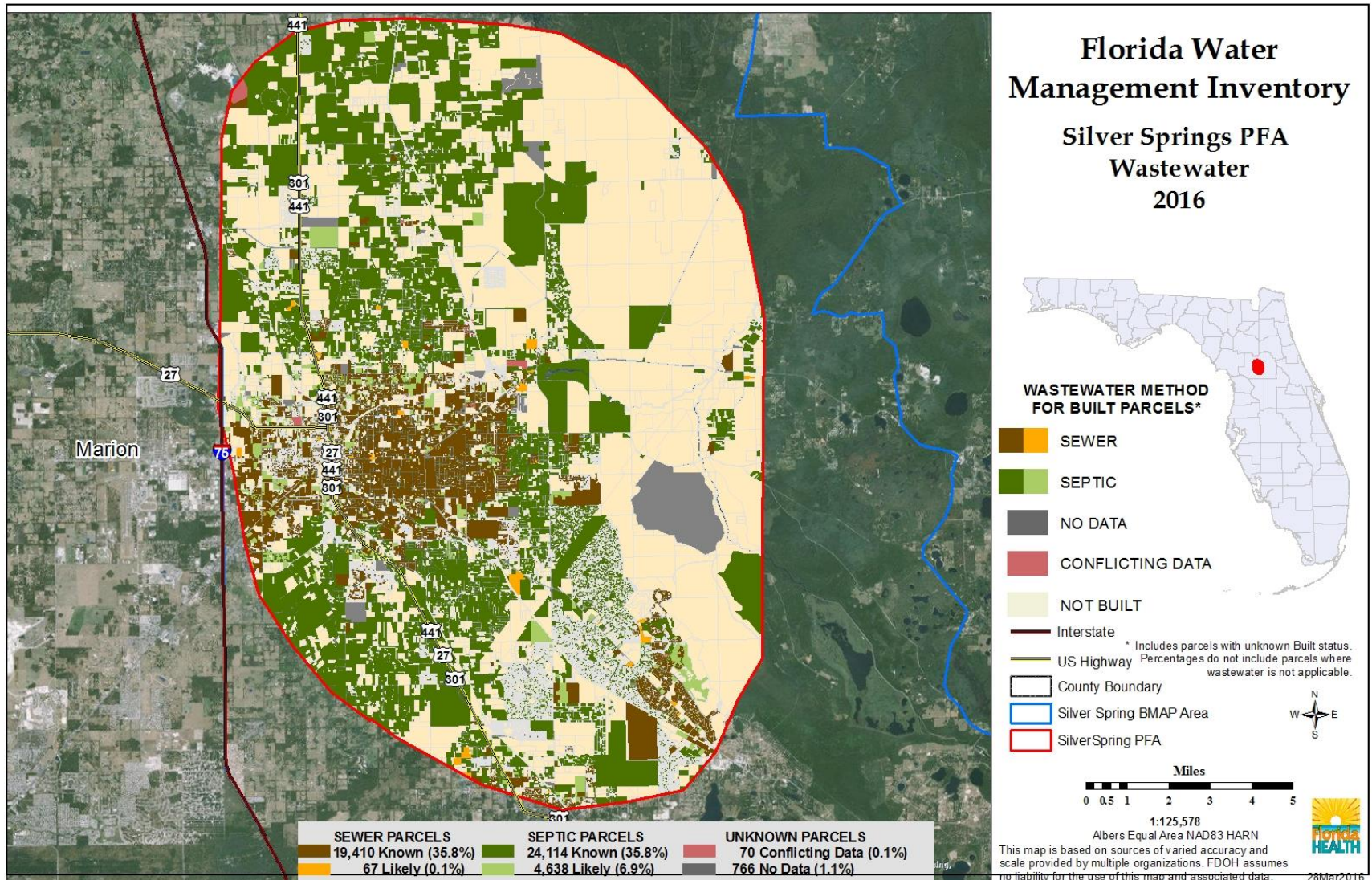


<https://gis.flhealth.gov/FLWMI>

Wastewater Distribution – Silver BMAP



Wastewater Distribution – Silver PFA



Comparison of Tools - Silver

Compared DOH's Florida Water Management Inventory (FLWMI) #'s to DEP's Nutrient Source Inventory Loading Tool (NSILT) #'s:

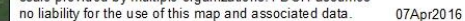
	FLWMI	NSILT	Matching parcels
# septic systems (BMAP)	75,998	59,622	56,219 (74%)

FLWMI has over 16,000 more onsite systems, most in Marion County.

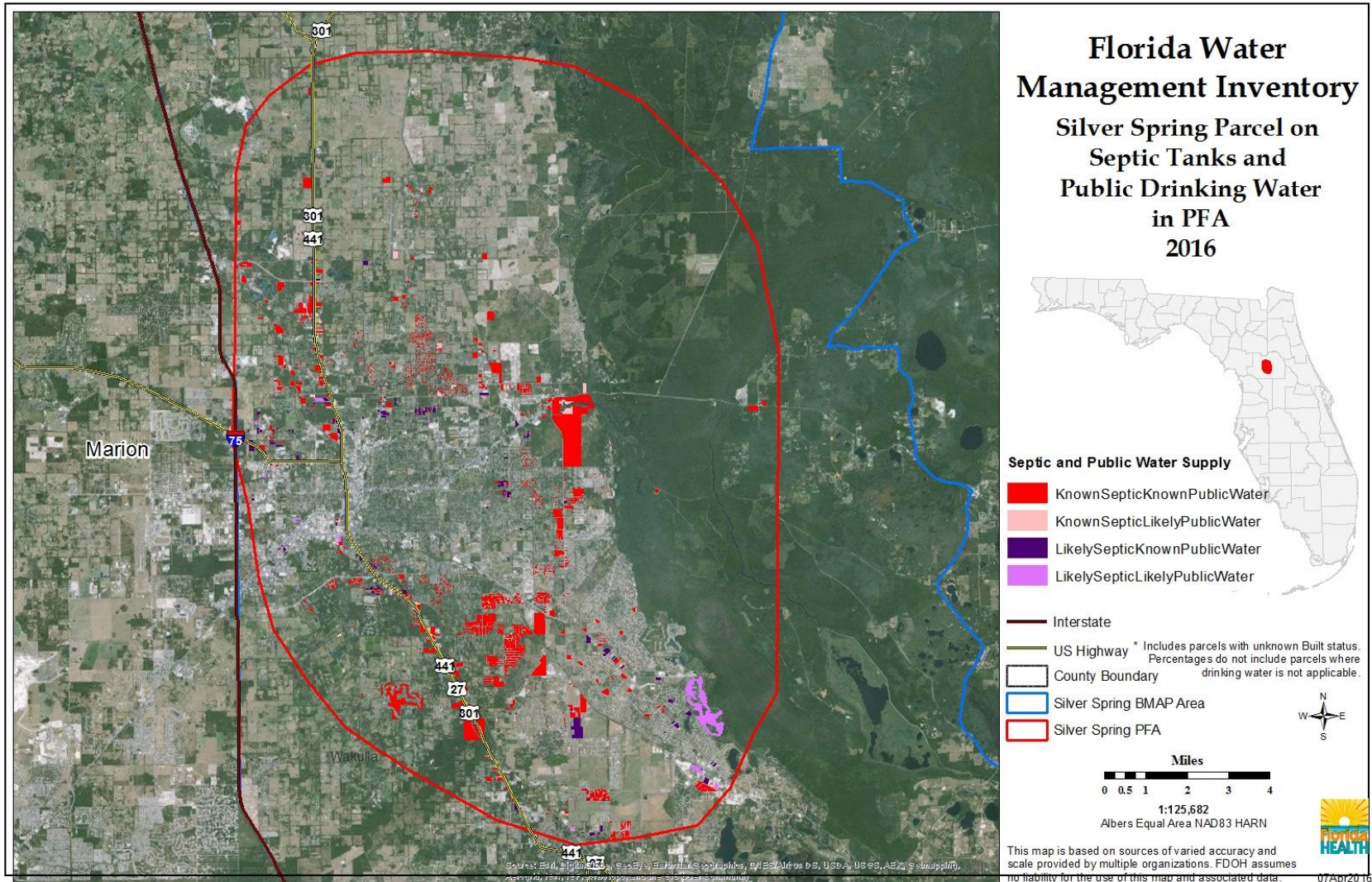
For unmatched ones, main difference is:

- FLWMI has many more known and likely septic parcels



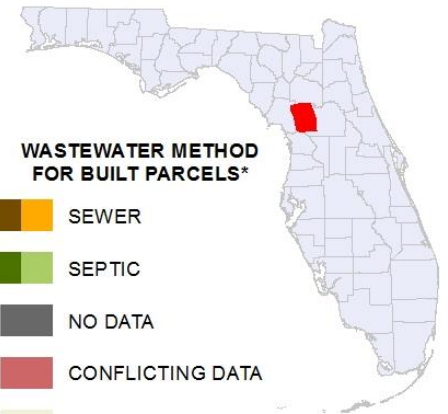


Expanding the Analysis – Silver PFA



Florida Water Management Inventory

Rainbow Springs BMAP Area Wastewater 2016

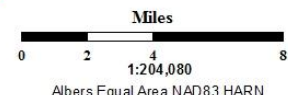


WASTEWATER METHOD FOR BUILT PARCELS*

- SEWER
- SEPTIC
- NO DATA
- CONFLICTING DATA
- NOT BUILT

* Includes parcels with unknown Built status.
Percentages do not include parcels where wastewater is not applicable.

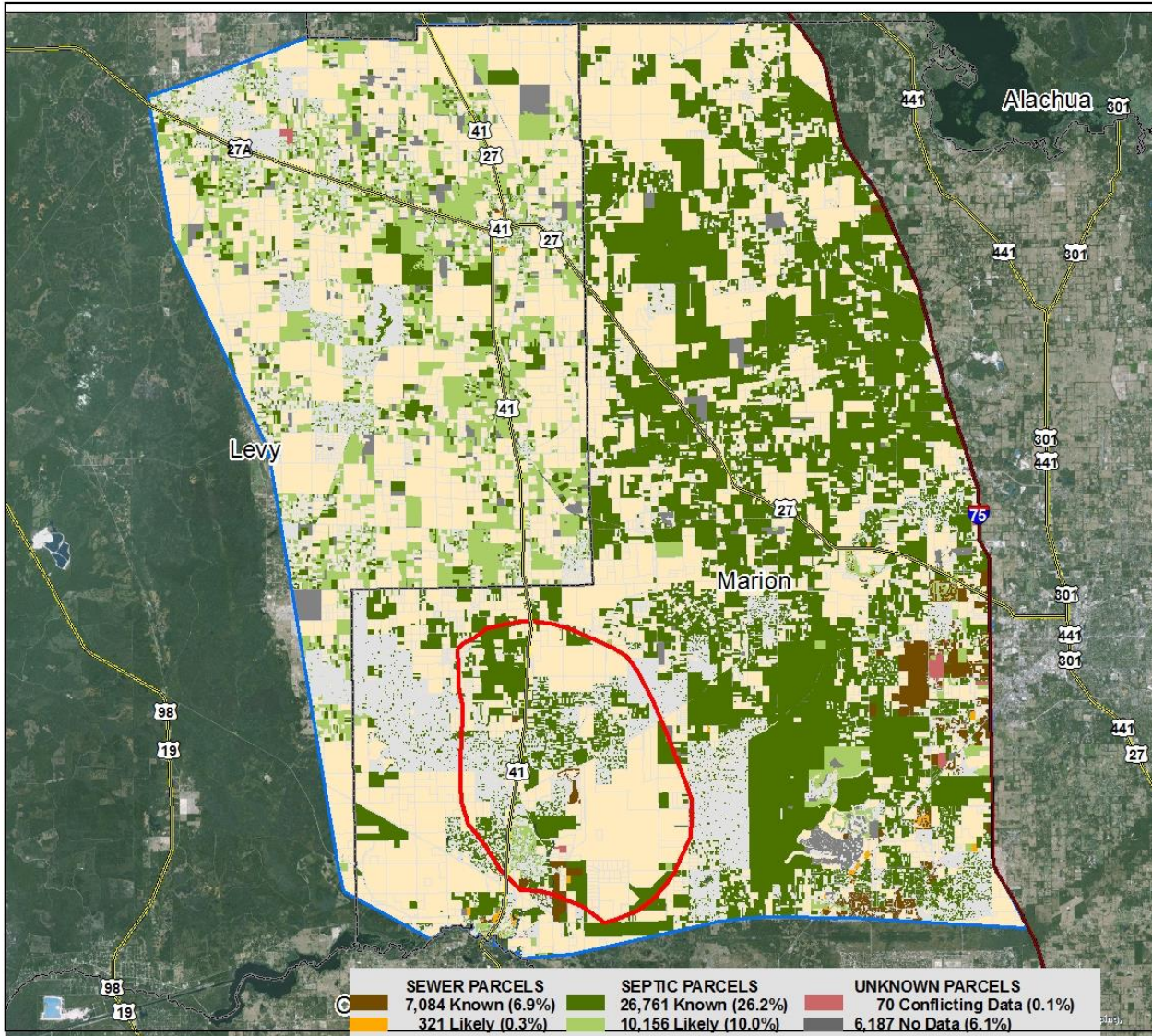
- Interstate
- US Highway
- County Boundary
- Rainbow Springs BMAP Area
- Rainbow Spring PFA Area



This map is based on sources of varied accuracy and scale provided by multiple organizations. FDOH assumes no liability for the use of this map and associated data.

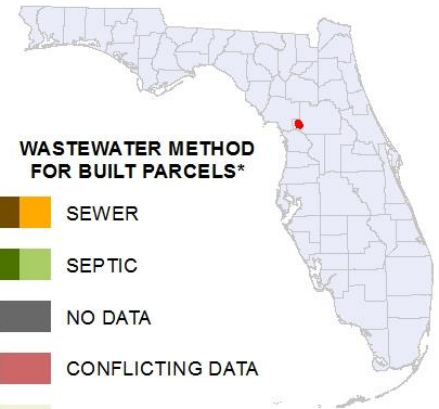


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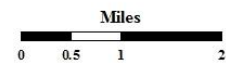
Florida Water Management Inventory

Rainbow Springs PFA Area Wastewater 2016



* Includes parcels with unknown Built status. Percentages do not include parcels where wastewater is not applicable.

- US Highway
- County Boundary
- Rainbow Spring PFA Area

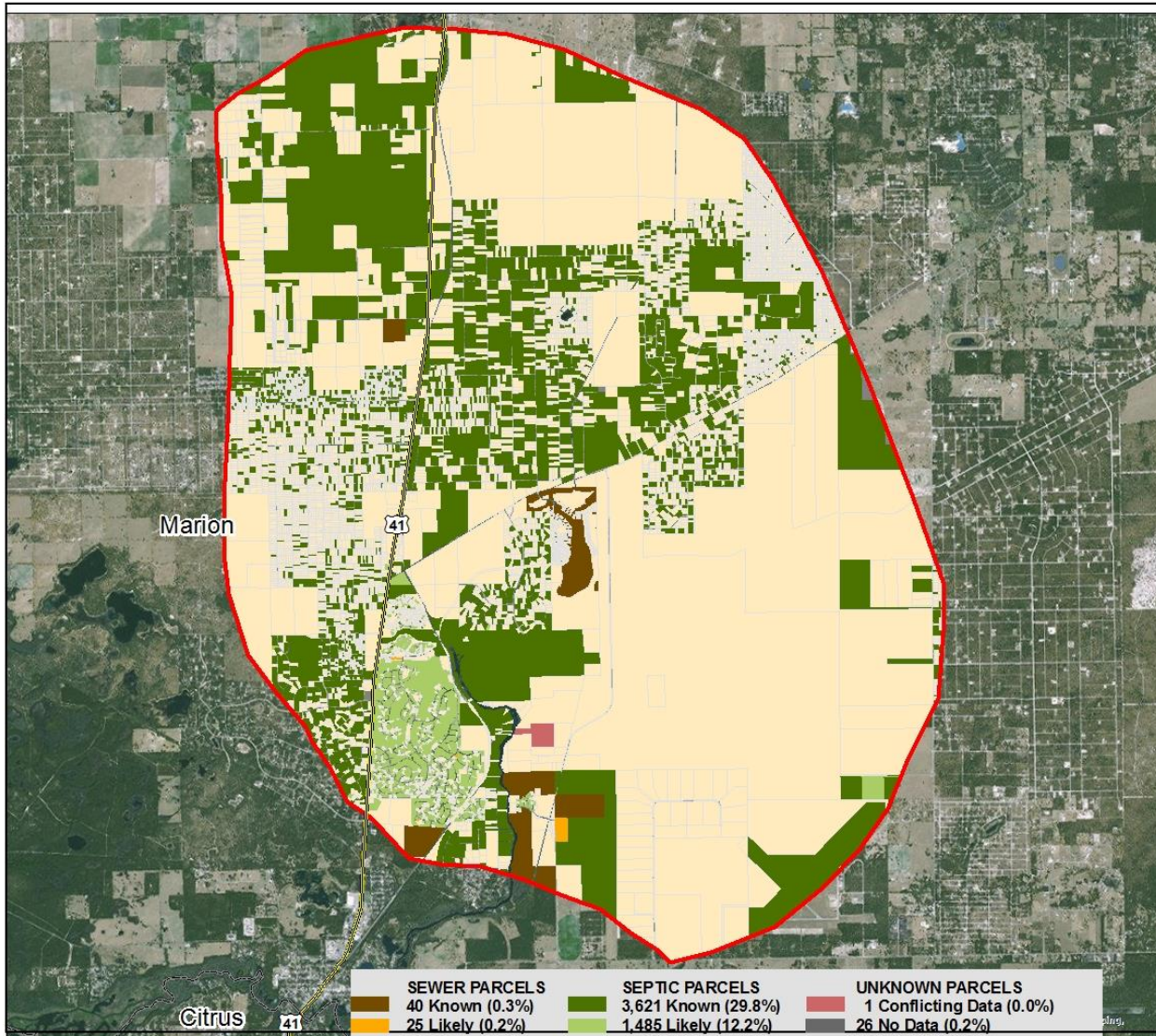


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Albers Equal Area NAD83 HARN



This map is based on sources of varied accuracy and scale provided by multiple organizations. FDOH assumes no liability for the use of this map and associated data.

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Comparison of Tools - Rainbow

Compared DOH's Florida Water Management Inventory (FLWMI) #'s to DEP's Nutrient Source Inventory Loading Tool (NSILT) #'s:

	FLWMI	NSILT	Matching parcels
# septic systems (BMAP)	38,686	21,277	20,217 (52%)

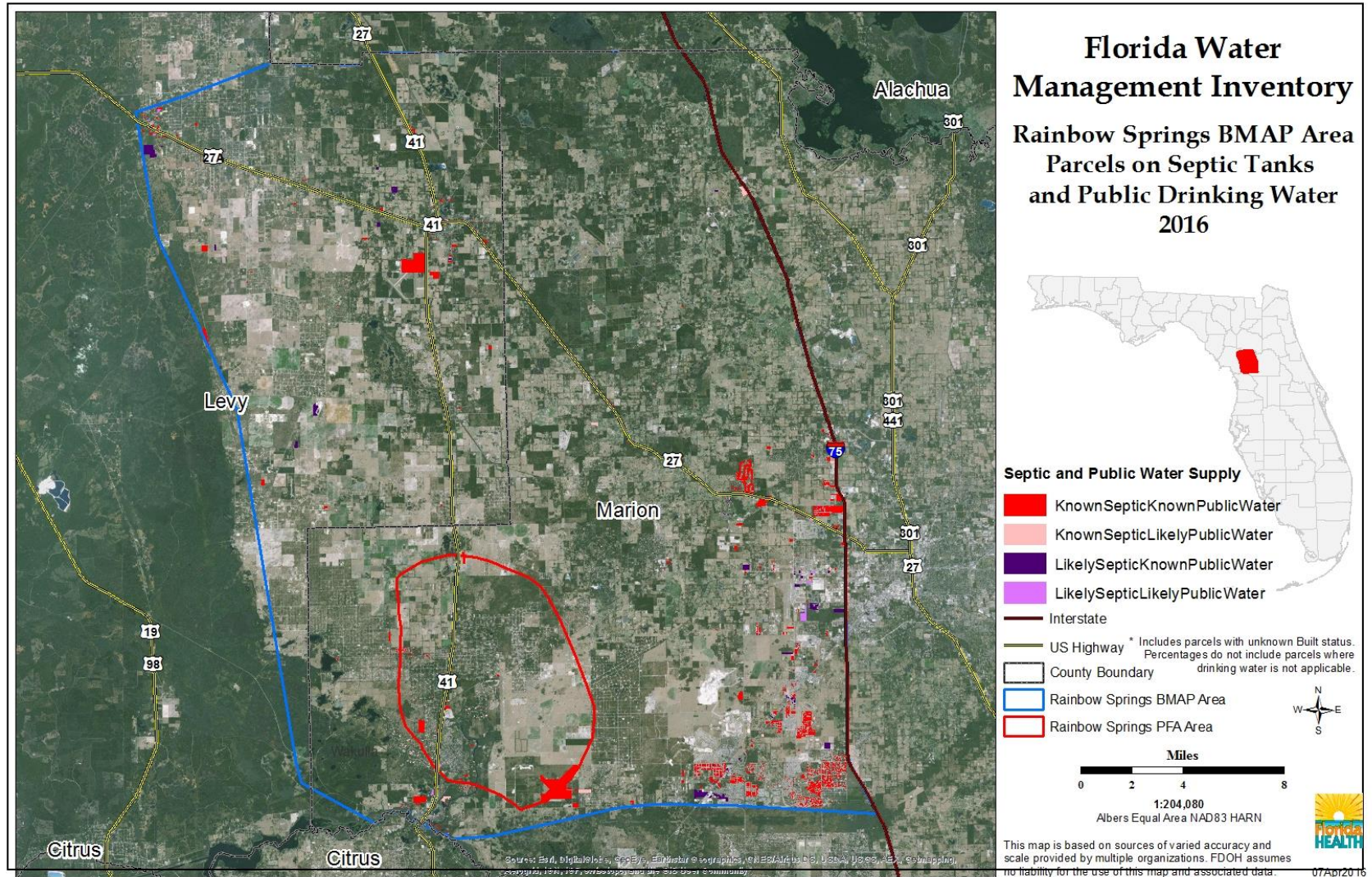
FLWMI has about 17,500 more onsite systems.

For unmatched ones, main difference is:

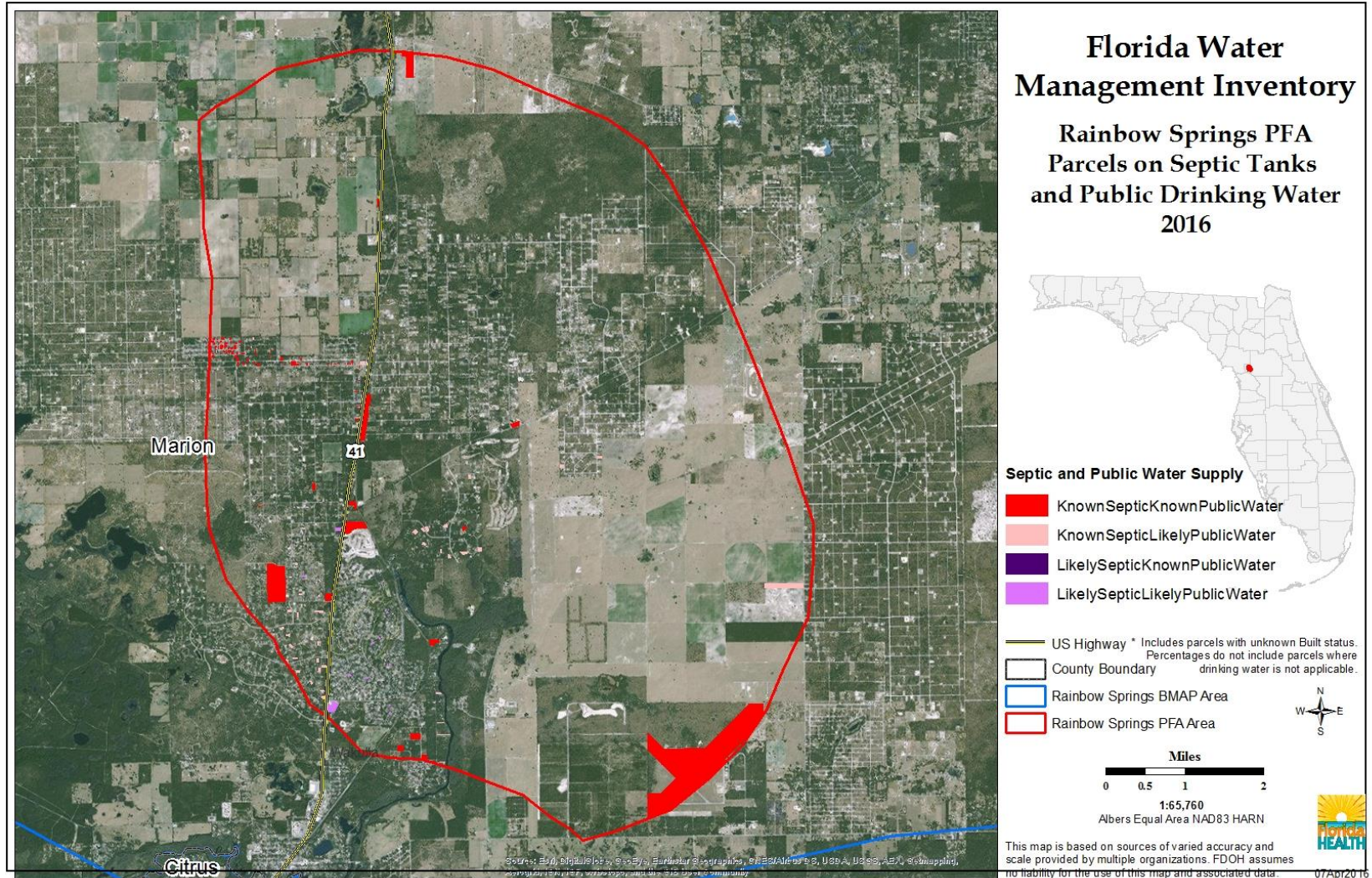
- FLWMI has many more known and likely septic parcels



Expanding the Analysis – Rainbow BMAP



Expanding the Analysis – Rainbow PFA





Next Meeting

- Proposed date of September 15 and potentially November 17.
- Tentative topics for these meetings.
 - Define the magnitude of the problem.
 - How much loading reduction is needed.
 - Where is the problem located?
 - What we know about wastewater and OSTDS management in these basins.
 - Utility planning proposed or underway.
 - What we can do to manage the problem.
 - Planning requirements.
 - Local ordinances.
 - Alternative treatment systems.
 - Education Plan development.
 - Funding sources.



Questions?



Summary and Action Items

- Summary.
 - TMDL needs to be achieved no more than 20 years after adoption of BMAP.
 - Wastewater/OSTDS Remediation Plan developed with input from Advisory Committee to help achieve TMDL reduction within 20 years.
- Need to update information (data, projects, studies, etc.) and start gathering necessary information.
 - Identify projects to meet the 5-year, 10-year and 15-year targets.
 - Identify what and where scientific information is needed.
 - Identify what public education efforts exist & what needs to be done.
- Action Items.
 - Project collection instructions will be provided before next meeting.
 - Propose meeting topics.
 - Next meeting dates-tentative.
 - September 15 and November 17.



Contacts

- Tom Frick, Director Division of Environmental Assessment and Restoration, thomas.frick@dep.state.fl.us.
- Kevin Coyne, Administrator Watershed Planning and Coordination Section, kevin.coyne@dep.state.fl.us.
- Elke Ursin, FDOH, Environmental Manager Onsite Sewage Programs, Elke.Ursin@flhealth.gov
- Mary Paulic, Silver Springs Basin Coordinator, mary.Paulic@dep.state.fl.us.
- Terry Hansen, Rainbow Springs Basin Coordinator, terry.Hansen@dep.state.fl.us.
- Kenny Hayman, Senior Attorney, kenneth.Hayman@dep.state.fl.us.
- Shane Williams, Facilitator, evan.williams@marioncountyfl.org.