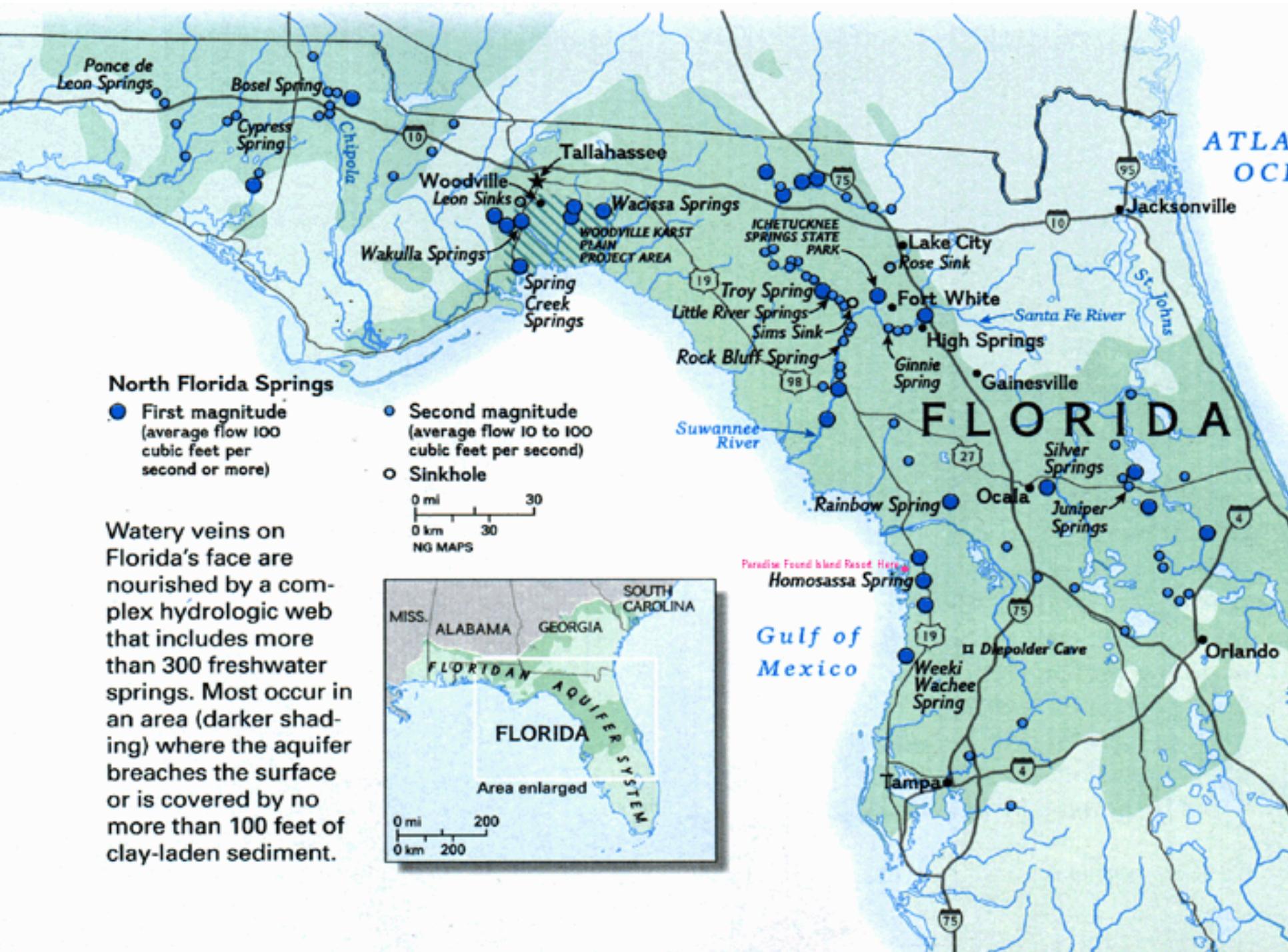


Protecting Florida's Springs

Land Use Planning Strategies and Best Management Practices





North Florida Springs

- First magnitude (average flow 100 cubic feet per second or more)
- Second magnitude (average flow 10 to 100 cubic feet per second)
- Sinkhole



Watery veins on Florida's face are nourished by a complex hydrologic web that includes more than 300 freshwater springs. Most occur in an area (darker shading) where the aquifer breaches the surface or is covered by no more than 100 feet of clay-laden sediment.



Paradise Found Island Resort Here
Homosassa Spring

Gulf of Mexico

Diepolder Cave

Weeki Wachee Spring

Tampa

ATLANTA
 OCEAN

FLORIDA

Orlando

Jacksonville

Gainesville

High Springs

Fort White

Lake City

Wacissa Springs

Tallahassee

Woodville

Wakulla Springs

Bosel Spring

Cypress Spring

Ponce de Leon Springs

Spring Creek Springs

Little River Springs

Sims Sink

Rock Bluff Spring

Suwannee River

Santa Fe River

St. Johns

Silver Springs

Juniper Springs

Rainbow Spring

Ocala

19

75

4

75

4

75

10

75

10

95

19

98

27

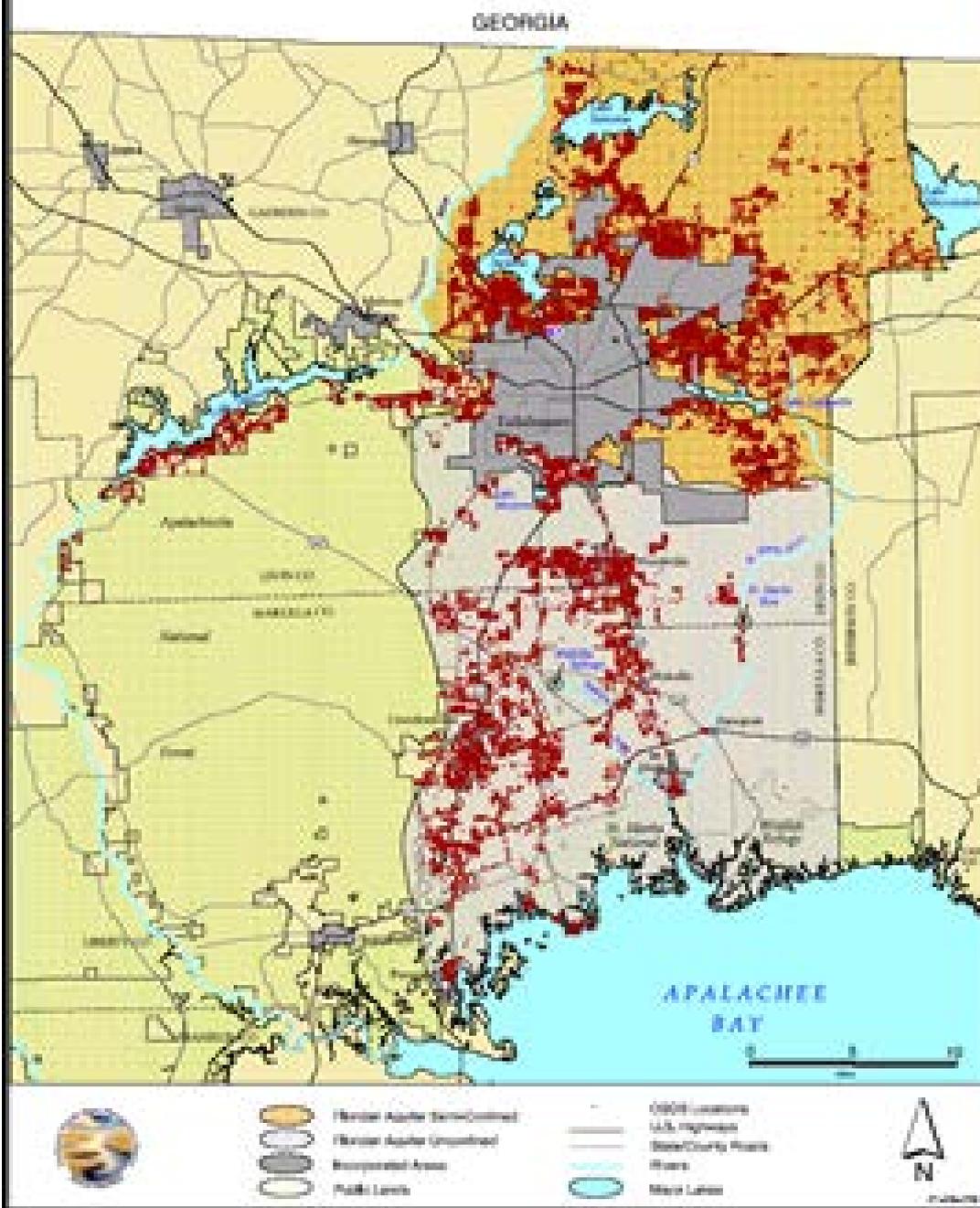
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From the quantity-side of the picture we need to complete required MFLs manage the water to protect the natural functions of the native ecological systems - carefully permitting human consumptive uses within identified bounds so as not to damage the native ecological systems.

<u>Date of WMD Priority List</u>	<u>Schedule for Wakulla MFL</u>	<u>Years Before Adoption</u>
2002	2009	7
2003	2006	3
2004	2006	2
2005	2006	1
2006	2008	2
2007	2008	1
2008	2012	4
2009	2012	3
2010	2012	2
2011	2012	1
2012 (latest)	2023	11

Water Quality and TMDLs

Needed - Better Tools Applicable from the local level to address nutrient and other pollutant problems deriving from the nonpoint side of the equation.



OSTDS in Leon and Wakulla

- Estimates for number of systems in 2000
 - 45,000 in Leon
 - 11,000 in Wakulla
- Estimate for Nitrate loading (mid-range of septic tank effluent, without accounting for losses in drainfield and groundwater)
 - 4kg /year per capita
 - ~20-25 lbs/year per household

NW Florida Water Management District Study (Chellette, Pratt and Katz, 2002)

Responsible **Nutrient** Management Entity

- Would like to see inclusion of the concept of the "Responsible Management Entity.
- If you want to get things done let the locals who have a vested interest in their springs get in on the action.

Through the use of a RME, integrated sets of solutions can be locally tailored to incrementally reduce nutrients and other pollutants over agreed upon timelines. Since such solution sets are specific to each watershed, a locally-based entity serving one or more local jurisdictions may be appropriate.

A RME or RNME may serve:

- As the mechanism by which affected stakeholders in a watershed with a limiting Total maximum Daily Load (TMDL) action and implementing Basin Management Action Plan (BMAP) may plan to incrementally address the complex pollution reduction actions necessary to make improvement to water quality (Currently FDEP is moving the TMDL/BMAP efforts forward statewide).
- The siting and use of non-central sewer related wastewater treatment and disposal systems such as septic systems, cluster systems or advanced wastewater treatment package plants.
- As a one-stop management entity – The RME plans and manages projects and operations for watershed-based responsible nutrient management - overtime it uses a host of means to manage the populations of septic systems in a basin toward greater nutrient reduction.
- To coordinate with existing central sewer system provider(s) to guide removal of significant numbers of previously installed septic system where density/intensity of development, environmental vulnerabilities and economics dictate.
- To work and coordinate with local land planning agencies to manage land use densities and intensities to fit the natural landscape limitations and suitability's helping to match service to the area's vulnerability, needs, costs, etc.

Areas of emphasis around which a RME or similar local entity may be structured:

- Developing and maintaining an inventory of the many septic systems and their age, type, condition and density of placement within the basin;
- Identification and mapping of more vulnerable areas;
- Permitting (in sync with County Health Department Offices) and system performance inspections and maintenance approaches;
- Education to system owners on Best Management Practices (BMPs) and user awareness of septic system location on property, function and care;
- Educational and BMP instruction regarding other citizen/consumer-based pollution problems;
- Establishment of a billing approach (e.g., a set monthly/quarterly/yearly fee to all septic system owners) and mechanism and customer care and interactions;
- Training and coordination of efforts with the multiple private service providers;
- Working collaboratively with one or more central sewer provider (note, a RNME could be the local central sewer provider), local land planning and regulatory agencies to use septic systems in appropriate locations and other wastewater disposal and treatment options in other locations (for example, helping to guide hooking up to central systems);
- The incremental/slow replacement of standard systems in the more vulnerable areas with tested/approved nitrate removing systems where economically rationale;
- Working with local land planning agencies to coordinate proper land use densities and intensities to fit the natural landscape limitations and suitability's helping to match which system serve what areas based on vulnerability, needs, costs, etc.
- Seeking grants and low interest loans to help develop and infuse a septic system repair/replacement fund and/or connection-to-central system fund.
- Development of innovative finance, assistance efforts and grants to help existing septic system owners replace these system with nitrate removal systems from a growing list of such system types.

Additional tools and management actions a RME may be structured to perform can include:

- 1. Education on Chemical Additives & Restrictions.** For septic and central systems - Organic solvents are advertised for use as septic system cleaners and sometimes as substitutes for sludge pumping.
- 2. Heightened Emphasis on Management of Pharmaceuticals.** For septic and central systems. Studies by the USGS in Florida assessed the occurrence and persistence of multiple target pharmaceuticals in septic tank effluent and the aquifer. Compounds such as acetaminophen, caffeine, codeine, carbamazepine, cotinine, erythromycin-18, nicotine, paraxanthine, ranitidine, sulfamethoxazole, trimethoprim, warfarin, 1,7-dimethylxanthine, phenol, galaxolide, and tris (dichloroisopropyl) phosphate) have been detected in a septic tank effluent and our groundwater.
- 3. Management Approaches for Handling the Population of Septic Systems, Distributed Fertilizer Applications and Corresponding Pollutant Loads. Permitted Inspection and Maintenance for all septic systems** (Standard or nitrate removal types) - Maintenance can be required through contracts, operating permits, and local ordinances/utility management.
- 4. Household Management Of What Goes Into The Ground.** For example, Educate to Reduced Use of Garbage Disposers for septic system homeowners (And instead, encouragement of individual home composting/mulching of the organic kitchen wastes) - Eliminating the use of garbage disposals can significantly reduce the loading of suspended solids, nutrients, and BOD to septic systems, as well as decreasing the buildup of solids in septic tanks, thus reducing pumping frequency.
- 5. Fertilizer/Yard Management (Residential, Commercial and Governmental).** Education on the other major nutrient problems - In particular, Fertilizer Management – This might include Retailer/Outlet Monitoring and Consumer Education on Appropriate Fertilizers Products and use in the Springshed/watershed. In particular, from an individual stewardship perspective, homeowner association education efforts to encourage reduced use of fertilizers could help make a difference.
- 6. Stormwater Management.** Coordinated and strategic to efficiently capture and treat stormwater-based pollutants. Where jurisdictions have in-place a stormwater utility, integrated/coordinated management can be structured to the RME.



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