

Northwest Florida Water Management District



Water Policy Advisory Council 2013



Spring Management Challenges

Jackson Blue Spring

- Nutrient pollution from agriculture
- Agricultural irrigation consumptive use demands on spring
- MFL study will be initiated in 2014

Wakulla Springs

- Nutrient pollution from wastewater and stormwater runoff
- Evaluation of future consumptive use demands on spring
- MFL study will be initiated in 2013

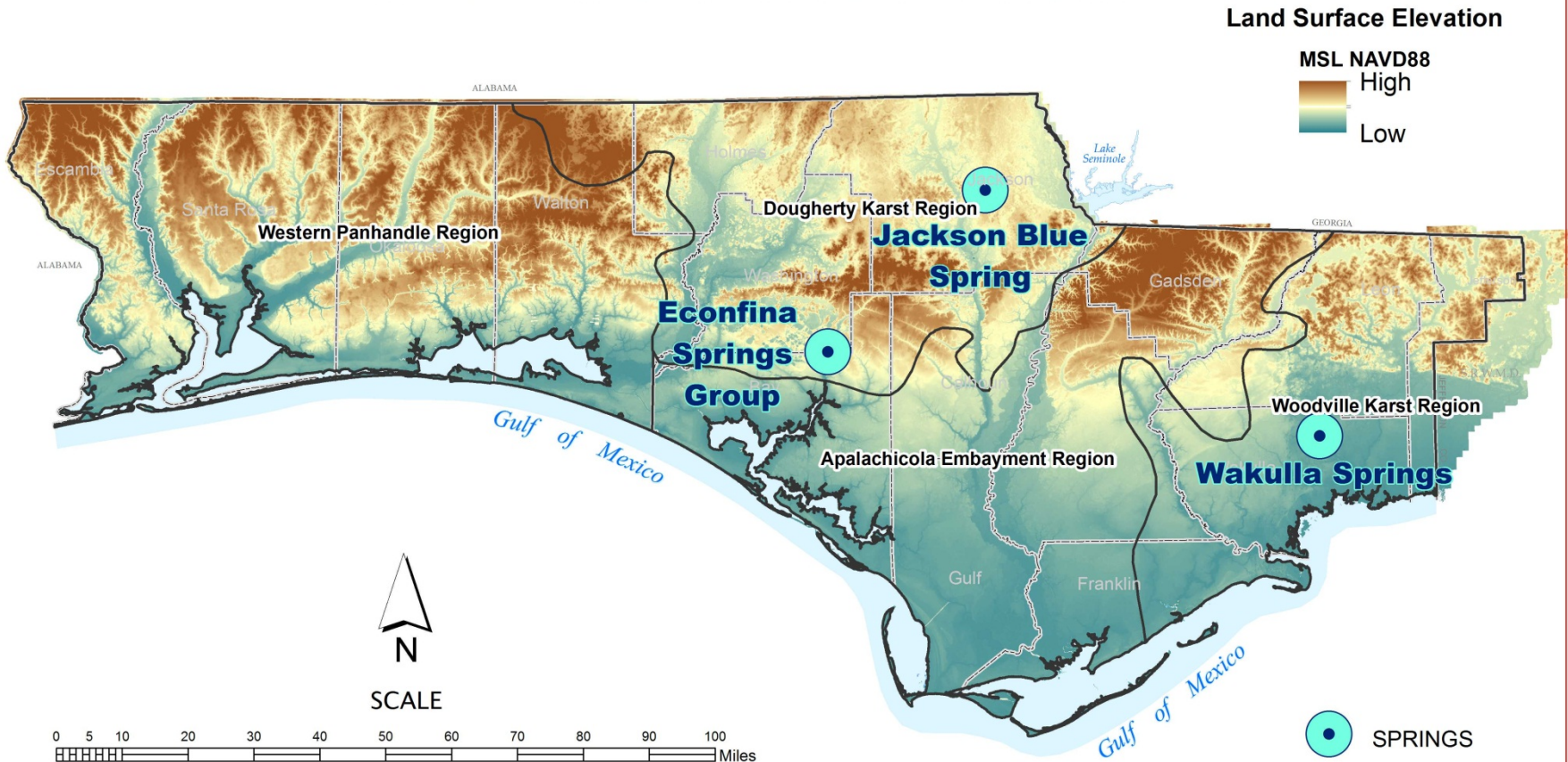
Econfina Creek Springs Complex

- Groundcover/habitat restoration
- Managing recreational use



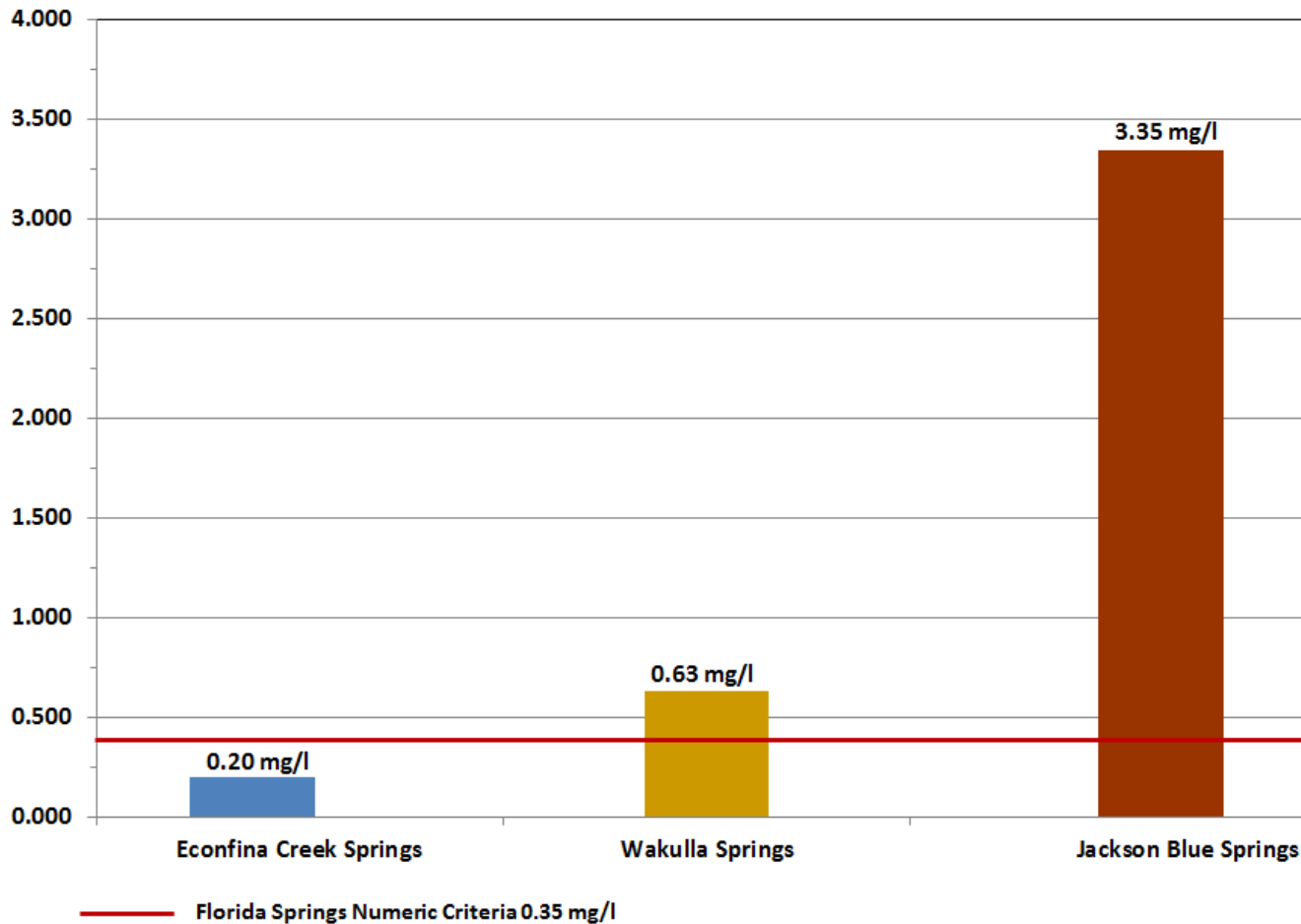
NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

GENERAL EXTENT OF GROUNDWATER REGIONS IN THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT





Average Nitrate Concentrations in Springs (mg/L) 2001-2013

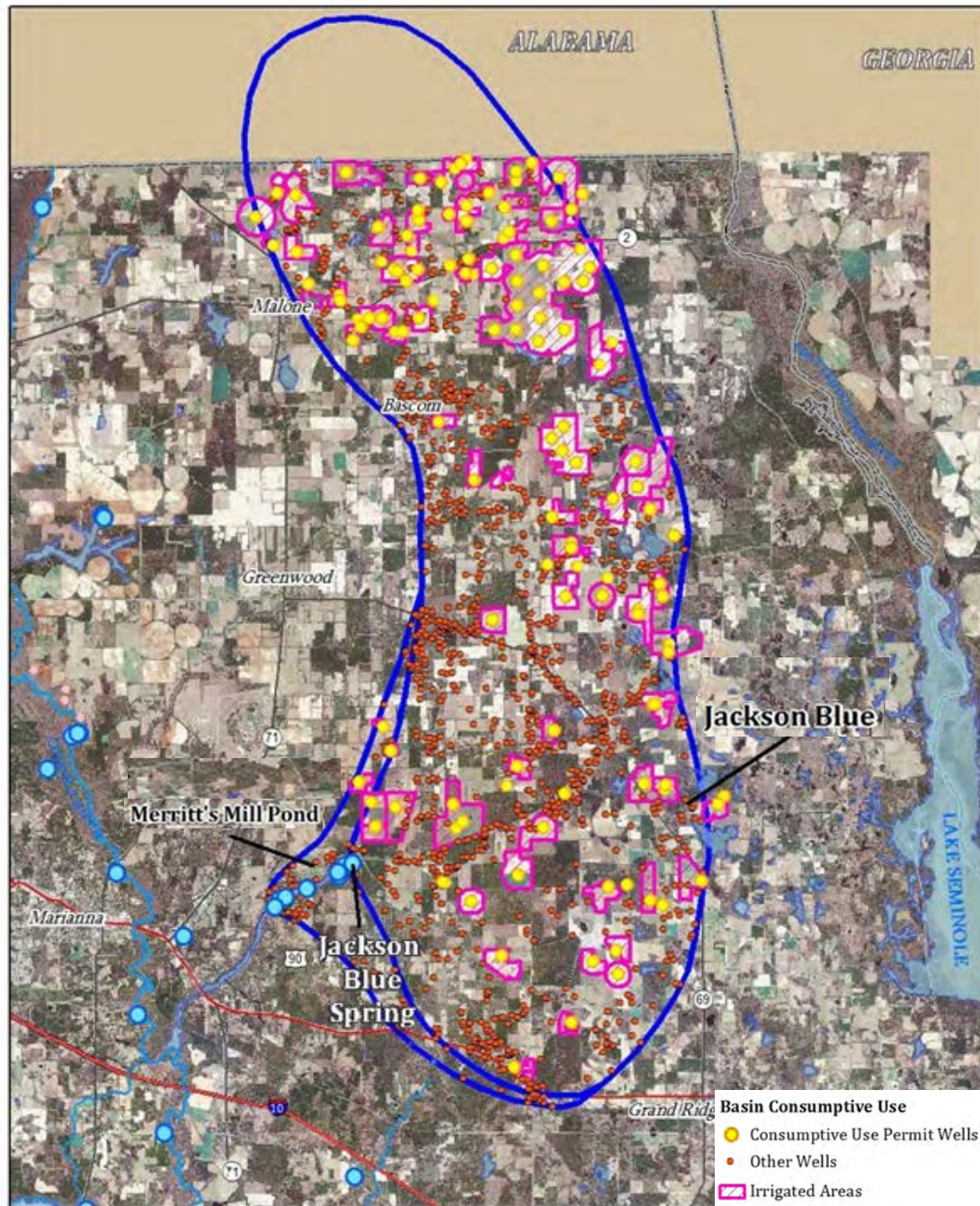




Jackson Blue Spring

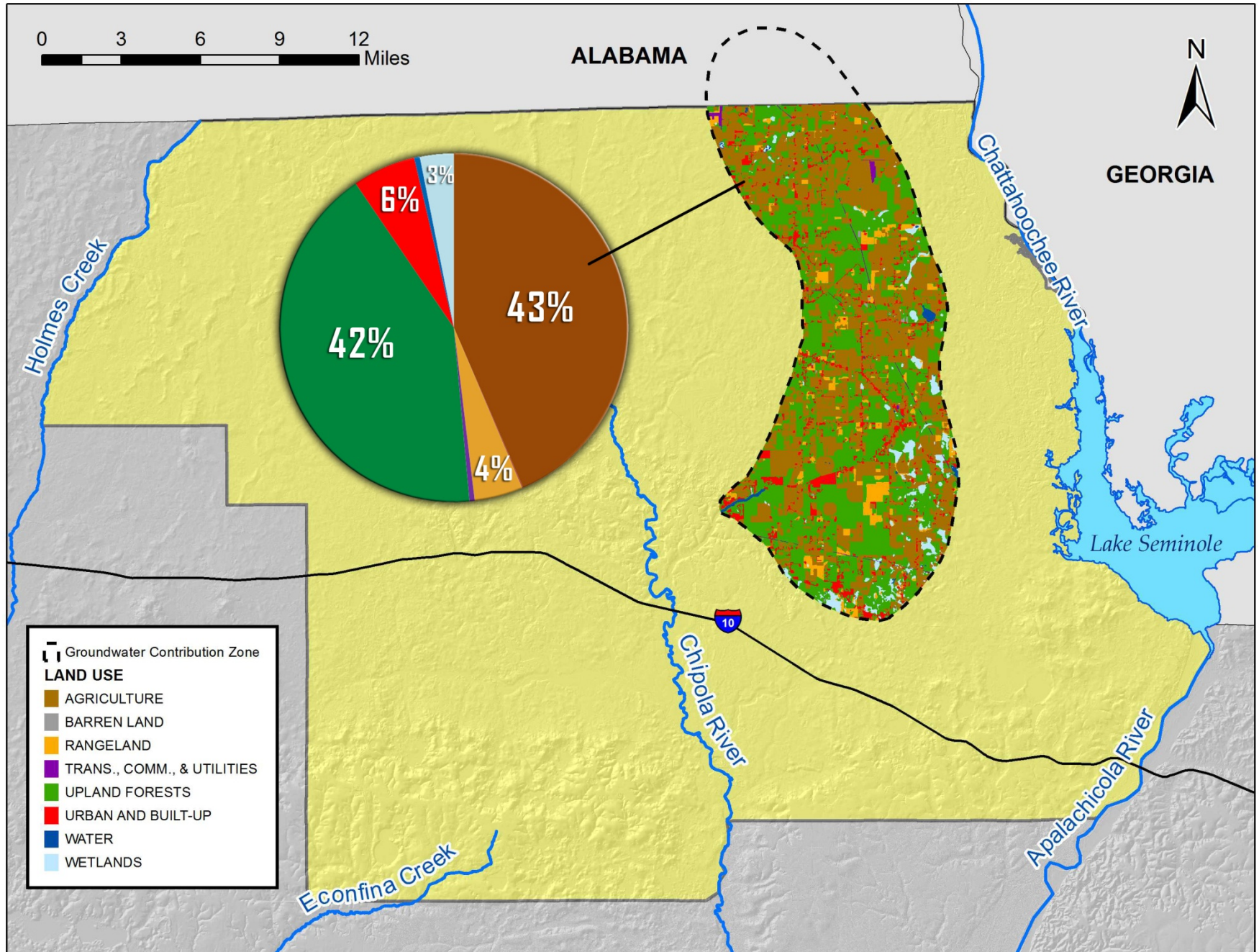


- Average Daily Flow – 130 cfs (84 mgd)
- High nitrates from agricultural fertilizer application
- EDB (Ethylene Dibromide, a crop fumigant) in Floridan Aquifer in NE Jackson County



Location of Water Supply Wells and Irrigated Farm Land in Jackson Blue Groundwater Contribution Area

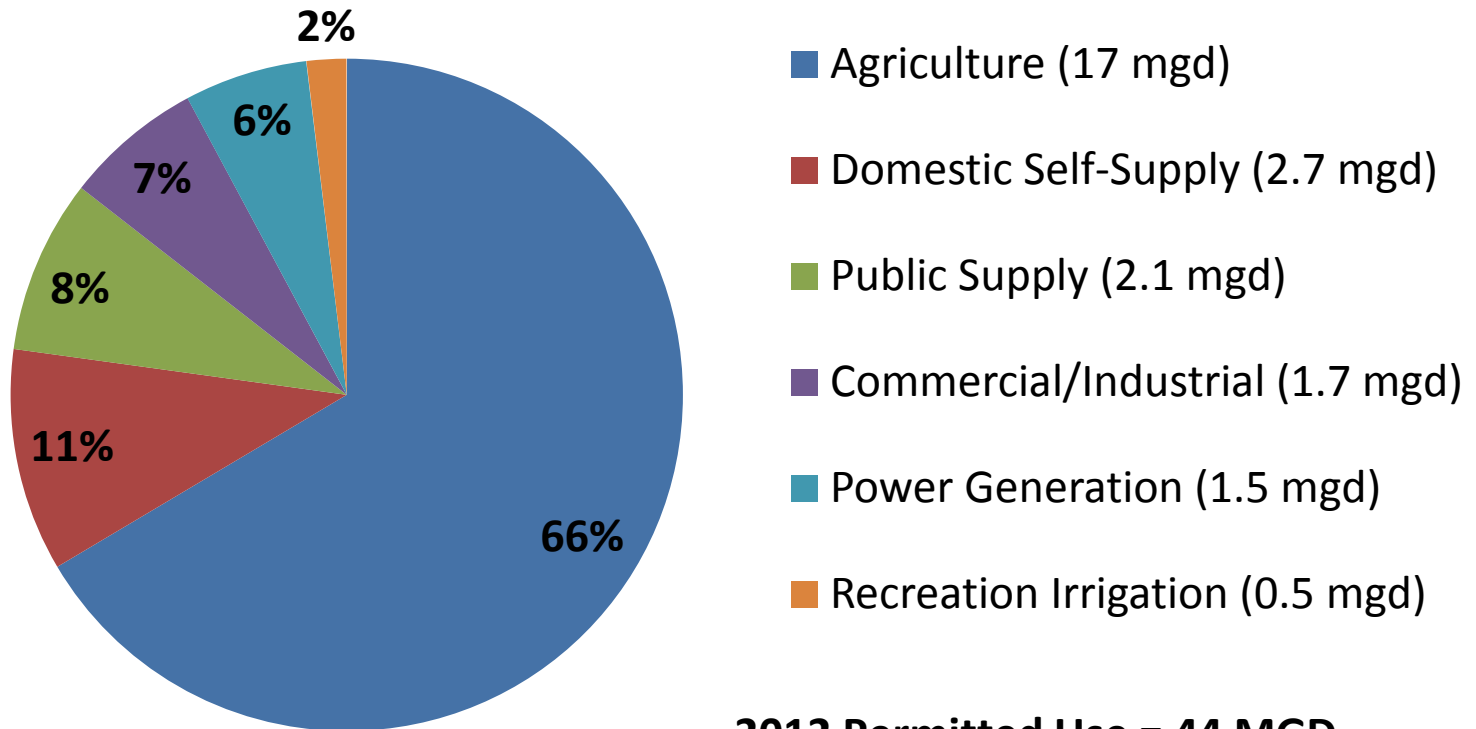
Jackson Blue Spring Groundwater Contribution Area



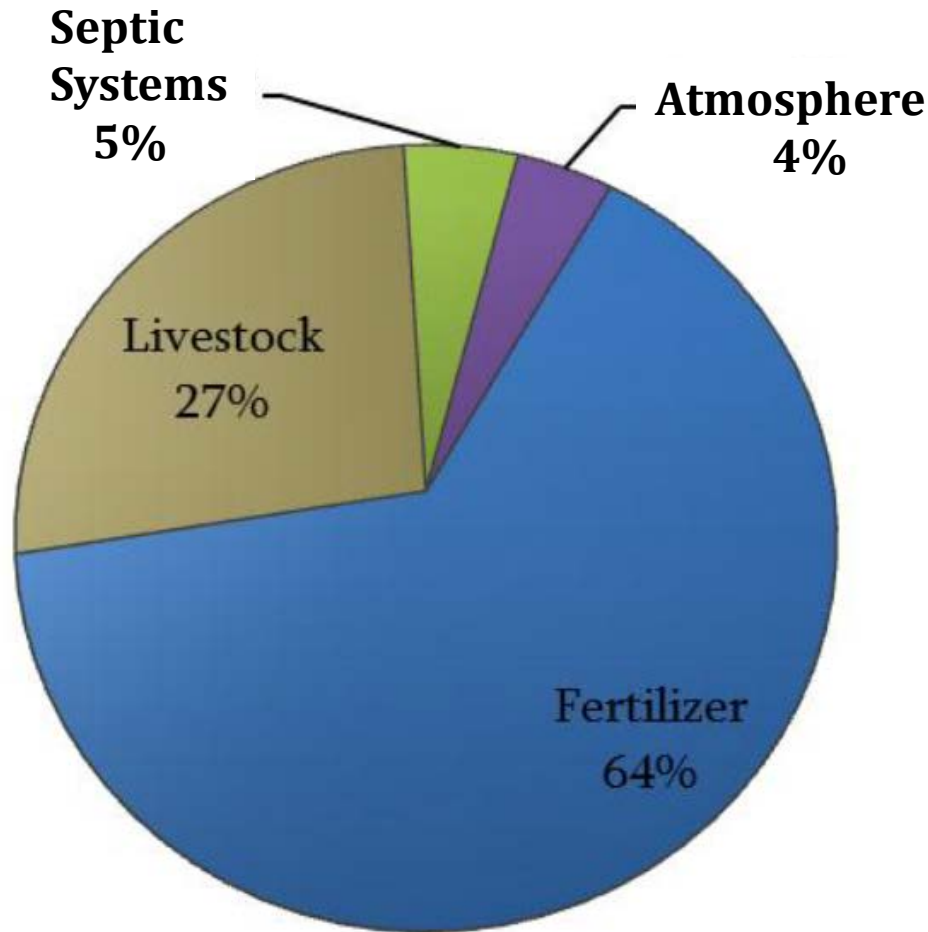


Jackson County Water Use in 2012

25.5 MGD



2012 Permitted Use = 44 MGD



Nutrients leaching into groundwater represents fertilizer lost to growers and increased nitrate levels in the springs and Merritt's Mill Pond.

Estimated Fertilizer Loss:
580 tons fertilizer/year
~ \$174,000 Economic Loss

Estimated Nitrogen Sources in Jackson Blue Spring ⁽¹⁾

(1) Nitrate Sources of Springs Discharging to Merritt's Mill Pond, Jackson Co. Technical Report 2011-01



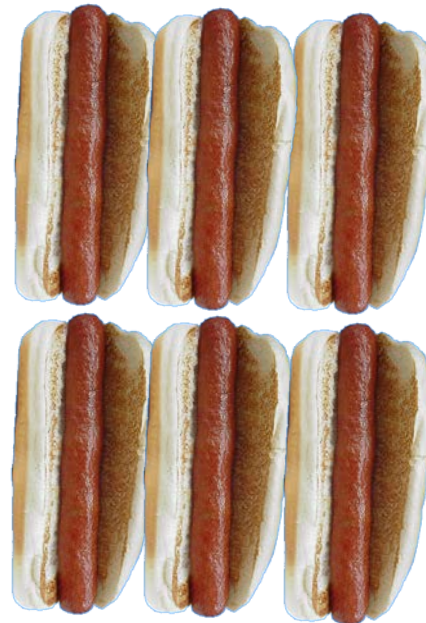
Maximum drinking water standard for nitrate is 10 mg/l. There is about 0.22 mg of nitrate in one hot dog.

The current Nitrate concentration of Jackson Blue Spring water is about 3.5 mg/L, equal to about 1.3 mg N per 16oz glass of water.



Jackson Blue Spring water

=



Nitrate in **SIX** hot dogs!

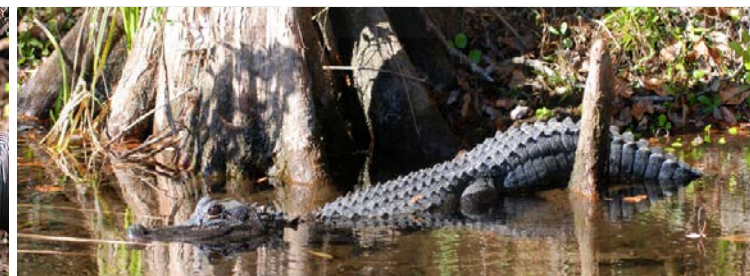
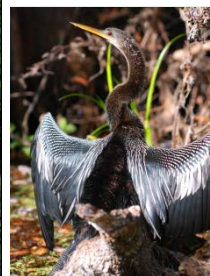
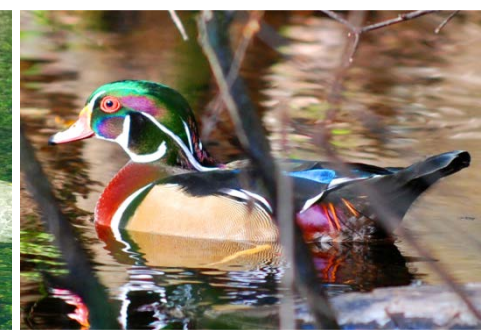


The Nitrate Problem in Jackson Blue Spring Watershed

Levels currently over 3.3 mg/l. At levels over 0.35 mg/L, nitrate contributes to excessive aquatic plant and algae growth:

1. Lowers quality of natural habitat.
2. Lowers available oxygen levels for fish and other aquatic life.
3. Lowers recreational value.
4. Hundreds of thousands of dollars are spent every year by the State of Florida to clean up nutrient-impacted water bodies like Merritt's Mill Pond.
5. **District provides funding support Mobile Irrigation Lab (MIL) and Sod Based Crop Rotation Programs to conserve agricultural water use and reduce fertilizer use in groundwater contribution area.**





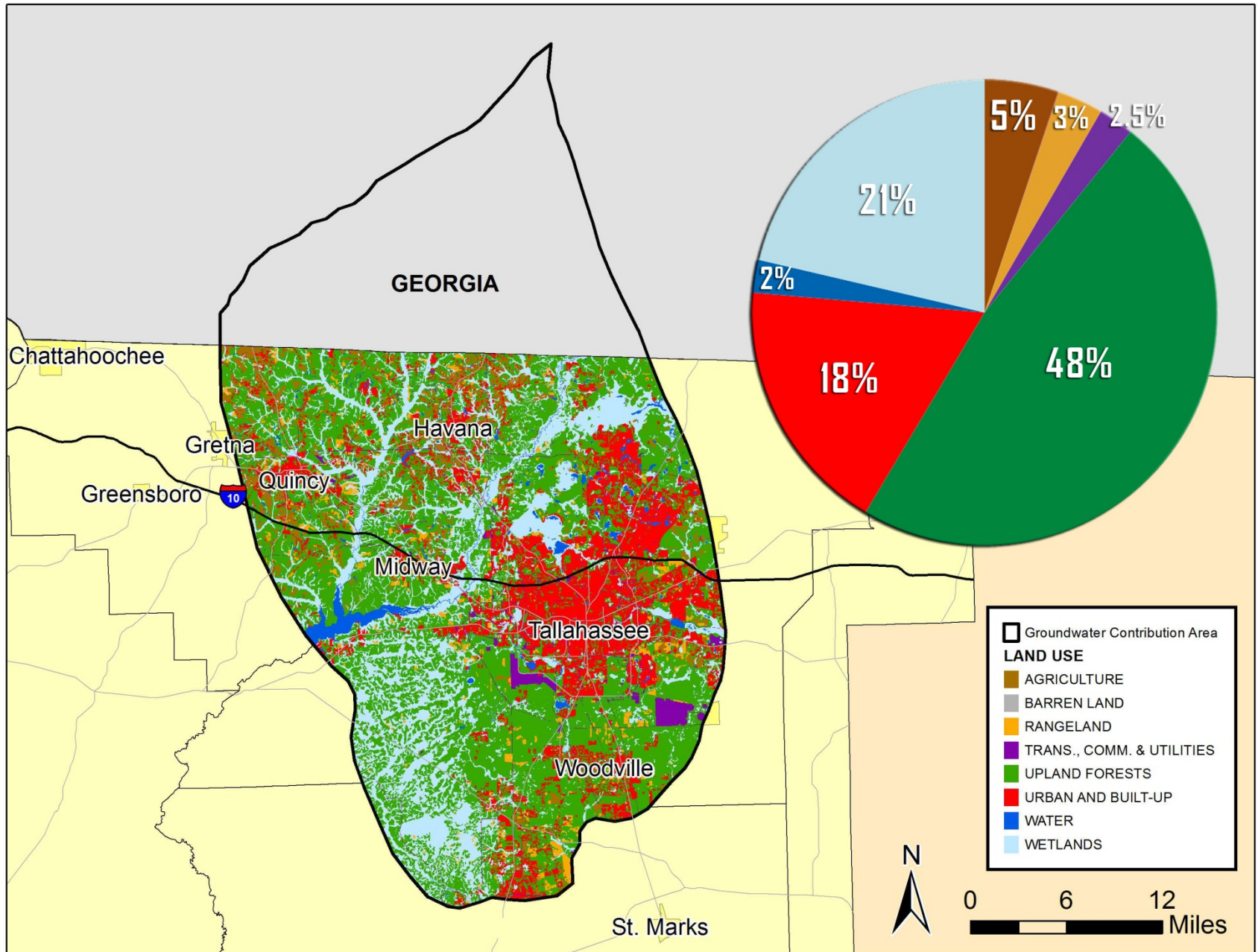
WAKULLA SPRINGS



Photo by Wes Skiles



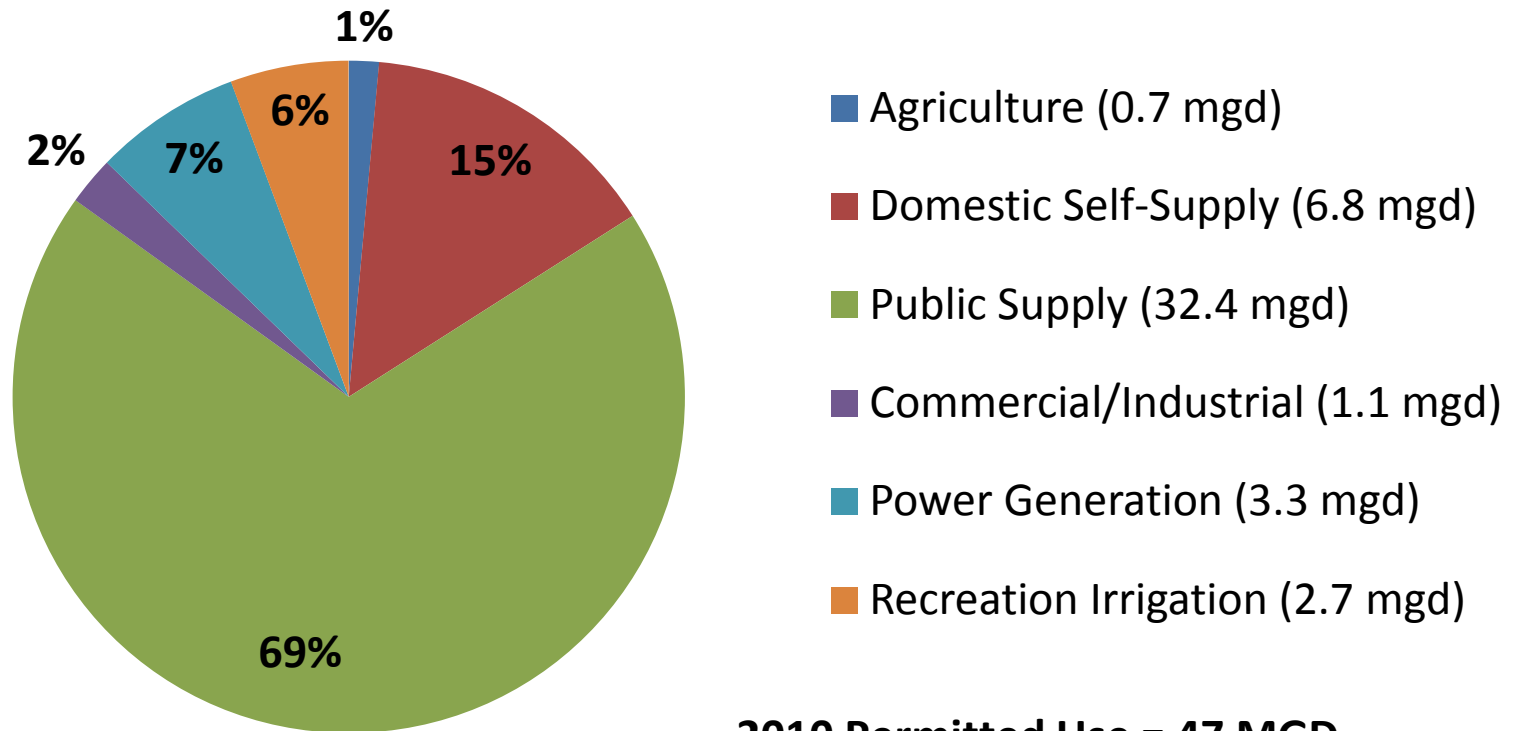
Wakulla Springs Groundwater Contribution Area





Leon & Wakulla Counties Water Use in 2010

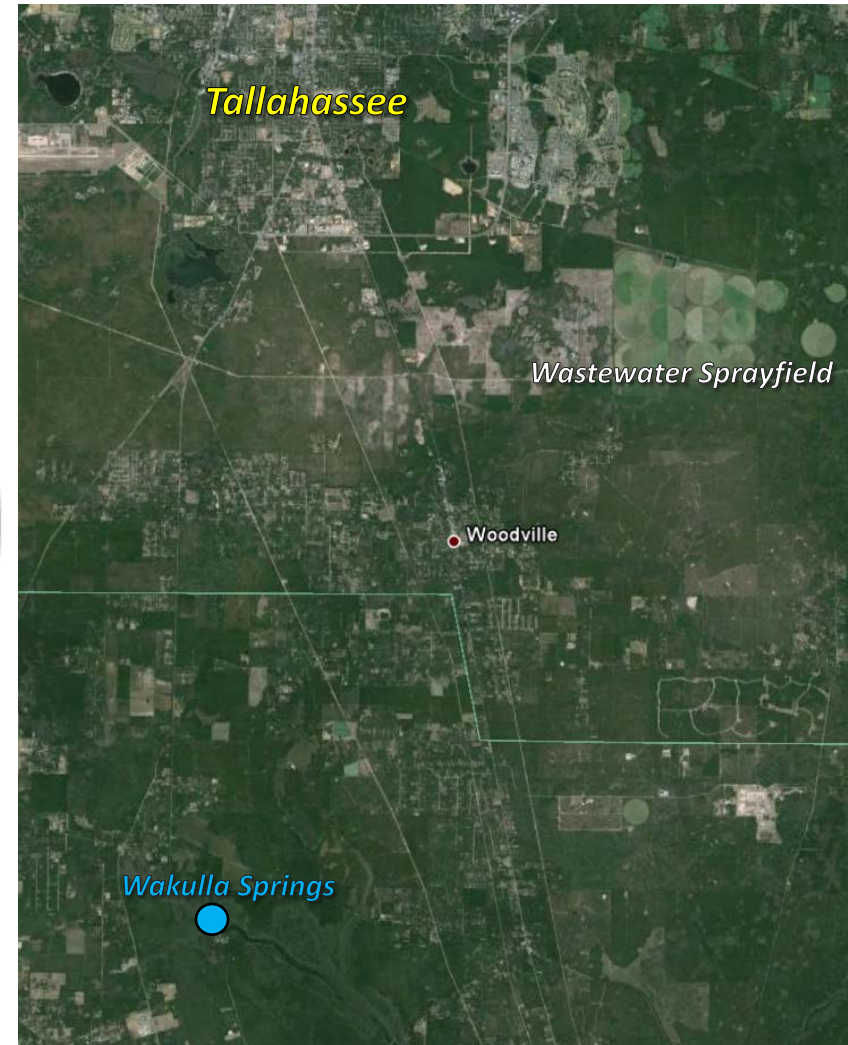
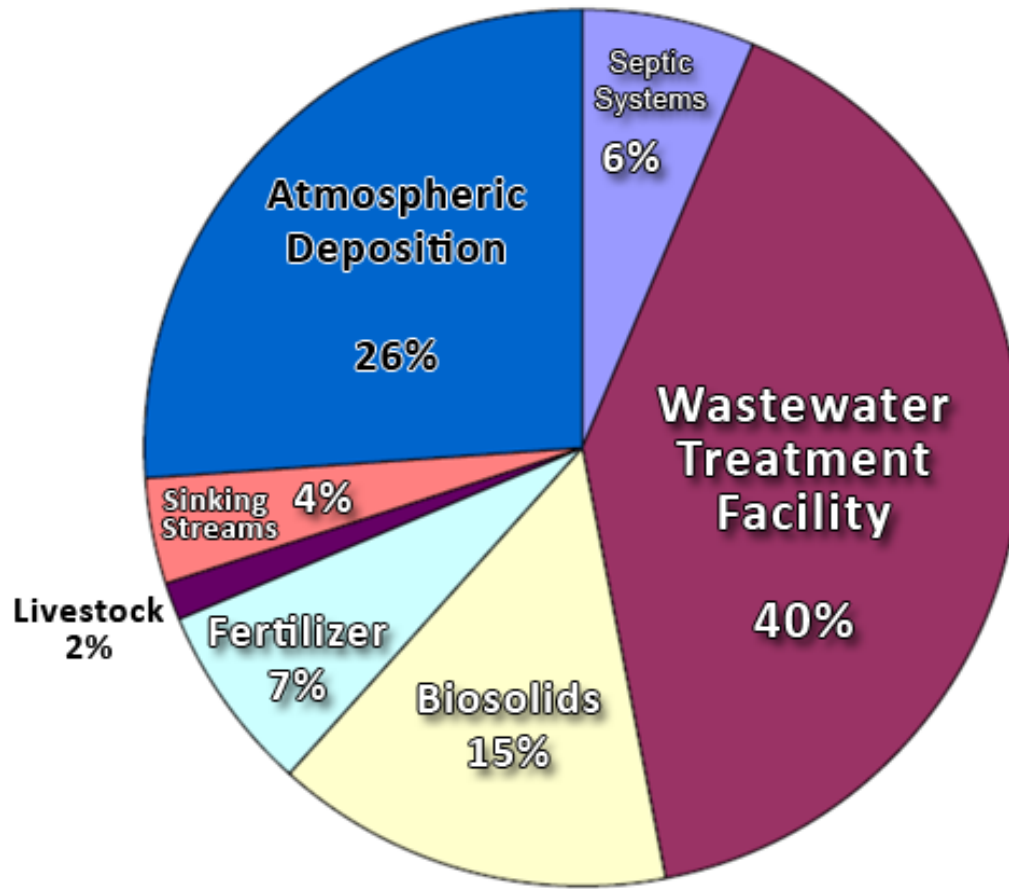
47.0 MGD



2010 Permitted Use = 47 MGD



Relative Sources of Nitrogen in Wakulla Springs Contributory Area (1990-1999 ⁽¹⁾)





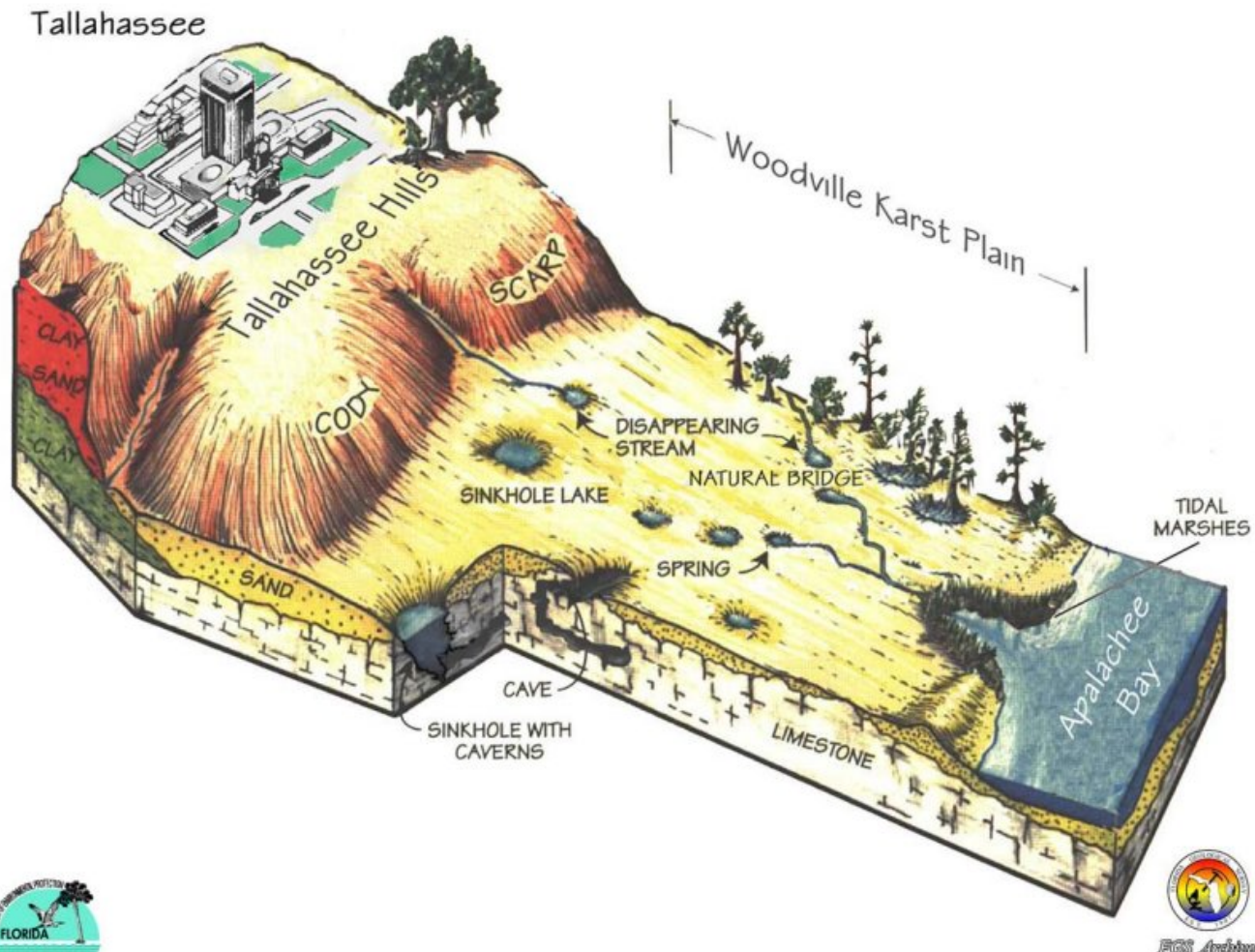
The Nitrate in Wakulla Springs Watershed

Levels currently over 0.6 mg/l, at levels above 0.35 mg/l nitrate contributes to excessive aquatic plant and algae growth:

1. Lowers quality of natural habitat.
2. Lowers available oxygen levels for fish and other aquatic life.
3. Lowers recreational value.
4. Wakulla Springs State Parks spends thousands of dollars every year to treat the swimming area in the spring for the hydrilla.



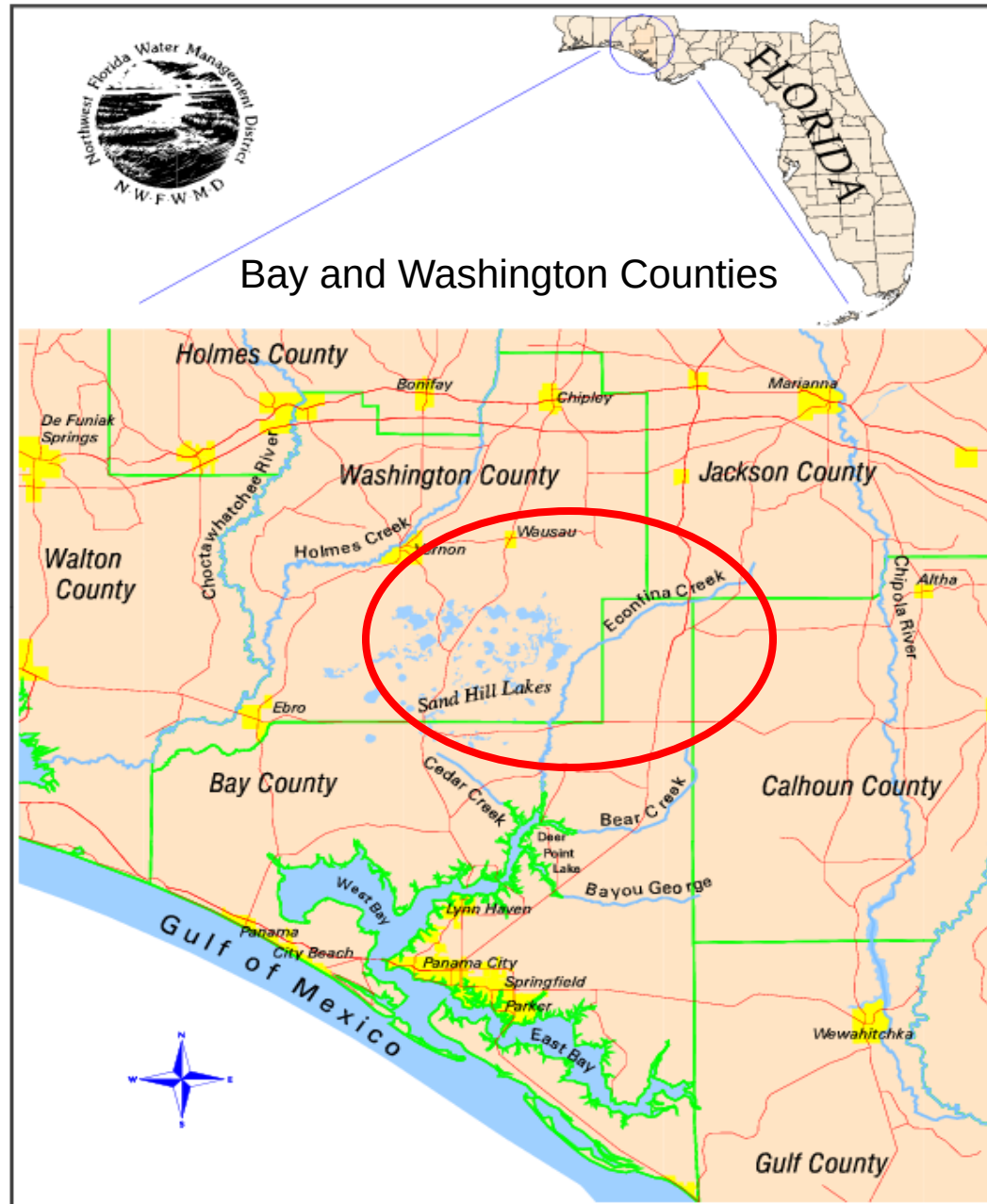
Woodville Karst Plain Cross Section



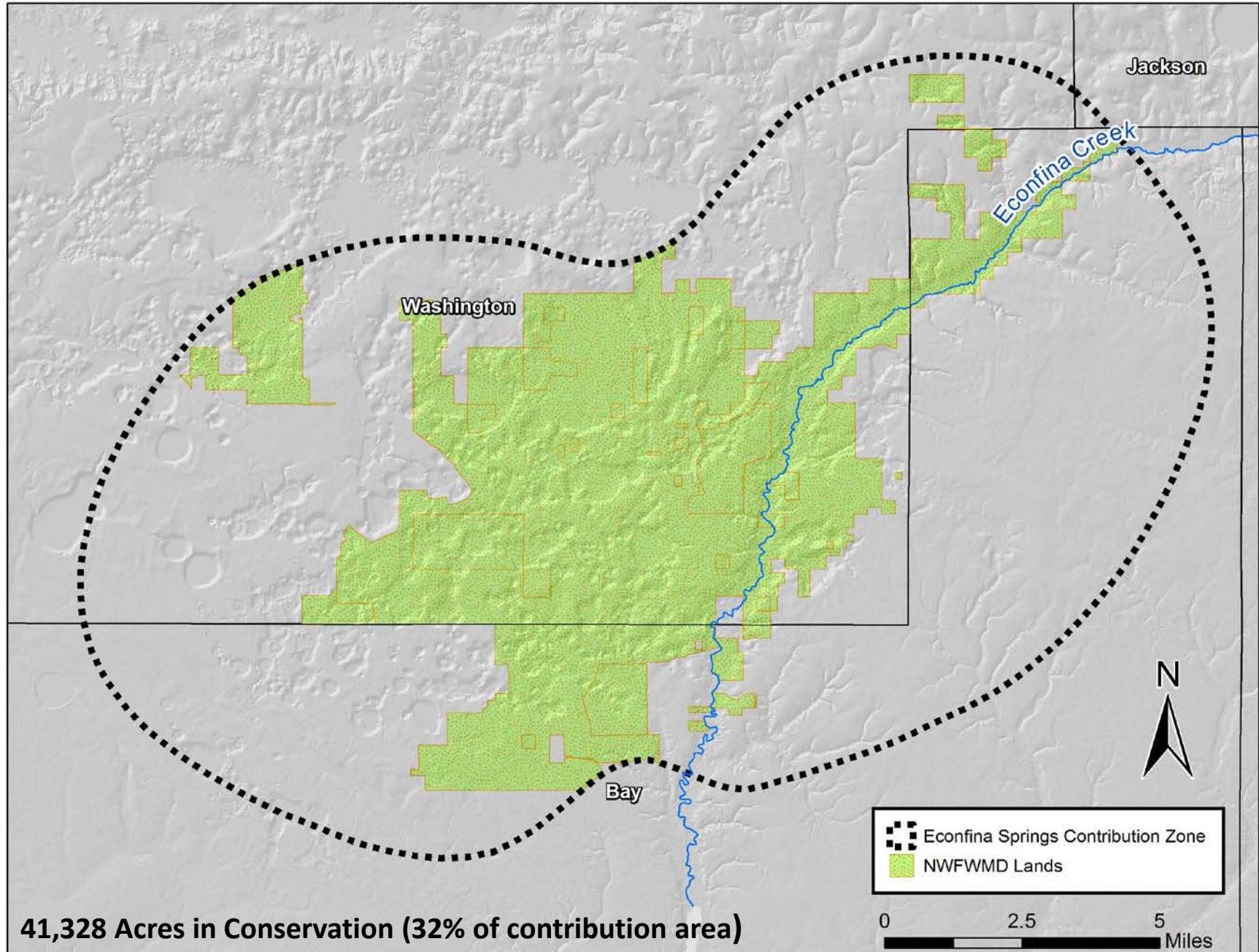
Econfina Creek Springs



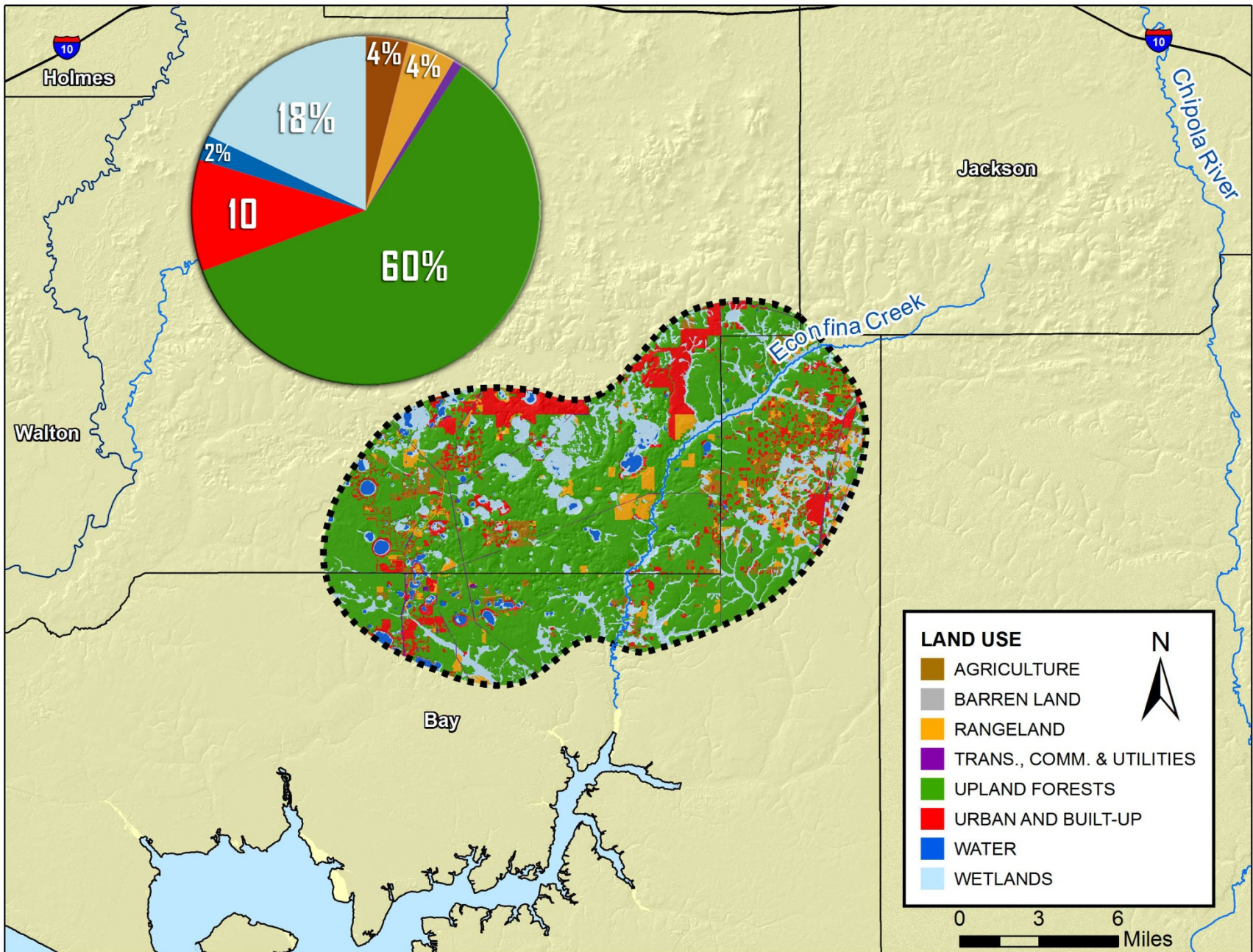
Econfina Creek Watershed Area



Econfina Watershed Conservation Lands



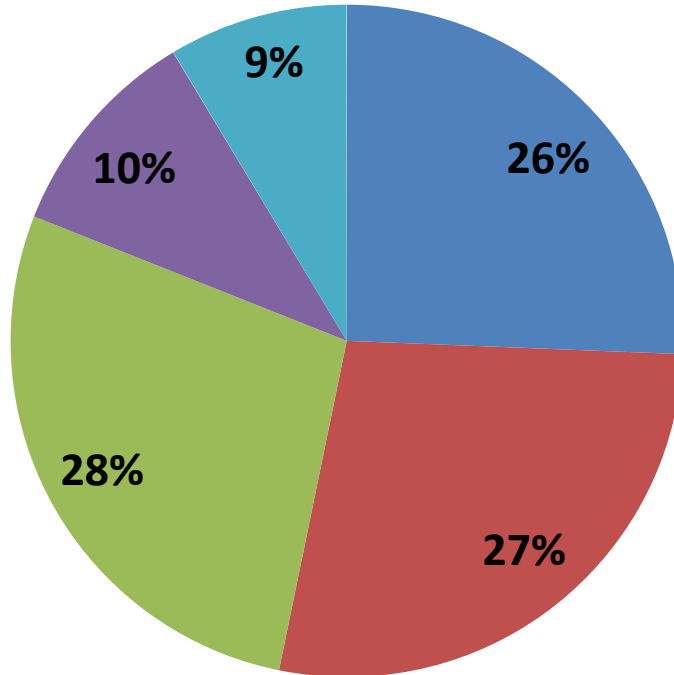
Econfina Creek Springs Complex Groundwater Contribution Area





Washington County Water Use in 2010

4.06 MGD



- Agriculture (1 mgd)
- Domestic Self-Supply (1.1 mgd)
- Public Supply (1.1 mgd)
- Commercial / Industrial (0.4 mgd)
- Recreation Irrigation (0.4 mgd)

2010 Permitted Use = 4.8 MGD

Econfina Springs Discharge (2003-2004)

Gainer Spring Group: 165 cfs (107 mgd)

Glowing Spring: 34 cfs (22 mgd)

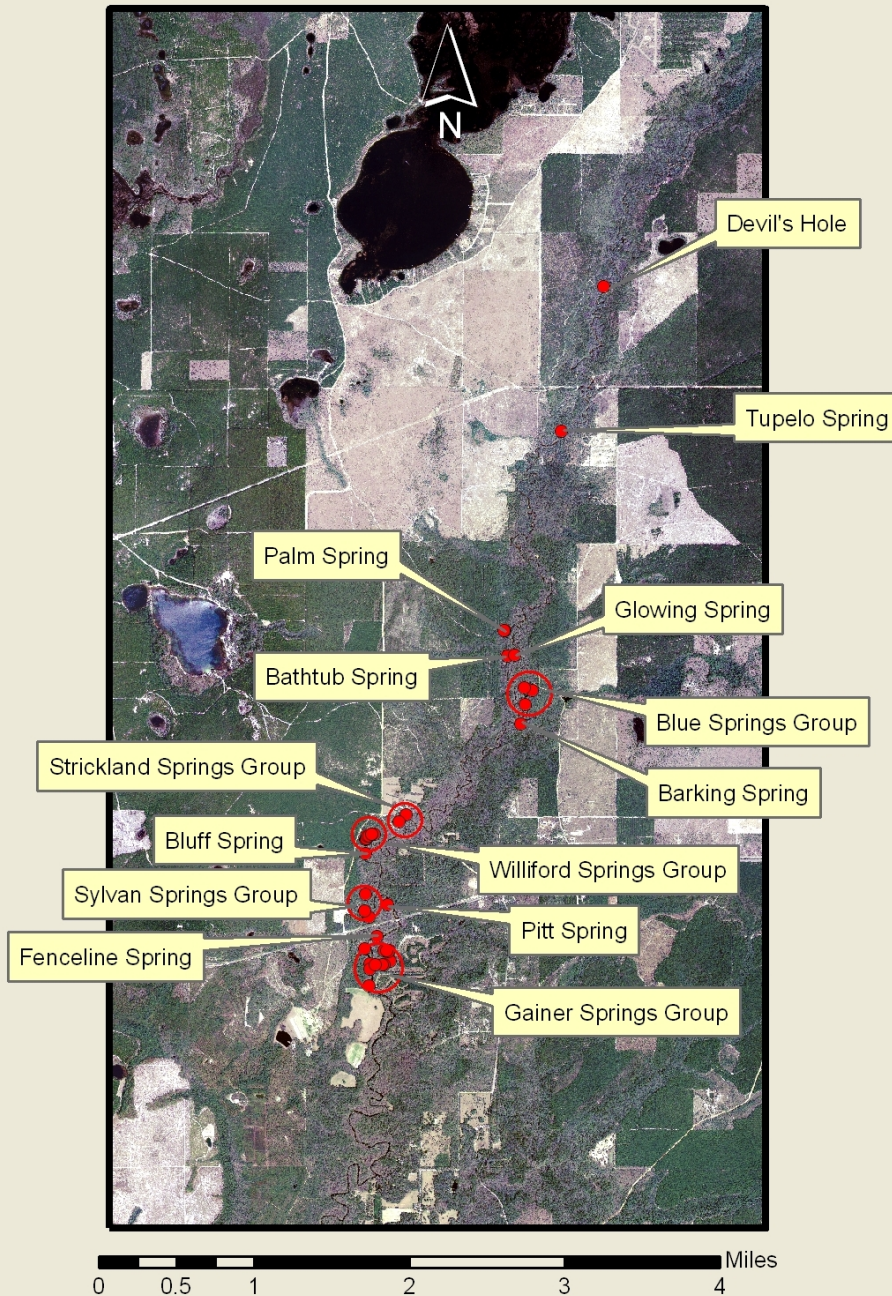
Devils Hole: 32 cfs (21 mgd)

Willford Spring: 29 cfs (19 mgd)

Sylvan Spring: 17 cfs (11 mgd)

**Bluff, Fenceline,
Barking, Bathtub,
Strickland, Pitt,
Blue, Tupelo,
Palm Springs: 1 to 10 cfs (0.6 -6.5 mgd)**

Mean Econfina Creek: 538 cfs (348 mgd)

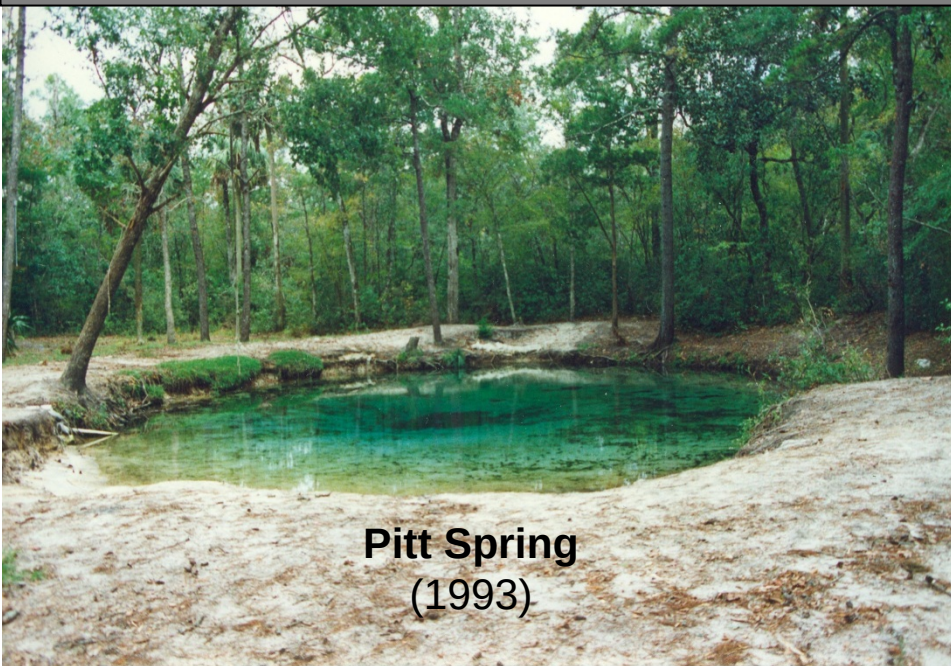




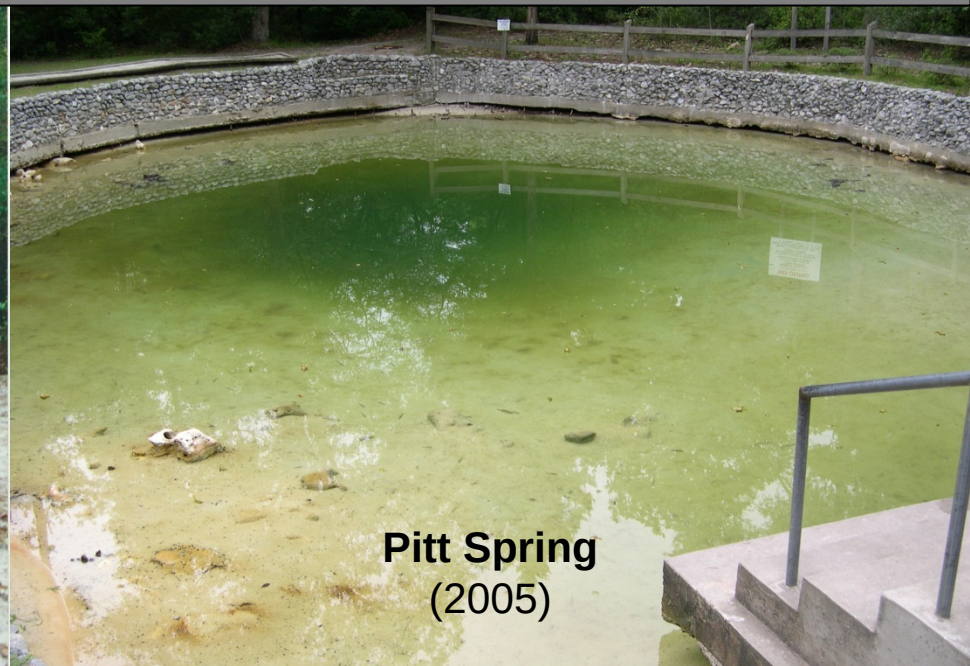
**Groundcover Habitat Restoration is
Management Priority to Maximize Recharge**

Econfina Recreational and Restoration Challenges





Pitt Spring
(1993)



Pitt Spring
(2005)

Econfina Springs Complex
Restoration & Protection
Challenges and Successes

Public Access & Recreation Impacts
(Econfina Creek – Class I Waterbody)

Spring restored, erosion and stormwater
runoff problems fixed



Pitt Spring
(2013)



Thank You

**Northwest Florida Water Management District
(850) 539-5999**