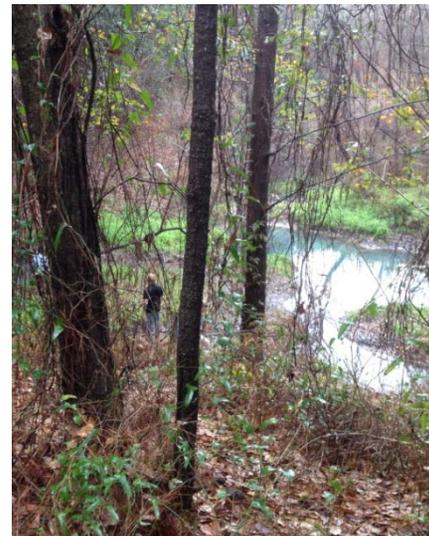




Ichetucknee Springshed Water Quality Improvement Project

St. Margarets Wastewater Treatment Facility Treatment Wetlands
Lake City, Florida



Cooperative Partnership

- The Ichetucknee Springshed Water Quality Improvement Project is funded through a cooperative partnership between Lake City, Columbia County, Suwannee River Water Management District (SRWMD), and the Florida Department of Environmental Protection (FDEP)
- 2013 Legislative Funded Springs Project

Partner	Funding Amount
FDEP	\$3,900,00
SRWMD	\$400,000
City of Lake City	\$200,000
Columbia County	\$100,000

- This Project helps to:
 - Reduce nutrient load to the springshed and associated watershed
 - Decrease undesirable vegetation and increase water clarity
 - Provide groundwater recharge

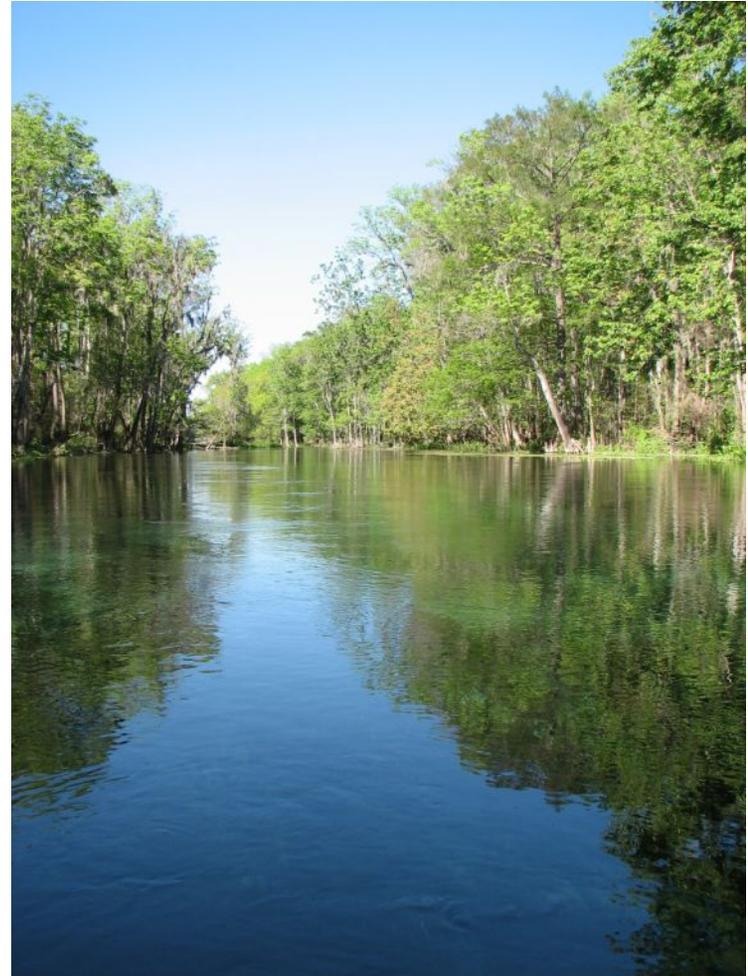


Project Location



Helping our Springs and Rivers

- Existing Wastewater Treatment Facility meets the regulations and criteria for wastewater treatment as described in its permit from FDEP
- Due to the unique hydrogeology of the area, additional measures can be taken to help improve and protect water quality in the springshed



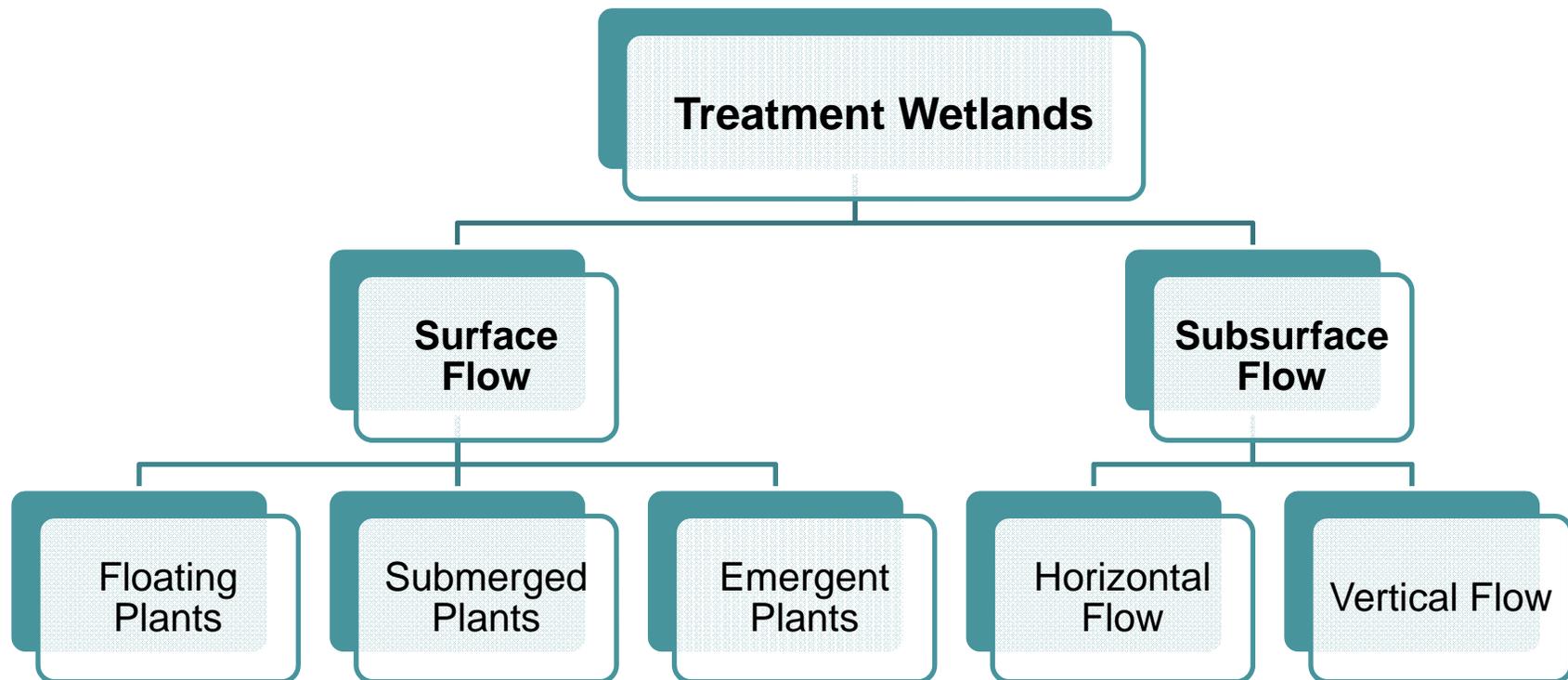
Why Treatment Wetlands?

- **Additional** nutrient (nitrogen and phosphorus) removal at an efficient cost by using natural processes
- **Reuse** reclaimed water for aquifer recharge while creating wetland habitat
- **Minimize** nutrient inputs to groundwater and connected springs; protecting groundwater and springs water quality



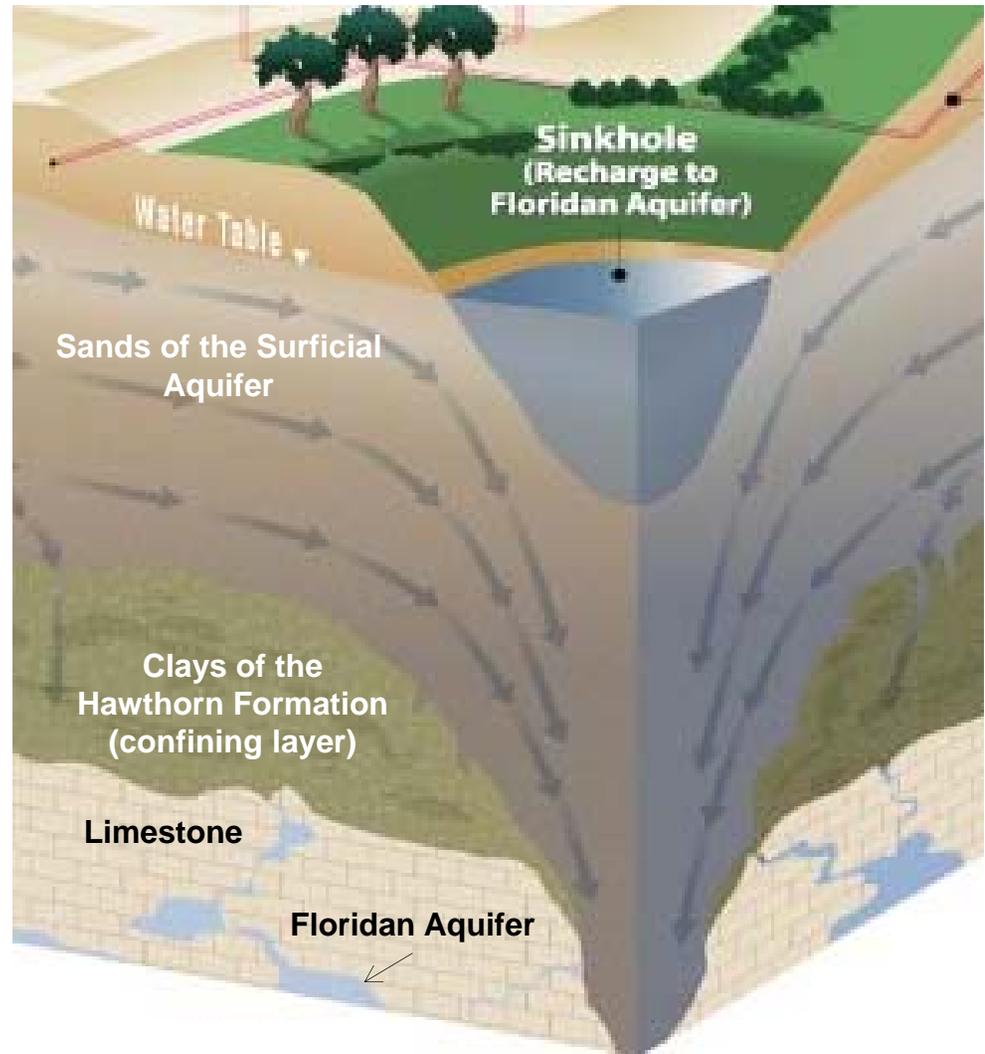
What are Treatment Wetlands?

- A treatment wetland is a vegetated, engineered system designed to filter and treat pollutants in water
- Technology has been used in North America since the 1970s

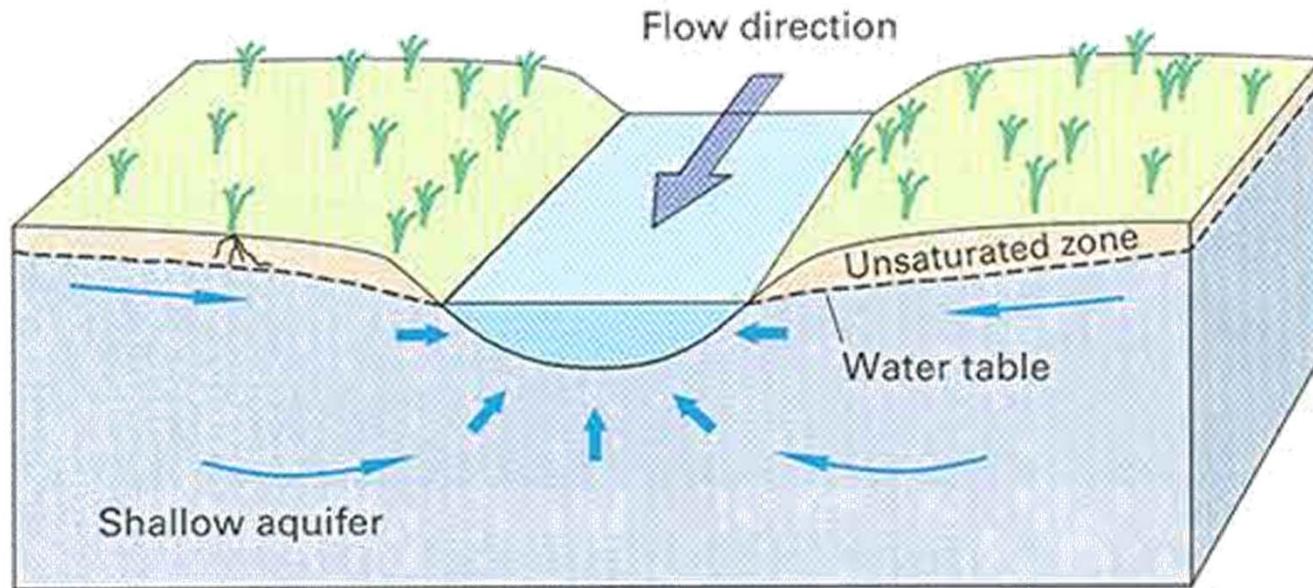


WWTF Topography and Geology

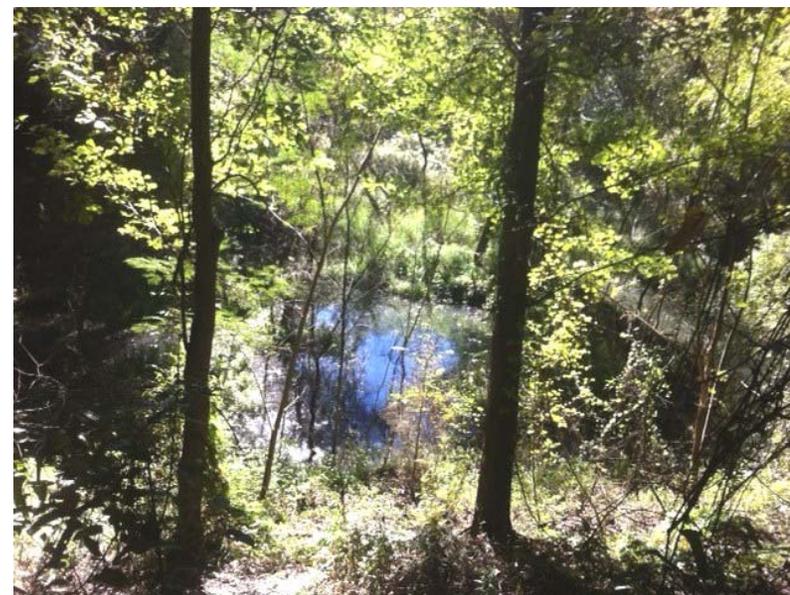
- Naturally occurring clay layer under the majority of the site, that keeps water from filtering into the Floridan aquifer at most locations



Groundwater and Surface Water Interactions

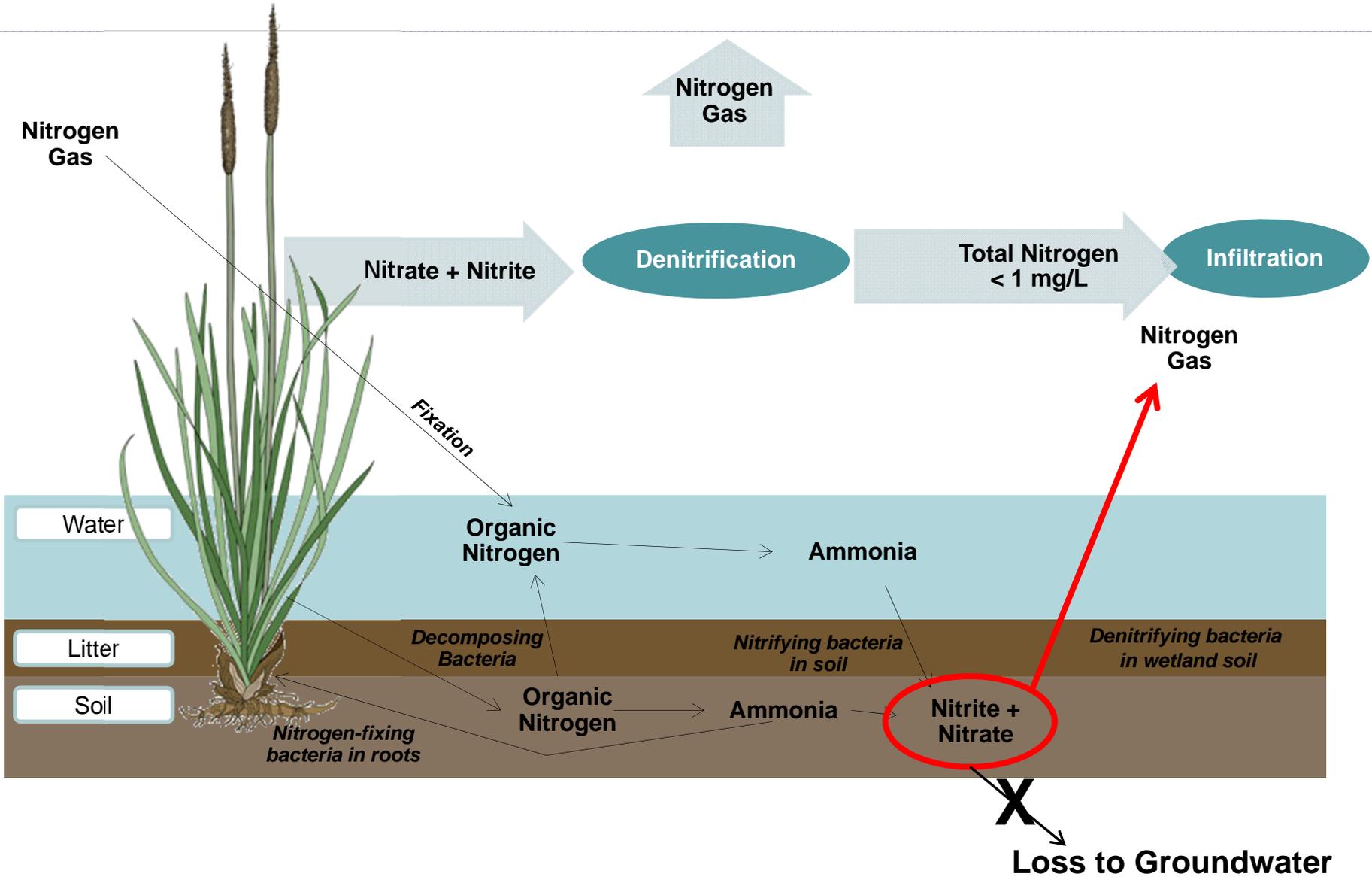


Relic Sinks at the WWTF



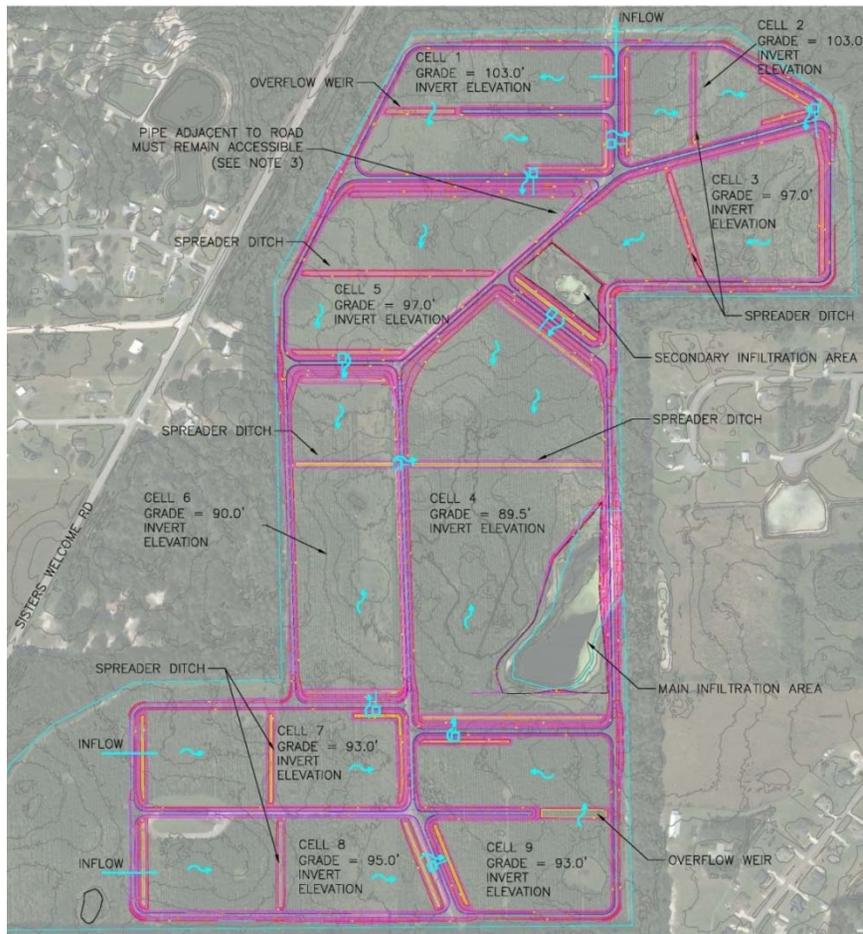
Relic Sink 2

Wetland Nitrogen Processing



Conceptual Design: Spray Field 1

Surface Flow Treatment Wetland



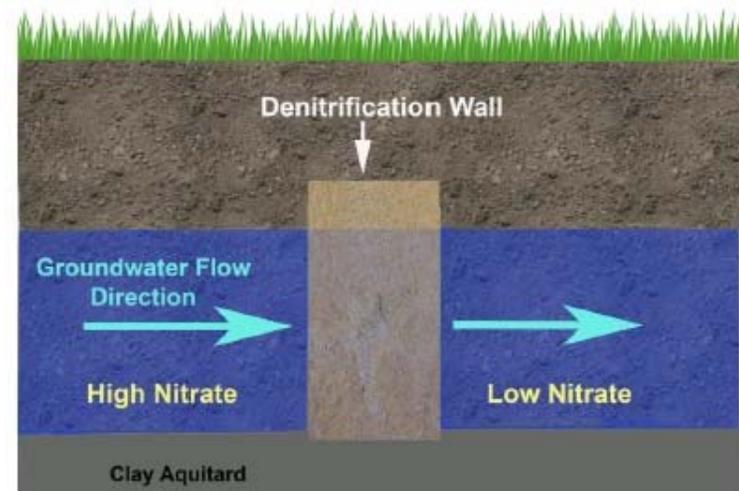
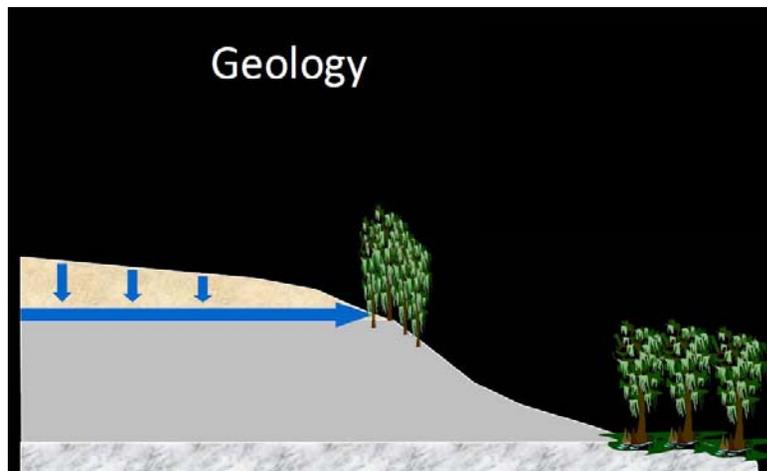
- Multi-cellular treatment wetland design
- Remove pine and replace with herbaceous wetland vegetation



Green Cay Wetland, Palm Beach County

Conceptual Design: Spray Field 2

Subsurface Horizontal Flow Wet Prairie Treatment Wetland, with Denitrification Bioreactor Walls



- Treats water before it reaches the relic sinks, ensuring water that enters the Floridan aquifer meets water quality standards for rivers and springs

Conceptual Design: Spray Field 2

Subsurface Horizontal Flow Wet Prairie Treatment Wetland, with Denitrification Bioreactor Walls



- Keep existing spray field system
- Remove pine and replace with herbaceous wet prairie wetland vegetation



Wet prairie community at Payne's Prairie

Water Quality Goals

	WWTF Effluent	Outflow Goal
Total Nitrogen (mg/L)	7.91	1.0
Nitrate (mg/L)	2.08	0.35

- Potential reduction in Total Nitrogen of 87%
- Potential reduction in Nitrate of 83%
- Increase WWTF discharge capabilities to allow of aquifer recharge



Questions?

