

Paynes Prairie Sheetflow Restoration

August 21, 2013



GRU[™]
More than Energy

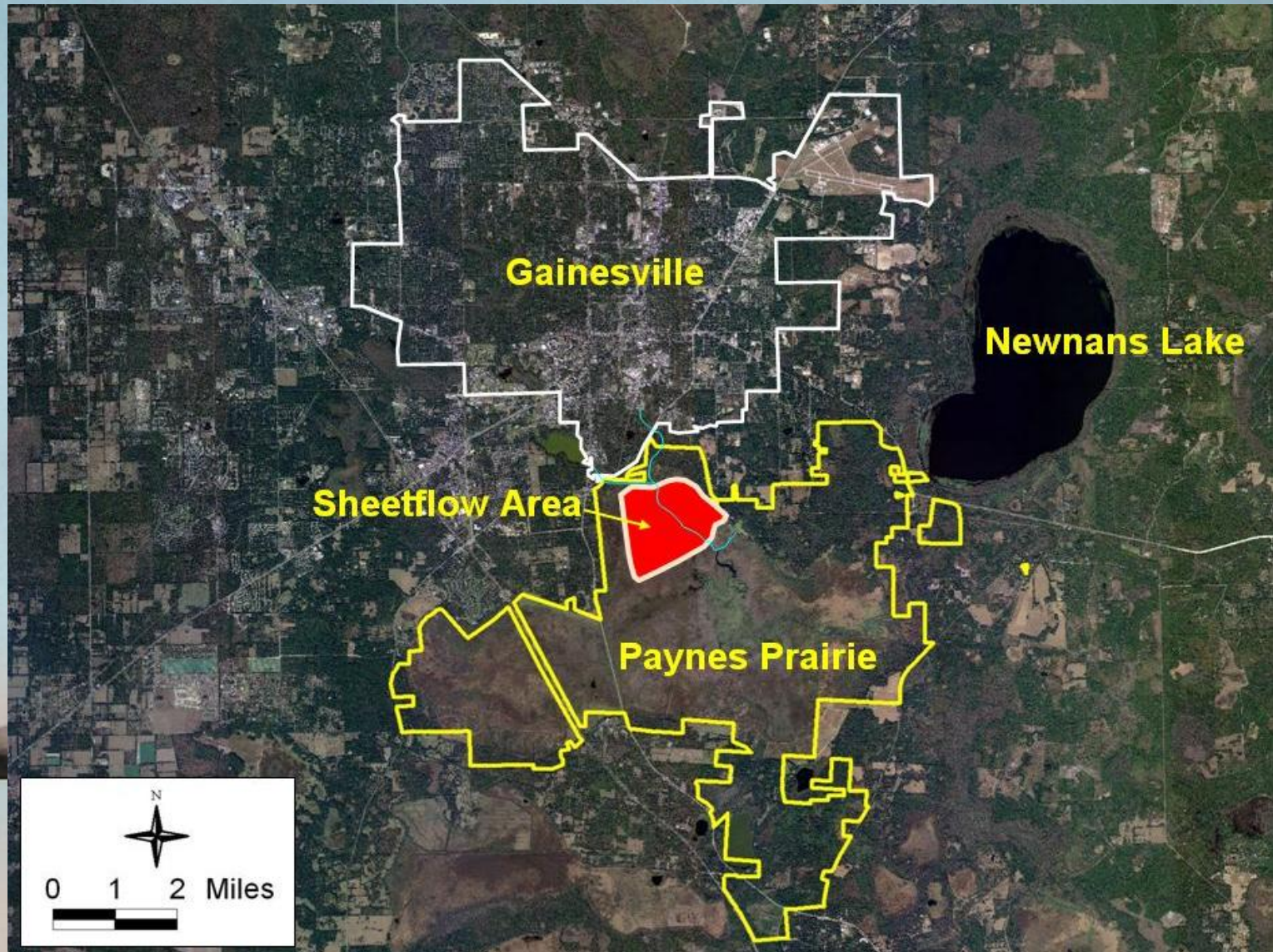
CITY OF
GAINEVILLE
every path starts with passion
FLORIDA

WS
Wharton-Smith, Inc.
CONSTRUCTION GROUP

Presentation Outline

- Project Background and Design Concepts
- Park Facilities
- Project Partnerships
- Construction Manager at Risk
- LEED Project Site
- Construction Challenges
- Questions?

Project Location



Historical Impacts



- **1800s to present:** Urbanization of Gainesville
 - Stormwater runoff
 - Trash & sediment
 - WW Effluent
 - Septic Tanks
- **1930s:** Sweetwater Branch channeled directly to Alachua Sink
 - 1,300 acres of wetlands impacted.
 - Direct flow path from Gainesville to Alachua Sink
- **1930s:** Portion of Prairie Creek flow diverted away from Paynes Prairie

**1. Main Street WRF
Enhancements**

**2. Enhancement
Wetland**

3. Sheetflow Distribution

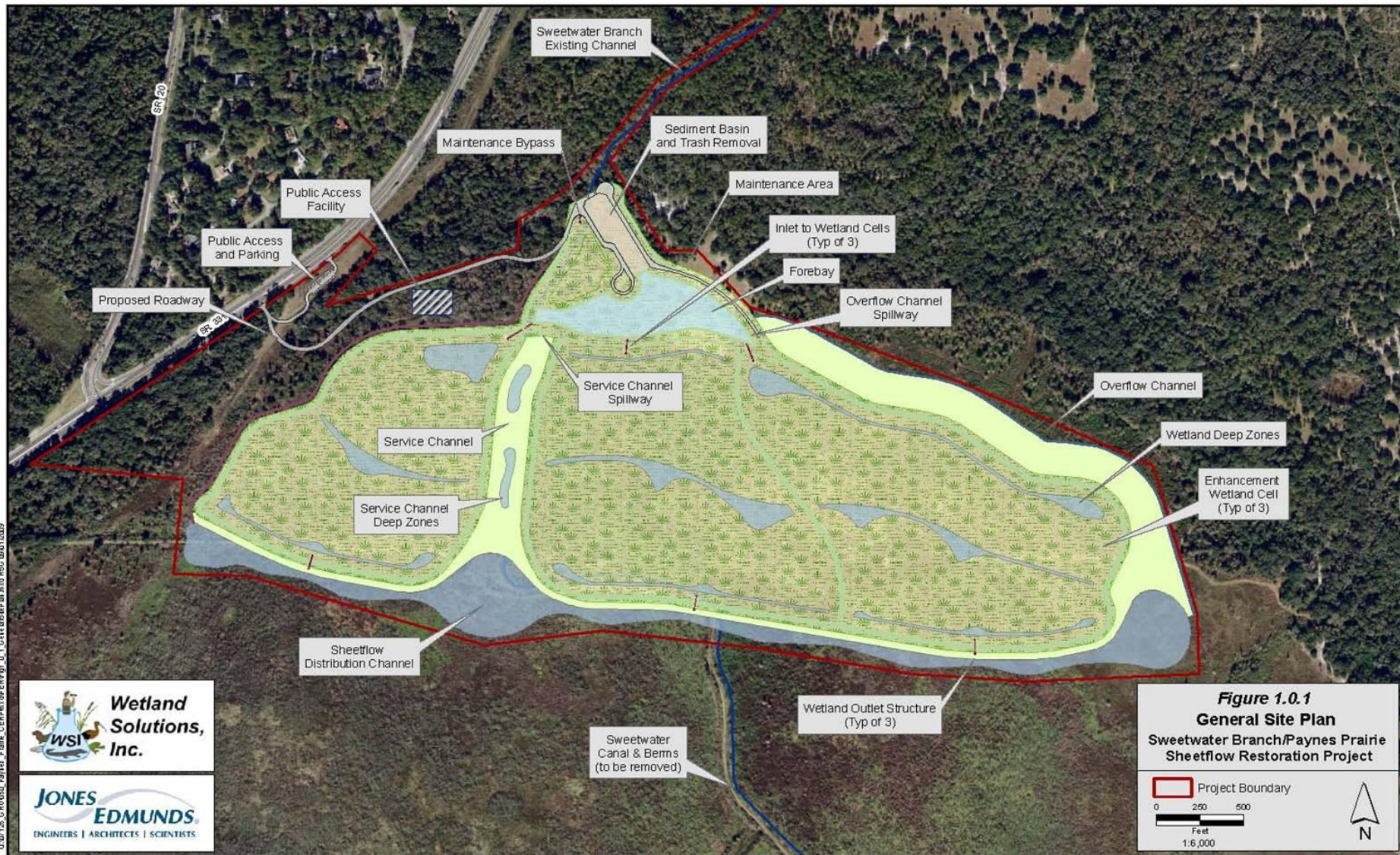
Sheetflow Restoration Area

Sweetwater Branch

4. Backfill Existing Canal

Alachua Sink





Environmental Benefits

Water Quality Benefits

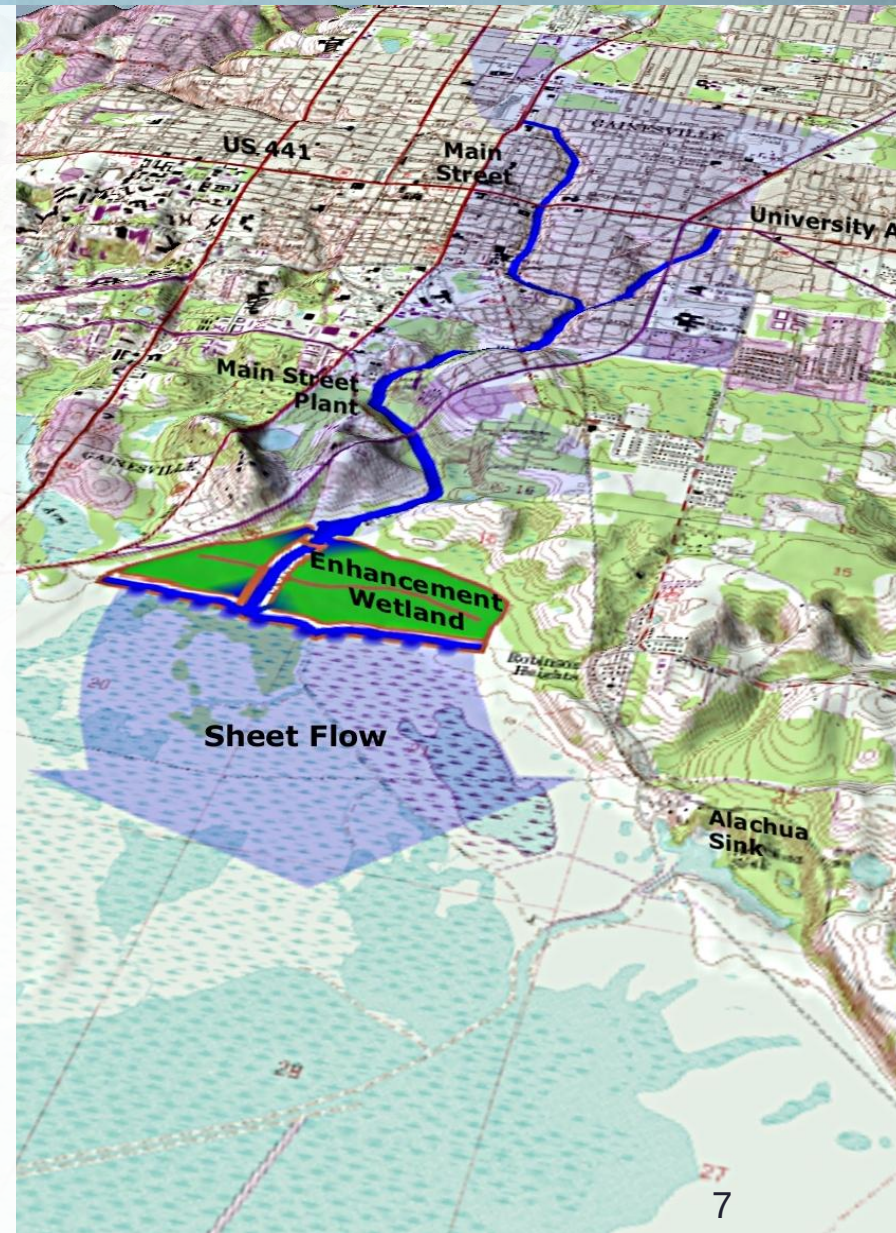
- **Exceeds total N TMDL**
- **Achieves background total N and P on Prairie**
- **Removes sediment and trash**

Hydrologic Restoration Benefits

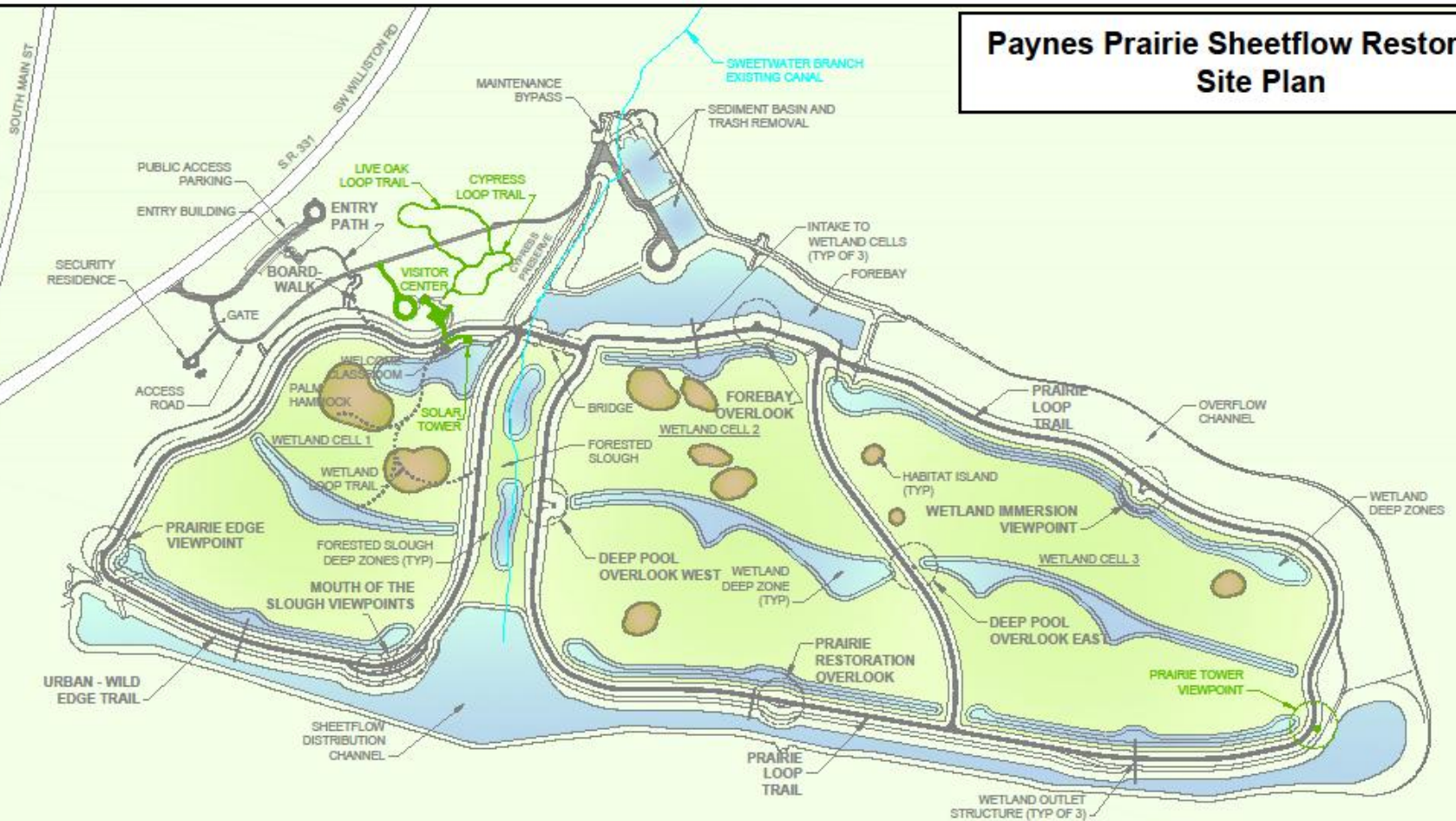
- **Restores Sweetwater Branch sheetflow to about 1,300 acres**
- **Removes 2 miles of Sweetwater Branch Canal**

Conservation

- **Adds 264 acres to the State Park**



Paynes Prairie Sheetflow Restoration Site Plan

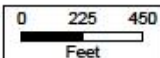


Current Construction Contract

- | | | | | | |
|--|-----------------------------------|--|---------------|--|----------------------|
| | Access Road/Parking | | Berm Trails | | Viewpoints/Overlooks |
| | Entry Building | | Nature Trails | | Shallow Water |
| | Security Residence | | Boardwalk | | Deep Water |
| | Sediment & Trash Removal Facility | | Bridge | | Habitat Island |

Future Park Improvements

- Visitor Center Complex
- Solar Viewing Tower
- Prairie Tower Viewpoint



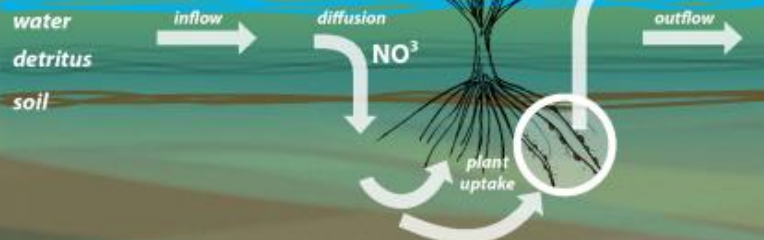


a natural way to treat water

How do natural wetlands treat water?

You are now standing in the Enhancement Wetland—an emergent marsh that is actively removing nutrients and pollutants. The plants of emergent marshes are particularly adept at removing nitrate-nitrogen, a nutrient that flows from wastewater treatment operations, septic tanks, and fertilizer.

Marsh plants support bacteria necessary for “denitrification” or the conversion of nitrate-nitrogen to nitrogen gas—a harmless gas that escapes from the wetland to the atmosphere.



Why are enhancement wetlands so cost-effective at cleaning water and improving water quality?

Unlike conventional wastewater treatment technologies, enhancement wetlands use free sunlight and water to power treatment. Incoming solar radiation and ample water combine to create high plant productivity (organic carbon). There is no costly fossil fuel energy or chemical inputs required!

life with wet feet

Alligators have acquired many adaptations that allow them to live and feed in the water... and to be the dominant predator in their environment.

Alligators can hold their breath under water for almost an hour! When it is cold and they are inactive, they can hold their breath even longer.

How might this help them capture their prey?

Alligators' eyes, ears, and nostrils are on the top of their head. Their eyes have a transparent third eyelid.

How are these adaptations useful under water?

What other adaptations do alligators have to help them survive in these wetlands?

Birds that live and feed in wetlands have acquired their own unique adaptations.



Wading birds

The American white ibis uses its long beak to probe for crawdads and other creatures in shallow water. Egrets and herons wait patiently in shallow water for fish and amphibians and then grab their prey using their long necks and sharp pointed bills.

photography by Deborah Warden

What types of wetland adaptations can you see in birds' bodies and their behaviors?



Birds of prey

Ospreys and bald eagles have keen eyes and sharp talons, allowing them to spot fish from high in the air and then swoop down and grab their prey with their talons.



Swimming birds

Birds such as anhingas and cormorants swim underwater and stab or grab fish with their bill. Like alligators, they have a third eyelid that opens and closes horizontally and helps them see underwater.



photography by Deborah Warden

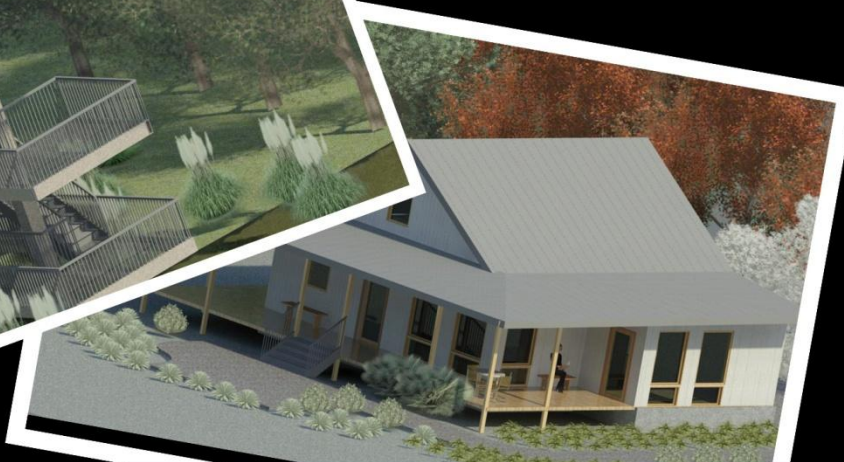
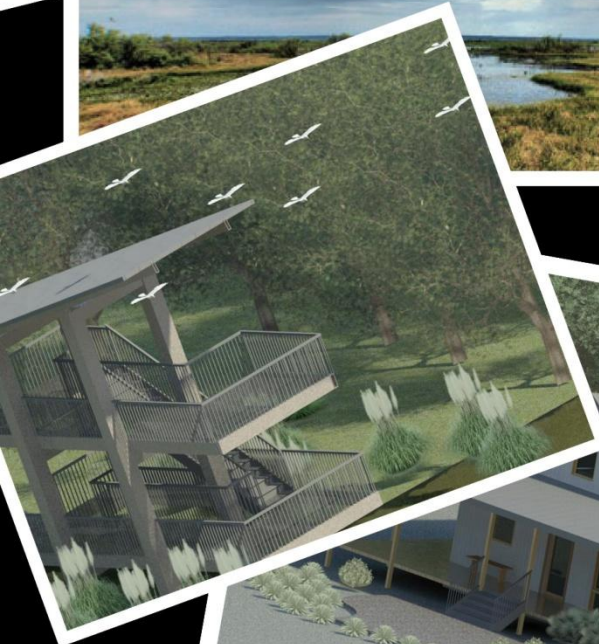
Paynes Prairie Sheetflow Project Partners

- FDEP
- St. Johns River Water Management District
- Florida Department of Transportation
- US EPA
- Alachua County
- Florida Fish and Wildlife Conservation Commission





Construction of the Sweetwater Branch / Paynes Prairie Sheetflow Restoration Project



Wharton-Smith, Inc.
CONSTRUCTION GROUP

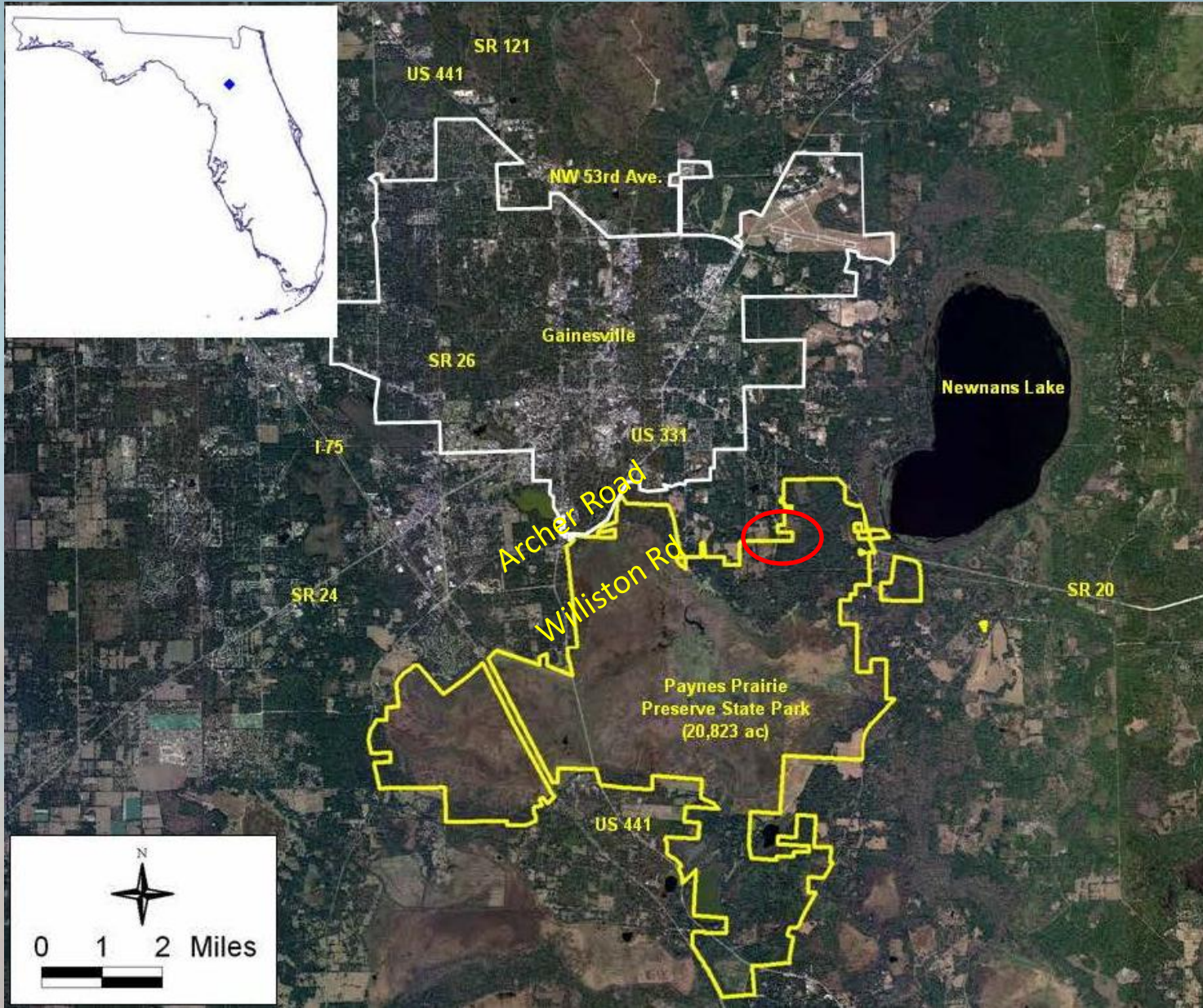
Introduction: Wharton-Smith, Inc.

- Established in 1984 in Central Florida
- Offices throughout the Southeast
 - Sanford, Tampa, Palm City, Miami, Tallahassee, Atlanta, Charlotte, Baton Rouge
- 430+ Employees
- Construction Management & General Construction Firm
- Environmental, Commercial, Industrial, Entertainment, International

Project Team

- **Owner: City of Gainesville and Gainesville Regional Utilities (GRU)**
- **Construction Manager: Wharton-Smith, Inc.**
- **Design Team**
 - **Engineer: Jones Edmunds**
 - **Architect: Jones and Jones**
 - **LEED Consultant: Green Building Services**
 - **Wetlands Consultant: Wetland Solutions**
 - **MEP Engineer: Affiliated Engineers**

Project Location



Project Location





Sweetwater Branch/Paynes Prairie Sheet Flow Restoration

Image # 121001 0016
Aero Date : 10.01.2012
Photo 888.542.0231



Sweetwater Branch/Paynes Prairie Sheet Flow Restoration

Image # 121219 2035
Aero Date : 12.19.2012
Photo 888.542.0231



Sweetwater Branch/Paynes Prairie Sheet Flow Restoration

Image # 130220 2031
Aero Date : 02.20.2013
Photo 888.542.0231









Sweetwater Branch/Paynes Prairie
Sheet Flow Restoration

Image # 130805 0042
Aero Date : 08.05.2013
Photo 888.542.0231





















Questions?

