



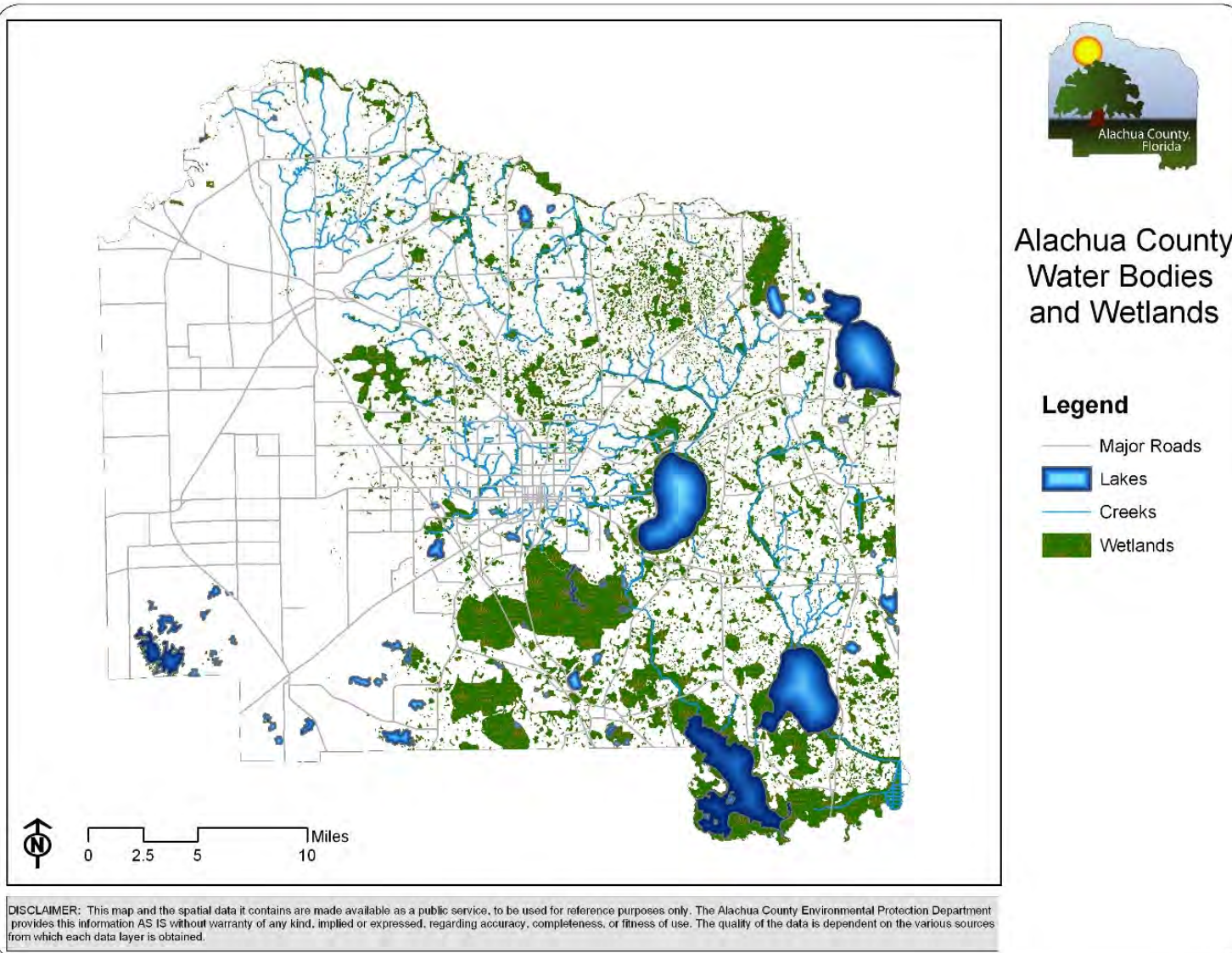
Alachua County's New Stormwater Treatment Code

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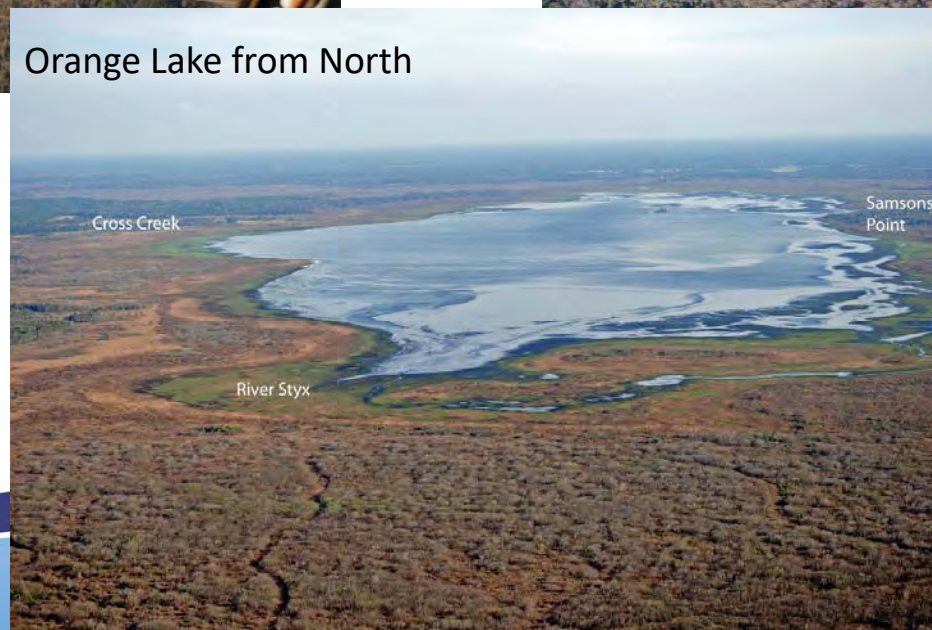
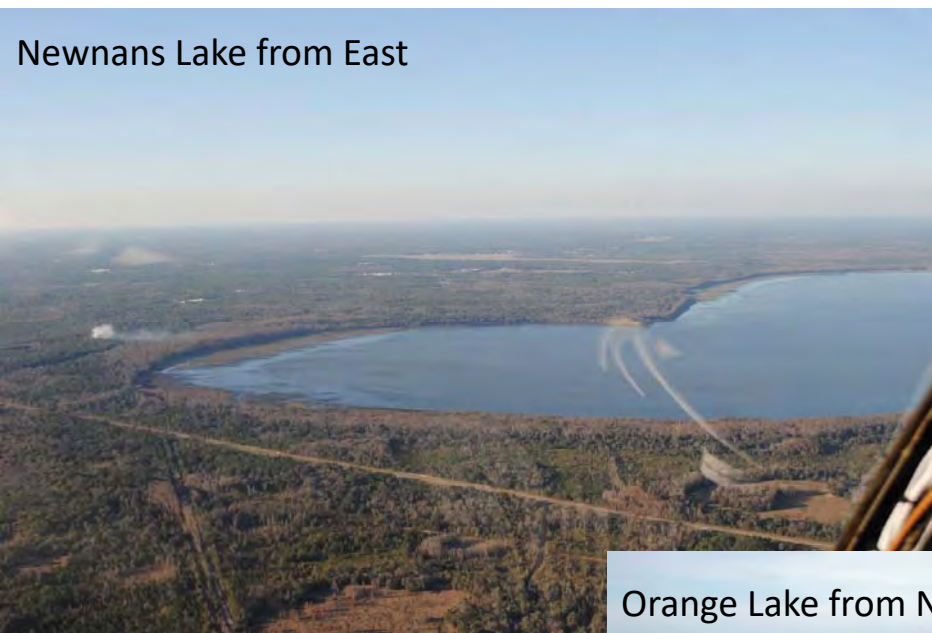
Goals of the New Stormwater Treatment Code

- The purpose of the Stormwater Treatment Code is to not make existing water quality impairments worse and to prevent new ones.
 - Performance standards for surface discharges of stormwater runoff.
 - Volumetric treatment standard for infiltration of runoff in Sensitive Karst Area.
- Encourage and in some cases require the use of Low Impact Design (LID).



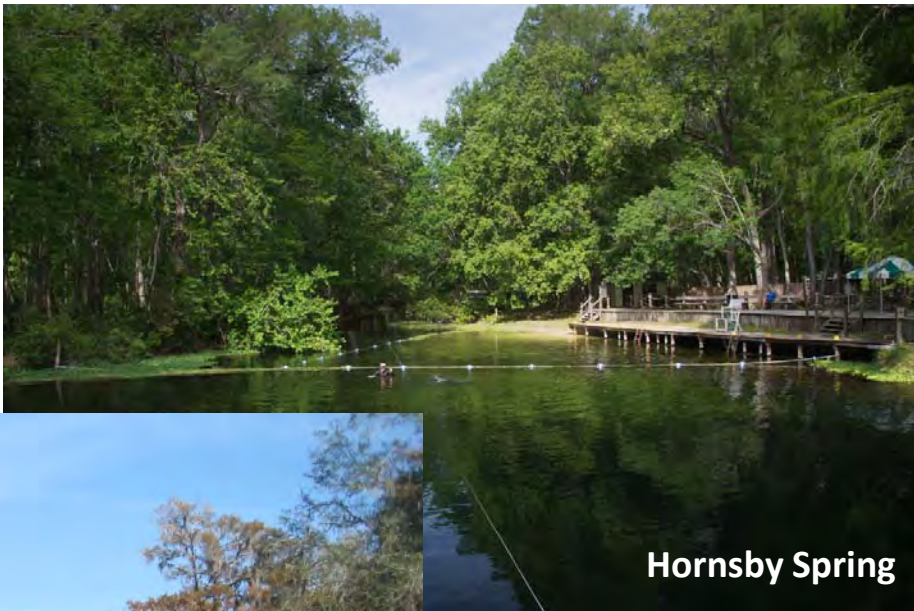


- The hydrology of Alachua County varies from east to west.
 - Open surface drainage in the east
 - Closed basin karst area in the west





Poe Spring

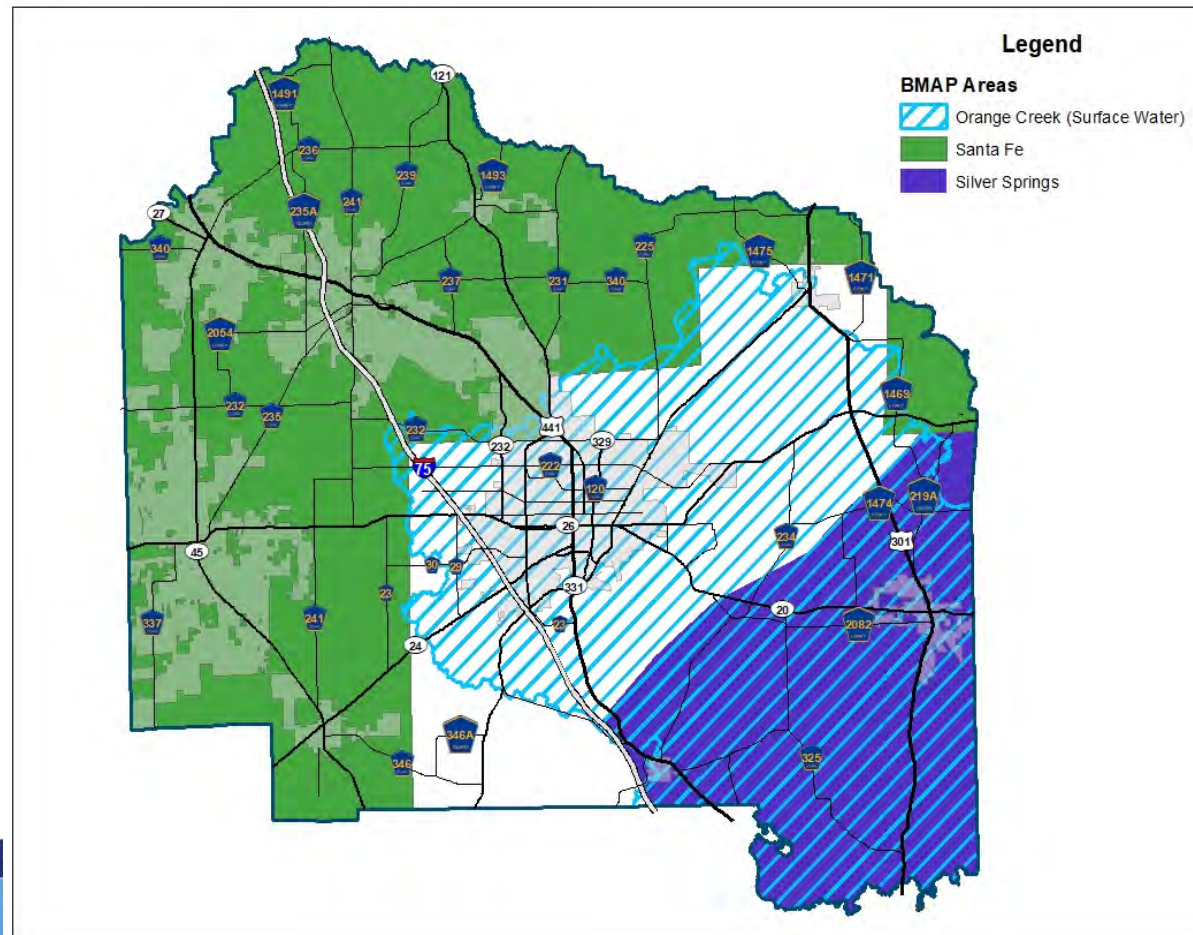


Hornsby Spring



Santa Fe River

Basin Management Action Plans (BMAPs) in Alachua County



Newnans Lake required TN reductions and credits (lbs-TN/yr) by jurisdiction

From: Orange Creek BMAP Amendment

Jurisdiction	Total Developed Land Use Reduction	First 5-Year 50 % Developed Land Use Reduction	Education Credit	Project Credits	Remaining Developed Land Use Reduction with a Target Date of 2023	Second 5-Year 50 % Developed Land Use Reduction	Total Septic System Reduction with a Target Date of 2028	Total Reduction to be Achieved with a Target Date of 2028*
Alachua County	4,155	2,078	299	65	1,714	2,077	1,448	5,239
FDOT, District 2	878	439	42	3,414	-3,017	439	0	0
Gainesville	4,094	2,047	294	1,034	719	2,047	113	2,879
Waldo	239	120	10	0	110	119	0	229
Total	9,366	4,684	645	4,513		4,682	1,561	8,347

Some LID Examples: Madera Subdivision

- Clustered design
- Retention of native vegetation and soils (site fingerprinting)
- Underground storage (exfiltration tank)
- Pervious pavers
- Narrow roads
- Florida Friendly Landscaping
- Maintained hydrologic regime
- On-site bioretention
- Educational signage
- Stem wall construction
- Energy efficient home design
- Floodplain protection



Some LID Examples: Bioretention

Green Street: NW 140th Street



SW Rec Center - UF Campus

Recessed Parking Lot Islands:
Campus USA HQ



Innovation Square Bioretention



Some LID Examples: Pervious Pavement

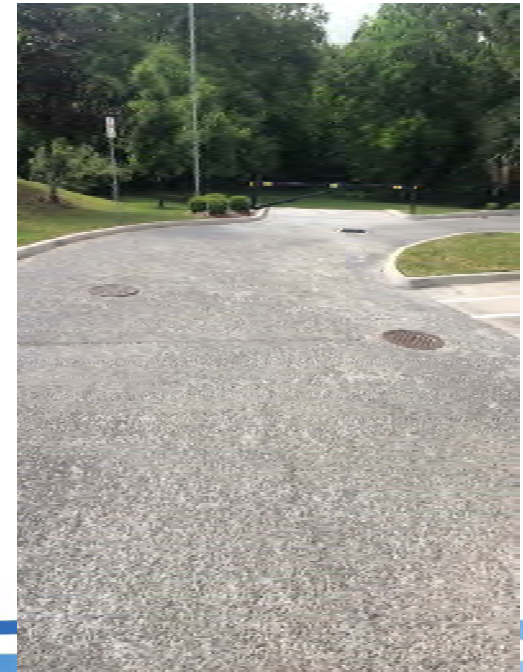
CVS: Archer Rd. And Tower Rd.



CVS: NW 16th Ave. and NW 13th St.



Savion Park Apts. SW 5th Ave.



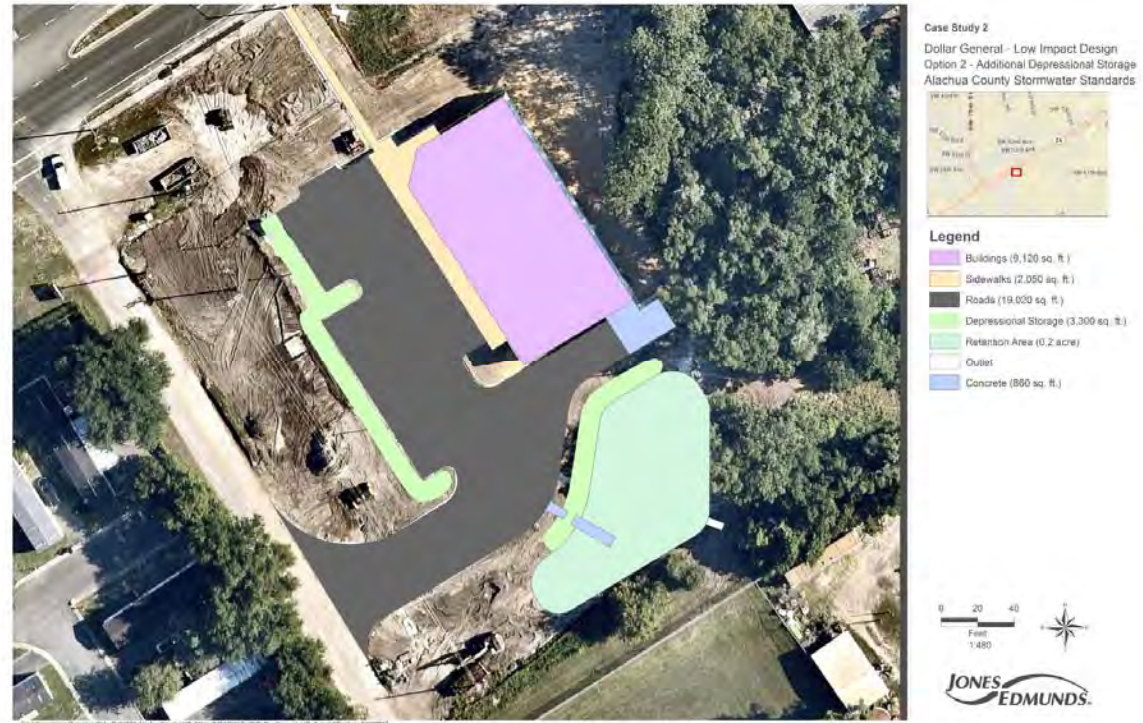
Some LID Examples: Green Roof

Rinker Hall/Perry
Construction Yard
on UF Campus



Case Studies

- Two rounds of case studies.
 - Second round was the result of a change in the stormwater treatment criteria.
- Helpful in addressing construction cost questions.
- Essentially paper retrofits of existing site designs.




OCTOBER 2018

ALACHUA COUNTY STORMWATER TREATMENT MANUAL


ALACHUA COUNTY STORMWATER TREATMENT MANUAL



Milestones in The Code Adoption

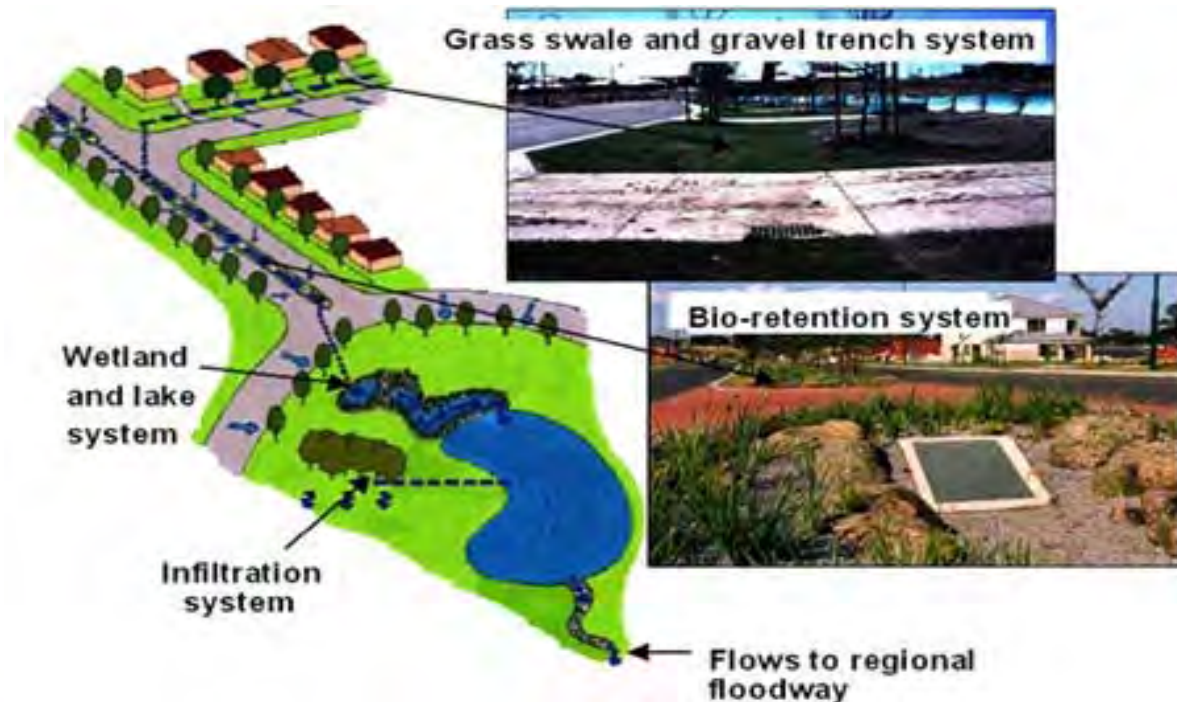
- 2016 – Board directs staff to begin work on Stormwater Treatment Code
 - November 2017 – First draft of code presented to Commission with interim karst measures.
 - January 2018 – Shane starts working for Alachua County
 - August 2018 – Final set of case studies presented to Board
 - October 2018 – Code adopted by Board of County Commissioners
 - January 2019 – Code effective date
 - April 2019 – Updates to definitions and exemptions
- 

Countywide Application

- Alachua County is one of 20 Charter Counties in Florida. Charter was adopted in 1987.
 - In November 2000, a majority of voters approved Amendment 1 which gave the County authority to establish countywide regulations for air and water pollution.
 - Projects within incorporated municipalities self-certify compliance rather than go through a project review.
- 

Code Requirements for Discharges to Surface Water

- **70%/80% Total Nitrogen (TN) and Total Phosphorus (TP) reduction of post-development load prior to discharge from the site.**
- **For direct discharges to Outstanding Florida Waters 95% reduction of post-development load is required.**
- Reductions may be achieved using a treatment train incorporating Low Impact Design (LID) techniques.



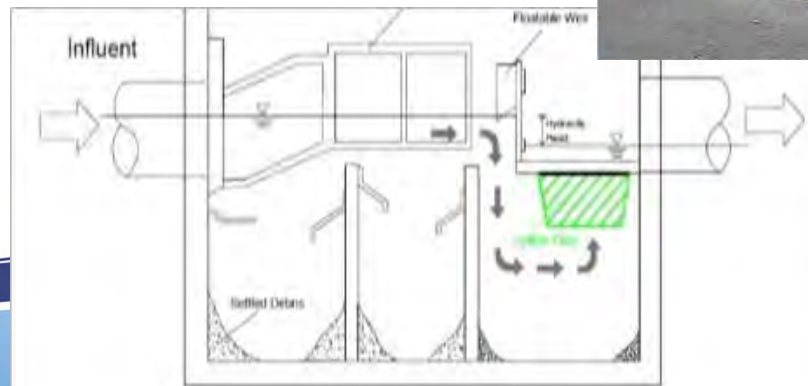
Requirement for Impaired Surface Waters

- For projects in watersheds of surfaces waters designated by State as impaired for nutrients.
- **Reduce the post- development average annual TN and TN load to at least 10 percent less than the pre-development.**
 - Unless the basic 70/80% (or 95% OFW requirement) would provide a greater reduction.



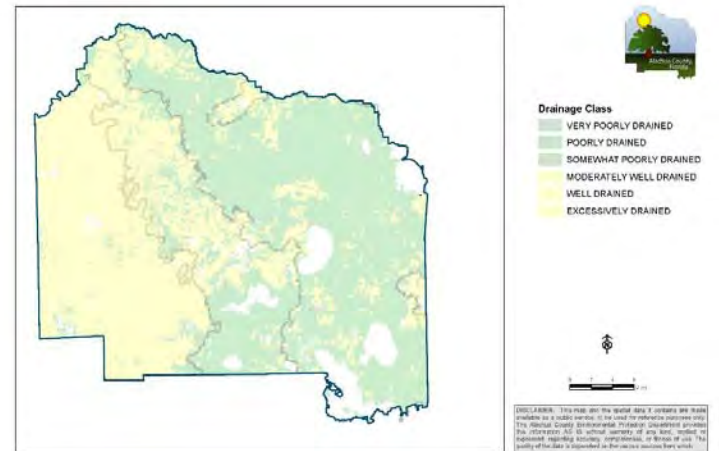
Interim Sensitive Karst Area Criteria

- **Treat 1" of runoff from the project area using LID techniques in addition to the retention basin(s).**
- The LID techniques can be storage (retention) or filtration (detention) practices.



moisture content.


- These soils are very aerobic and sandy and have low cation exchange capacity and moisture content.






Sensitive Karst Area

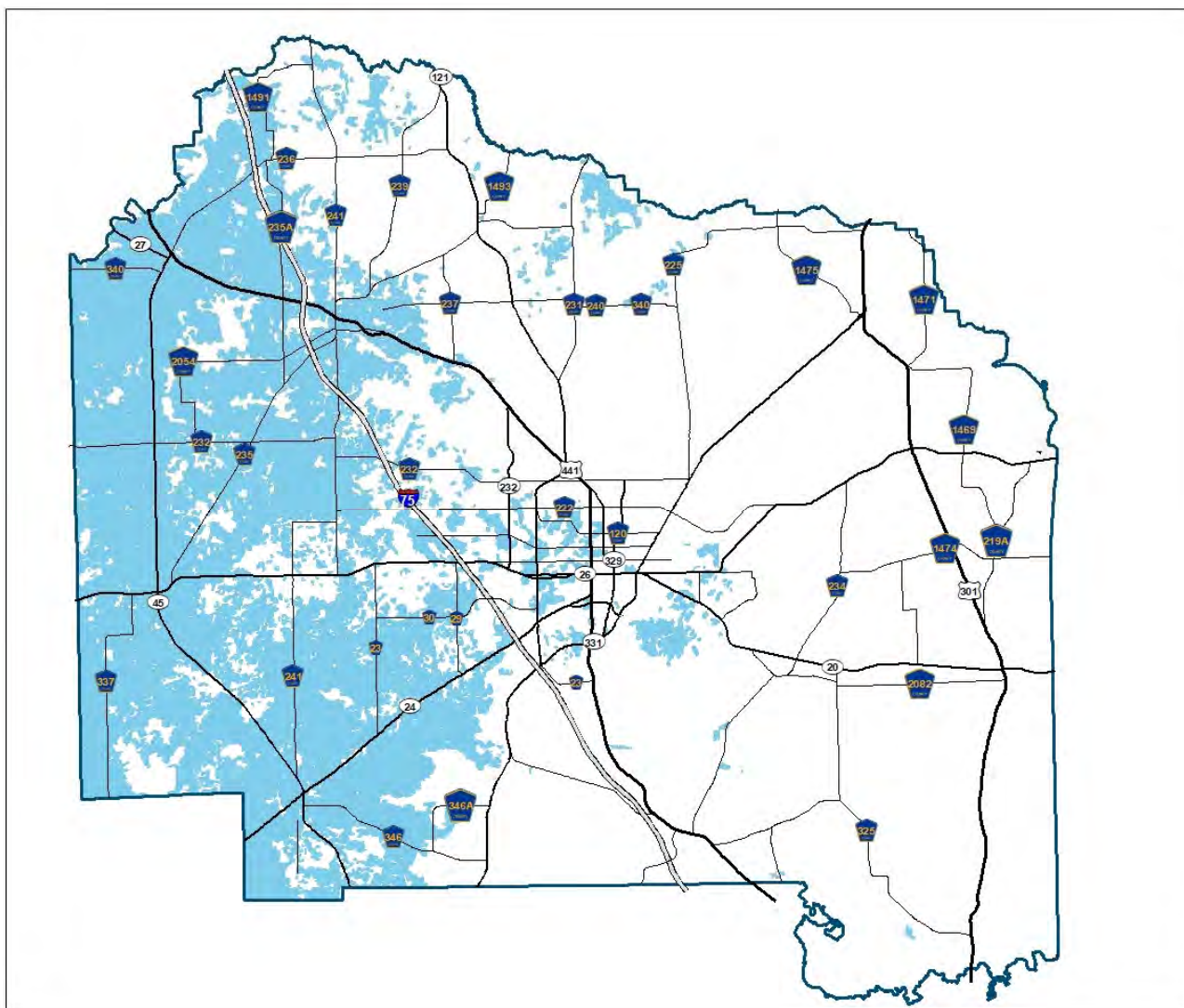
Legend

 Sensitive Karst Area



0 5 10
 Miles

DISCLAIMER: This map and the spatial data it contains are made available as a public service, to be used for reference purposes only. The Alachua County Environmental Protection Department provides this information AS IS without warranty of any kind, implied or expressed, regarding accuracy, completeness, or fitness of use. The quality of the data is dependent on the various sources from which



Issues in the Sensitive Karst Area

- The sandy soils in the SKA have low nitrogen removal potential and rapidly infiltrate runoff to the aquifer.
- Assimilation of nitrogen in retention ponds is low.
- After large storms, sinkhole formation in retention ponds is not unusual.




Interim SKA Criteria Benefits

- Runoff and pollutant load reduction from disconnecting impervious surfaces and from structural LIDs.
- Separates water quality treatment from flood control storage and distributes across the site using LIDs designed for treatment.
 - Better opportunity for assimilation of nitrogen by using LID.
 - Sinkhole formation has less impact on water quality treatment.



Why it is an Interim Criteria

- Originally the SKA criteria required a 70% post-development load reduction of TN infiltrated to groundwater.
 - Two issues were raised with a numeric reduction requirement:
 - Nitrogen load to groundwater also includes nitrogen leached during infiltration of rainfall and irrigation.
 - Uncertainty on how many stormwater best management practices can achieve that level of reduction.
- 

Future Sensitive Karst Area Criteria

- County has contracted with University of Florida to perform two studies.
 - Residential Nitrogen Leaching Assessment – Quantify the amount of nitrogen leached from lawns of various ages, soil types and management.
 - Low Impact Design Nutrient Removal Assessment – Study the treatment efficiency of various design configurations and engineered soils.
- Based on the results:
 - Implement a numeric TN reduction for stormwater infiltration to groundwater.
 - Overall project reduction criteria that includes nitrogen leached during rainfall and irrigation.



Recent Changes to Fertilizer Ordinance

- Signage provided by Alachua County required at retail locations
- These provisions go into effect 10/1/19:
 - Fertilizer with phosphorus is only allowed if a soil or tissue test verifies a need
 - Fertilizer with nitrogen is only allowed March, April, May, and June and nitrogen must be at least 50% slow release nitrogen
- Contact: Stacie Greco
Sgreco@alachuacounty.us



**THE APPLICATION OF LANDSCAPE
FERTILIZER CONTAINING NITROGEN AND/OR
PHOSPHORUS IS PROHIBITED DEC-FEB**
Ord No. 2018-24




New Florida Friendly Landscaping Ordinance


- Deed restrictions, covenants or local ordinances cannot prohibit implementation of FFL
 - Still need to follow HOA covenants for making changes
- Deed restriction or covenants adopted after 10/1/19 may not require a property owner to have a permanent irrigation system on his or her land
- Contact: Stacie Greco Sgreco@alachuacounty.us



Issues Arising After Adoption

- In the first few months the code was in effect several issues arose, requiring a code update in April.
 - Which projects are exempt?
 - Definition of “project area”
 - Alternative criteria
 - Implementation in ultra-urban areas
 - Issues were related to the karst area criteria because of potential impact on development layout.
- 

Lessons Learned: Exempt Projects


- The exemption for projects in the development review pipeline was not written clearly.
 - The issue was that projects with preliminary plan approval might require changes to the approved plan in order to implement the karst criteria, which could affect financing etc.
 - Code change in April resolved this but it would have been better to have addressed this before the initial code adoption.
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Lessons Learned: Definition of the Project Area

- The goal of the karst criteria was to target increased nitrogen load from development.
- Some parts of new development don't generate additional load such as preserved open spaces and the LID stormwater BMPs.
- It was assumed everyone knew this and thus wasn't defined. Result: Code update in April.




Lessons Learned: Alternate Criteria

- Meeting the stormwater treatment standards and following the design guidelines in the Stormwater Treatment Manual = Presumed Compliance.
 - Sometimes the karst area 1" treatment volume would capture almost all of the annual runoff from the site.
 - Code gives staff the ability to approve an alternative treatment volume criteria or new BMP design.
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LID Options for Various Land Use Intensities

Rural			Urban	
Natural Area	Rural Agriculture	Suburban/ Large Lot	Urban/ Small Lot	Urban/ Activity Center
Leave unimpacted	Cluster design	Vegetated swales	Vegetated swales	Green roofs w/cisterns
Preserve and protect	Vegetated swales	Vegetated natural buffers	Bioretention	Cisterns
	Bioretention	Bioretention	Rain barrel/cisterns	Permeable surfaces
	Rain barrel/ cistern	Rain barrel/cisterns	Permeable surfaces	Soil amendments
		Curb elimination/ cuts	Soil amendments	Exfiltration
		Native plantings	Exfiltration	Curb cuts
		Enhanced stormwater ponds	Curb cuts	Tree filter boxes
			Green roofs w/ cisterns	Native plantings
			Native plantings	Recessed parking Islands
			Enhanced stormwater ponds	

In Summary

- The new Alachua County Stormwater Treatment Code will provide increased protection of both surface waters and groundwater.
 - The groundwater protection criteria for the Sensitive Karst Area is a unique aspect of the code and will continue to evolve.
 - Stakeholder involvement is important and case studies are useful.
 - At what point does a development project become exempt is very important.
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Questions?

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