



LAKE COUNTY
FLORIDA



Planning Land Use to Protect Groundwater and Springs

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Lake County Facts



- 1,156 Square Miles in Size
- 1,400 Named Lakes
- 28 Springs
- Southwest County includes Green Swamp Area of Critical State Concern
- Northeast includes Ocala National Forest and Wekiva River Protection and Wekiva Study Areas

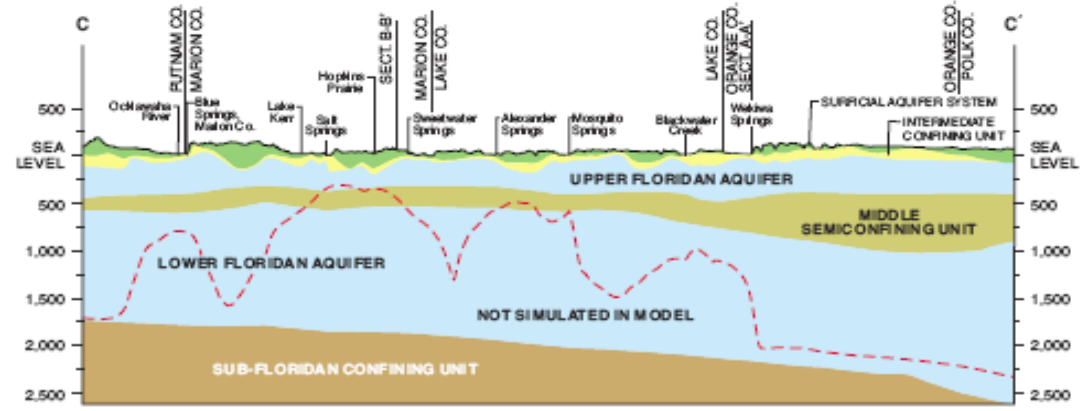
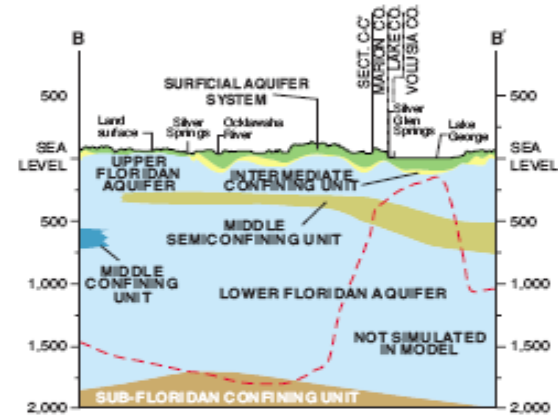
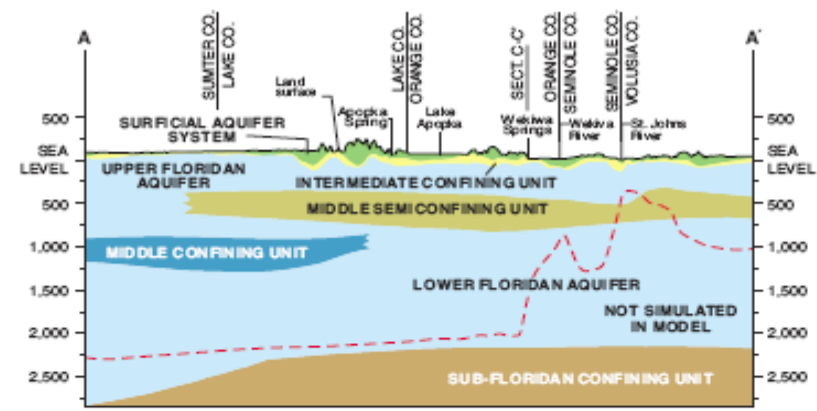
Lake County Hydrology



- Similar to most of Central Florida
 - Surface deposits of sands.
 - Surface layer ranges in thickness from a few feet to hundreds of feet.
 - Sands grade to finer materials and contain more silts and clays with depth.
 - Below the clay are thick sequences of carbonate rocks -- limestone, dolomitic limestones, and dolomite.



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EXPLANATION

--- ESTIMATED BOUNDARY BETWEEN FRESHWATER AND UNDERLYING WATER WITH CHLORIDE CONCENTRATION GREATER THAN 5,000 MILLIGRAMS PER LITER

0 10 20 MILES
0 10 20 KILOMETERS

Recharge



Recharge is the process of adding water to the zone of saturation. Recharge can be influenced by the amount and type of development.

- Stormwater runoff and building impervious surfaces affect the level of recharge
- The quality of the water being recharged is also be influenced by development.

Why Protect Groundwater?



Protecting Florida's springs means ensuring that water entering the aquifer is free from pollutants. It also means ensuring that adequate levels of water can recharge the aquifer. Because our drinking water comes from the same aquifer that supplies water to the springs, the quality and quantity of water in the springs indicates the quality and quantity of the State's drinking water. *Protecting Florida's Springs An Implementation Guidebook, DCA 2008*

Another Reason to Protect Groundwater



In mid-2000, the St Johns River WMD designated a large portion of Lake County as a Priority Water Resource Caution Area. These are areas where existing and *reasonably* anticipated water sources and conservation efforts may not be adequate (1) to supply water for all existing legal uses and reasonably anticipated future needs and (2) to sustain the water resources and related natural systems.

The Constraints



The constraints established to identify these areas are:

- impacts to native vegetation, primarily wetlands;
- impacts to minimum flows and levels, primary spring flows;
- impacts to groundwater quality in terms of increased saltwater intrusion;
- impacts to existing legal users; and
- failure to identify a source of supply for future development.

Lake County's Early Initiatives



- Adopted Ordinance in 1990's limiting phosphorus.
- Adopted Ordinance in 2001 implementing design criteria to improve water quality, habitat, and conserve water for Golf Courses.
(Sec. 6-14 Lake LDR)

Lake's New Initiatives



2008 - Wekiva Parkway and Protection Act Amendments adopted.

2009 - New Florida Friendly Landscape Ordinance was adopted.

2010 –2030 Comprehensive Plan Adopted
(under challenge)

Wekiva Amendments



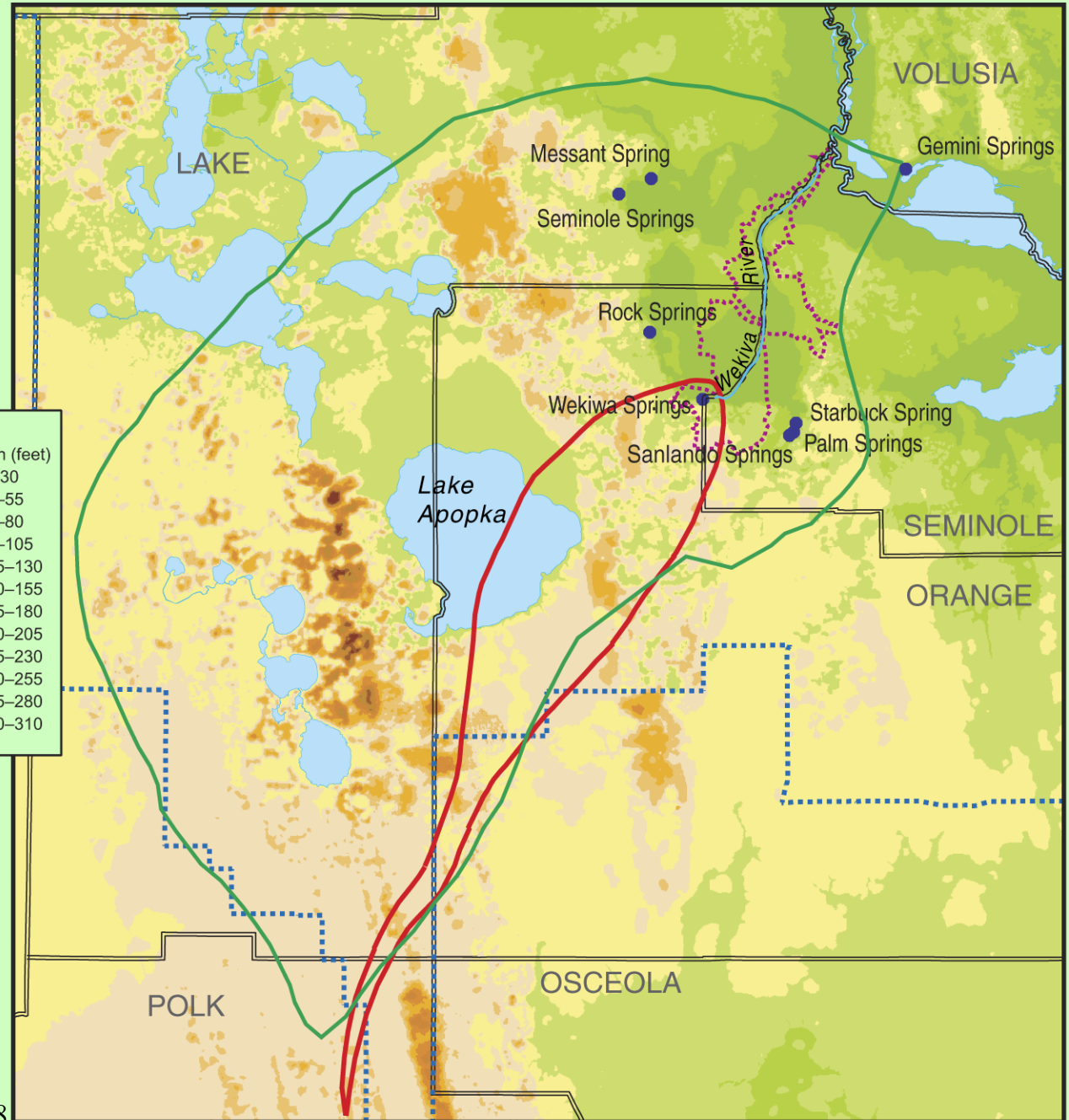
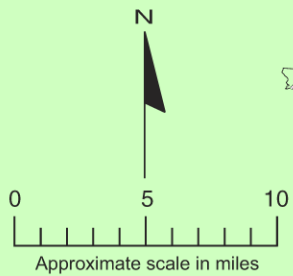
- Established new land use category that allowed increased density in exchange for higher *Common Open Space*.
- Recharge areas and Springs receive priority to be included in open space.
- Clustering of lots/development required to maximize open space.
- Limits on Impervious Surface

Note: No reduction in density from OSR Requirement

Wekiva (cont.)



- Hydrology is first consideration not land use and requires hydrologic study for sites 40 acres or greater.
- Established minimum setbacks from Springs (300 feet), Spring Runs and Karst Features (100 feet).
- Acquisition of lands with Springs a priority.



Legend

- Spring
- Wekiwa groundwater basin
- Wekiwa Springs groundwater basin
- ⋯ Wekiwa Springs surface water basin
- County boundary
- ⋯ District boundary
- Water body

Elevation (feet)	
5-30	
30-55	
55-80	
80-105	
105-130	
130-155	
155-180	
180-205	
205-230	
230-255	
255-280	
280-310	

Land surface elevation in the study area

Landscaping



- The adverse impact on of Landscaping was a significant concern due its impacts on water use and resulting use of fertilizers (nitrates) and pesticides that funnel into groundwater and springs.
- The County adopted a new Florida Friendly Ordinance consistent with the WaterStar Program.

Landscape Ordinance (cont)



- Removed old requirement for permanent irrigation.
- Limits non-drought tolerant turf to 60%
- Requires use of Florida Friendly Plants
- Disincentives to remove existing non-invasive trees
- Encourage use of rain gardens and increased size of parking lot islands for pre-treatment of stormwater

2030 Comprehensive Plan



- Reconfirmed Wekiva Policies and implemented some County wide.
- Preservation of Rural Lands by directing density to Urban Areas.
- Rural Development requires high percentage of open space and Conservation Subdivision Design
- Requires Conditional Approval for Resource Extraction.

2030 Comprehensive Plan (cont)



- Adopted objective to coordinate with federal, state, regional, and local agencies to protect the quantity and quality of groundwater resources, recharge areas, and prevent excessive groundwater draw-down caused by withdrawal for consumptive uses.
- County will Identity Aquifer Protection Zones to protect vulnerable groundwater resources areas (Wekiva AVA already completed)

2030 Comprehensive Plan (cont)



- Sets a minimum lot size of one (1) acre if using Septic Tanks (*variance allowed*)
- Limits density/intensity in Springsheds.
- Limits clearing of non-invasive vegetation surrounding springs and other water bodies.
- Requires the use of Low Impact Design (LID) in Springsheds to reduce development impact.

2030 Comprehensive Plan (cont.)



Agricultural Uses in Springsheds,

- Best Management Practices (DACCS)
- Encouraged to follow the protection practices contained in “Protecting Florida’s Springs-Land Use Planning Strategies and Best Management Practices” (DCA/DEP, 2002).
- Use of Long-crop rotation silviculture and unimproved pasture within the primary zone encouraged.

Lessons Learned



- Engage Stakeholders early!
- Policies cannot succeed without political will
- Pursue policies to deal with Antiquated Plats
- Work with agencies.
 - Lessons with DOH (coordination of Septic Tank issues)
 - Irrigation/Landscaping (coordination with WMDs)
 - Agriculture.

Lake County Initiatives



QUESTIONS?



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Thank you.