

Water Reuse Trends in the State of Florida

NJWEA Annual Conference
May 11, 2015

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October 22, 2014

AECOM

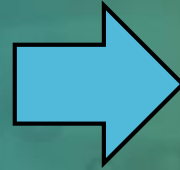
Florida, “The Sunshine State”

- **Average Rainfall 52”/yr**
- **Climate, both mild and extreme**
- **Potable water source primarily from groundwater**
- **Groundwater supplies at sustainable yields in most urban cities**
- **Rivers are slow moving with limited assimilative nutrient capacity**
- **Projected 3rd most populous state by 2030**

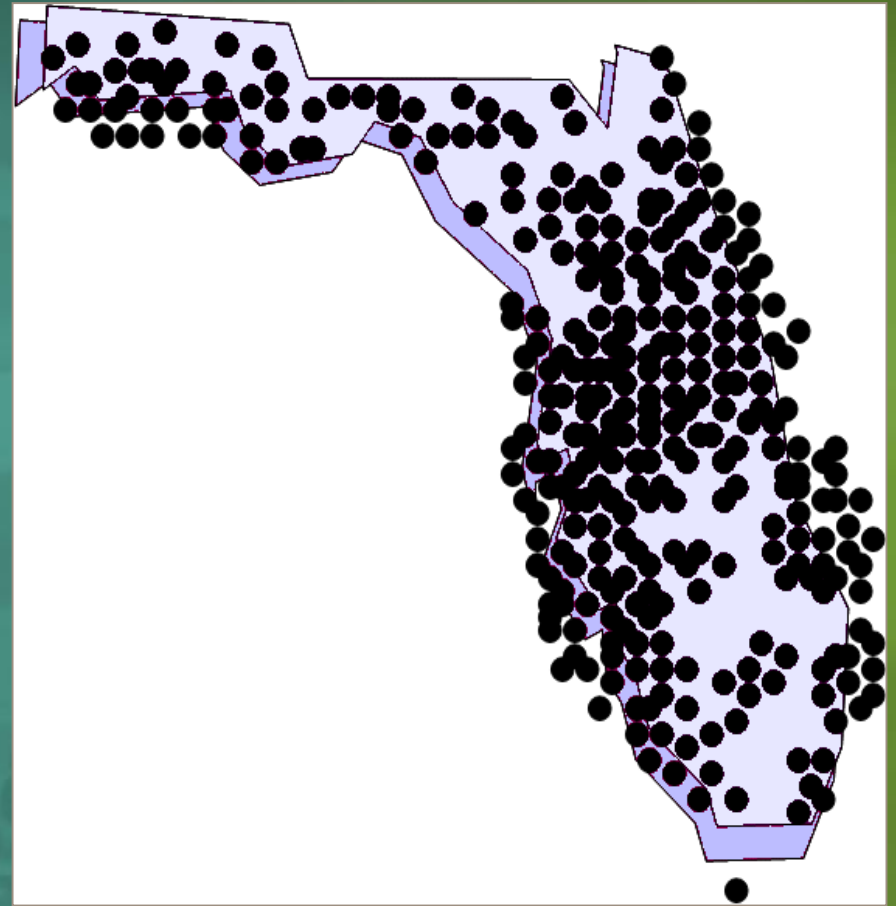


Reuse defined

- “Reuse” the deliberate application of appropriately treated wastewater (reclaimed water) for a beneficial purpose.



National Leader in Water Reuse



In 2013, 719 million gallons per day were reused in Florida rather than being disposed. This equates to nearly half of all WWTP flow.

Source: *Shanin Speas-Frost, FDEP*

Why we use reclaimed water

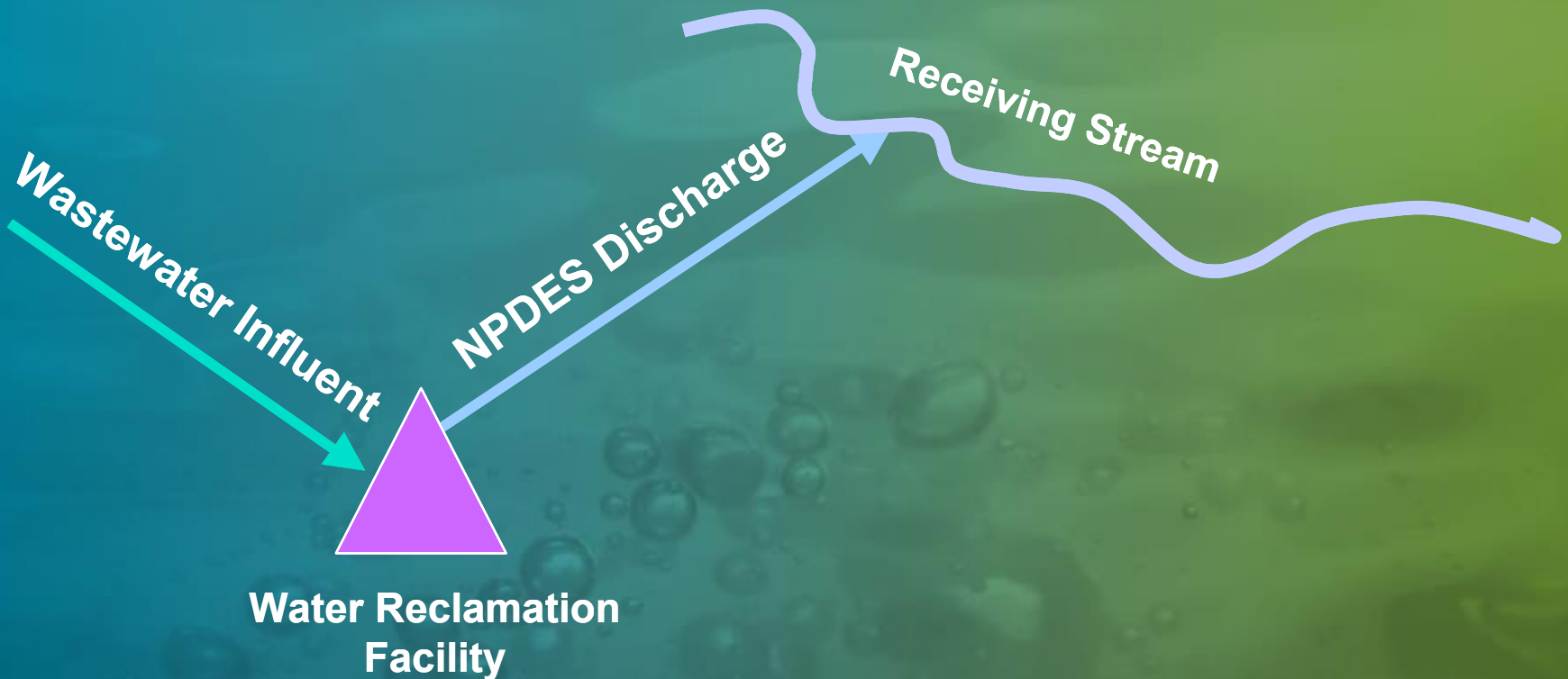


Effluent
Disposal



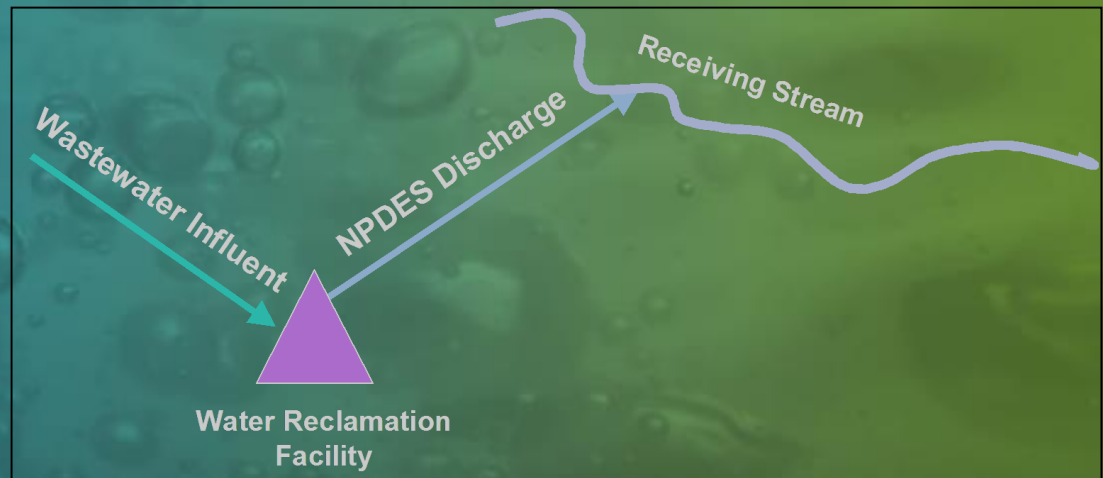
Water
Conservation

Traditional Treatment and Disposal Systems

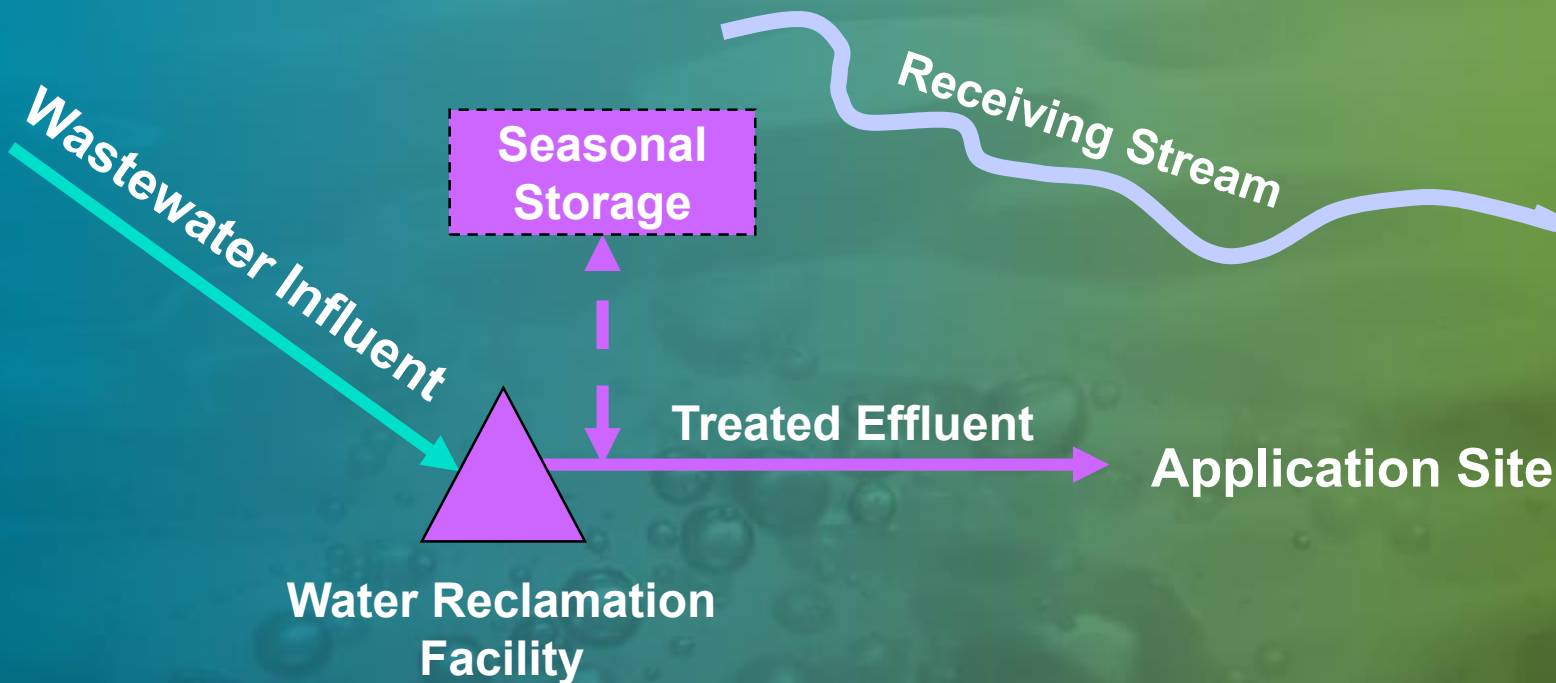


Why Florida had to change its ways:

- Streams and rivers experience very low flow conditions in the spring with a correspondingly low assimilative capacity for nutrient loading
- Increased population necessitates expensive, possibly unattainable water quality for continued discharge
- Surface water quality linked to critical industries - Tourism



An obvious solution: Redirect effluent discharge



Land Application



Restricted Access Irrigation on Non-Food Crops





In the early 1990's Florida Adopted Comprehensive Rules for Reclaimed Water

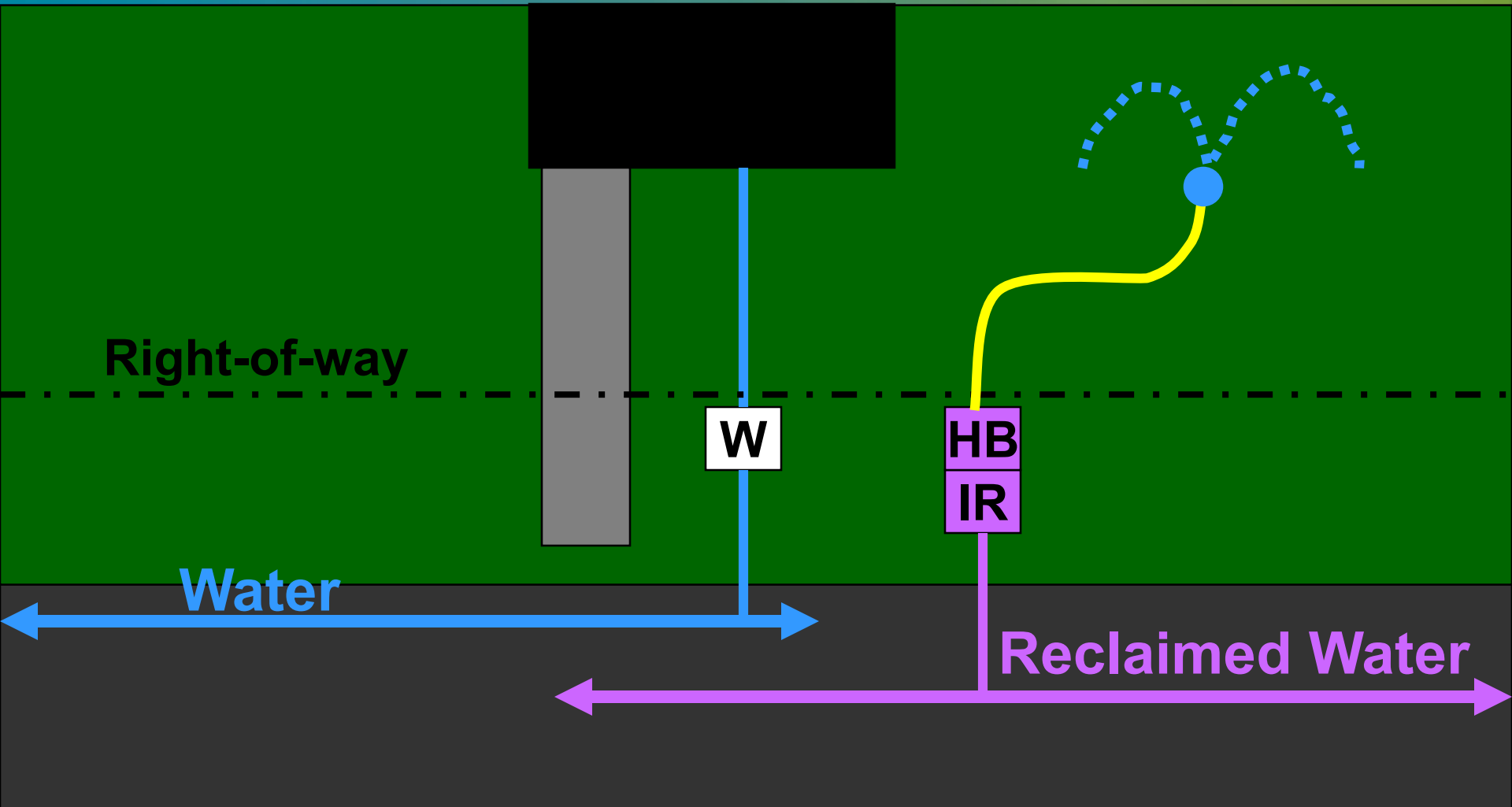
- Land application
- Agricultural irrigation
 - Non-food crops
 - Food crops
- Urban reuse
 - Landscape irrigation
 - Non-irrigation urban uses
- Industrial reuse
- Environmental, aesthetic & recreational uses
- Groundwater recharge
- Indirect/direct potable reuse



Agricultural Reuse



Dual Distribution Systems: Residential Irrigation



Color Coded Pipes in a New Development



Other Urban Uses of Reclaimed Water

Sewer cleaning, street sweeping and fire control



Aesthetic Uses – A fountain at a Water Reclamation Facility





Ground Water Recharge



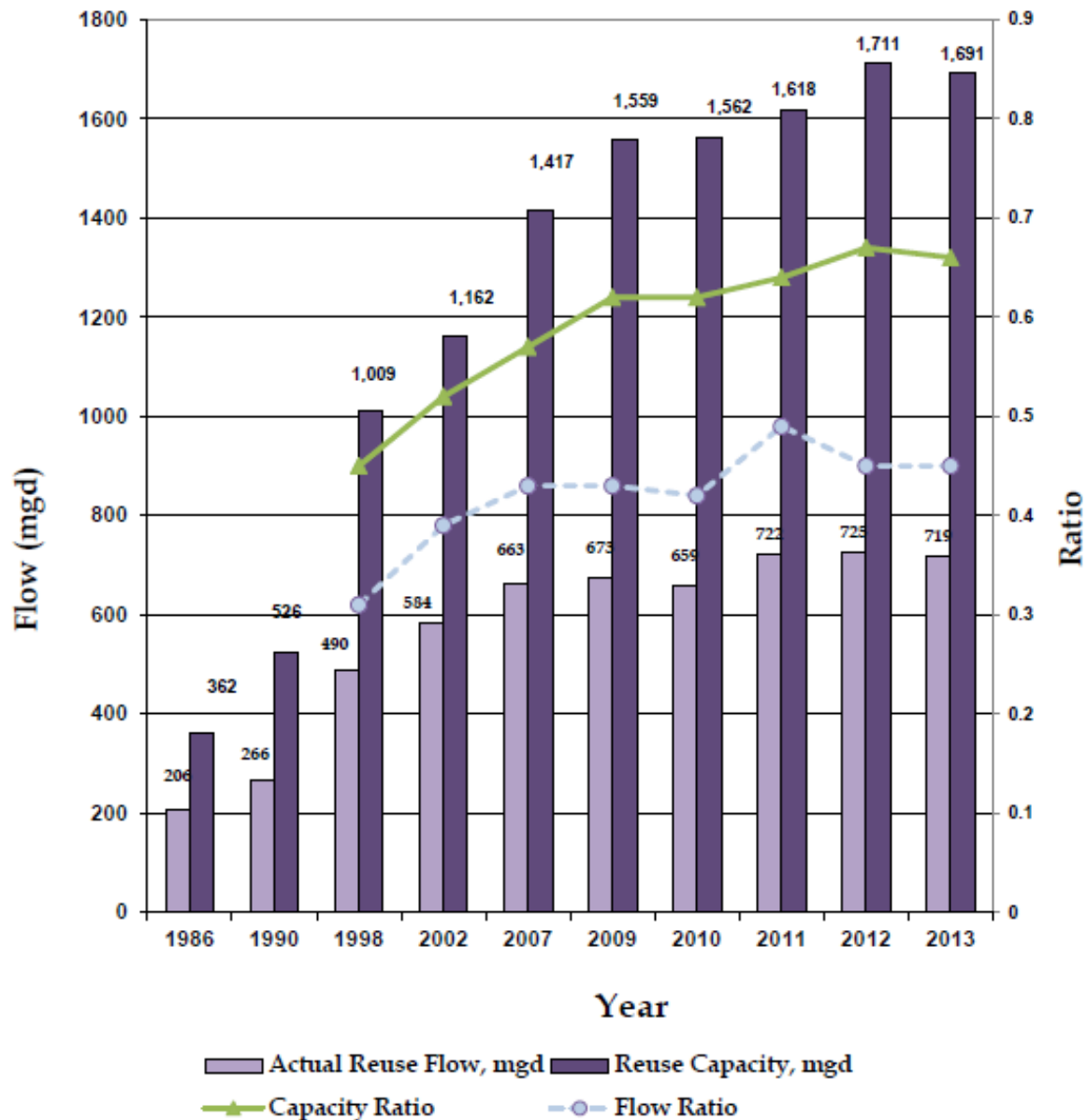
Industrial Uses

- **Industrial cooling tower**
 - Secondary treatment by industrial users may be necessary
 - Blowdown
- **Boiler feed water**
 - High level treatment
 - RO-DI
- **Other Industries**
 - Application-specific

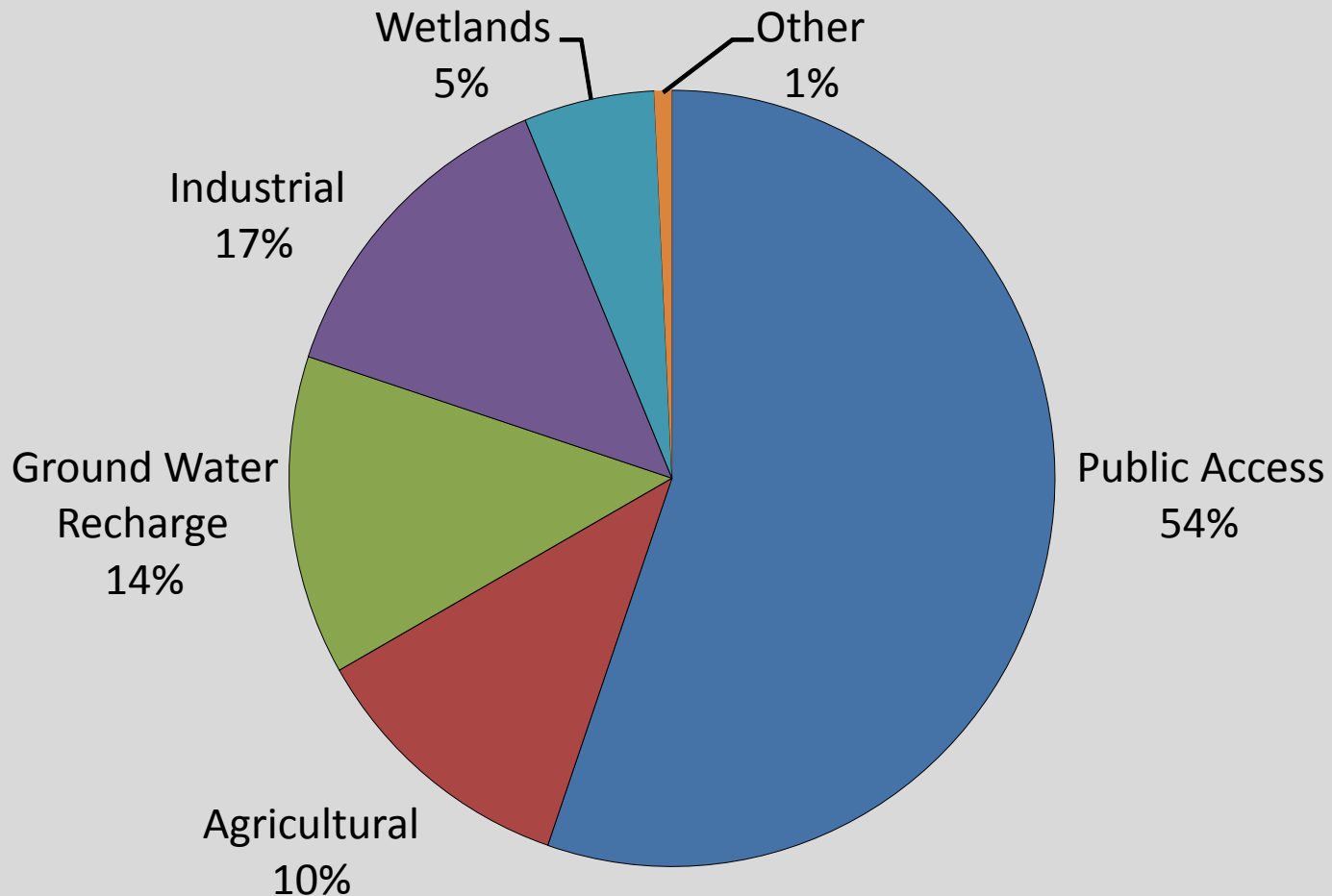
Generally higher treatment required than irrigation



Reuse Growth in Florida

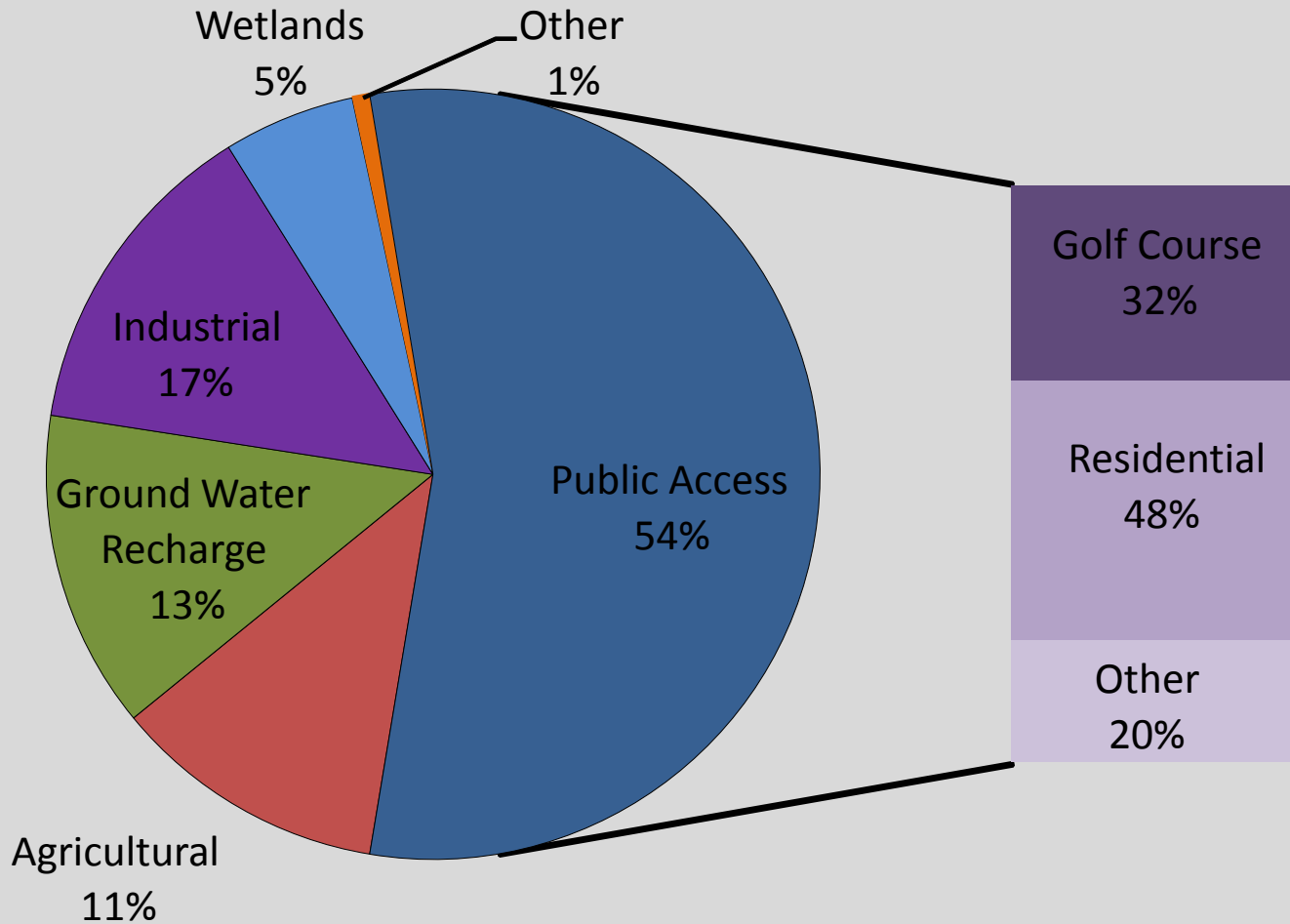


How water is being reused in Florida

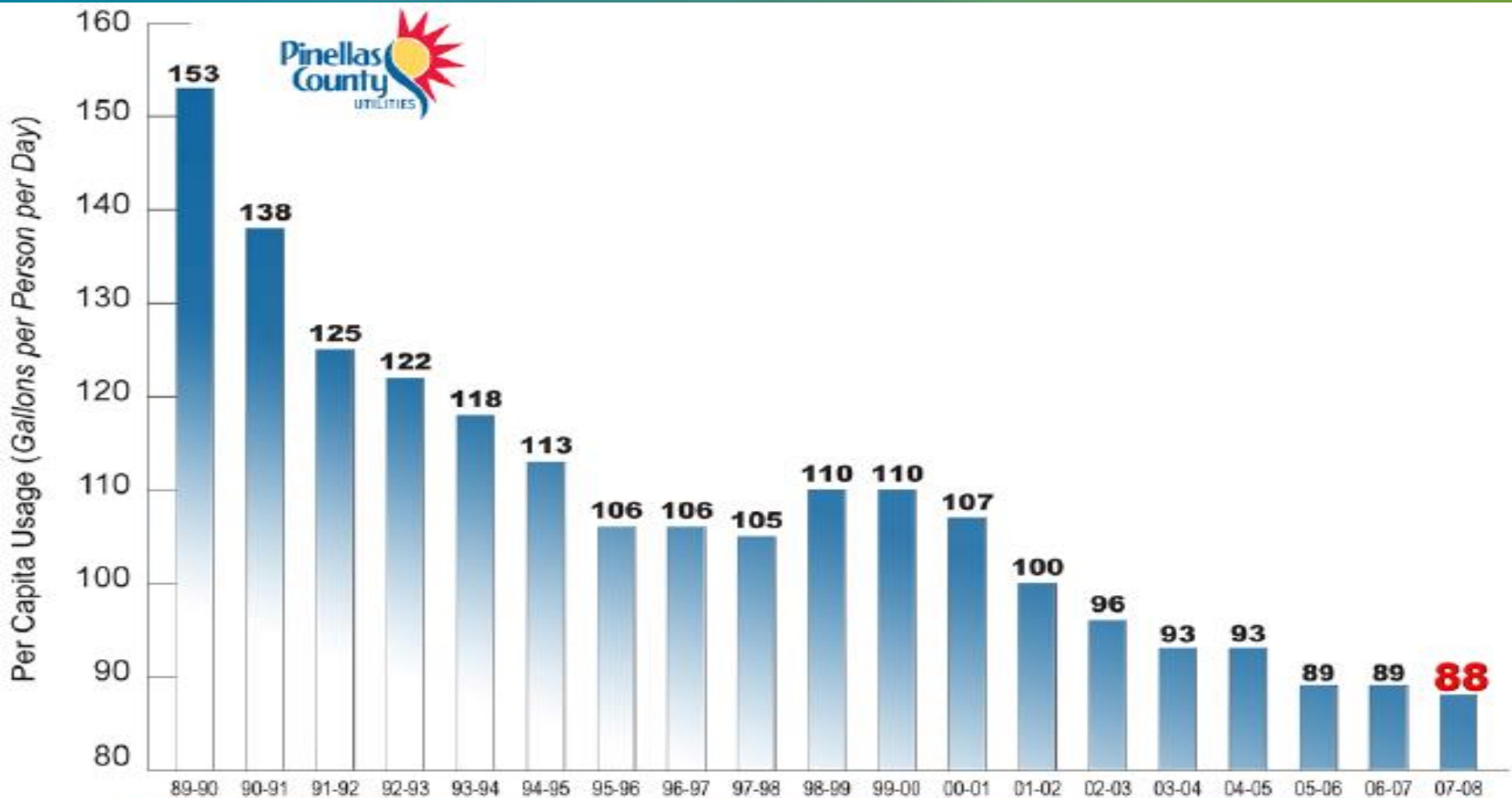


Source: 2013 FDEP Reuse Inventory, 719 mgd total reuse flow

Breakdown of public access reuse



Pinellas County Residential Per Capita Water Usage



A. Annual usage is calculated by using six consecutive bi-monthly billing periods (1 year of billing).

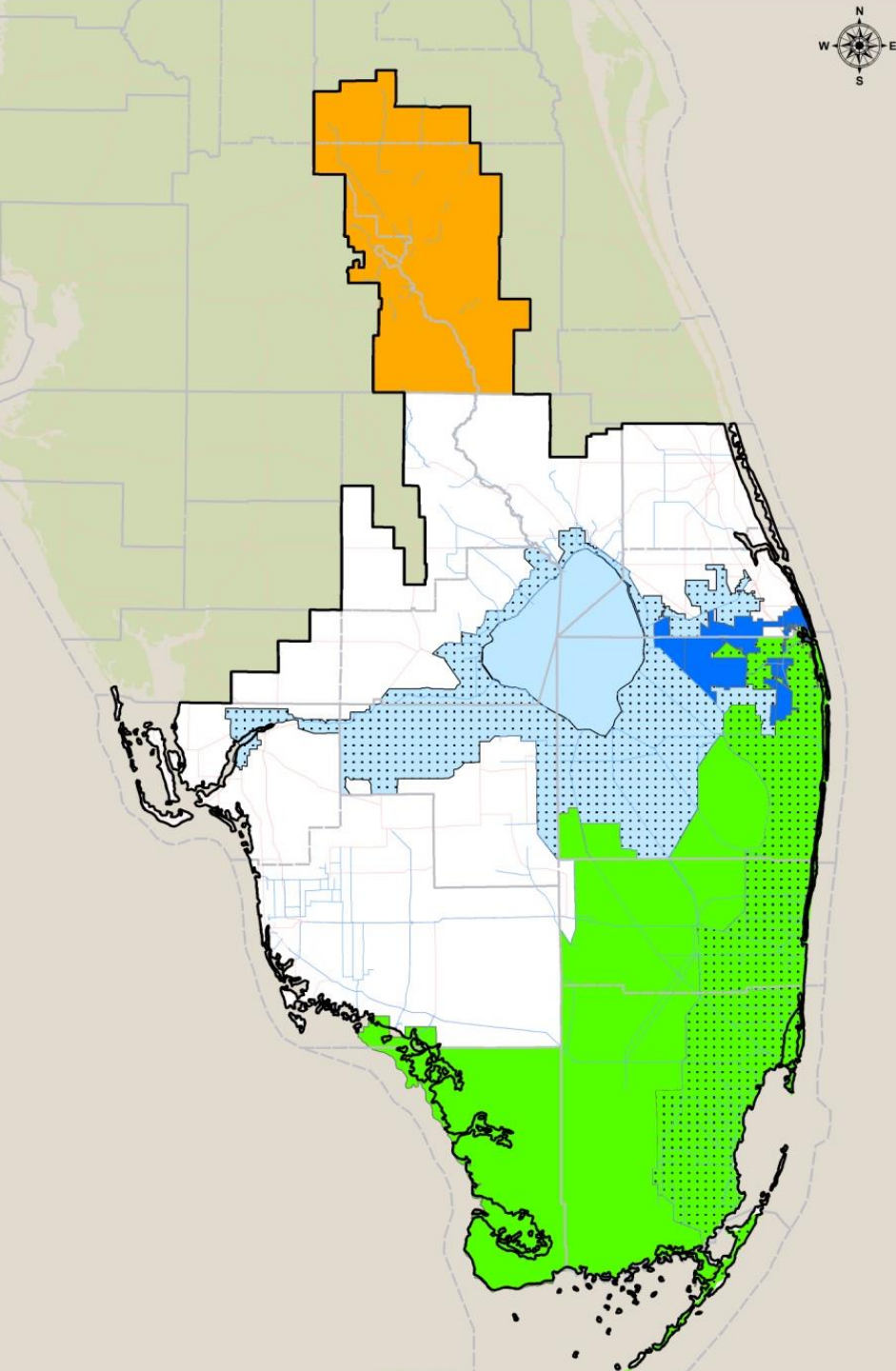
B. Population is calculated by taking the total number of single-family accounts multiplied by 2.31 persons per household, plus multi-family accounts multiplied by 1.31 persons per household for those accounts that had six consecutive billing periods.



Permitting Pressures on Traditional Water Supplies:

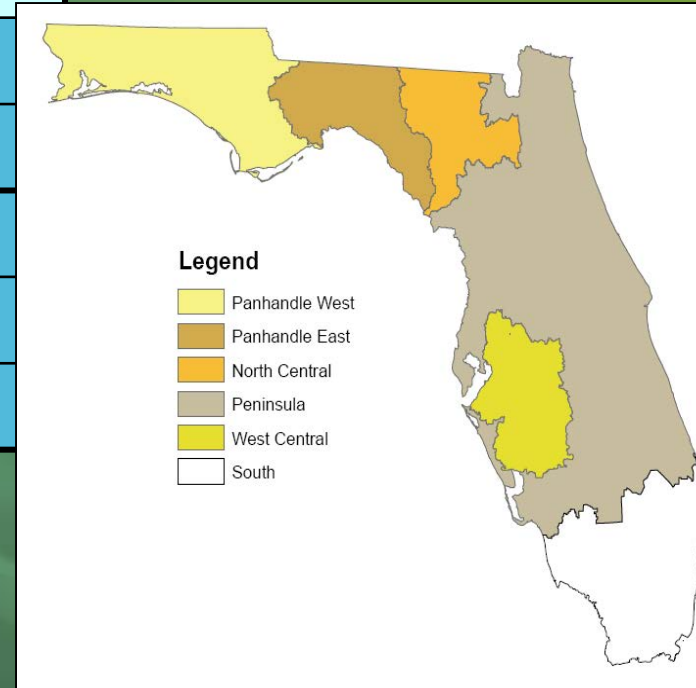
Restricted Allocation Areas

-  Central Florida Coordination Area
-  North Palm/Loxahatchee River Watershed
-  Lake Okeechobee Service Area
-  Everglades and Lower East Coast

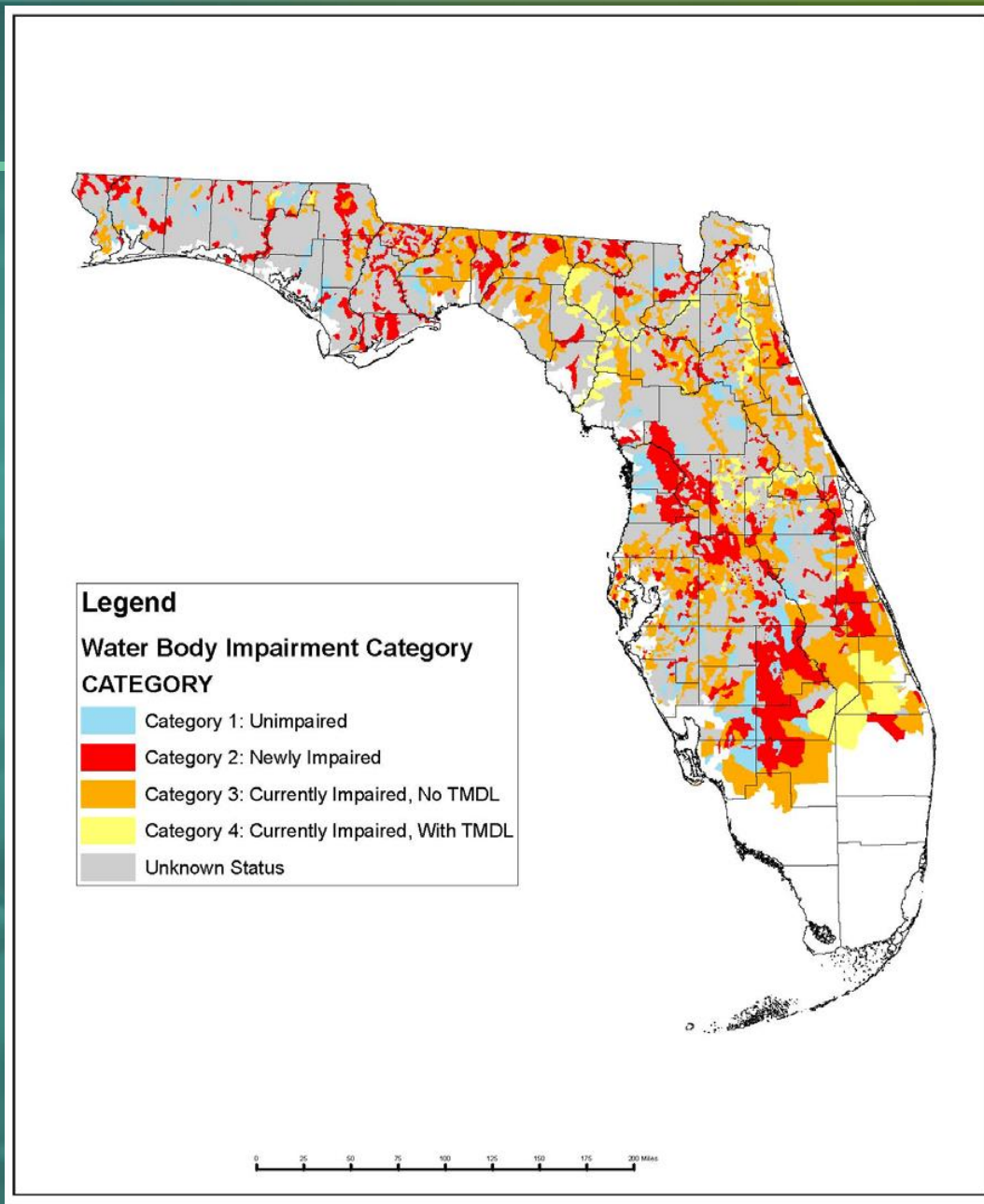


Rivers & Streams

Nutrient Watershed Region	Instream Protective Value	
	TN (mg/L)	TP (mg/L)
Panhandle West	0.67	0.06
Panhandle East	1.03	0.18
North Central	1.87	0.30
West Central	1.65	0.49
Peninsula	1.54	0.12

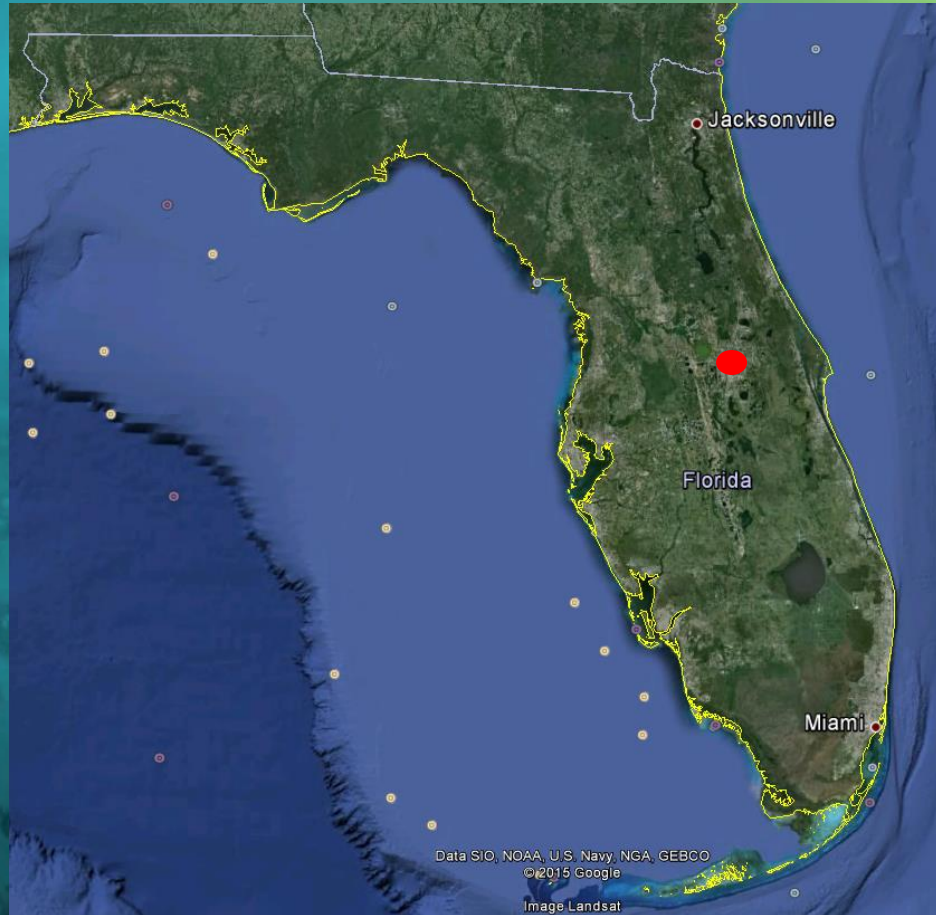


A first look at water body classifications based on FDEP's interpretation of the EPA Rules



City of Altamonte Springs

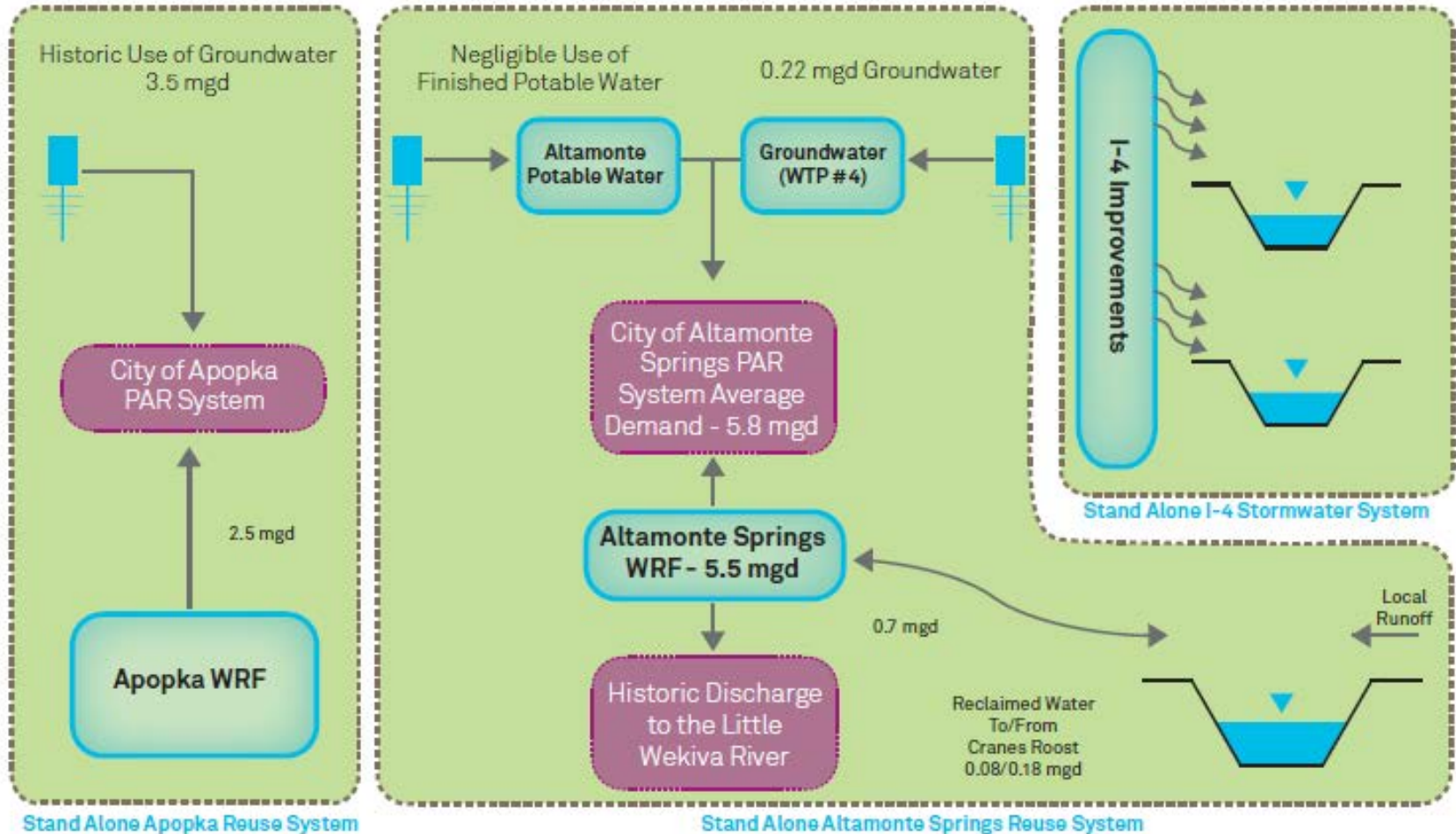
FDOT Integrated Stormwater Capture & Reclaimed Water Project



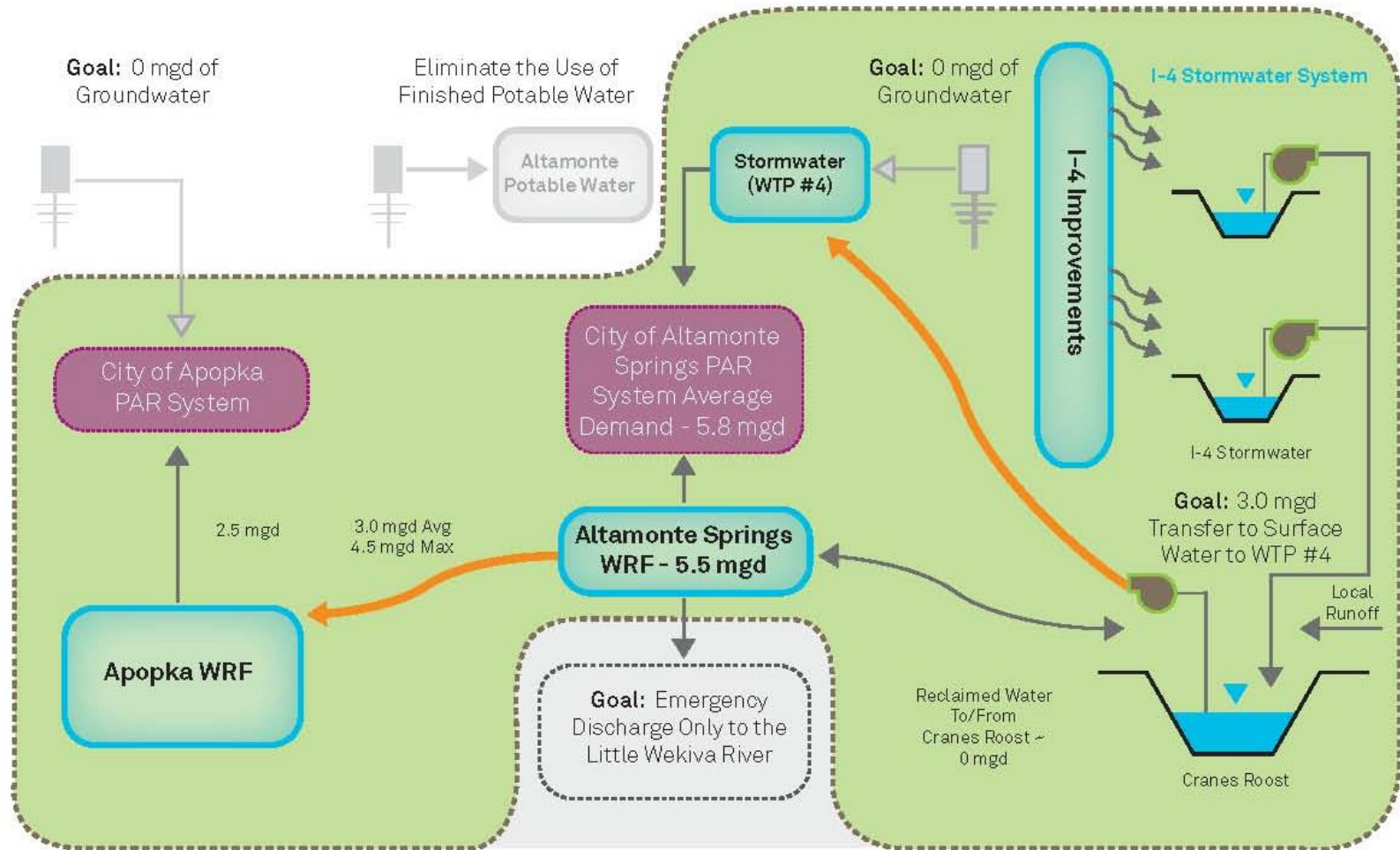
City of Altamonte Springs

- Located in Central Florida, Suburb to Orlando
- Integrated Stormwater Capture & Reclaimed Project
 - Innovative approach combines alternative water supply with stormwater management and capture
 - Partnership with FDOT
 - 4.5 mgd of alternative water supply created
 - 3.0 mgd of reclaimed
 - 1.5 mgd of stormwater
 - Significant nutrient reductions to Little Wekiva River & Cranes Roost
 - Construction started January 2014

Altamonte Springs Current Configuration

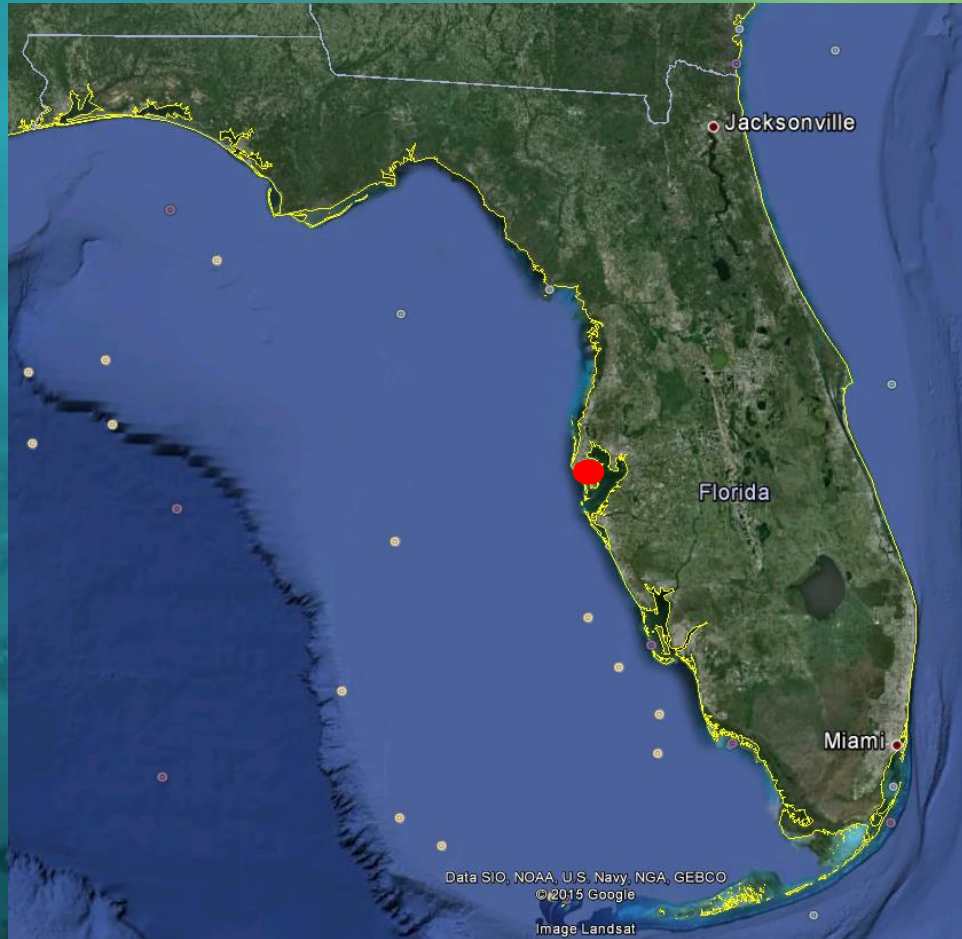


Altamonte Springs “A-FIRST” Configuration



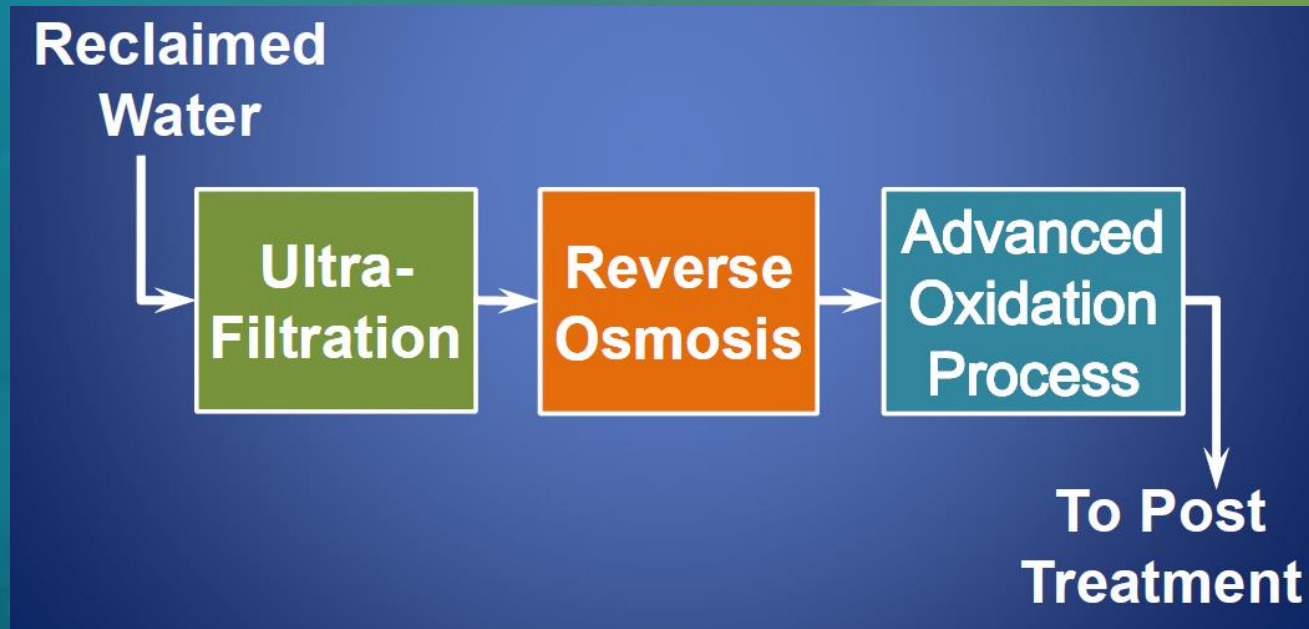
City of Clearwater

Groundwater Replenishment Project



Project Statement

To construct a water purification plant at the existing Northeast Water Reclamation Facility to supply 3 MGD of highly treated water to recharge lower Zone A of the Floridan Aquifer.



Conceptual Recharge System Design



The Shape of Things to Come

Increasing Populations, increasing ...everything

Trends in Reclaimed water:

- Recognition of its value:
 - Evolution of fees: free to flat rate to use based charges
- Embraced as a water supply:
 - Reclaimed water is a prominent element of water supply planning throughout the State
- Future direct and direct potable reuse
 - Cost/benefit of distributing reclaimed water for direct nonpotable uses such as irrigation vs treating to potable quality

THIS FIXTURE USES
NON-POTABLE RECLAIMED
WATER-DO NOT DRINK

Questions?



Thank You

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