

This presentation premiered at WaterSmart Innovations

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Water Smart Innovations 2009

Evolution of Water Reuse in Florida

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BROWN AND
CALDWELL

Water-Rich State

- 50 in. average annual rainfall
- 2,000 miles coastline
- 11,000 miles rivers, streams, waterways
- Over 7,500 lakes > 10 ac
- More 1st magnitude springs than any other state (27)
- Fragile ecosystem
 - The Everglades
 - Productive estuaries
 - Freshwater springs
 - Wetlands
 - Warm slow-moving rivers



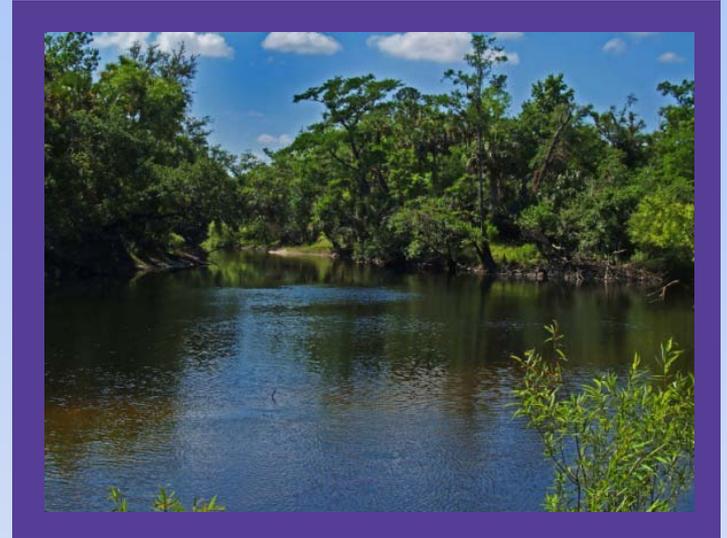
In the beginning...

- Effluent disposal driven
- Wilson-Grizzle Act of 1972
 - Advanced Waste Treatment (AWT) for discharges to Tampa Bay
 - AWT
 - 5 mg/L TSS
 - 5 mg/L BOD
 - 3 mg/L TN
 - 1 mg/L TP



In the beginning...

- Central Florida Initiatives – 1980s/1990s
 - Background TN and TP
- South Florida
 - Status quo/ocean outfalls and deep injection wells



Effluent Disposal Mentality

- Use as much as you want
- Irrigate whenever you want
- Free! (or at least cheap)
- Drought-proof water supply
- Water savings not always a consideration
 - Spray fields
 - Highway medians
 - Previously unirrigated areas



Chapter 62-610, Florida Administrative Code

- Restricted Access Irrigation
- Unrestricted Access Irrigation
 - Public Access Reuse
- Environmental Enhancement
- Groundwater Recharge
- Indirect Potable Reuse
- Potable Reuse



City of St. Petersburg

- One of earliest reuse projects – 1970's
- Wastewater disposal and water supply driven
- Over 10,000 customers
 - Urban users
 - Landscape irrigation





City of Altamonte Springs Project APRICOT

A Prototype **R**ealistic **I**nnovative **C**ommunity **O**f **T**oday

- 94% utilization of reclaimed water
- Primarily landscape irrigation
 - Commercial
 - Residential – nearly every city resident
- Other innovative uses – car washing
- Storage/augmentation

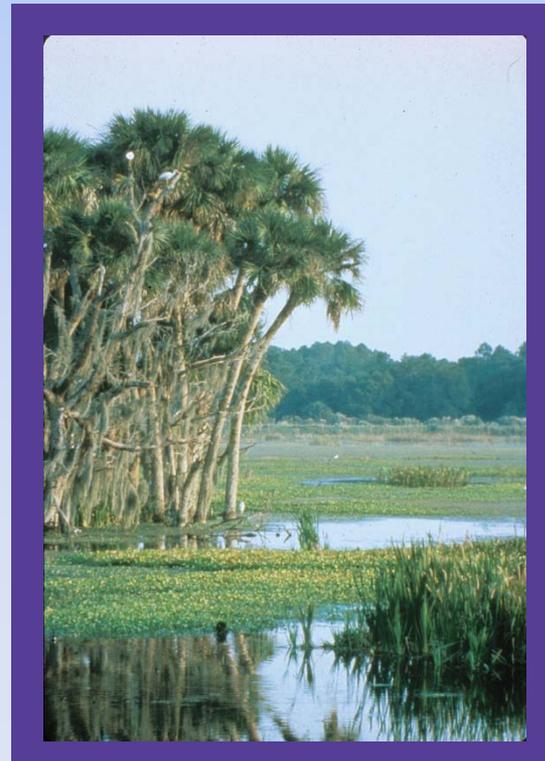
Water Conserv II

- Agricultural (citrus) irrigation
- Groundwater recharge
- 50 mgd capacity



Orlando Easterly Wetlands

- Environmental enhancement reuse system
- Created 1200 acres wetland habitat
- 35 mgd capacity



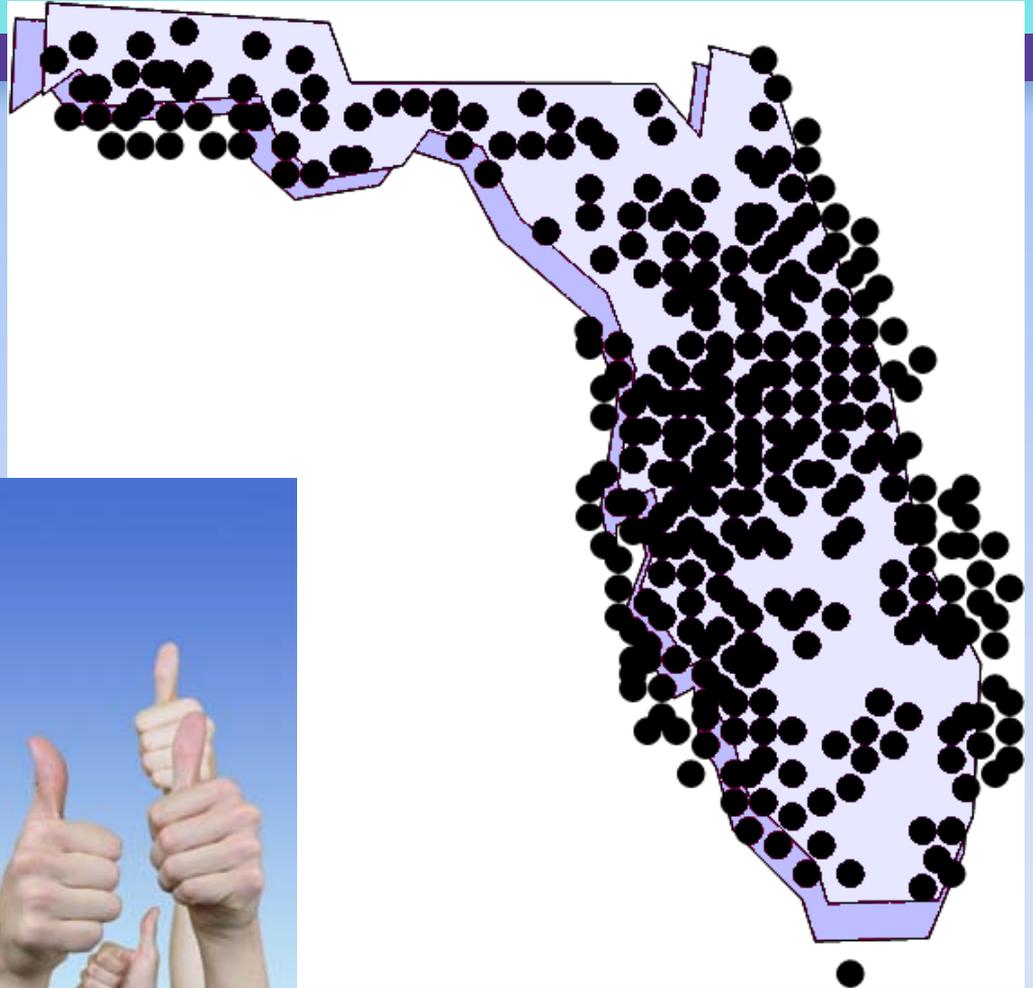
Tallahassee Southeast Farms

- Started in 1966
- Agricultural reuse
 - Canola, corn, soybean, hay, sorghum
- Recently expanded to landscape and golf course irrigation

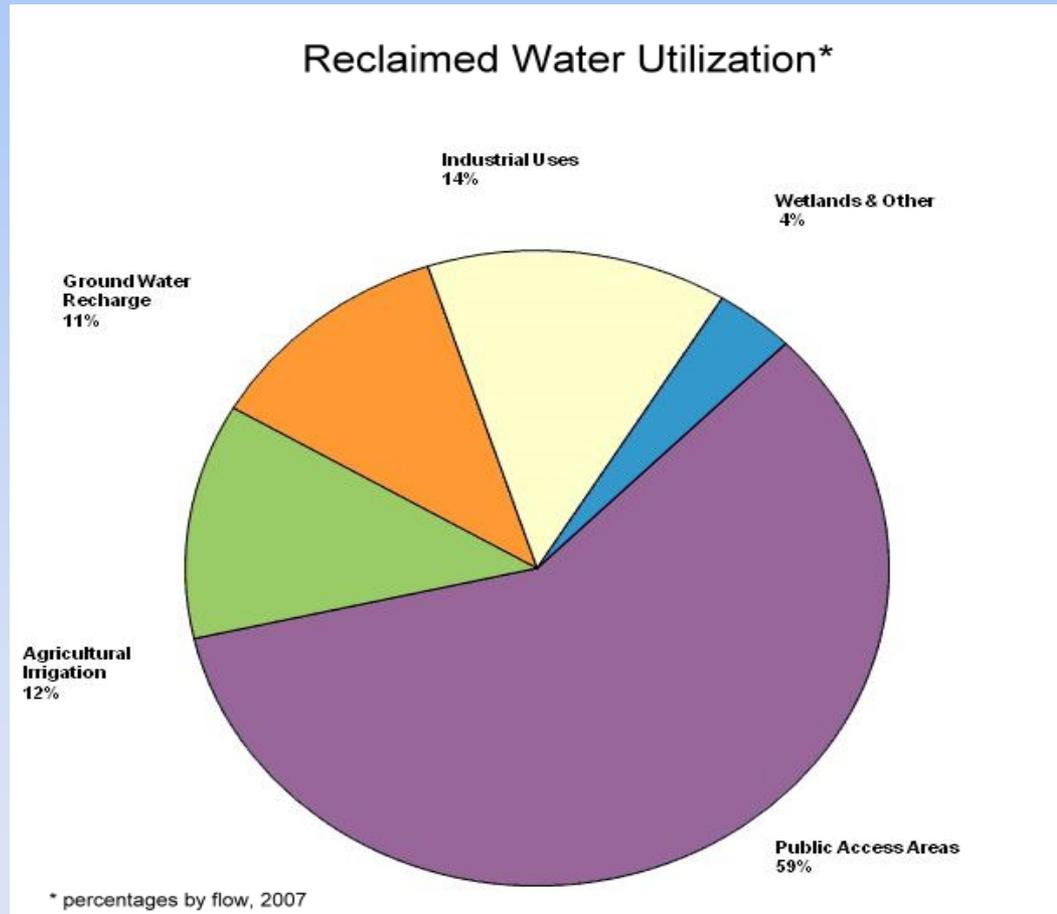


Florida Reuse

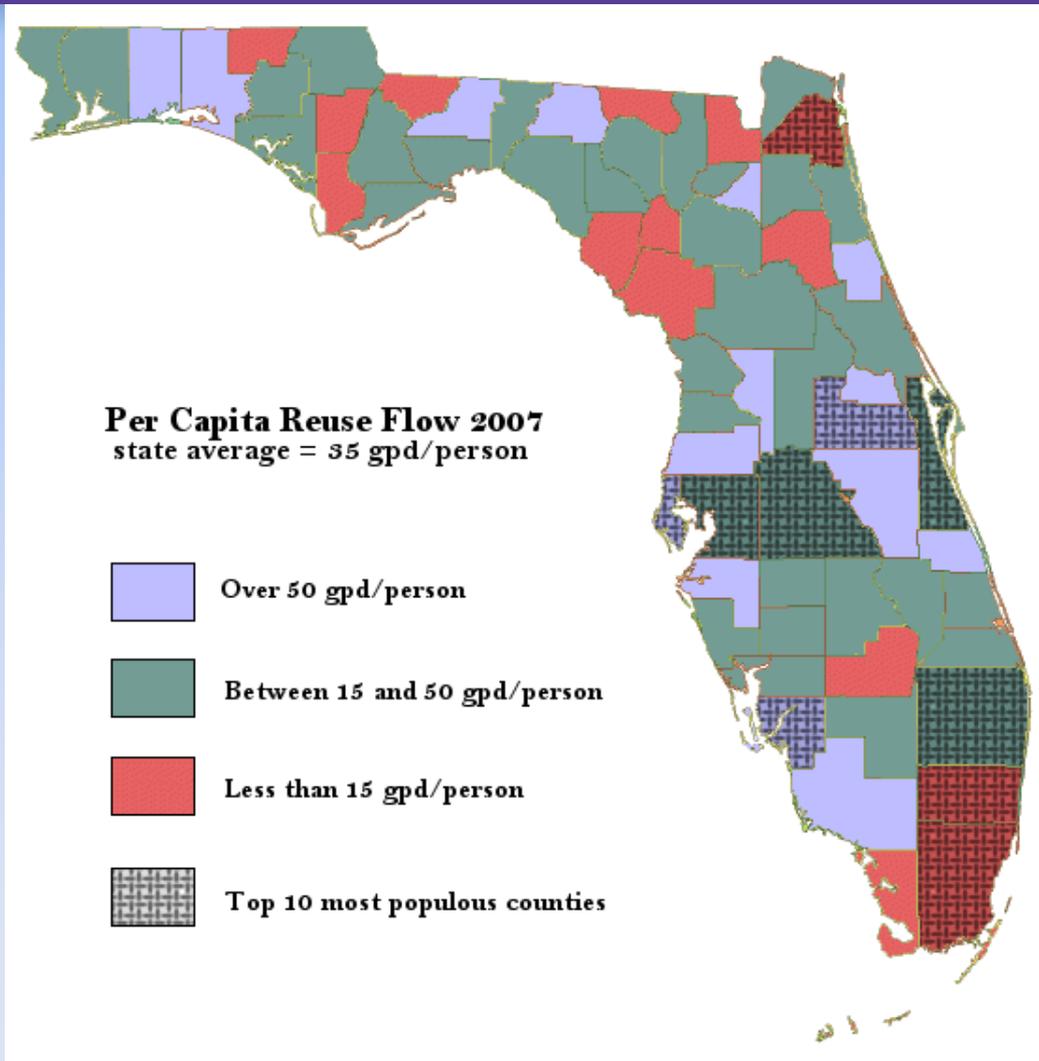
- 663 mgd reused! (2007)



Florida Reuse



Florida Reuse



Recent Trends

- Water supply driven
- Nutrients
- Efficiency
- Indirect potable reuse

Water Supply Driver

- Seminole County
 - Retrofit of existing neighborhood required in order to meet water demands



Water Supply Driver

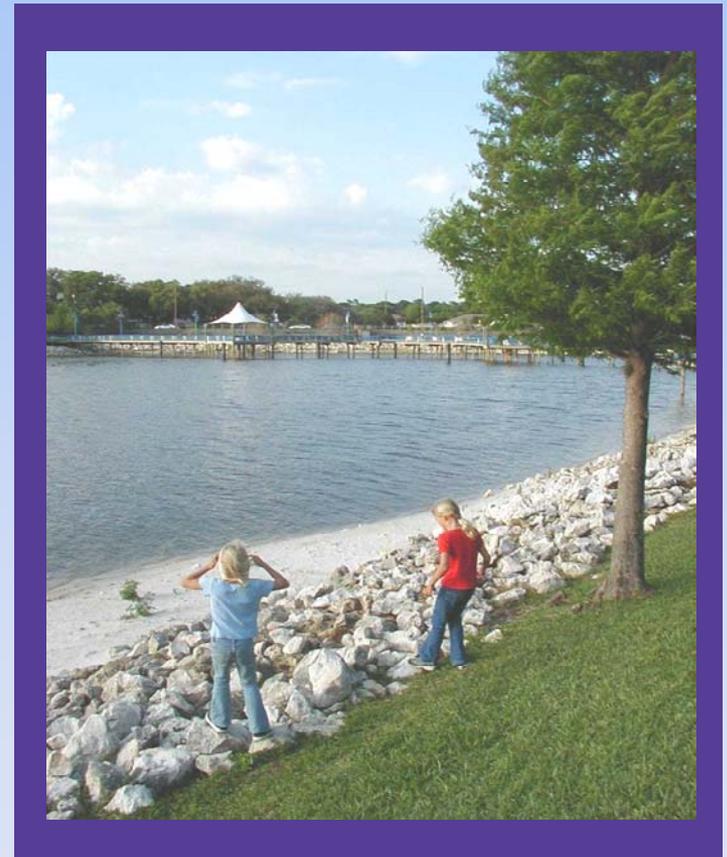


sfwmd.gov

- Miami-Dade 20-yr Permit
- Issued by South Florida Water Management District in 2007
- Requires Implementation of Conservation and Alternative Water Supply (AWS) Projects
 - Reuse projects totaling 170 mgd
 - Evaluate the feasibility of using 90 mgd for cooling FPL proposed nuclear power plant

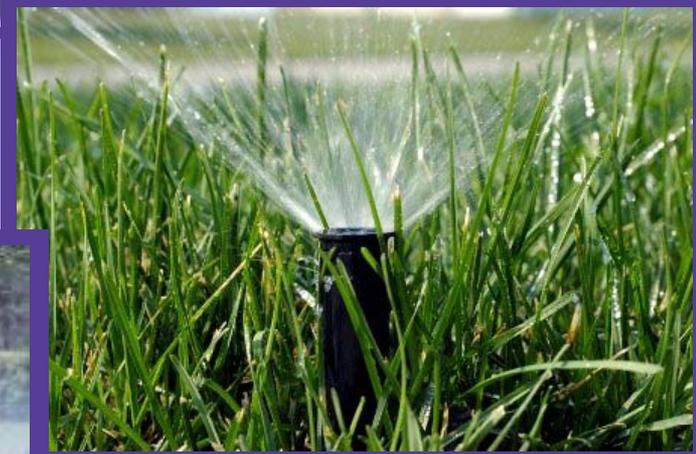
Nutrient Issues - Stormwater

- Reclaimed water nutrients contributing to non-point source loadings to surface waters.
- Stormwater ponds used for reclaimed water storage overflow to surface waters.



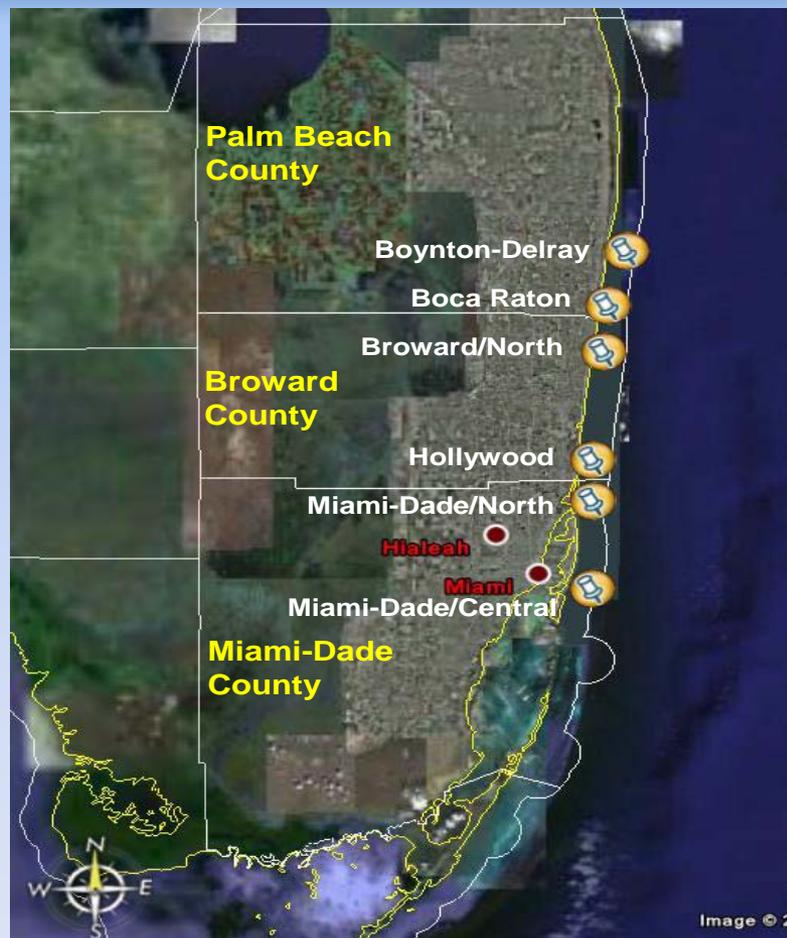
Maximizing Efficiency

- Applying potable water usage restrictions to reclaimed water
- Allocating reclaimed water use
- Prioritizing customers



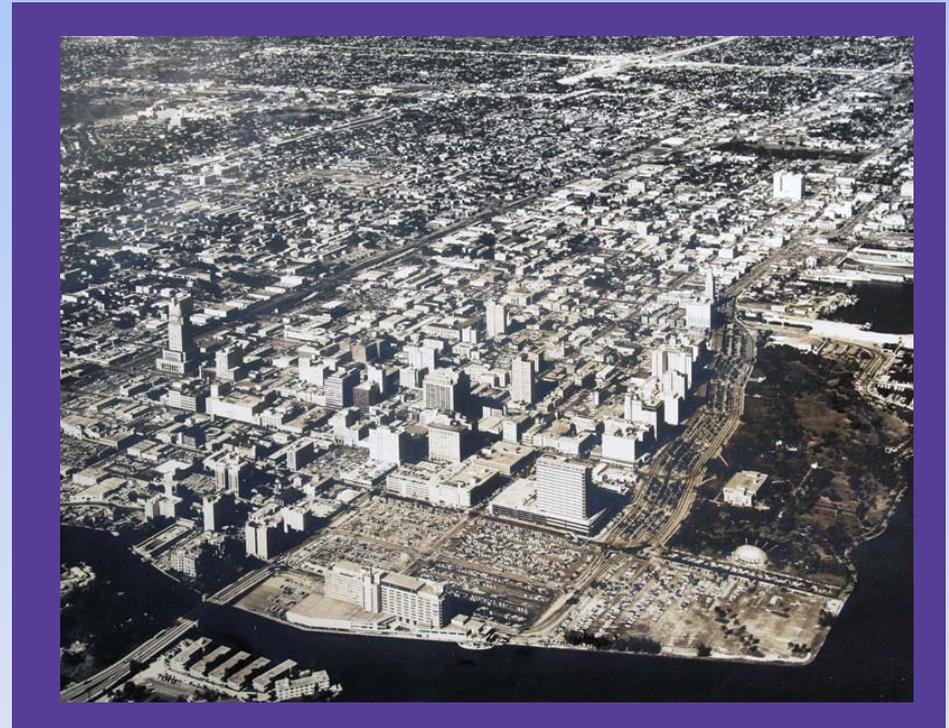
2008 Ocean Outfall Legislation

- 400 mgd discharged via ocean outfalls.
- No new outfalls
- No expansion of existing outfalls
- By 2018, existing outfall discharges must meet AWT
- Eliminate outfall use by December 2025
- After 2025, use of outfalls for wet weather flows from permitted reuse systems only



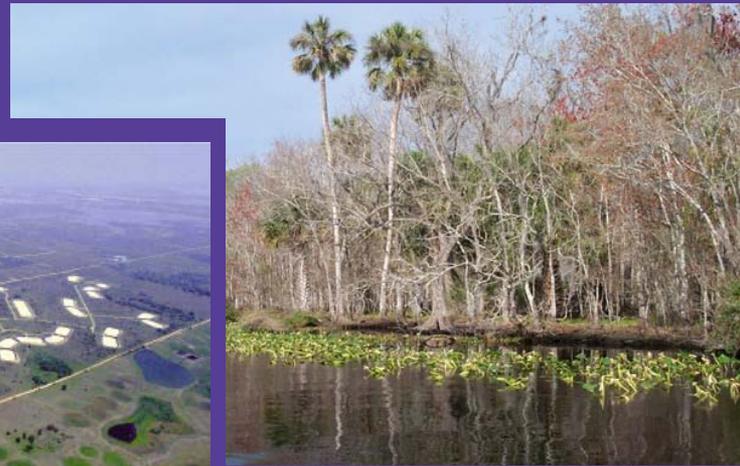
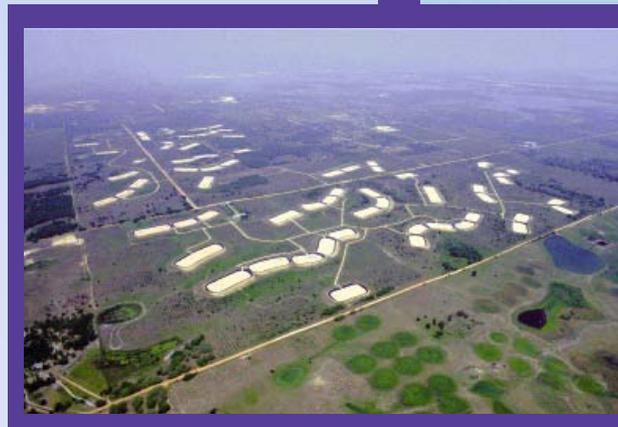
Indirect Potable Reuse

- Diminishing fresh water resources
- Inefficiencies of non-potable reuse
 - Over-irrigation
 - Not a 1:1 replacement of potable water use
 - Cost

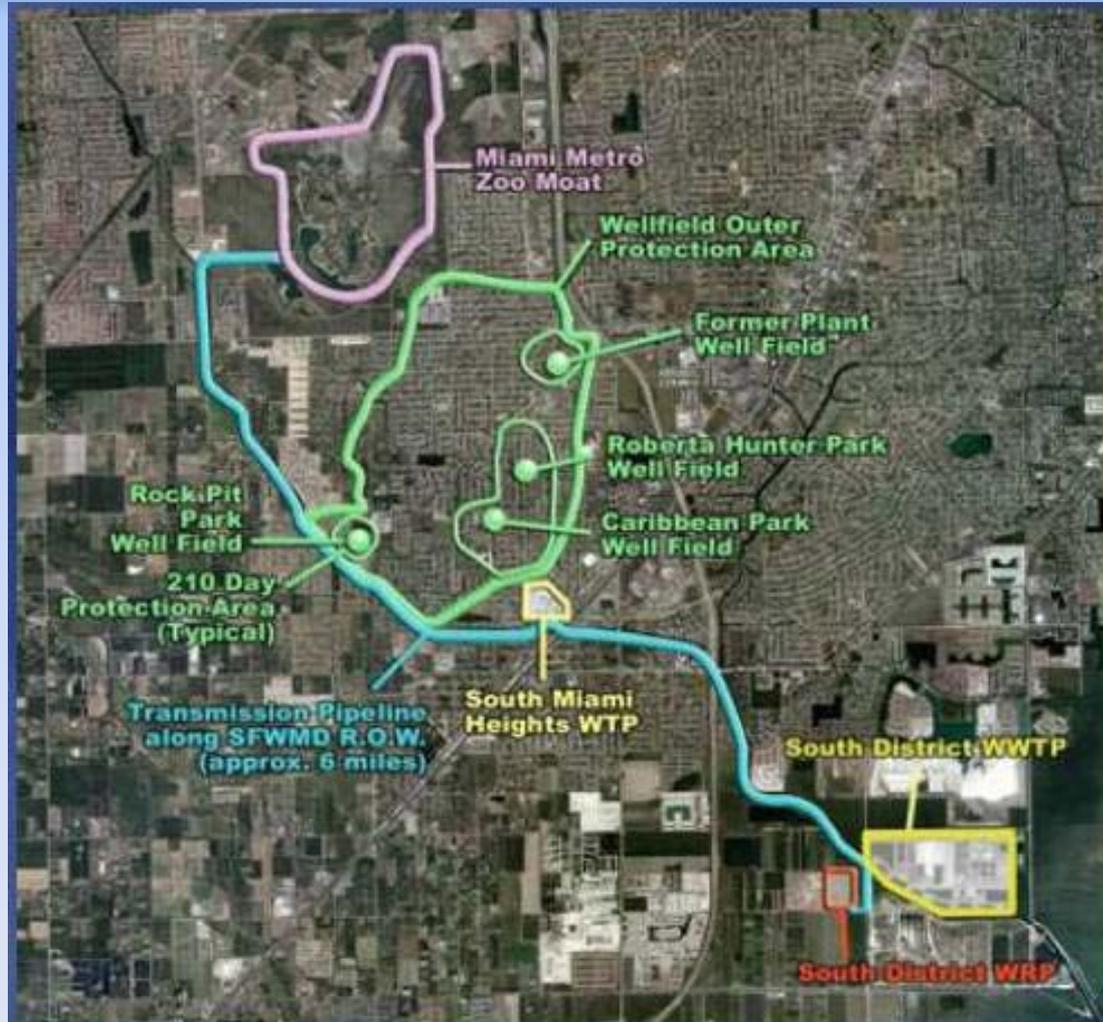


Indirect Potable Reuse

- Reclaimed water is returned to the natural environment and mixes with other waters before withdrawal and treatment for potable use
 - Groundwater
 - Reservoir
 - Stream



South District Groundwater Recharge



Summary

- Effluent disposal early driver
 - Success!
 - Florida leader in water reuse
- Shift to water supply focus
- Need to overcome disposal stigma
 - Value reclaimed water as a supply resource
 - California leads in indirect potable reuse
 - Water is water

