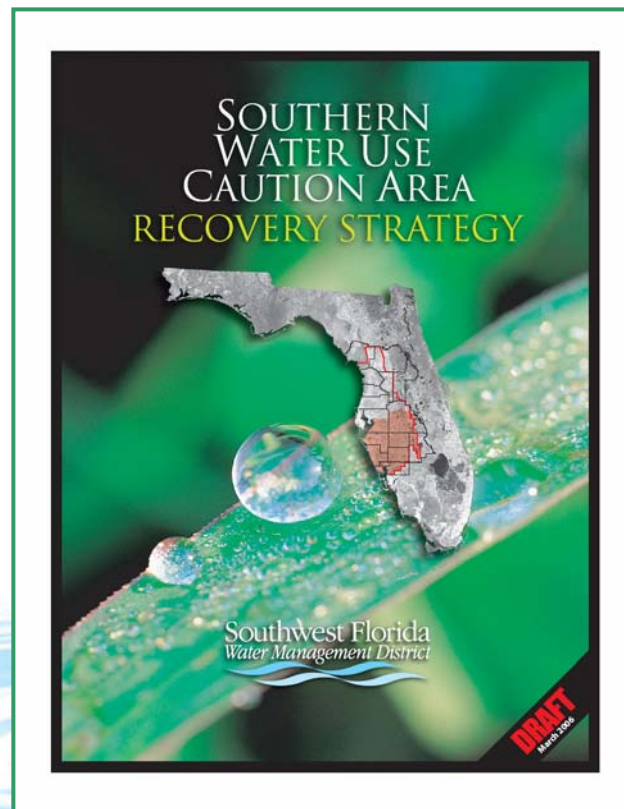
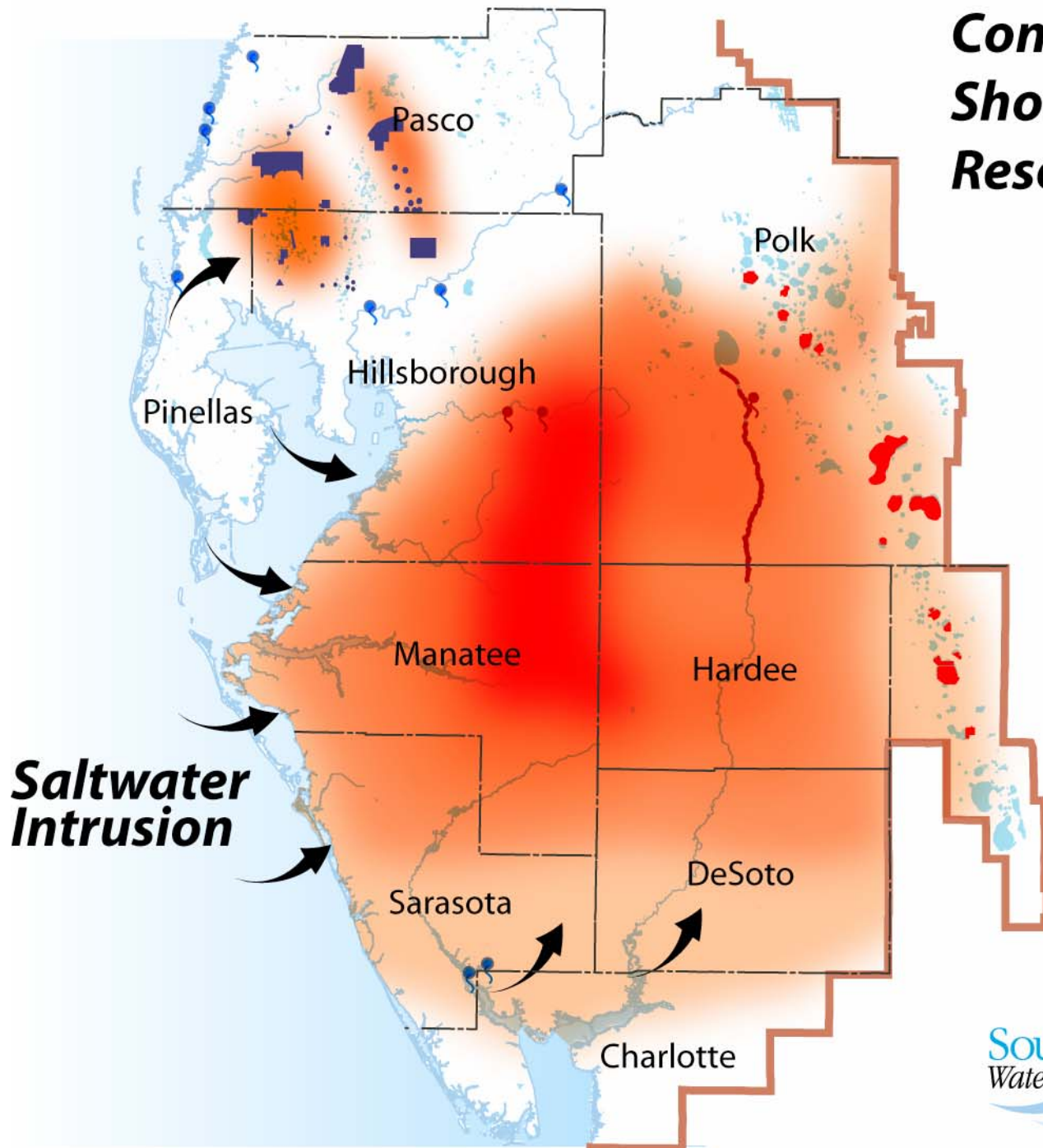


Southern Water Use Caution Area Recovery Strategy

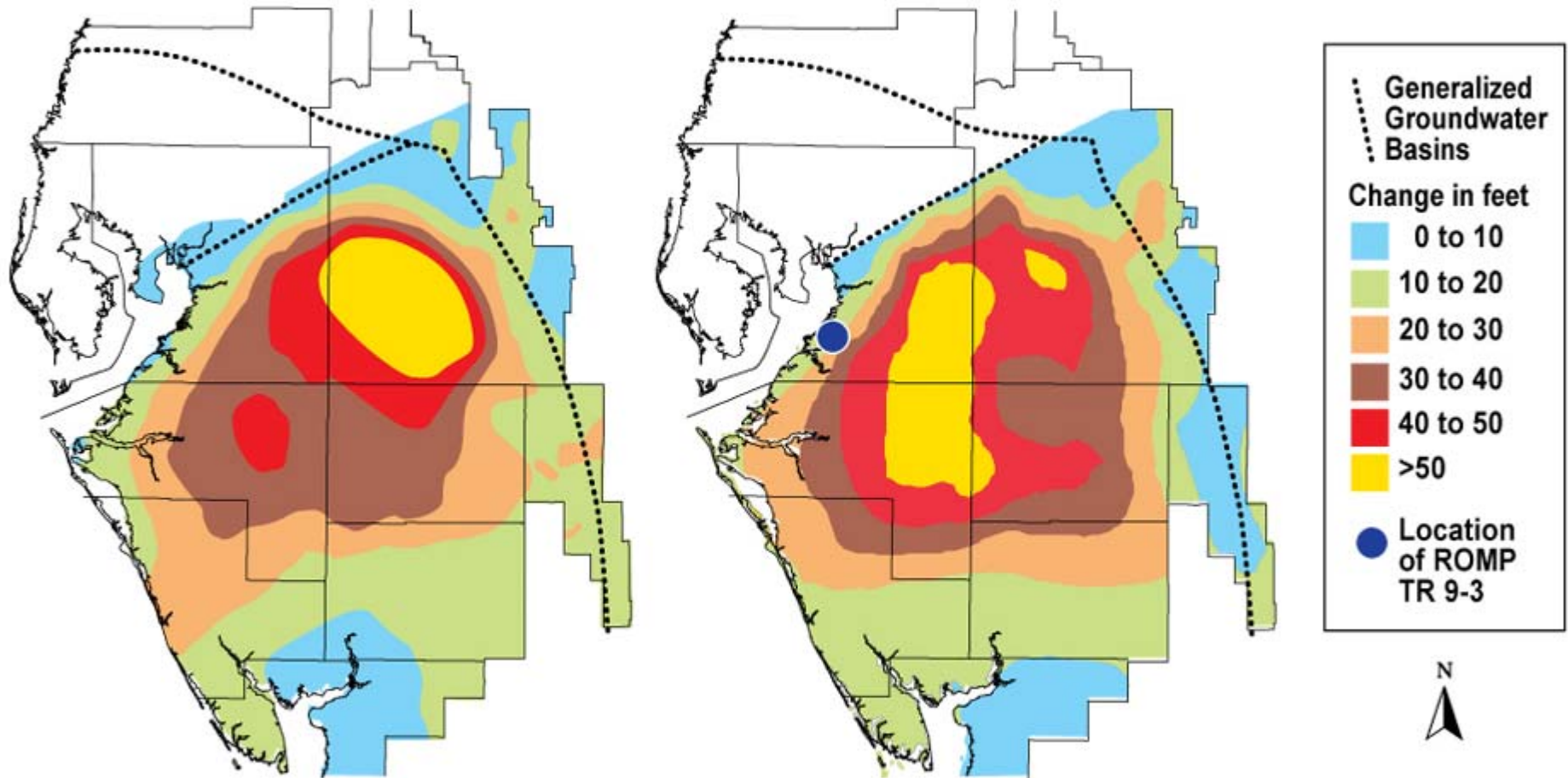
September 29, 2006



Conceptual Map Showing Areas of Resource Concern



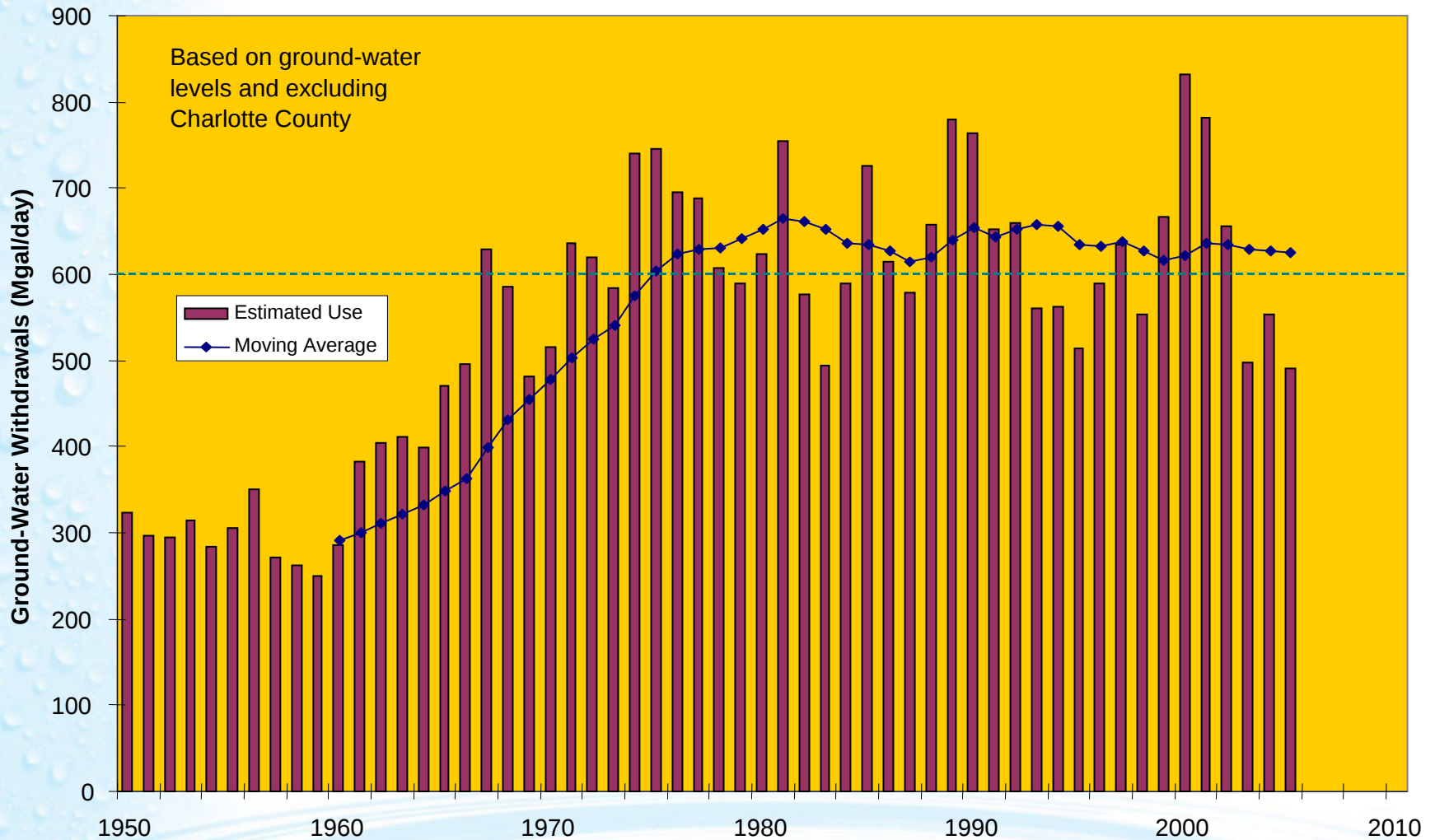
Long Term Changes in the Potentiometric Surface of the Upper Floridan Aquifer



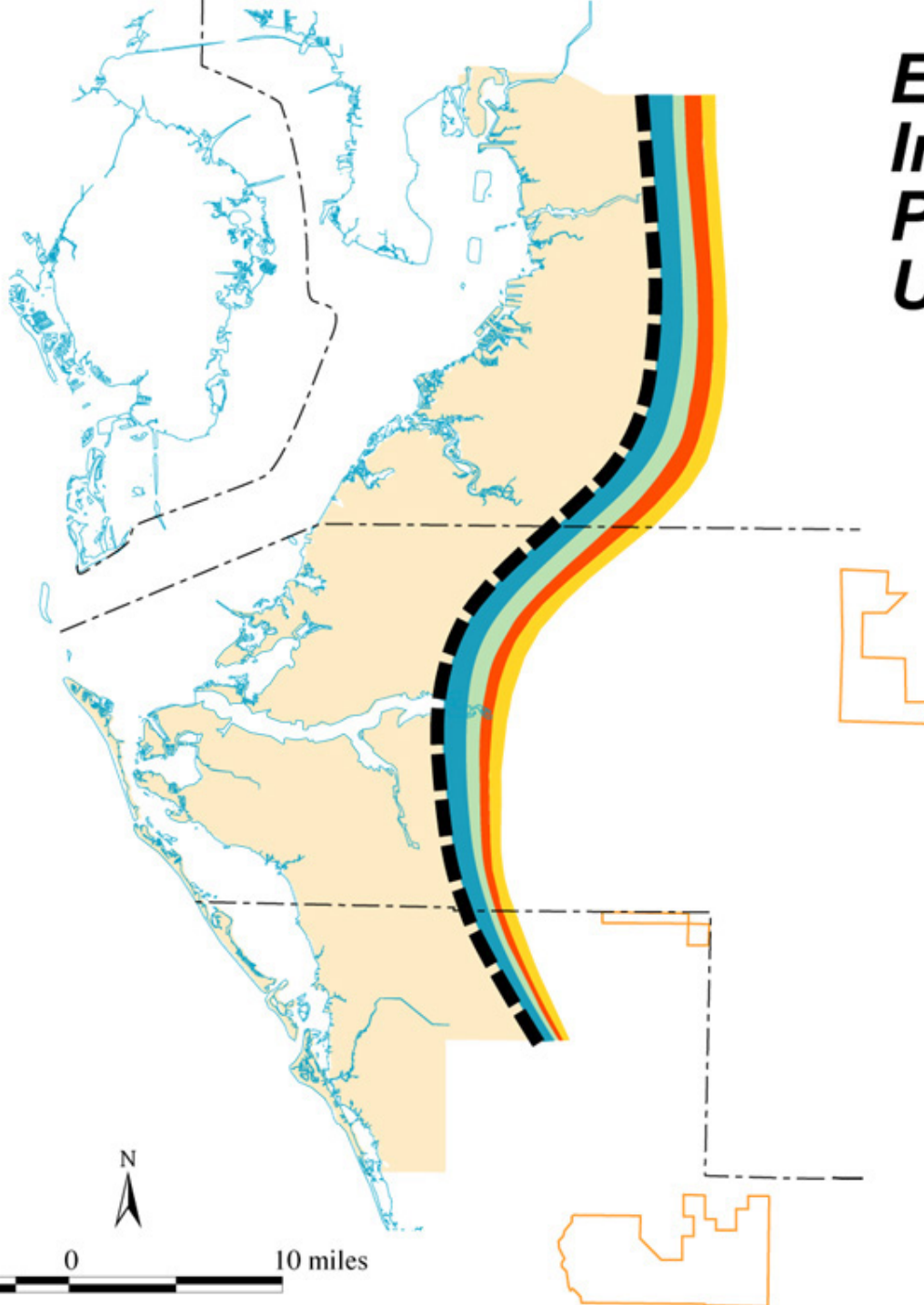
Predevelopment to 1975

Predevelopment to 2000

SWUCA: Estimated Ground-Water Use



Extent of the Saltwater Interface in the Highly Permeable Zone of the Upper Floridan Aquifer



■ ■ Present Position
of Interface

■ Position of Interface
after 50 Years:

■ 400 MGD

■ 600 MGD

■ 800 MGD

■ 1000 MGD

Note: Interface is 1,000 mg/L isochlor

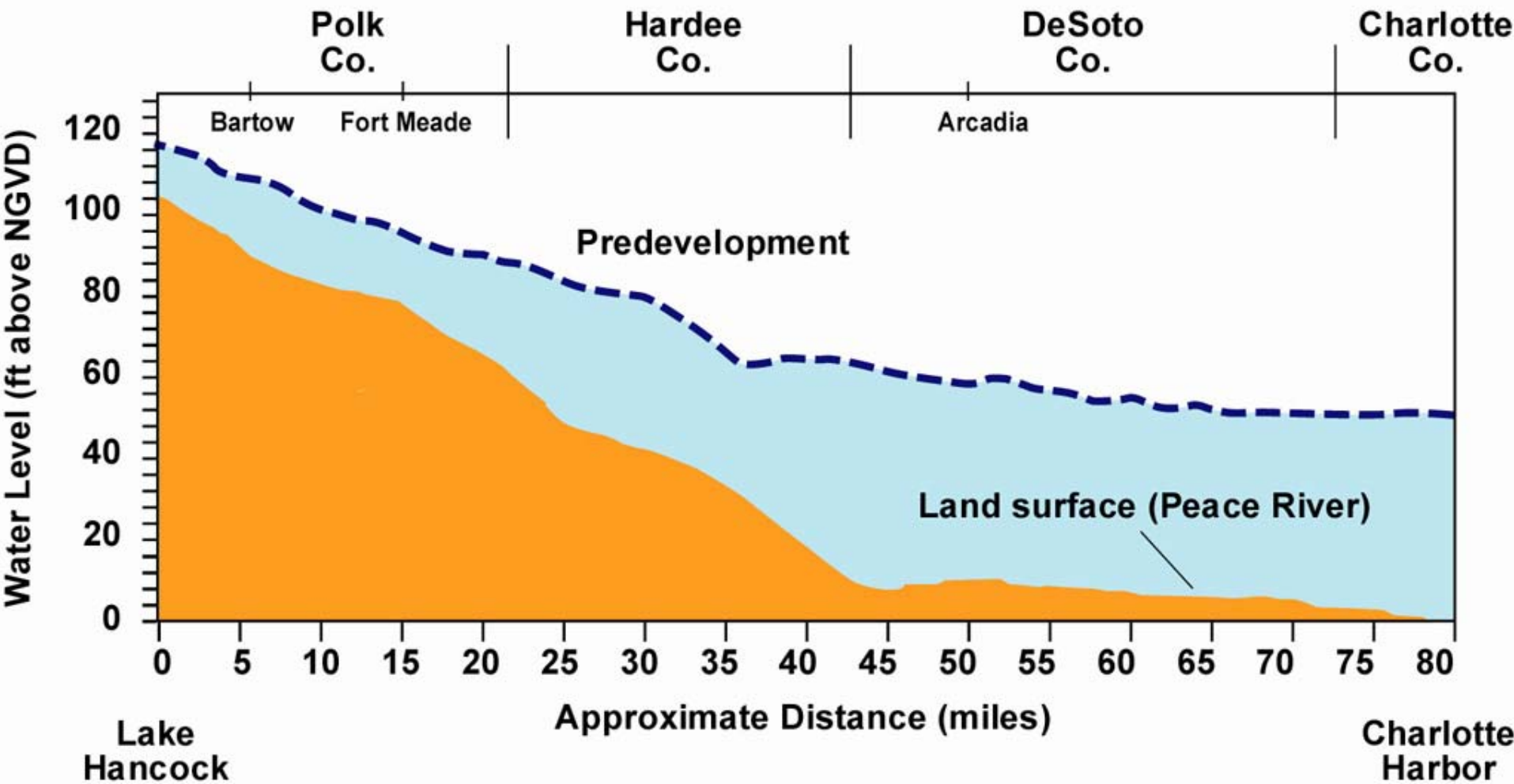
Peace River



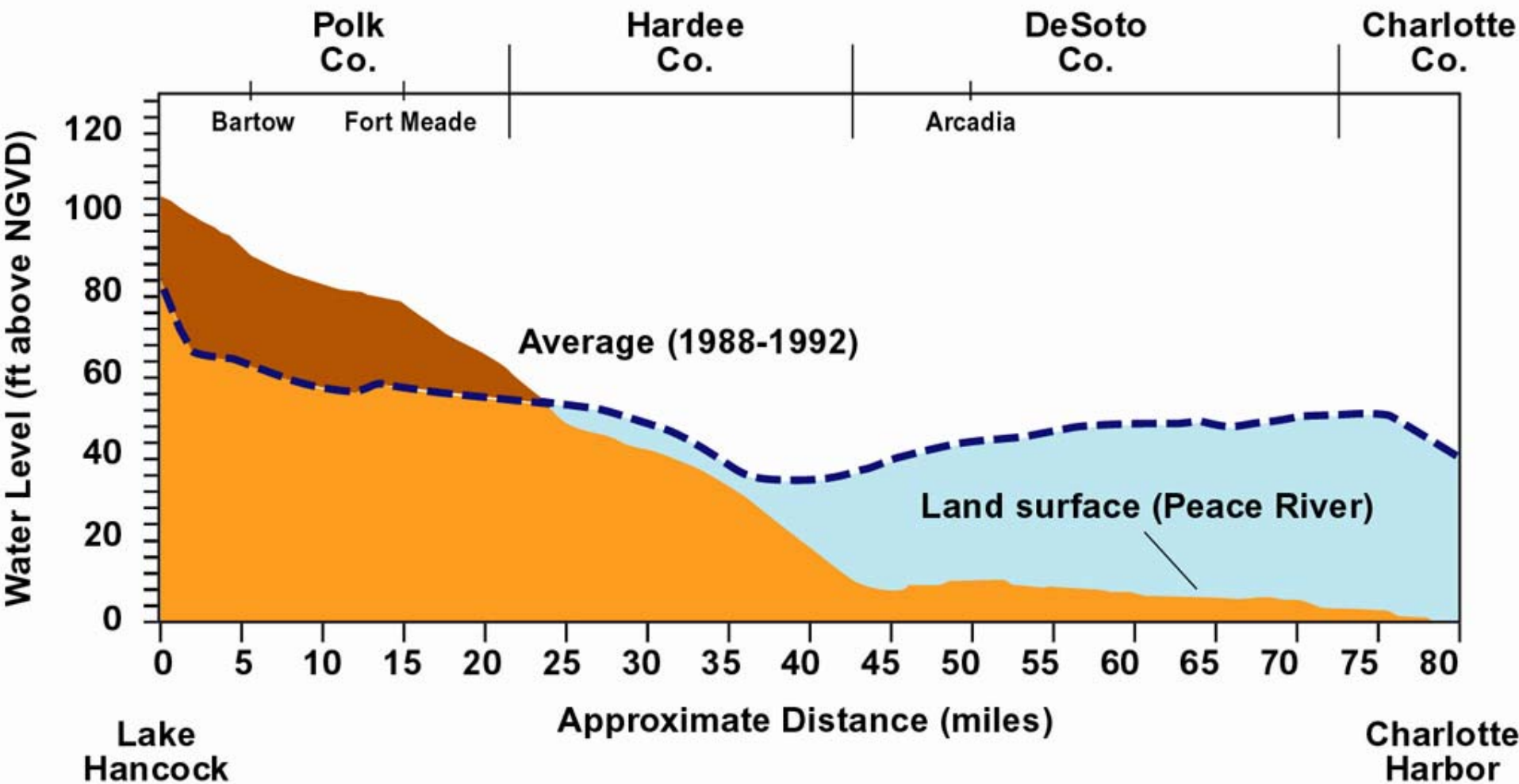
Peace River

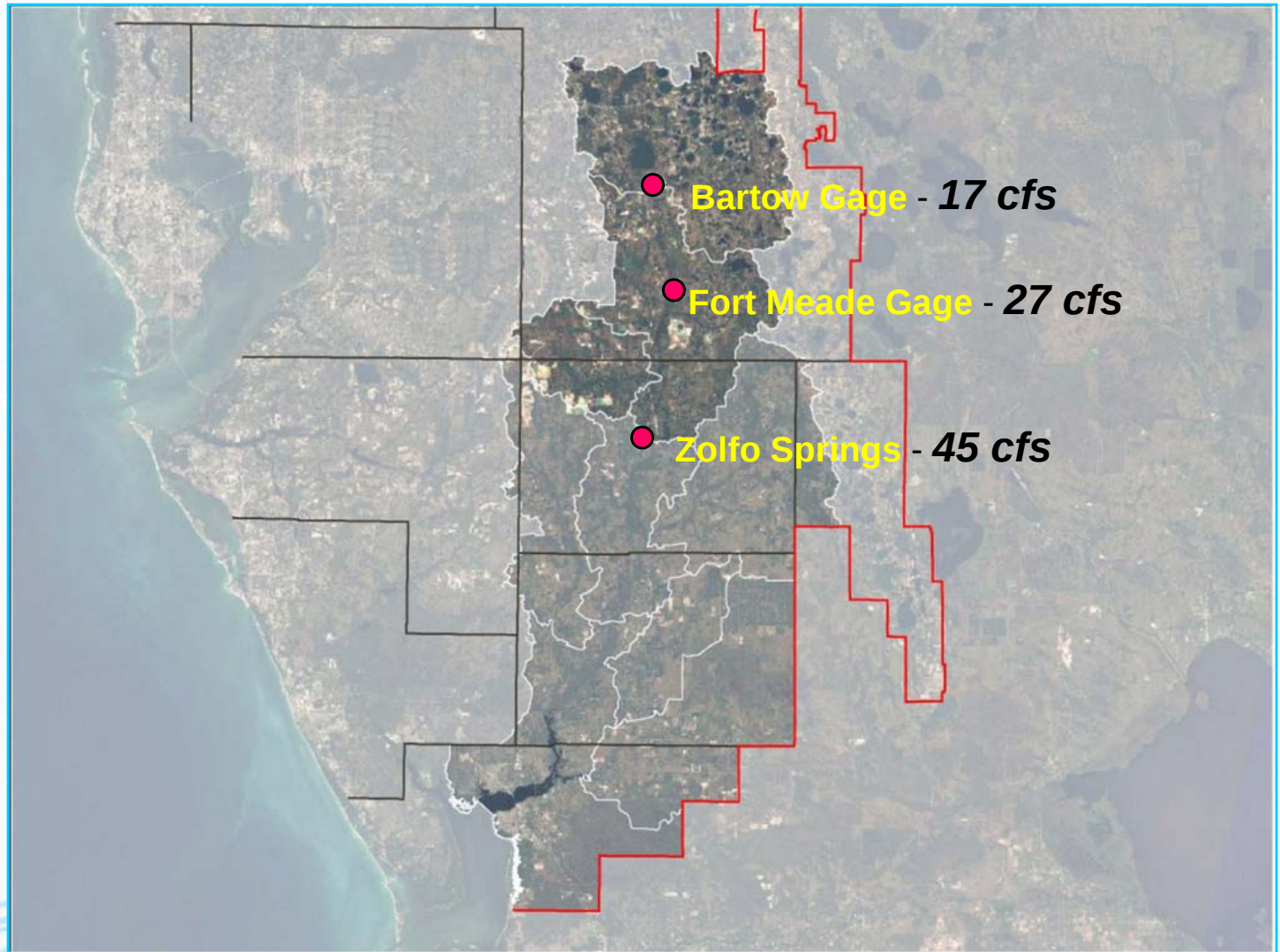


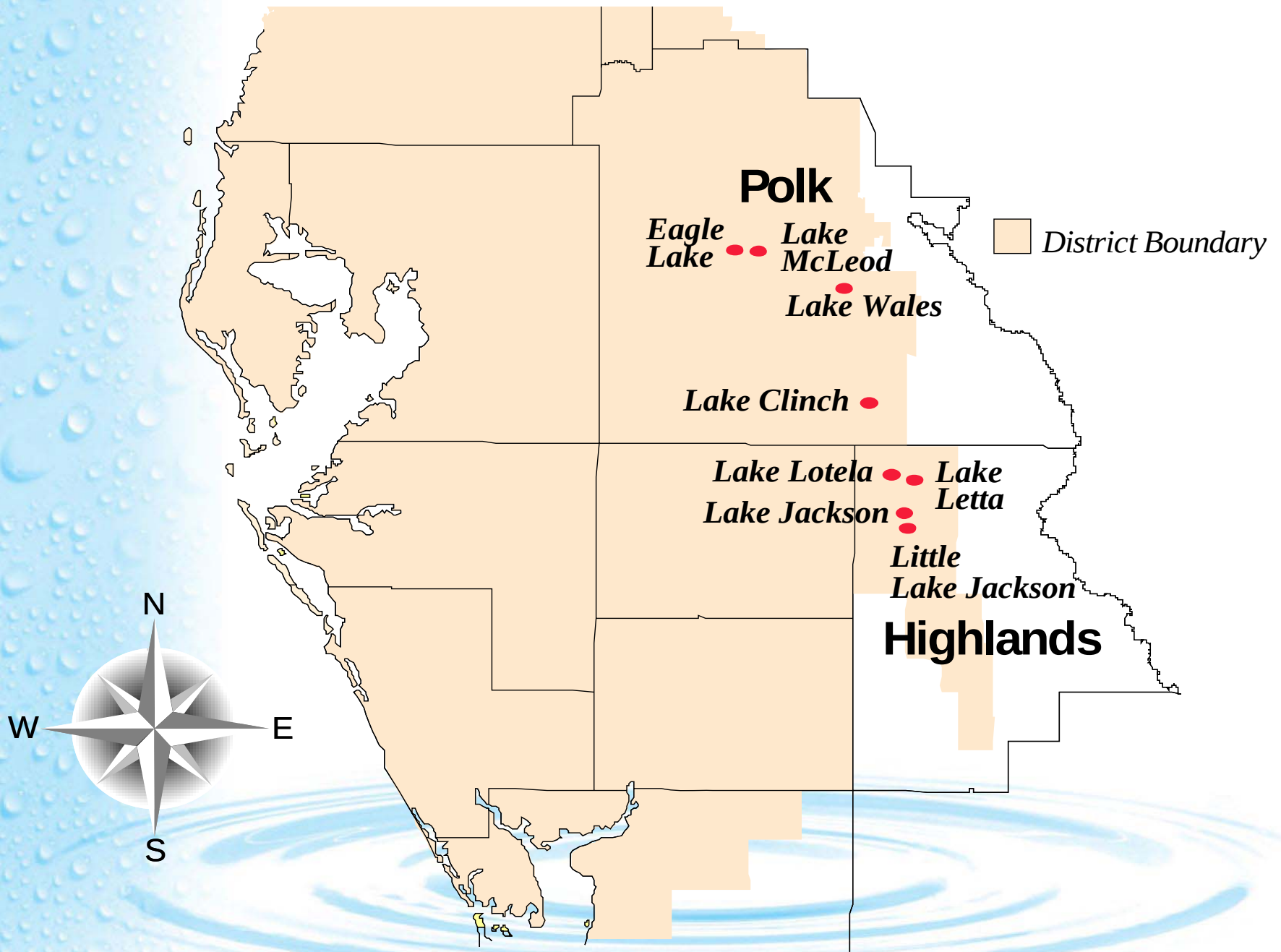
Generalized Potentiometric Surface of the Upper Floridan Aquifer along the Peace River



Generalized Potentiometric Surface of the Upper Floridan Aquifer along the Peace River







Southern Water Use Caution Area Recovery Strategy

Guiding Principles:

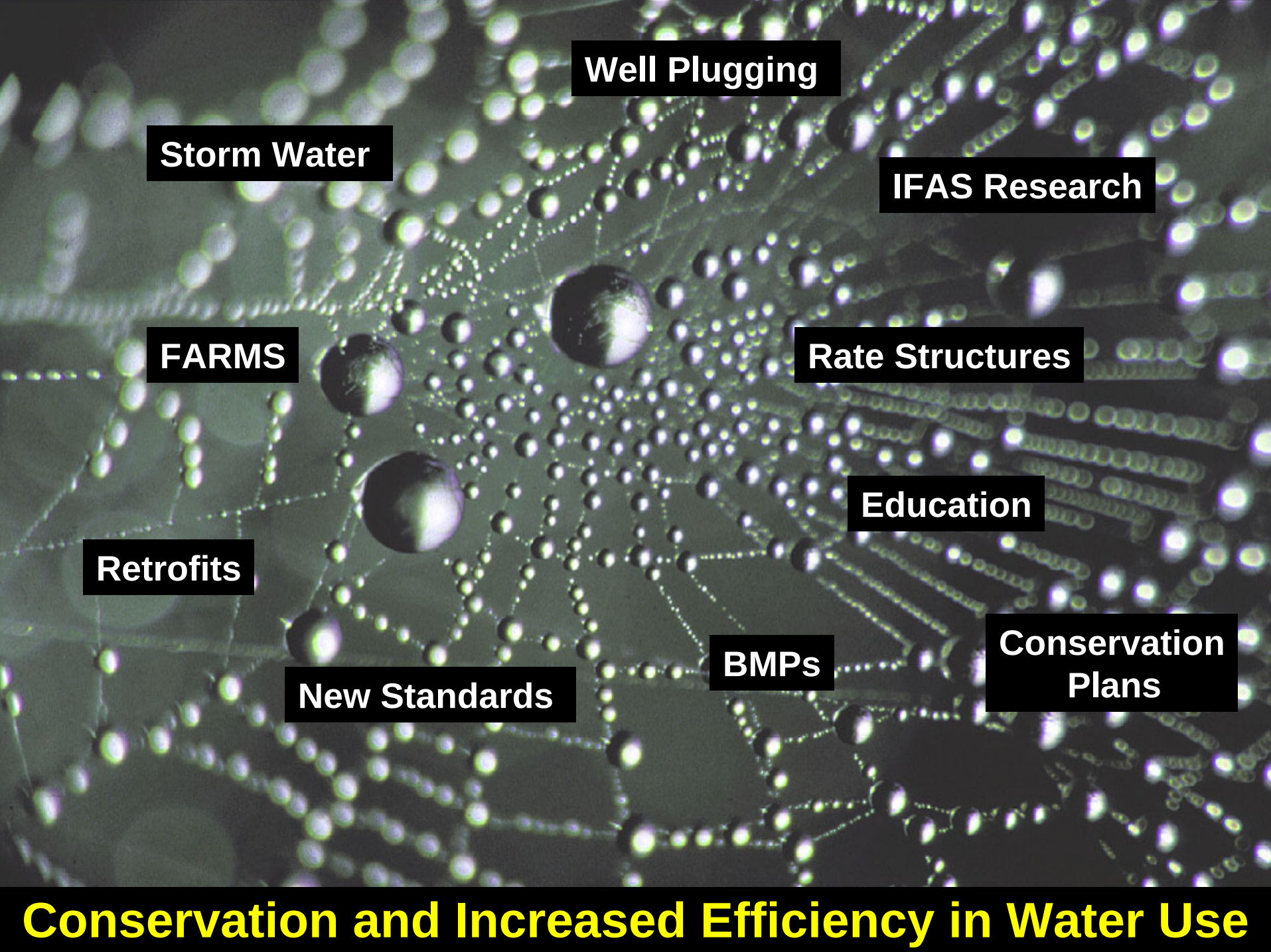
- Contribute to recovery
- Protect investments of existing users
- Allow economic expansion
- Use best available science
- Minimize need for new rules
- Provide incentives
- Implement expeditiously
- Seek consistency with other recovery strategies

Southern Water Use Caution Area Recovery Strategy

- Conservation
- Alternative Supply Development
- Resource Recovery Projects
- Land Use Transitions
- Permitting
- Monitoring and Reporting

Southern Water Use Caution Area Recovery Strategy

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Well Plugging

Storm Water

IFAS Research

FARMS

Rate Structures

Education

Retrofits

BMPs

**Conservation
Plans**

New Standards

Conservation and Increased Efficiency in Water Use

Southern Water Use Caution Area Recovery Strategy

- Conservation
- **Alternative Supply Development**
- Resource Recovery Projects
- Land Use Transitions
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- Monitoring and Reporting



Alternative Supply Development



Alternative Supplies: Surface Water, Sea Water, Rainfall Capture, Shallow Aquifers, Reclaimed Water, Stormwater, etc.

Surface Water Projects

- **Off-stream Reservoirs**
- **Aquifer Storage and Recovery**
- **Aquifer Recharge**
- **Wellfield Rehydration**
- **Augumentation of Impacted Surface Water Bodies**
- **Enhancement of Minimum Stream Flows**



Reclaimed Water

- Master plans
- Transmission, distribution
- Storage - Tanks, Reservoirs, ASR
- Aquifer Recharge
- Efficiency Measures (Metering, Rates)
- Interconnects
- System Expansion



Southern Water Use Caution Area Recovery Strategy

- Conservation
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Upper Peace River Restoration Projects

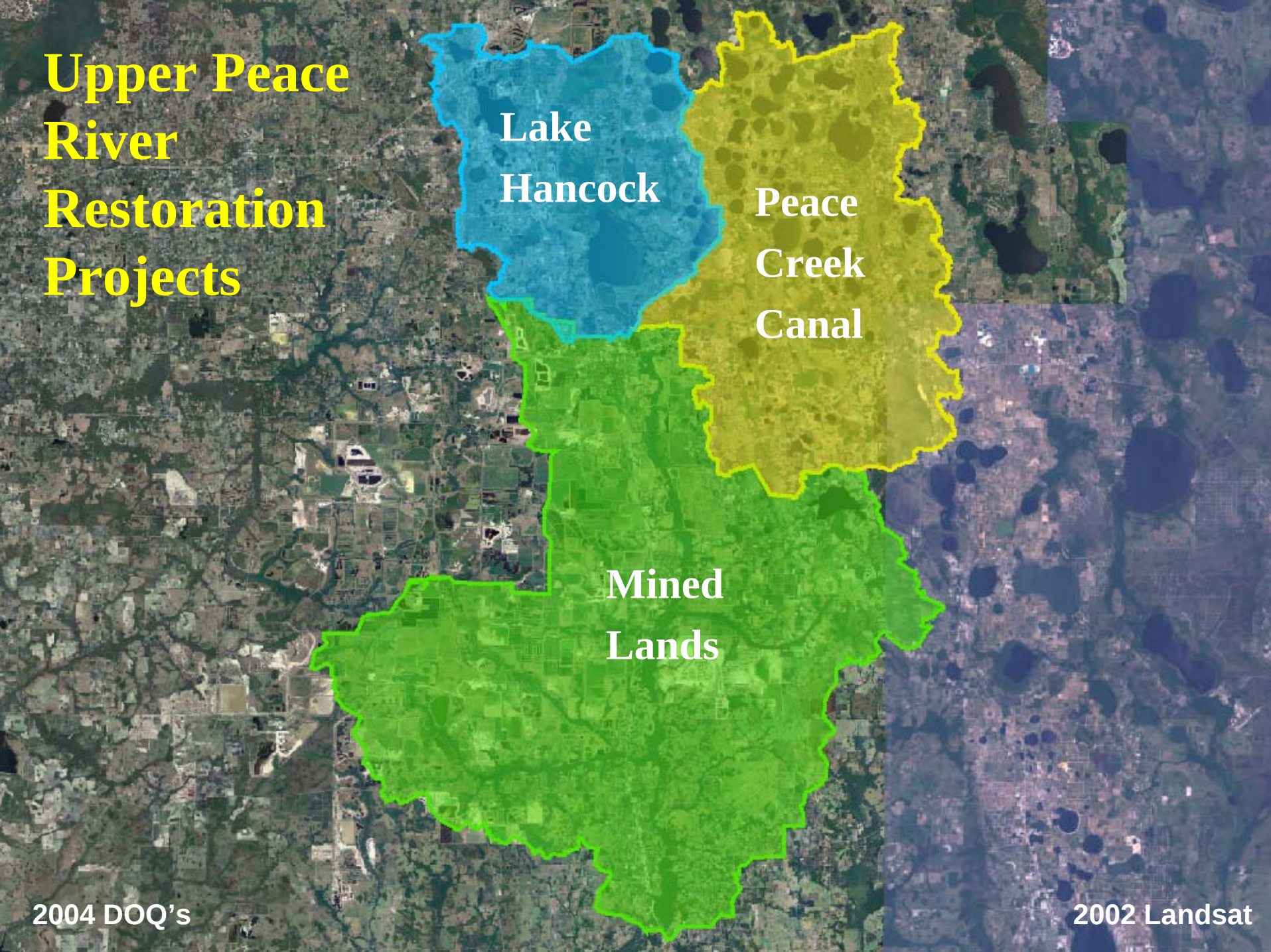
Lake
Hancock

Peace
Creek
Canal

Mined
Lands

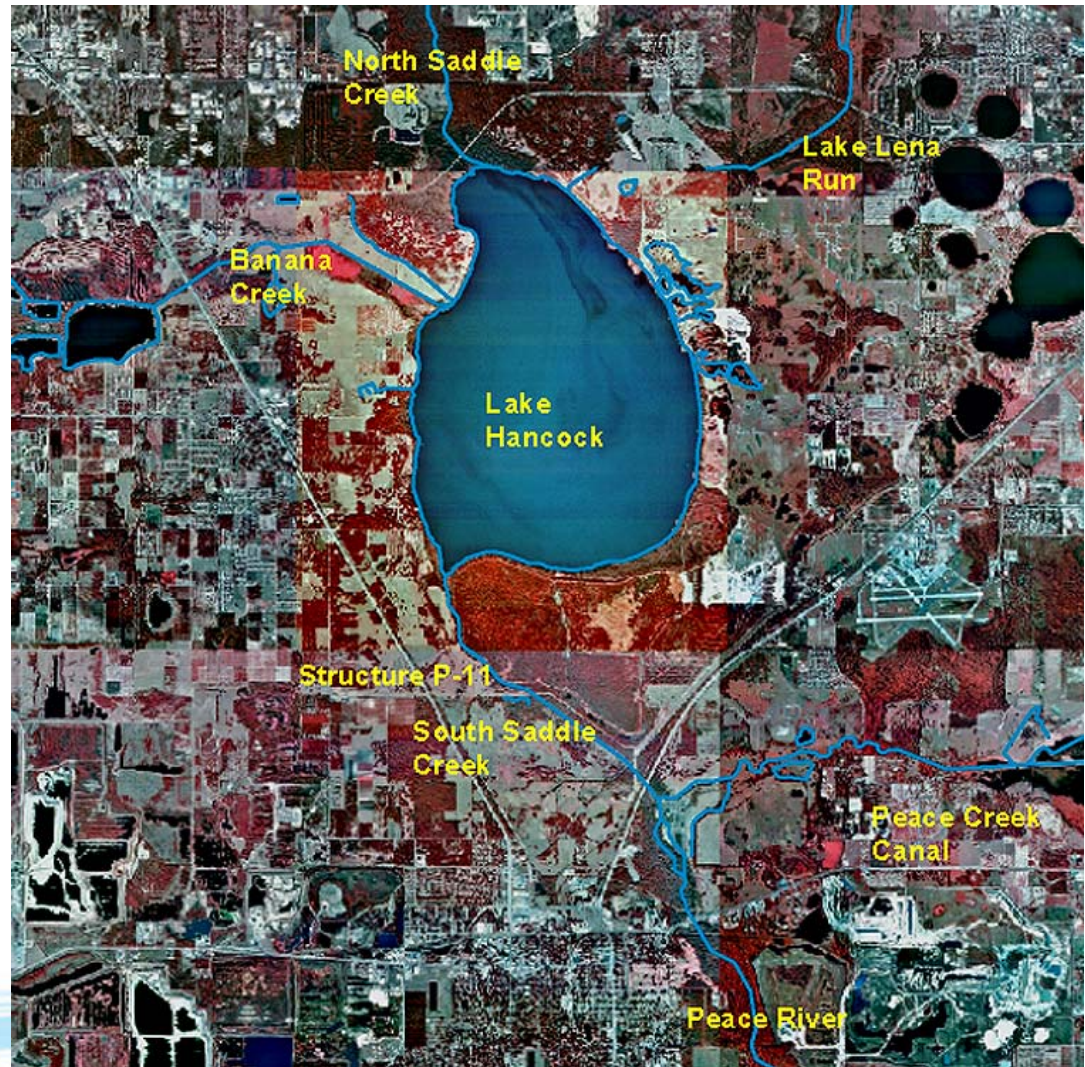
2004 DOQ's

2002 Landsat



Lake Hancock Lake Level Modification

- Create storage by raising lake level to historic levels from 98.7 to 100 feet
- Provide releases to achieve minimum flows
- Conceptual ERP – 2006
- Construction 2008 - 2010



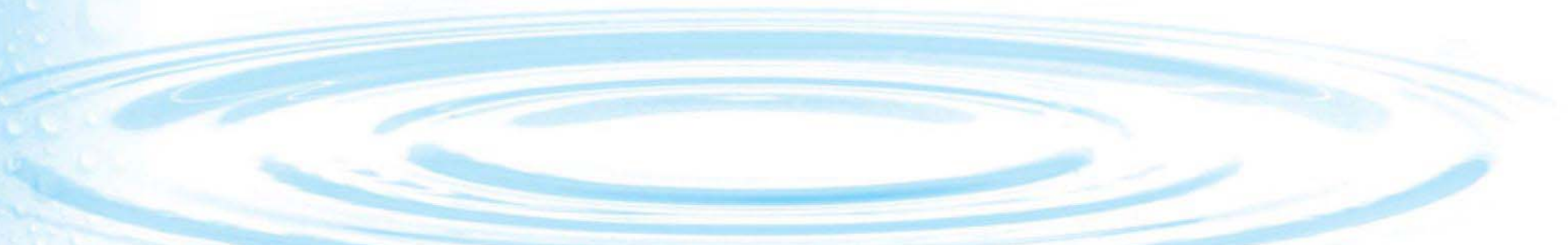
Lake Hancock Water Quality Treatment

- Construct treatment system to improve quality of discharges
 - approved a nitrogen reduction goal of 27 percent
 - will pursue a wetlands treatment system on about 1,000 acres



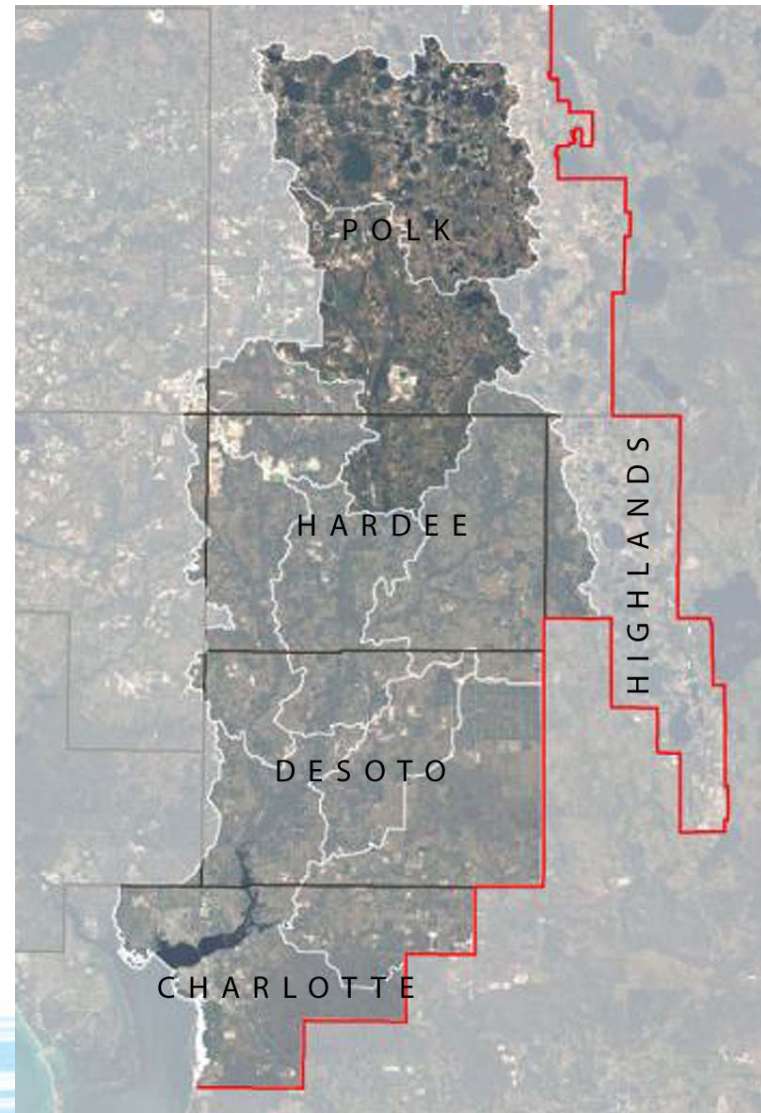
Peace Creek Watershed

- Identify projects to:
 - restore basin storage
 - provide recharge
 - improve water quality
 - provide flood protection
 - improve natural systems



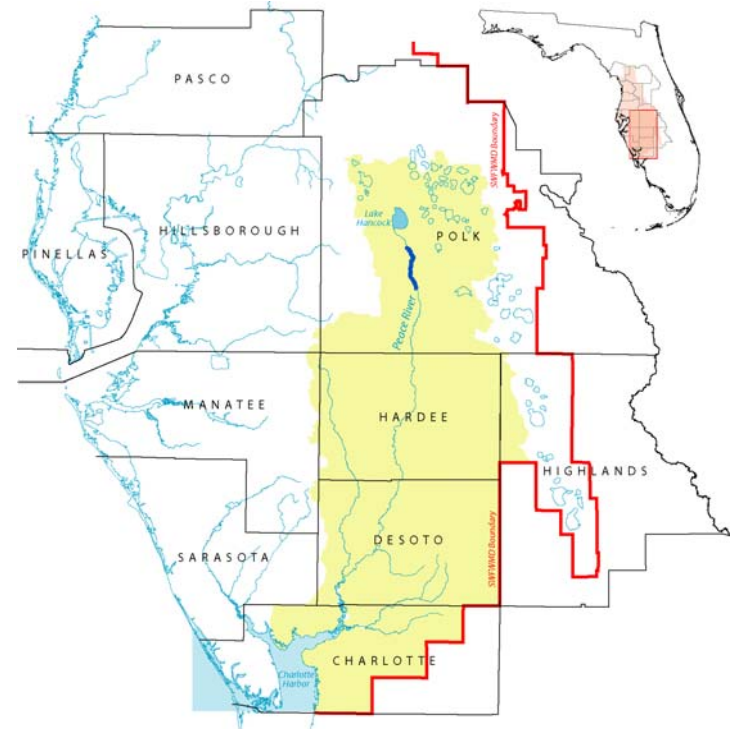
Upper Peace River Resource Development

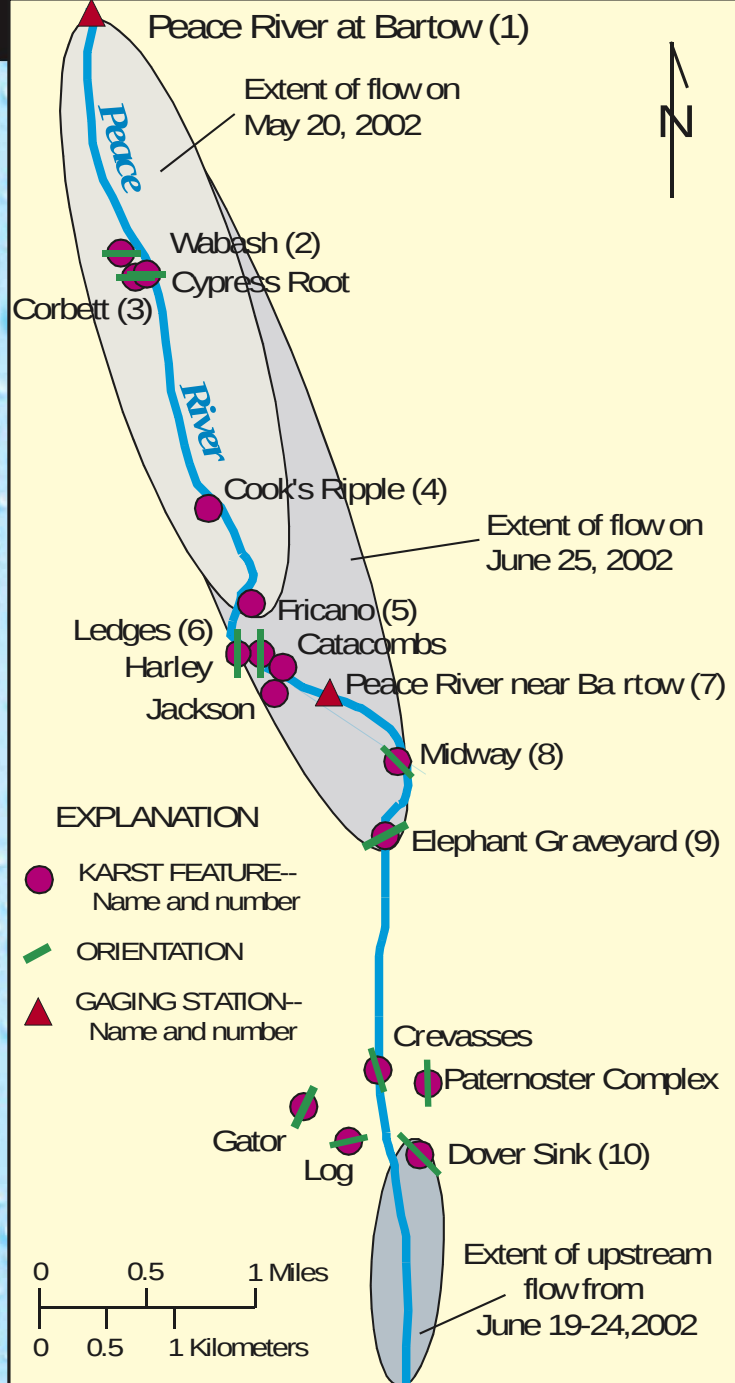
- Investigate projects to:
 - provide wet season storage for later release to achieve minimum flows
 - reconnect impacted lands



Streamflow Losses Through Karst Features

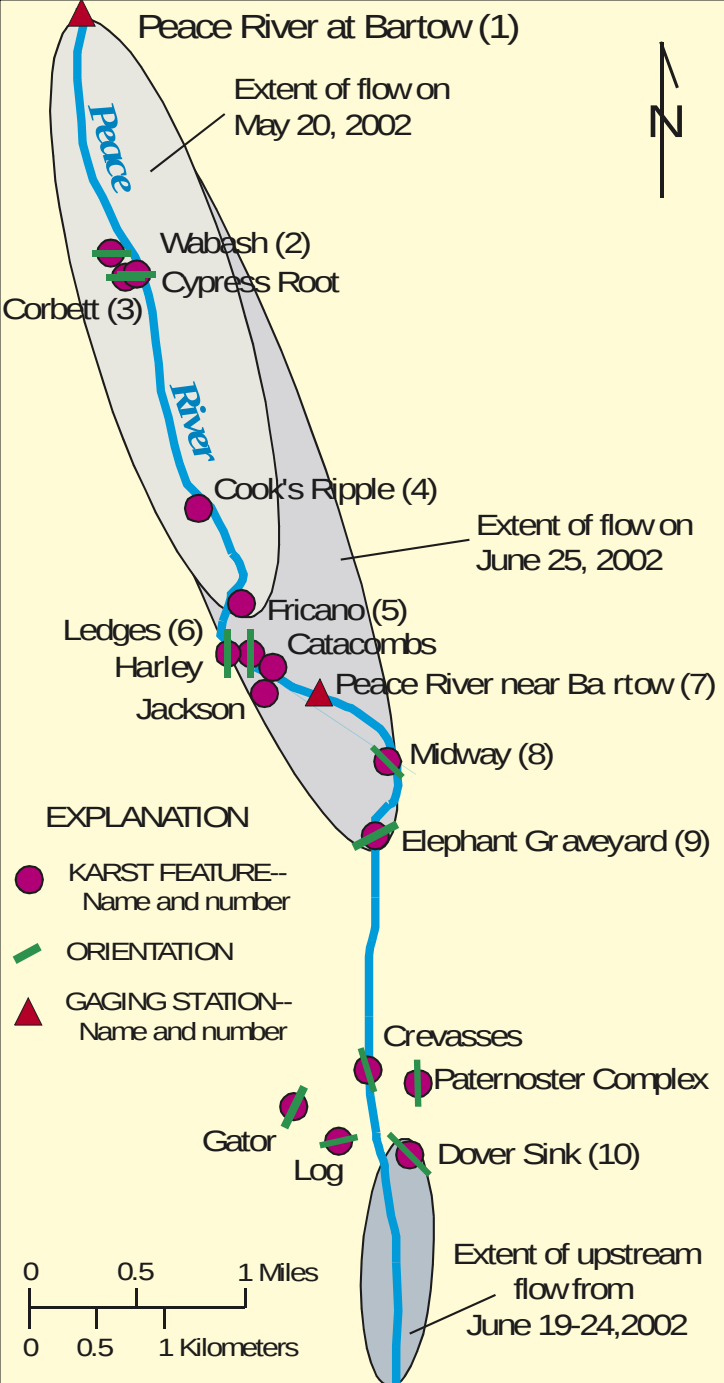
- Assess hydraulic connection between the river and underlying aquifers:
 - characterize karst features
 - quantify flow losses





Cypress Root



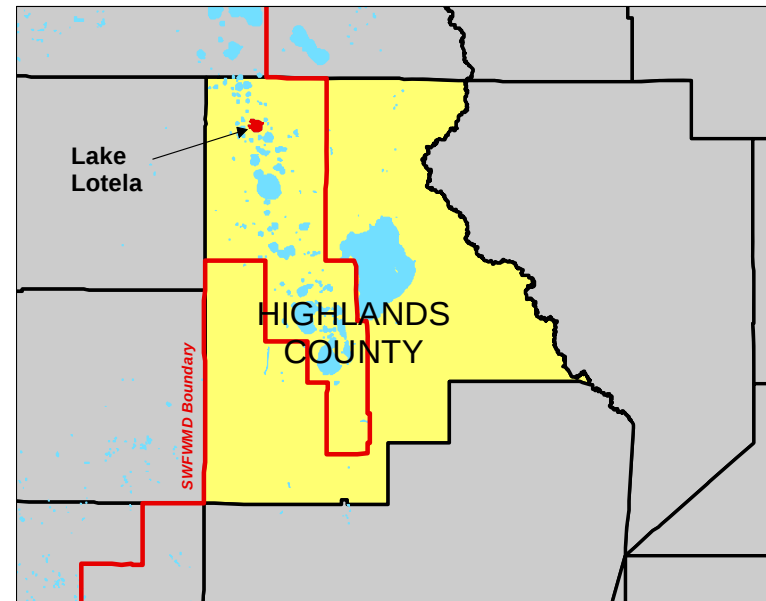


The Ledges

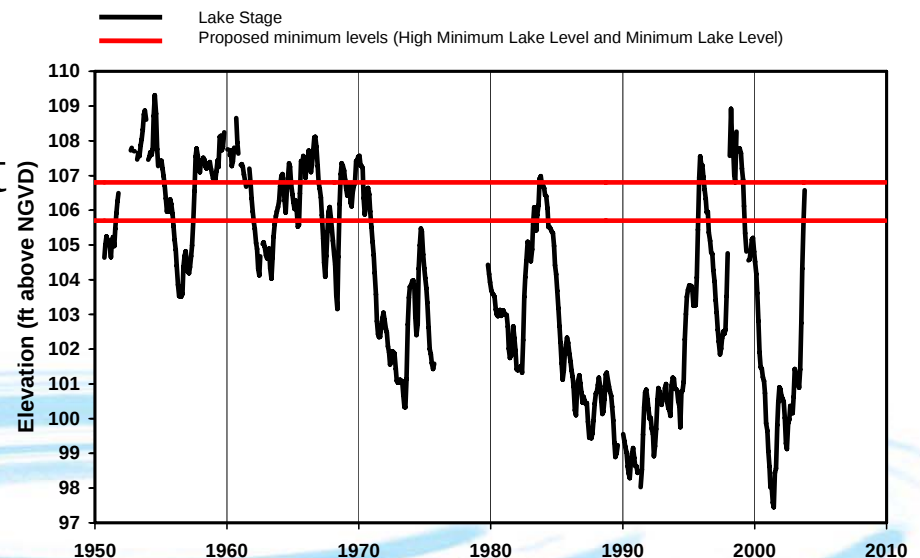


Pilot Augmentation Project for Lake Lotela

- Assess feasibility of using groundwater from the surficial aquifer to augment the lake:



Lake Lotela - Lake Stage and Proposed Minimum Levels



Southern Water Use Caution Area Recovery Strategy

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**Southern
Water
Use
Caution
Area**

Urban

**1990 – 2004
Urban**

 **No Change**

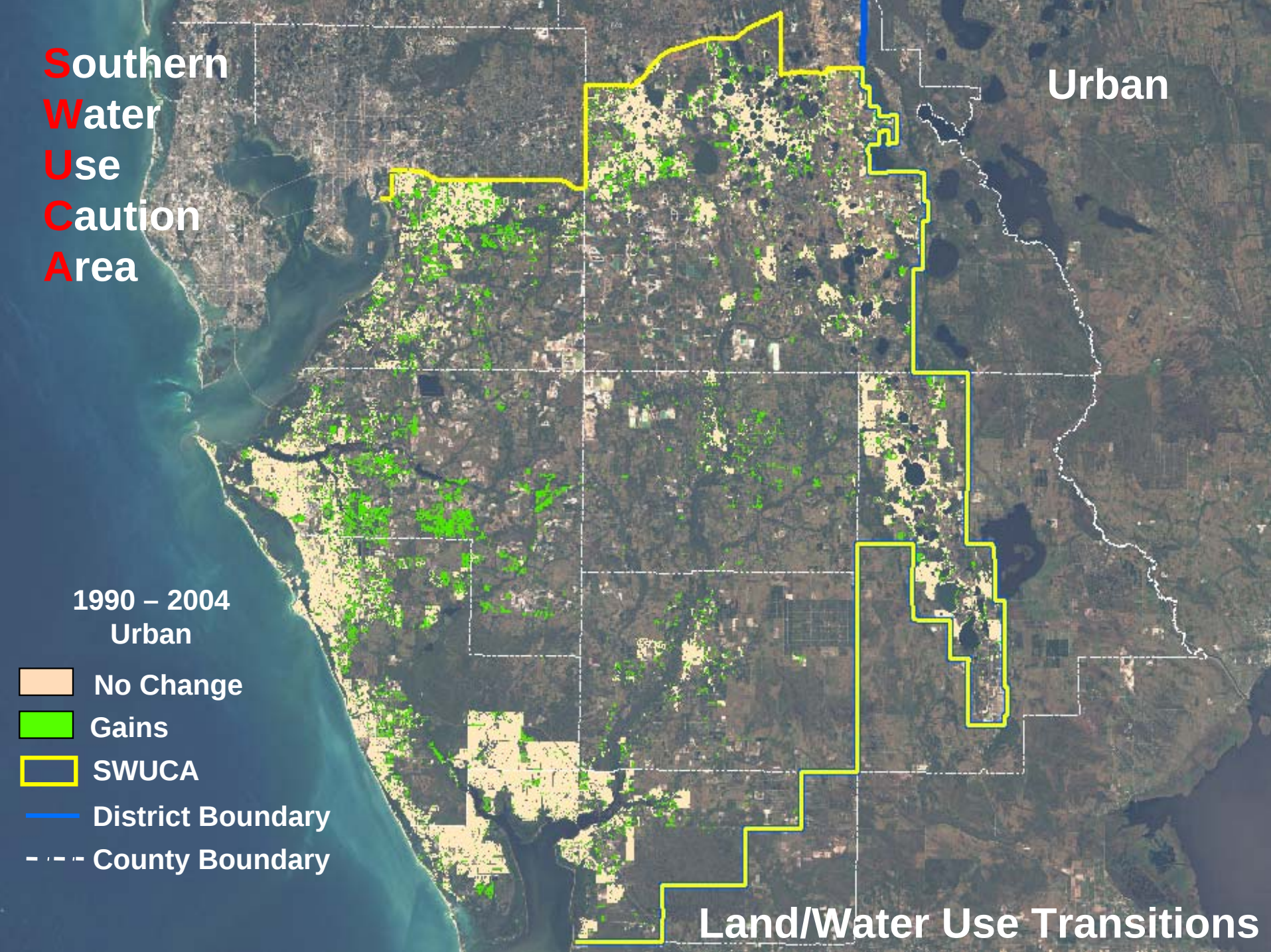
 **Gains**

 **SWUCA**

 **District Boundary**

 **County Boundary**

Land/Water Use Transitions



**Southern
Water
Use
Caution
Area**

Agriculture

**1990 – 2004
Agriculture**

 **No Change**

 **Gains**

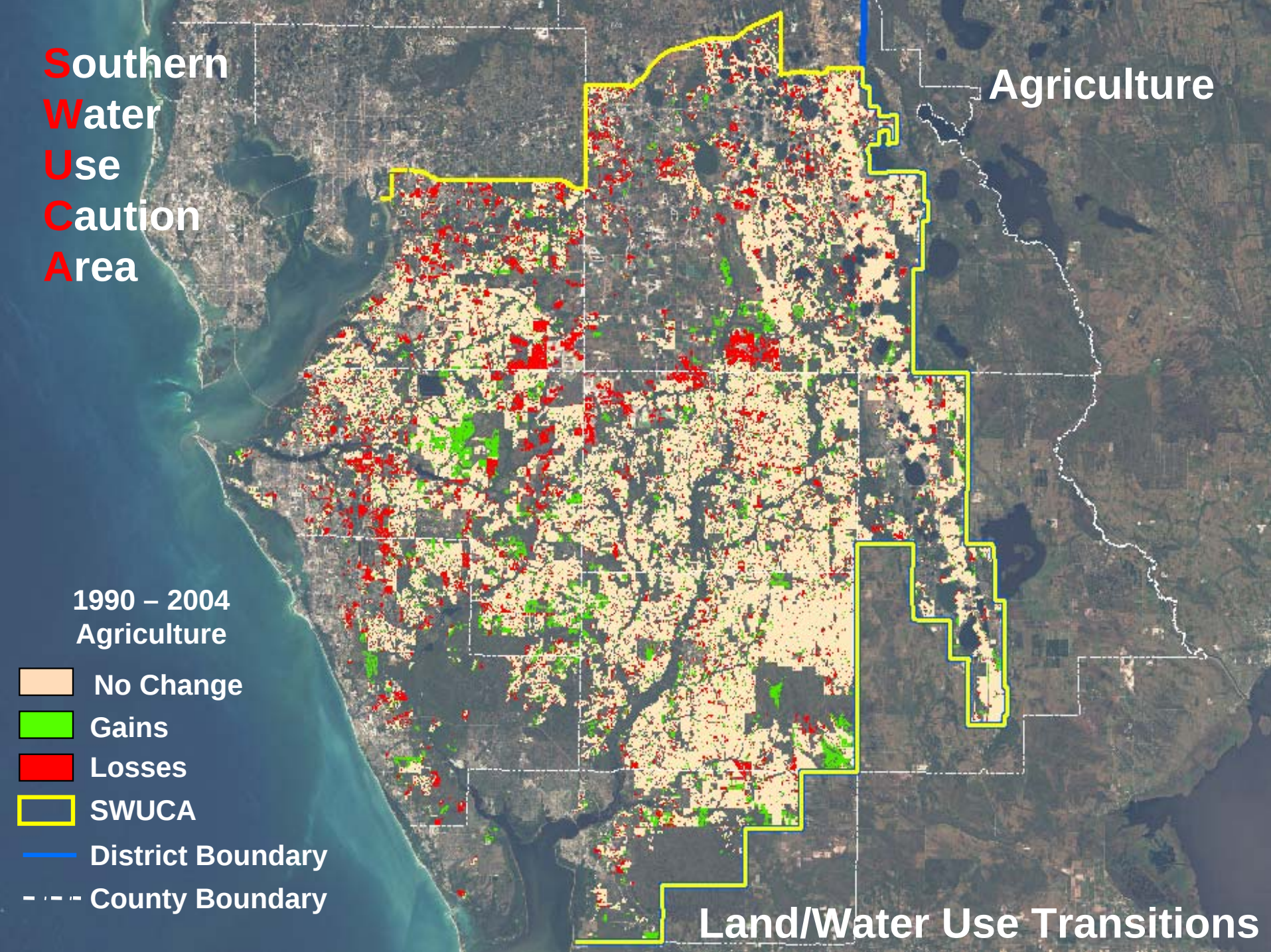
 **Losses**

 **SWUCA**

 **District Boundary**

 **County Boundary**

Land/Water Use Transitions



Southern Water Use Caution Area Recovery Strategy

- Conservation
- Alternative Supply Development
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- **Permitting**
- Monitoring and Reporting

SWUCA RECOVERY STRATEGY – PERMITTING

- Reasonable and Beneficial
 - Conservation requirements
- Alternative supplies - technically, economically and environmentally feasible
- Existing permits renewed
- New Floridan aquifer quantities needed
 - No MFL impact – standard permitting
 - Impact MFL – Net Benefit
 - Ground water replacement credit
 - Mitigation
 - Participation in resource development project
- Self-relocation

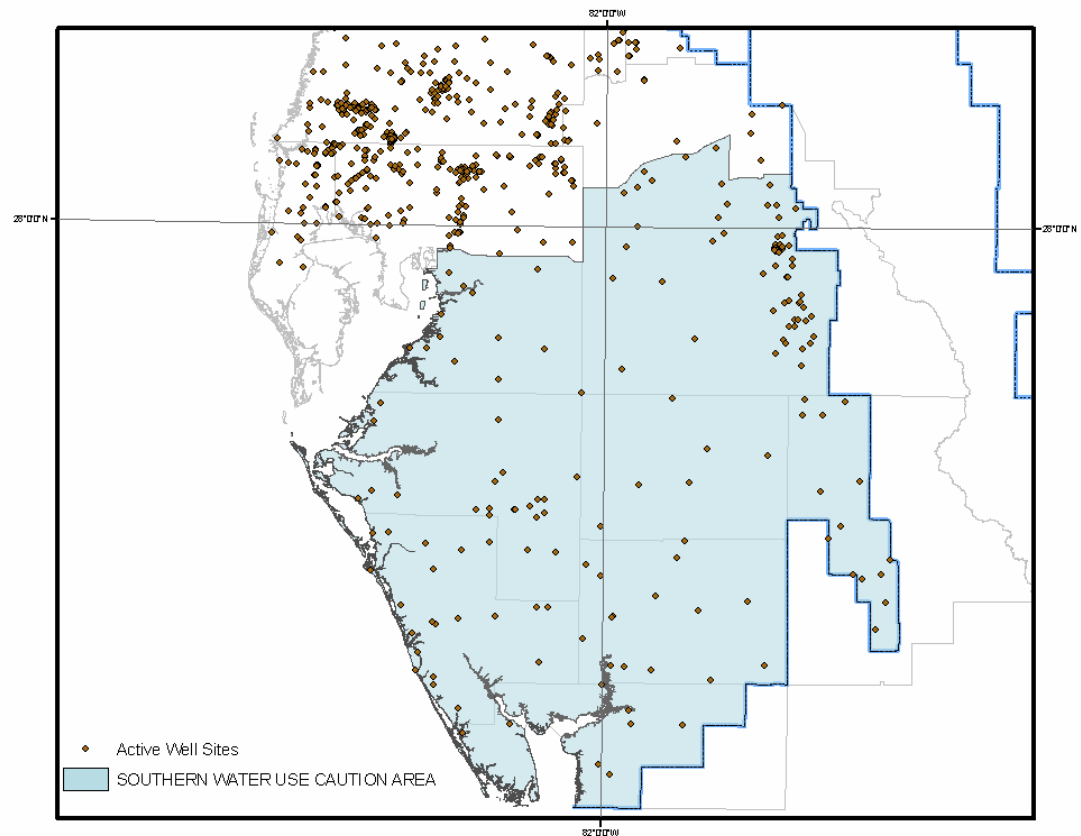
Southern Water Use Caution Area Recovery Strategy

- Conservation
- Alternative Supply Development
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- Land Use Transitions
- Permitting
- **Monitoring and Reporting**

SWUCA Monitoring

Resource Trends

- Resource
- Flows
- Water quality

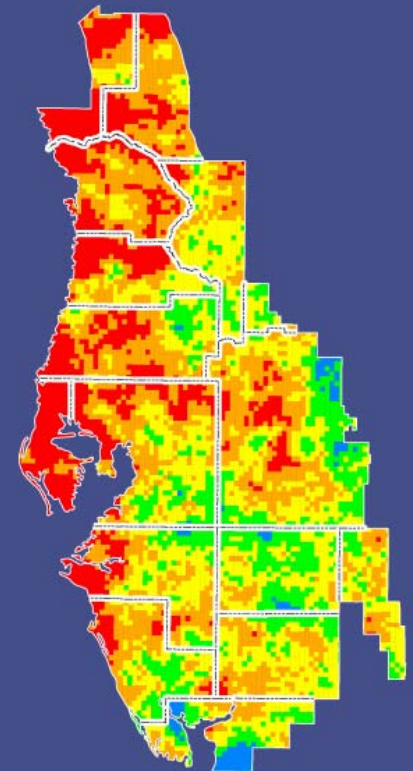
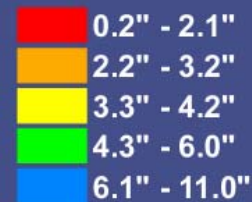


SWUCA Monitoring

Factors Effecting Trends

- **Climate**
- **Water use**
- **Water demands**
- **Surface drainage**
- **Structural alterations**

SWFWMD Rainfall Distribution
September 2005
Actual Rainfall in Inches



SWUCA Monitoring

Cumulative Impact Analysis

- WUP activity
- Projects
- Redistribution

