

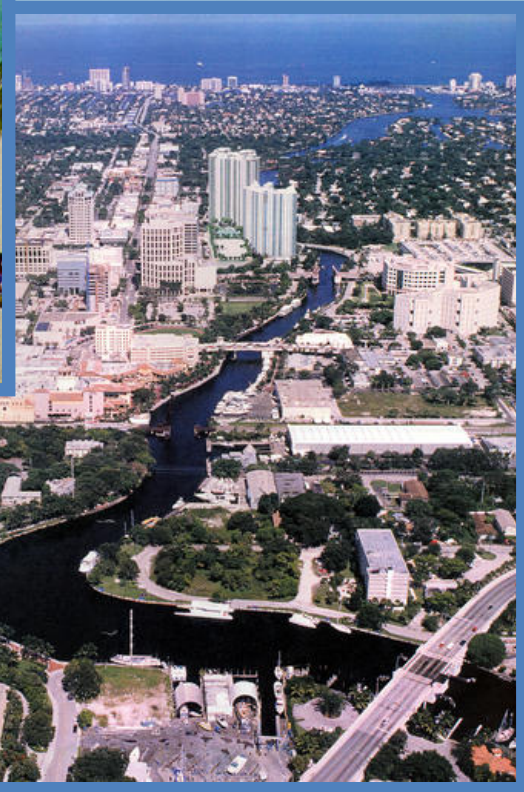
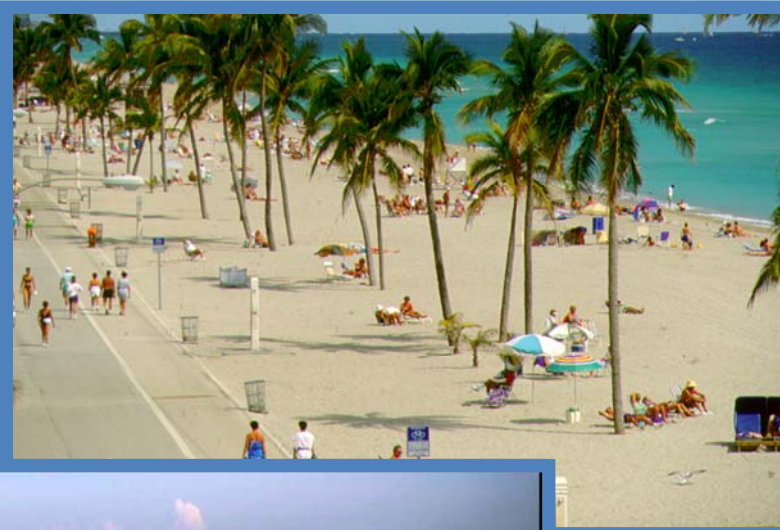
# **Broward Leaders Water Academy**

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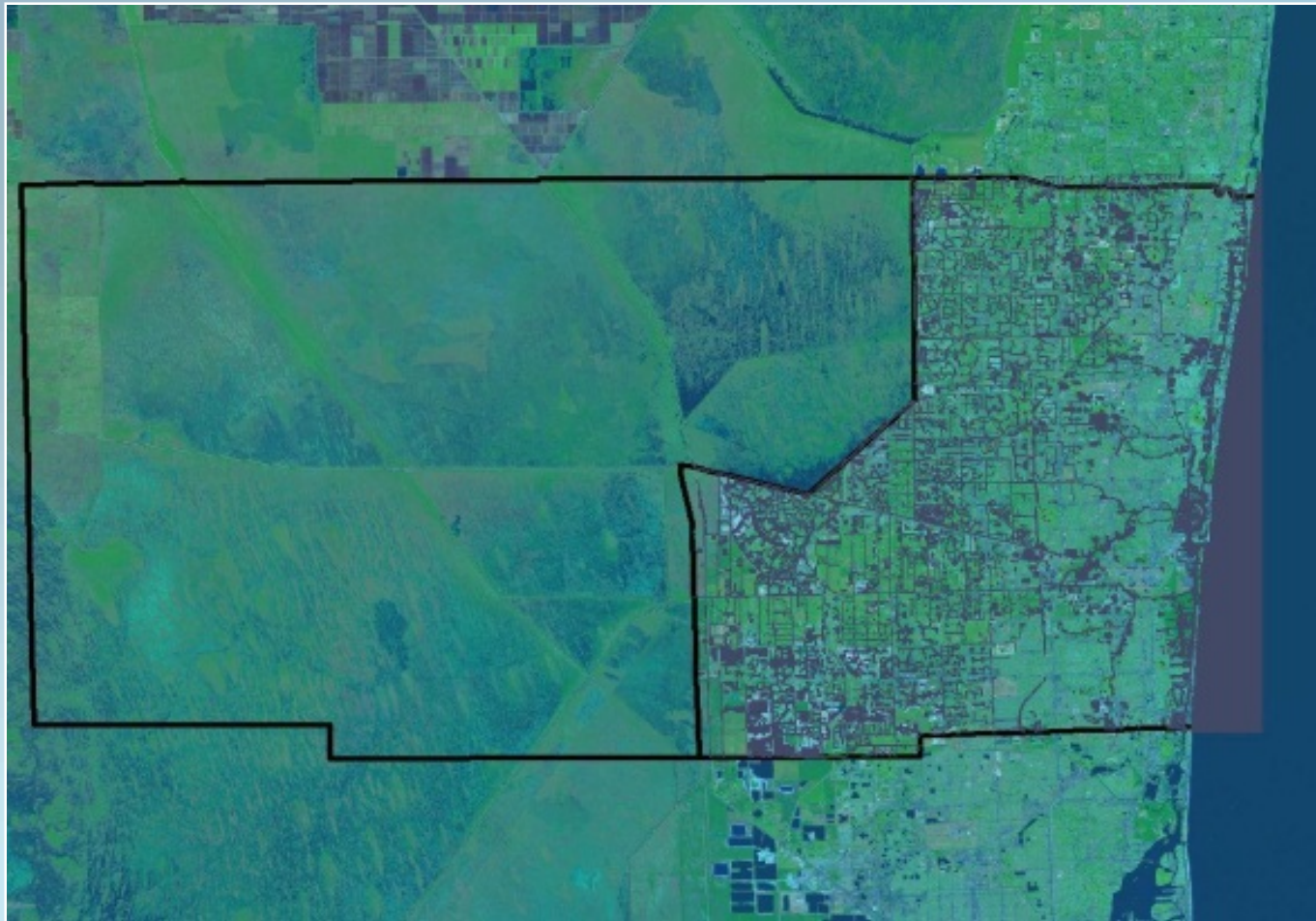
## **Broward Water Resources Overview**

Presented: January 19, 2010  
Jennifer Jurado, Ph.D.

# Broward – Rich in Water Resources



# Broward and the Everglades



# Land Use and Water Management



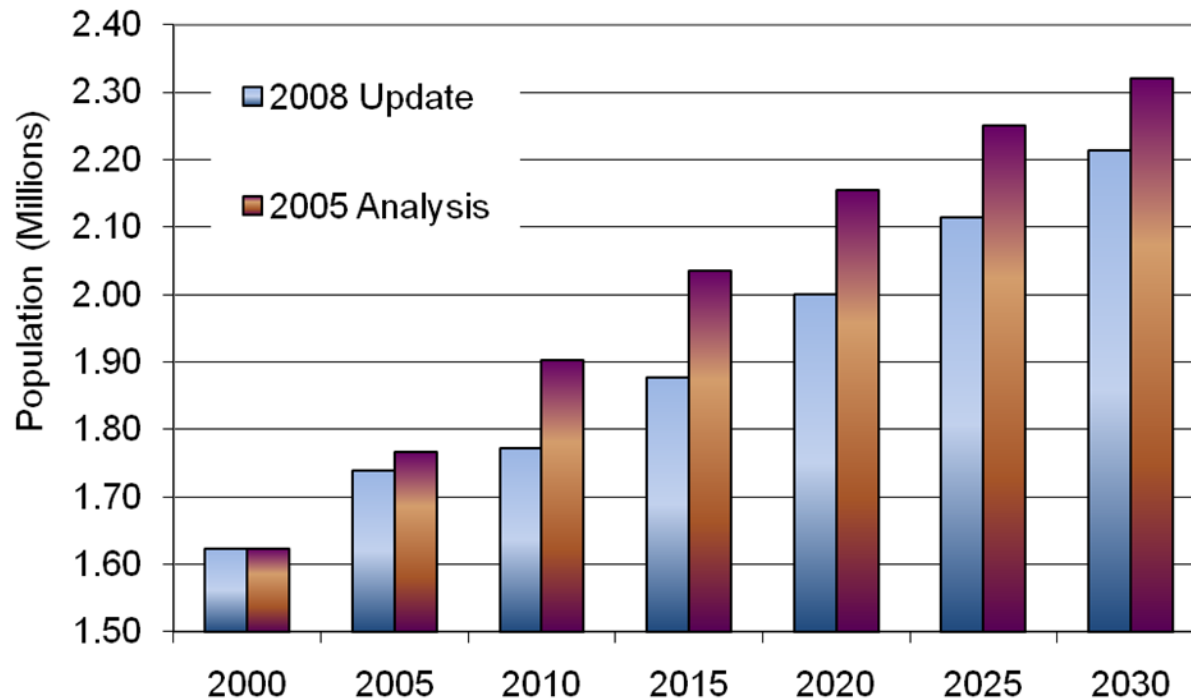
Broward County Historical Commission



SFWMD

# Long-term Growth Trends

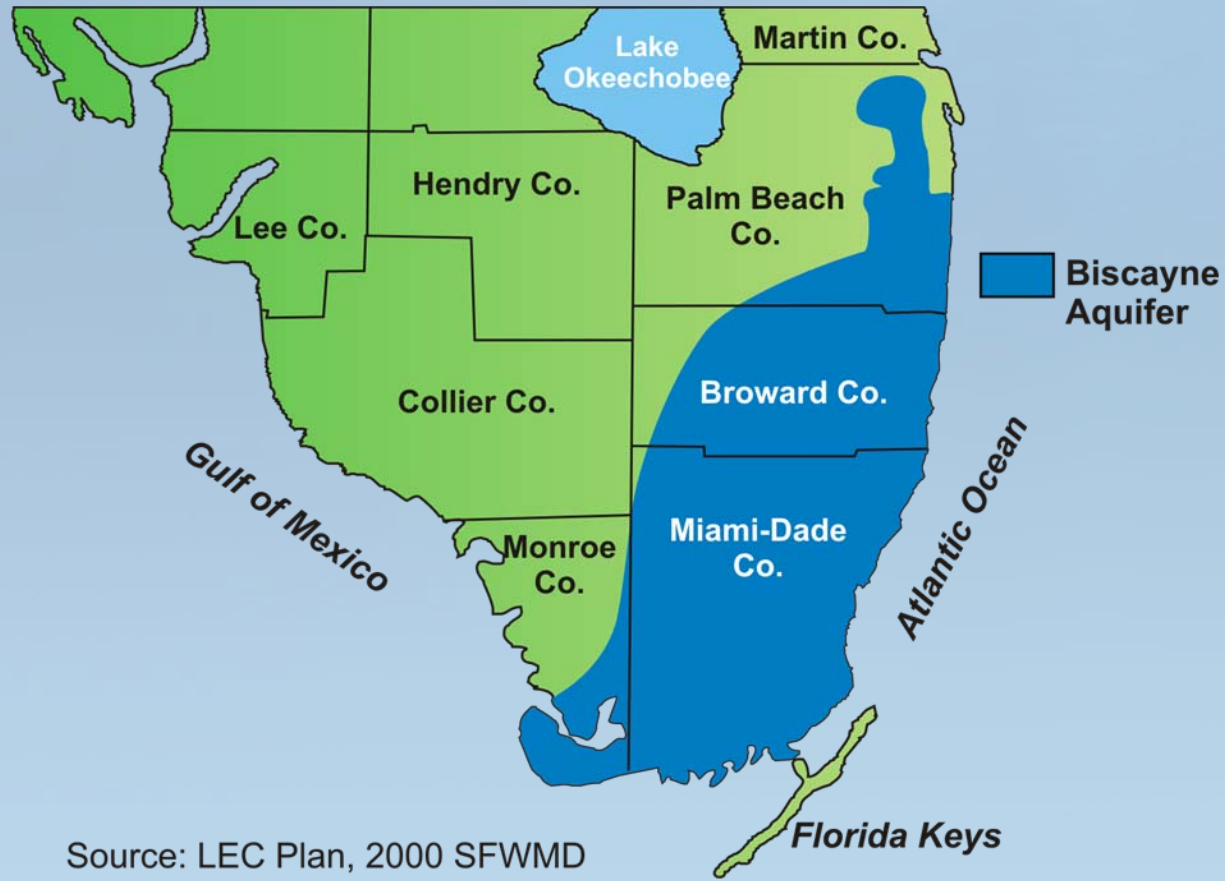
**Broward Population Projections**



## **Today:**

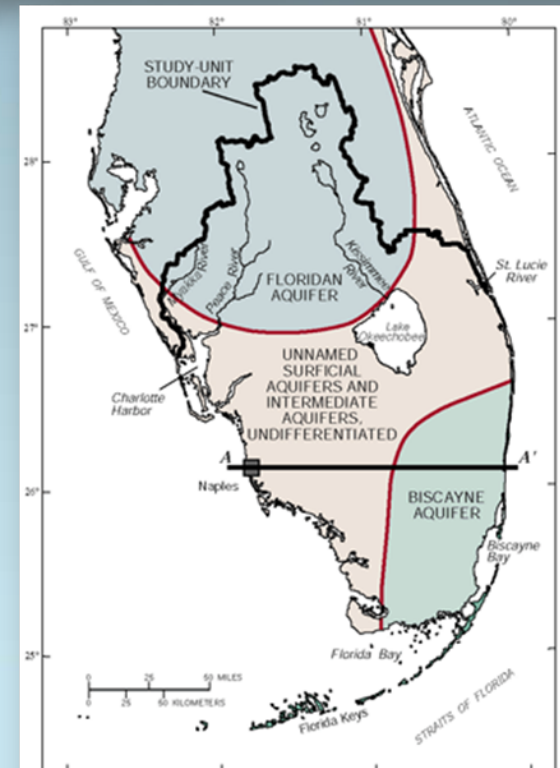
- Population of 1.67M
- 18<sup>th</sup> most populous county in U.S.
- Projected 25% increase by 2030
- One of fastest growing counties numerically

# The Biscayne Aquifer



# Characteristics

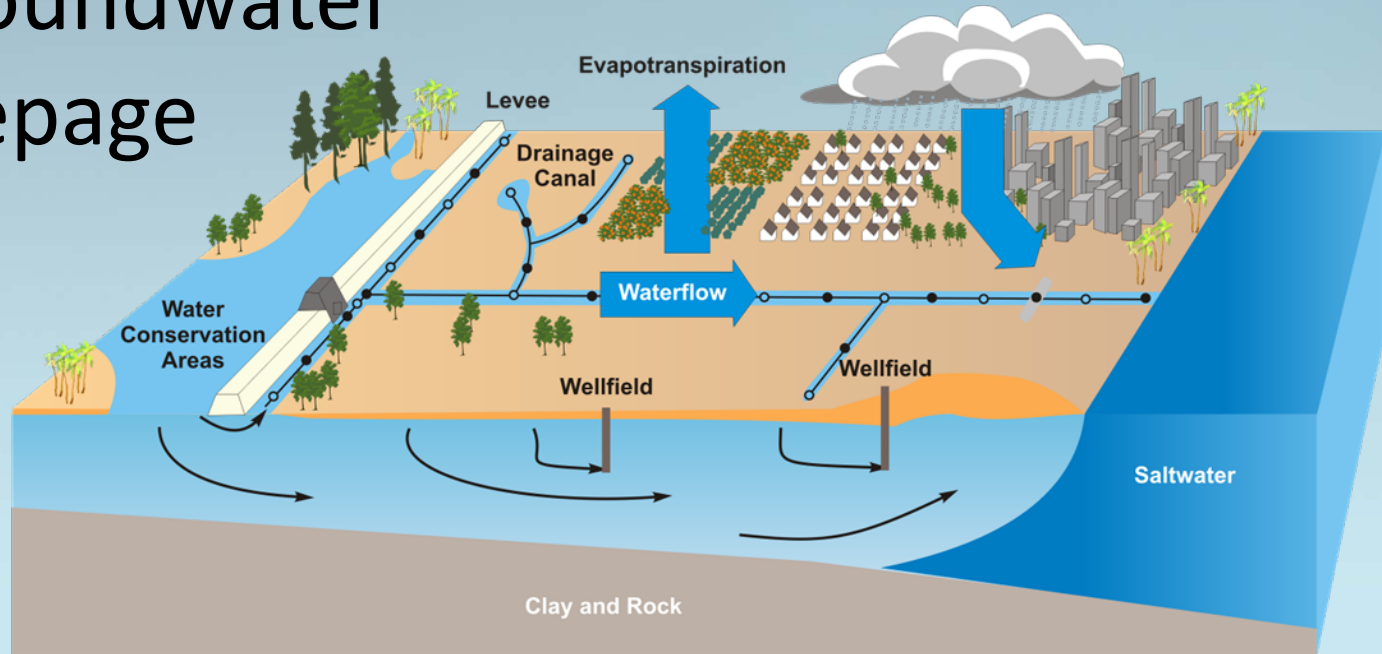
- Coastal Aquifer
- Human-induced Stresses:
  - Everglades drainage
  - Well field pumping
  - Canal water level management
  - Agricultural/Urban development
- Natural Stresses:
  - Sea level rise
  - Rainfall variations



Base from U.S. Geological Survey digital data, 1:2,000,000, 1972  
Albers Equal-Area Conic projection  
Standard Parallels 29° 30' and 45° 30', central meridian -83° 00'

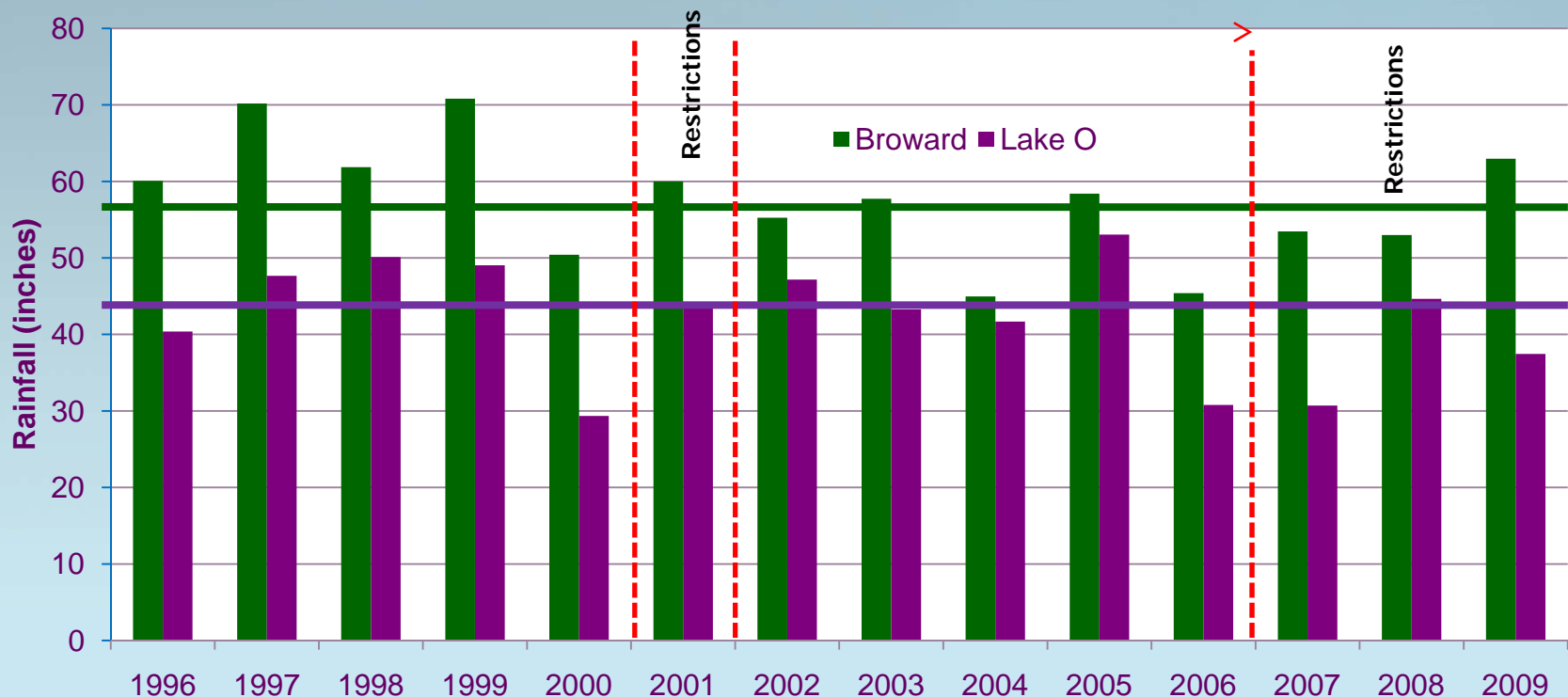
# Aquifer Recharge

- Rainfall
- Surface deliveries
- Groundwater seepage



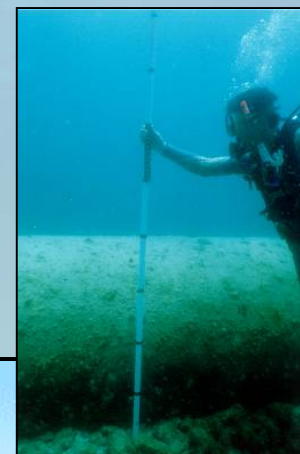
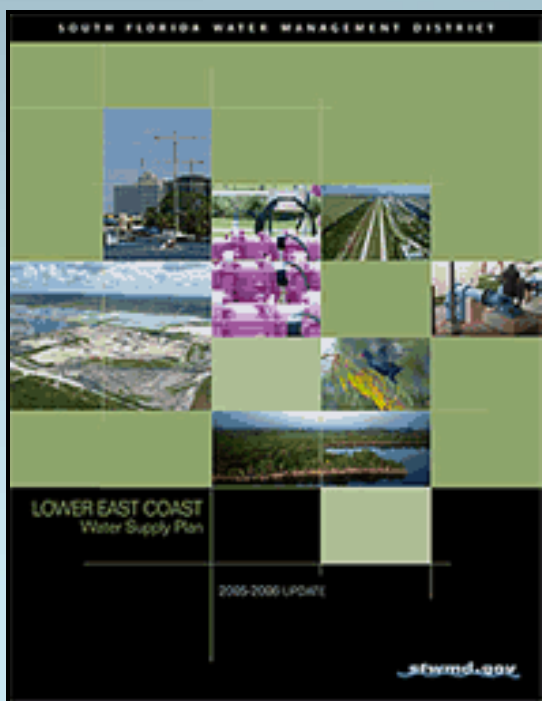
# Waves of Policy Change

- 2000 – CERP is adopted for Everglades restoration
- 2000 - Census reveals significant population growth
- 2000-2001 –Regional drought and water shortage

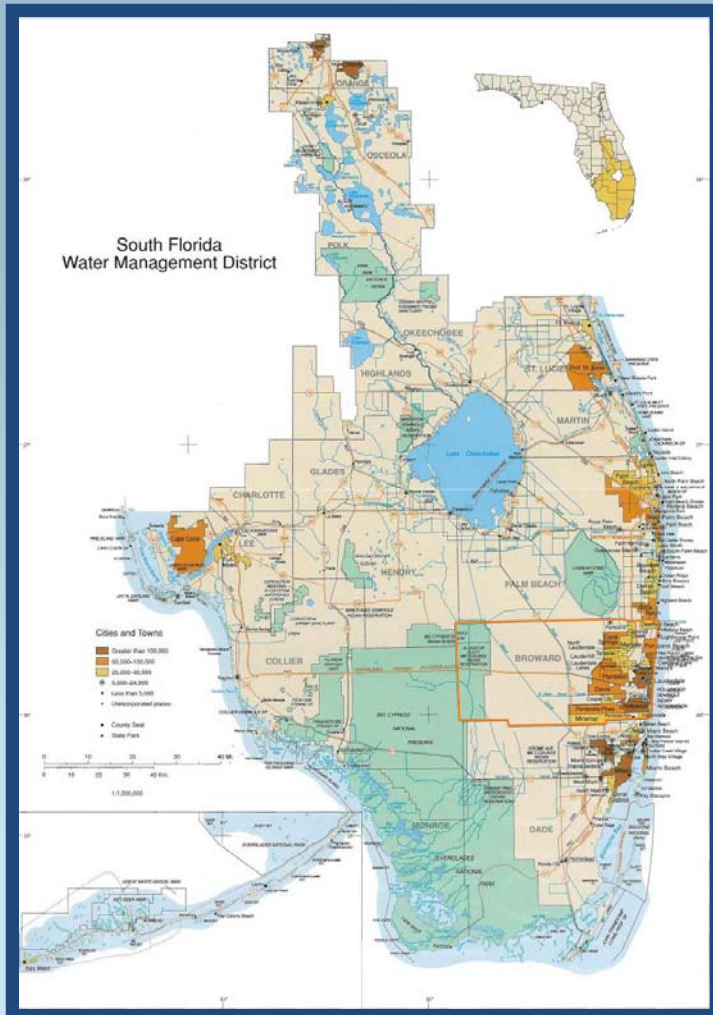


# Evolution of Water Policy

- 2002 – Amendment to Growth Management Act
- 2004 – Goal-based Water Conservation
- 2007 – Regional Water Availability Rule
- 2008 – Ocean Outfall Legislation



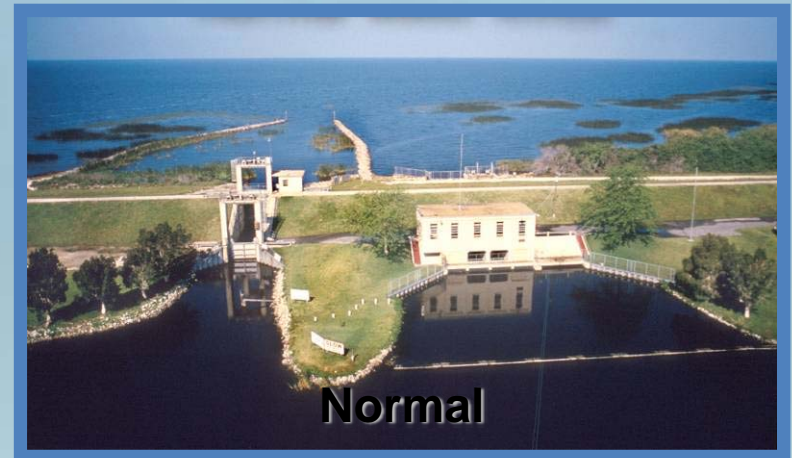
# Lake Okeechobee Considerations



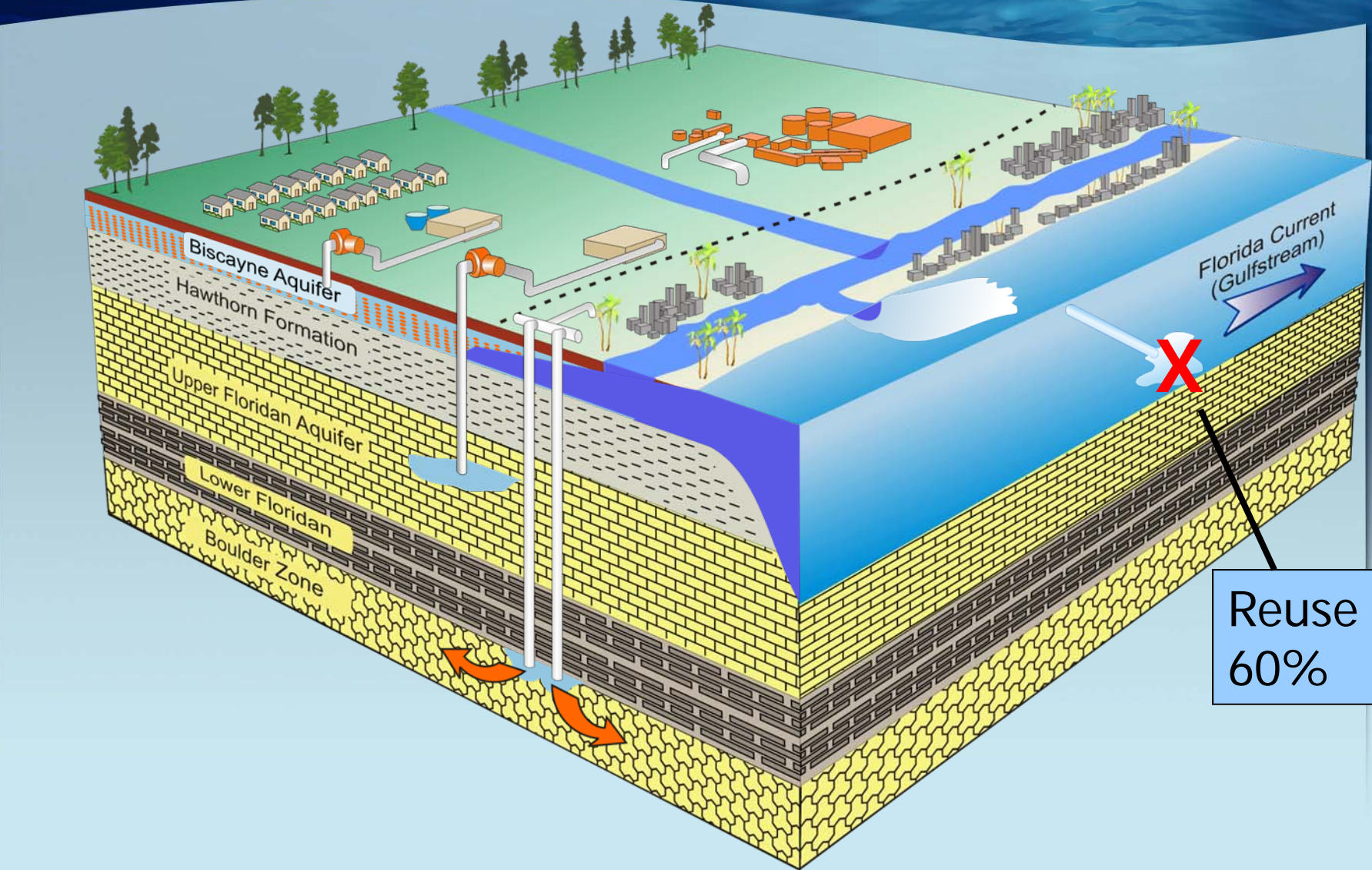
- A remote and occasional source of recharge
- Variable water levels and uncertain availability

# Lake Okeechobee

- Water levels managed in accordance with a regulatory schedule.
  - Environmental needs
  - Water supply considerations
  - Rainfall predictions
- Concerns about dike dropped levels by 1 ft - water supply storage
- Affected by regional water shortages.
- Infrequent water supply benefits.

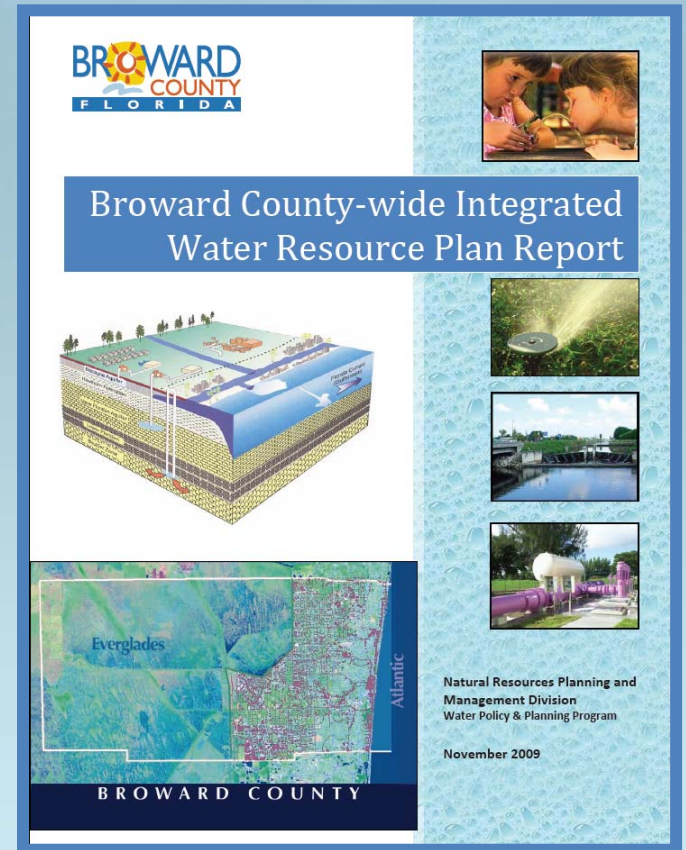


# Looking Beyond the Biscayne



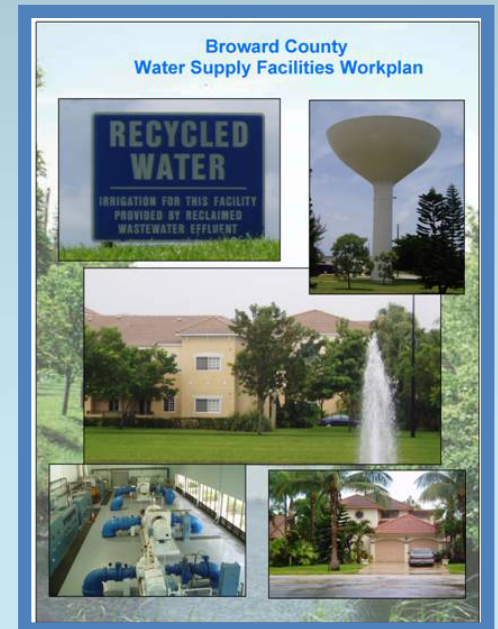
# Planning for Tomorrow

- Water Provider 10-year Water Supply Facility Workplans
- Broward County-wide Integrated Water Resources Plan
- Broward Water Resources Task Force



# Water Supply Facility Workplans

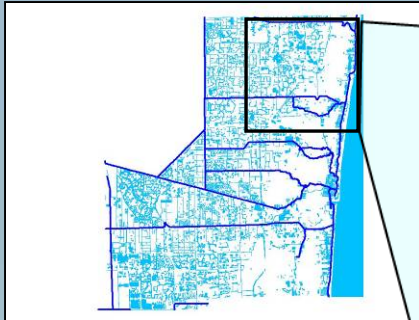
- Required of all local governments responsible for water supply
- Objective - provide greater coordination between future land use and water supply planning
- Requirements
  - Assess demands and quantify needs
  - Commit to specific water supply projects
  - Identify and budget necessary funds



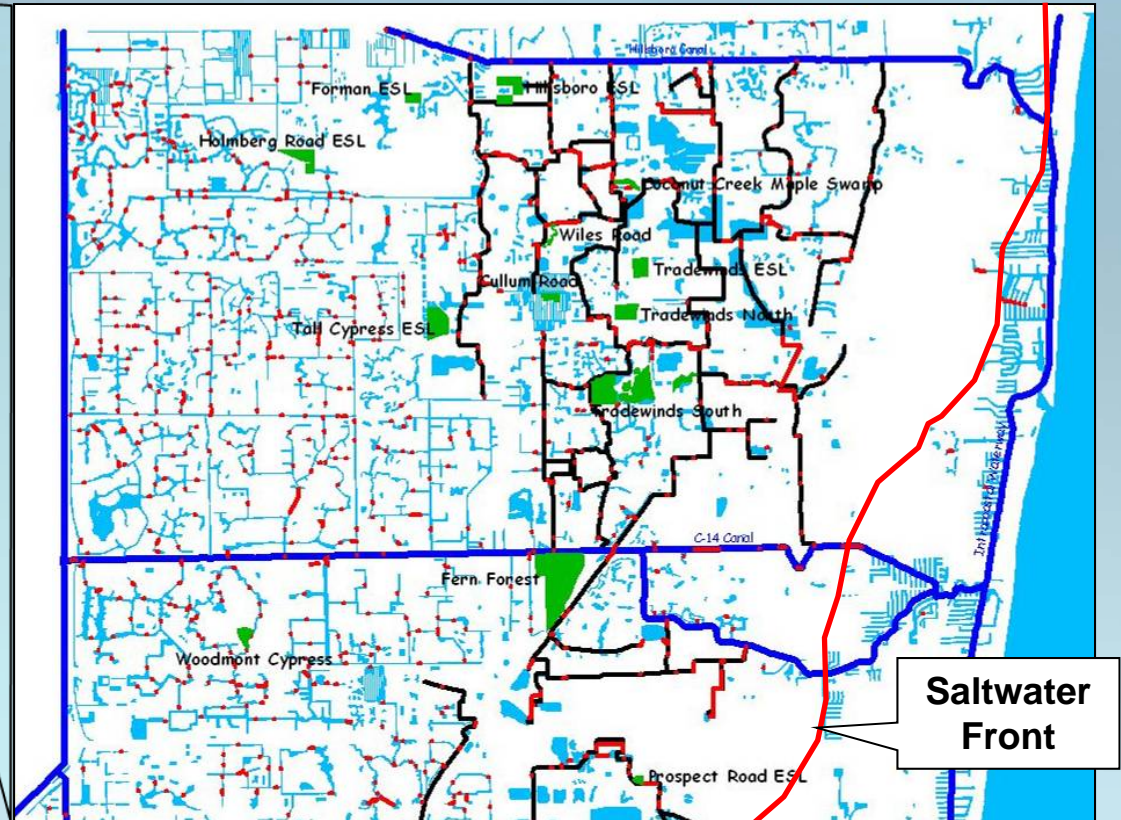
# The Broward Integrated Water Resources Plan

- Foundation for current and future county-wide water resource planning and management activities:
  - Seek efficiencies through canal integration
  - Optimize use through water conservation
  - Achieve effective planning and management
  - Diversify water sources and projects

# Surface Water Management

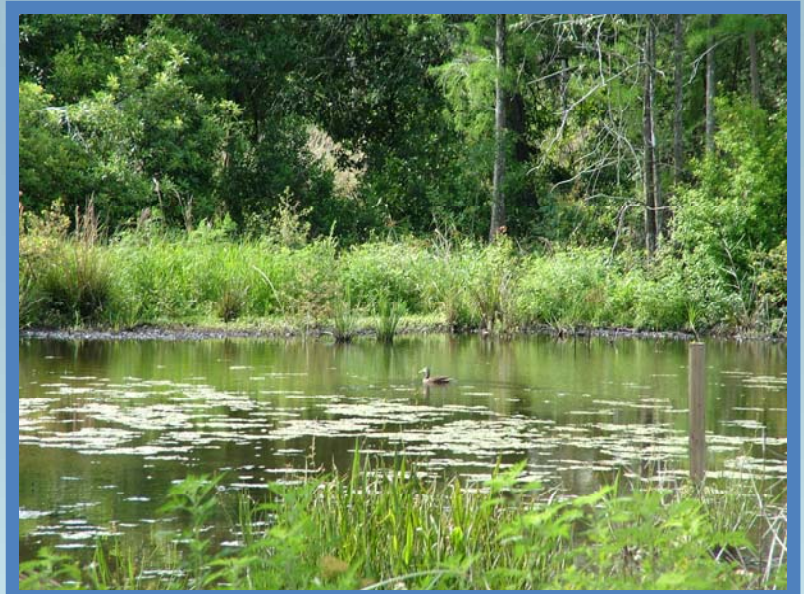


- Natural systems
- Wellfields
- Saltwater intrusion
- Flood protection



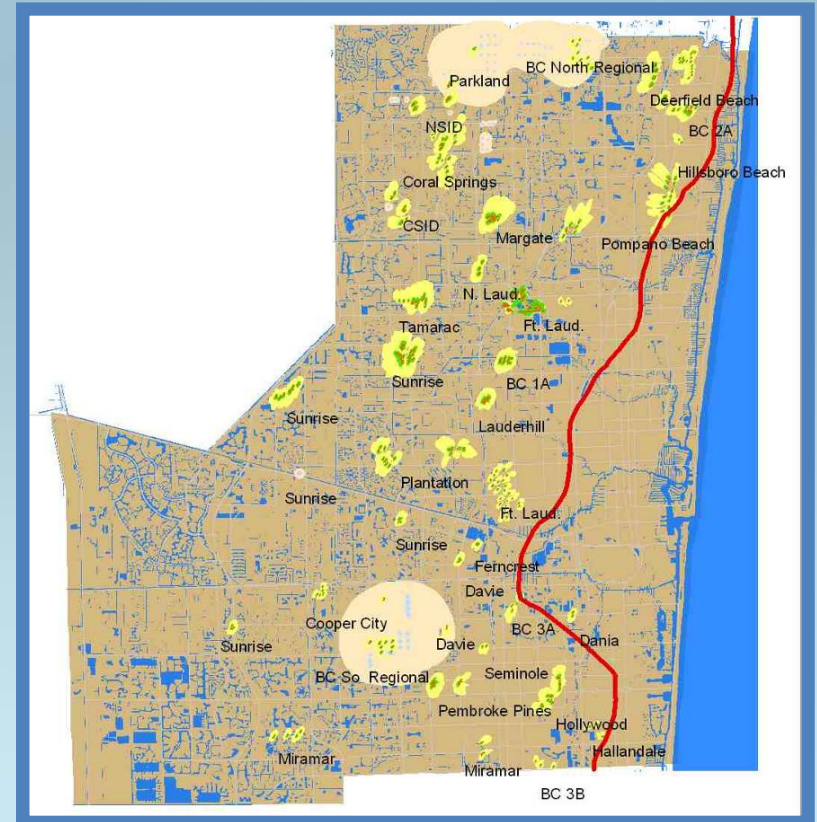
# Rehydration and Restoration

## Hillsboro Pineland ESL



# Assessments and Planning

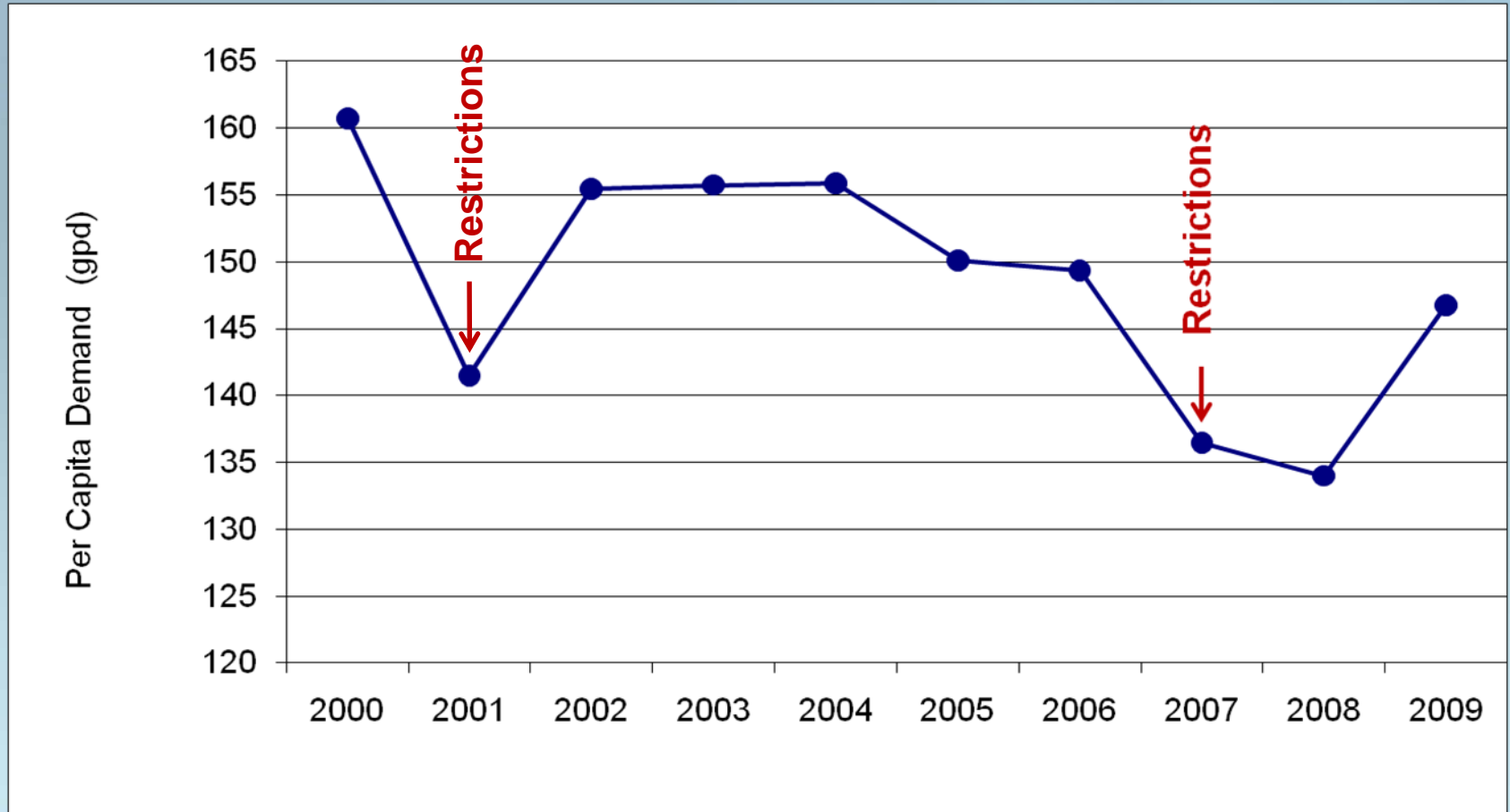
- Development and application of technical tools:
  - Broward County hydrologic model
  - Saltwater intrusion model
  - Study of upper Floridan
  - Water Management Master Plan



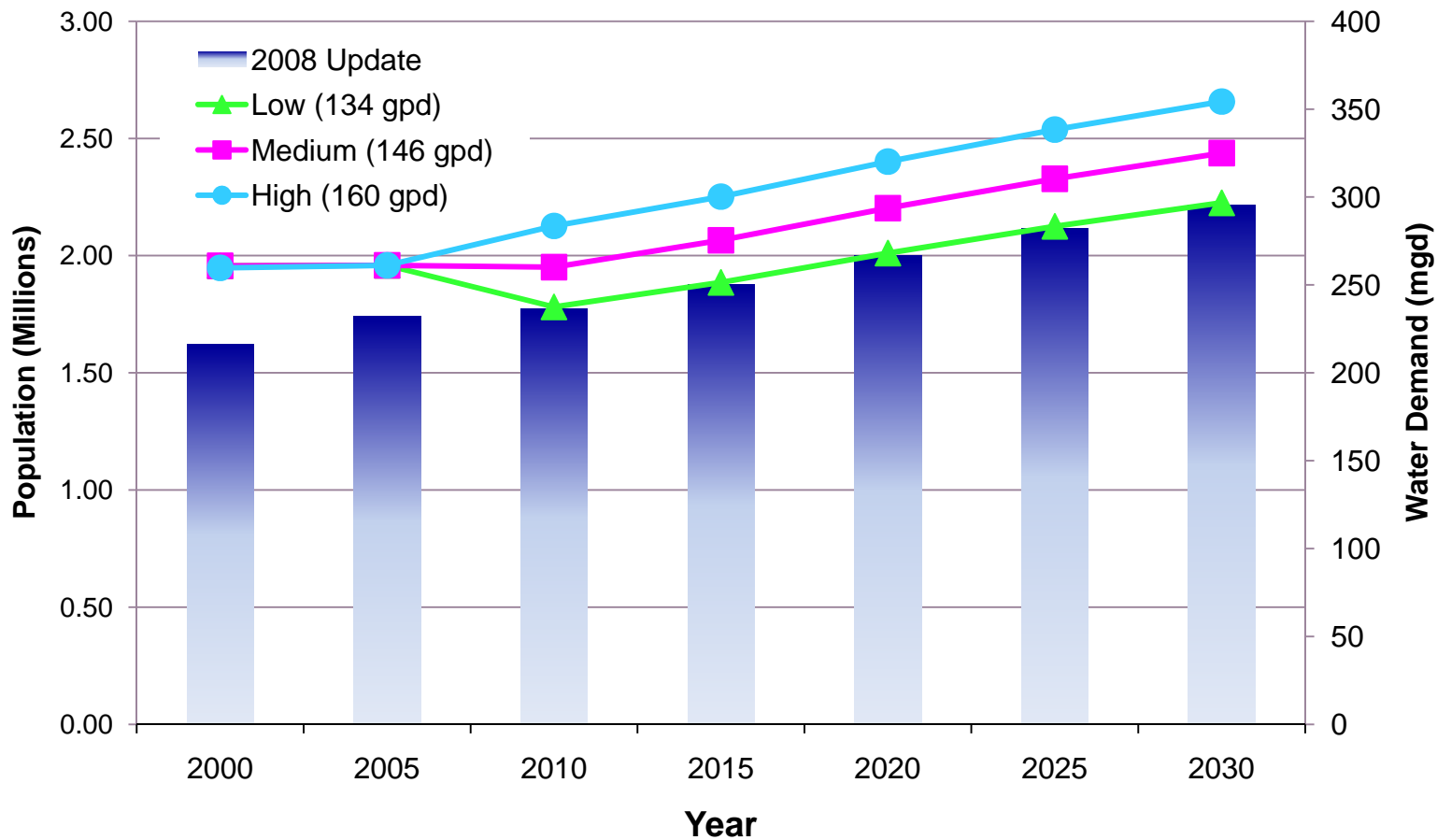
# The Case for Conservation

- Provides the lowest cost source of future water
- Postpones and reduces the need for more costly alternative water supplies
- Lessens the severity of water shortages
- Helps to maintain groundwater levels and protect existing water supplies
- Will become increasingly important with climate change

# Opportunities for Conservation



# Water Demand as a Function of Per Capita Consumption



# Water Conservation Initiatives

- Annual Water Matters Day Event
- NatureScape Broward Program
- NatureScape Irrigation Service
- Broward Schools Environmental Partnership
- Broward Water Conservation and Incentives Program



# Broward Water Matters Day



# NatureScape Broward

- 2,900 certified sites and 11 community partners



# NatureScape Irrigation Service

- 659 million gallons saved, average 18% reduction



# Partnership with Broward Schools



# Water Conservation and Incentives Program

- Collaboration with 18 municipal and water utility partners
- To include:
  - unique branding,
  - broad messaging,
  - rebates/incentives
- Kick-off in summer 2011



# Broward Water Resources Task Force

- 15-member Task Force
- Convened to evaluate regional water supply options and water conservation strategies
- September 2010 report includes 40 recommendations:
  - Water conservation
  - Regional project concepts
  - Reuse development
  - Research and Investigations
- Several prominent recommendations are already advancing



# The Challenges of Climate Change

- Water resource implications for south Florida are expected to include:
  - More intense rain and storm events
  - Regional droughts
  - Rising sea level
  - Saltwater intrusion
  - Coastal and inland flooding

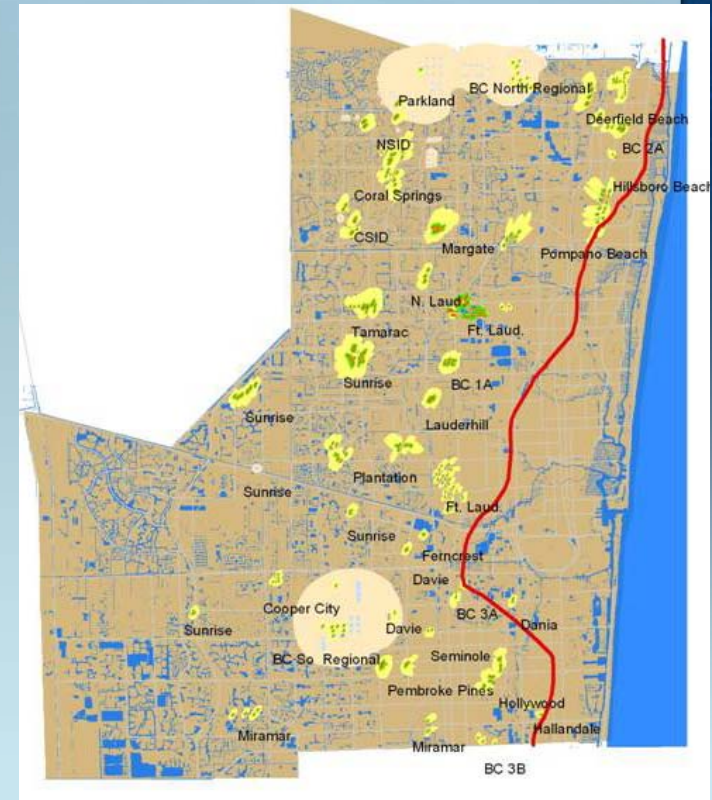


# Adaptation Planning Activities

- Variable density models are being developed to guide placement of water wells and operations
- Partnership with the USGS will produce an adaptation planning model to address impacts on drainage and flood control
- Technical assessments of Floridan Aquifer and modeling support diversification of water supplies needed to reduce impacts of water shortages

# Climate Mitigation Efforts

- Investments in conservation will serve to:
  - Reduce demands for high energy alternative water supplies
  - Lessen water shortages that may accompany drought
  - Maintain aquifer levels needed to abate saltwater intrusion



# The Future



## Sustainable solutions will require:

- Greater conservation ethic
- Partnerships in the pursuit of projects and funding
- Participation of both public and private sectors
- Integration of new technologies into business and governmental operations
- Commitments





Questions?