Water Utilities and Climate Change: Problems and Opportunities

Presented by Douglas Yoder

Miami-Dade Water and Sewer Department

MIAMI-DADE COUNTY

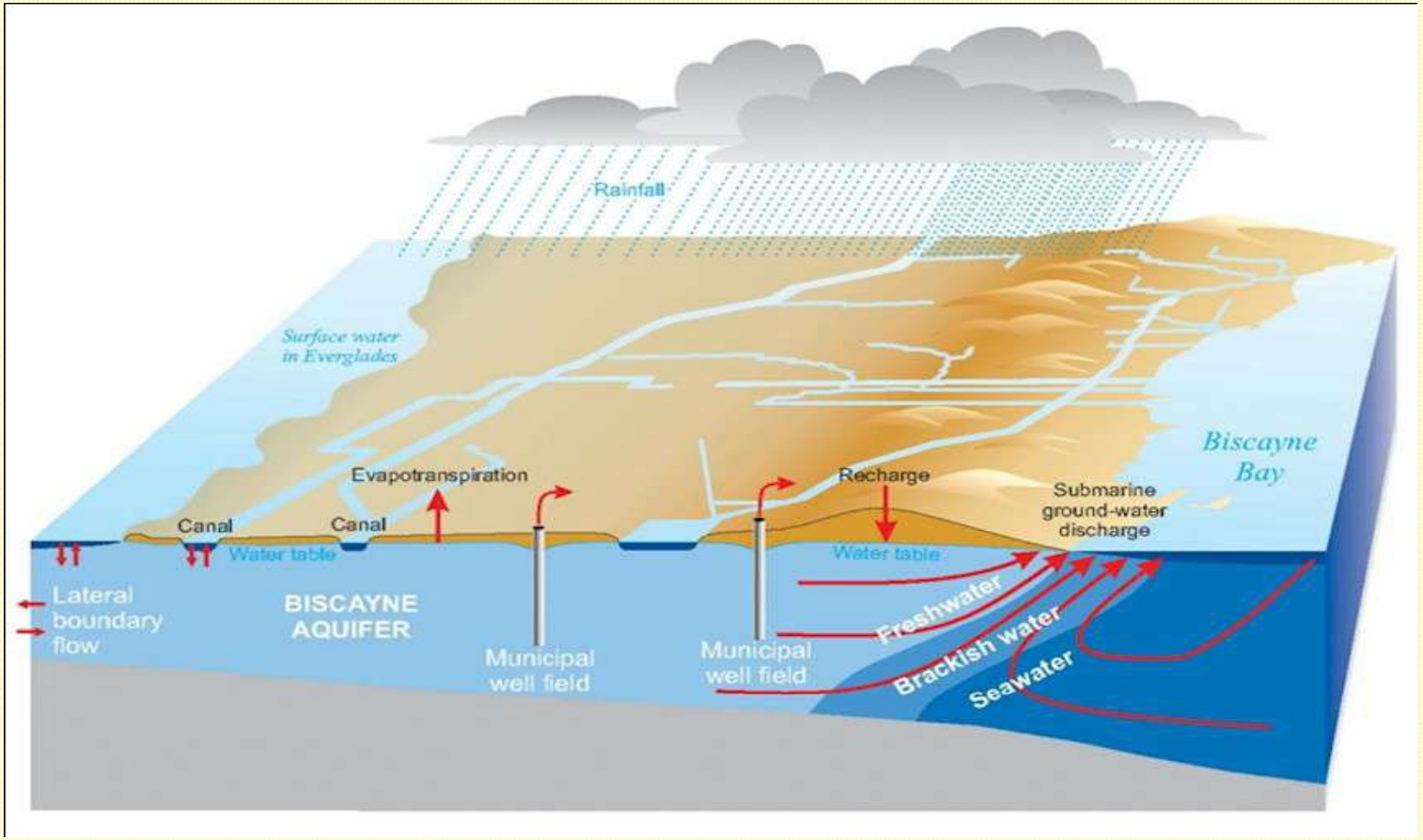
MDWASD Overview

Water System:

- Serving more than 2.2 million residents
- 3 large regional (lime softening) and 5 small water treatment plants
- Supplying 313.5 million gallons per day (MG
- 90% of the County's public water supply
- Per capita water use 140 gpcd
- 417,969 retail customers
- 14 wholesale customers
- 100 water supply wells
- 7,559 miles of pipes
- 38,955 fire hydrants
- Nationally Recognized Leak Detection Program
- Extensive Water Conservation Program

MIAMI-DADE COUNTY

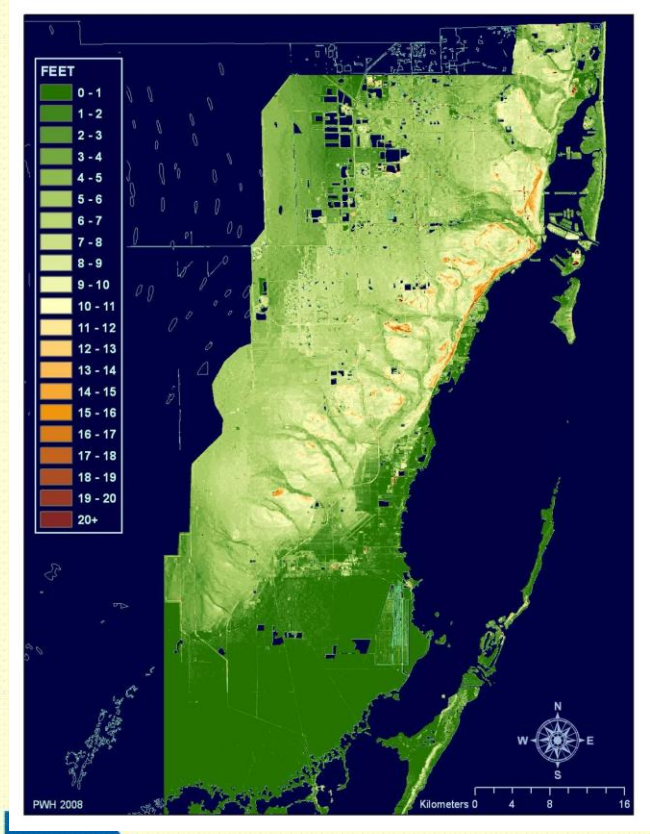
Our Delicate Water Balance



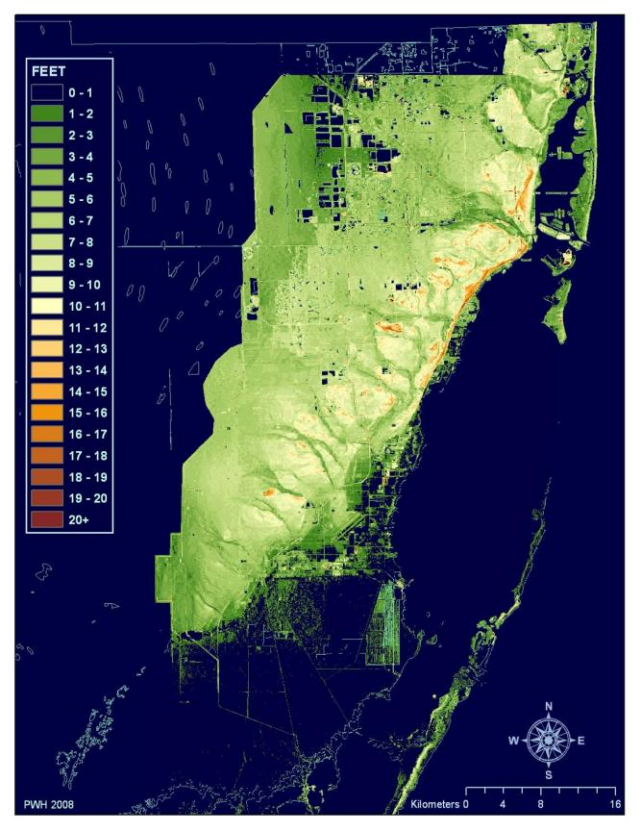
MIAMI-DADE COUNTY

Sea Level Rise: An Emerging Danger

Present Conditions



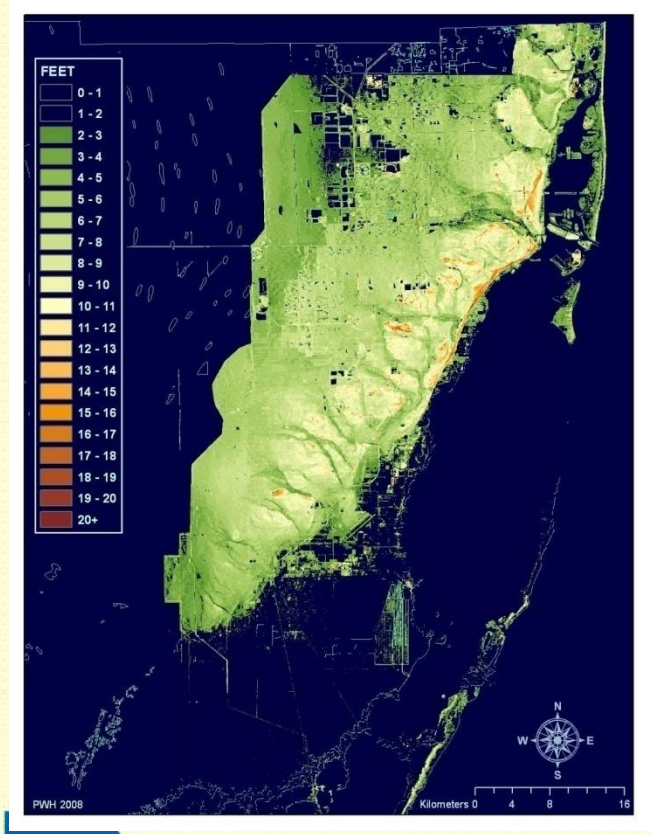
1 Foot Rise



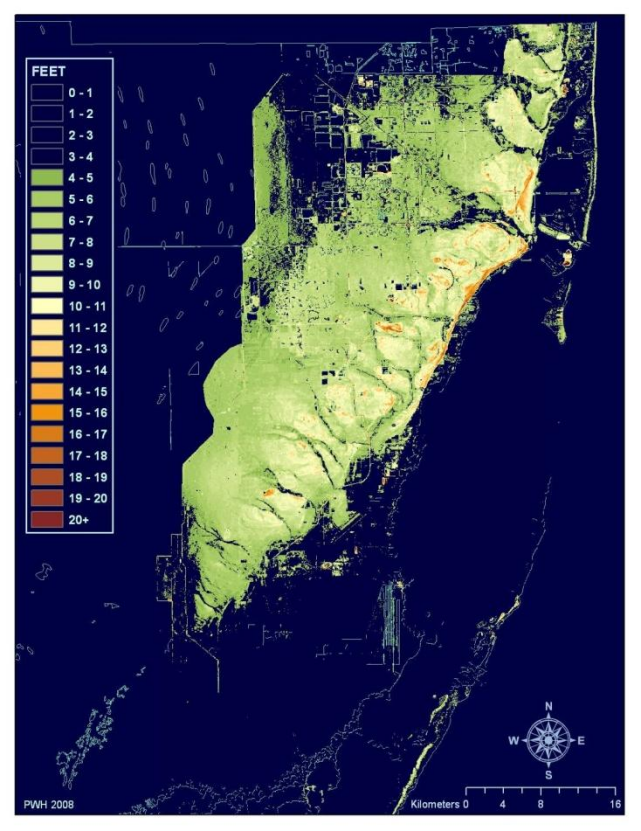
MIAMI-DADE COUNTY

Getting Worse

2 Foot Rise



4 Foot Rise



MIAMI-DADE COUNTY

Potential Problems

- Drainage/Flooding
- Water Supply/Salt Intrusion
- More Frequent Drought/Intense Rain
- Tropical Storm Activity/Storm Surge Impacts
- Habitable Space, Economic Viability, Future Demands
- Natural System Changes/A Different Everglades

MIAMI-DADE COUNTY

Potential Opportunities

- Conservation
- Aquifer Storage and Recovery
- Membrane treatment for future supply
- Floridan Aquifer Strategy
- Indirect/Direct Potable Reuse
- Decentralization/Redundancy

MIAMI-DADE COUNTY

What Miami-Dade is Doing

- Sustainability Plan (Mitigation of GHG Emissions)
- Ground Water/Surface Water Model
- Large Scale Alternative Water Supply Plan
- Climate Change Adaptation Plan
- Energy Efficient Operations and Buildings

MIAMI-DADE COUNTY

Regional Responses

- Scenario Planning With Adaptation Strategies Associated With Increments of Sea Level Rise
- Regional Monitoring Program to Track the Extent and Rate of Sea Level Rise
- Careful Analysis, Optimization, and Appropriate Retrofits to Flood Control System
- Alternative Water Supply Development With Flexibility to Respond to Changing Conditions
- Infrastructure Analysis to Establish Vulnerability (building elevations, drainfields, sewer lines)

MIAMI-DADE COUNTY

Conclusions

- Beyond some point, sea level rise will not be manageable through adaptation in some areas
- Only significant reductions in GHG emissions and extraction of GHG are likely to mitigate SLR; probably too late
- Many adaptation measures are energy intensive and very expensive
- Solutions require individual, local, regional, state, federal, and international plans and actions; the SFWMD is a key existing regional agency to lead water management solutions

MIAMI-DADE COUNTY

A Survivor