



COASTAL UTILITIES' RESPONSE TO SALTWATER INTRUSION

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SALTWATER INTRUSION HEALTH CONCERN

Long-term Coastal Groundwater Stressors

Urbanization
Agriculture
Climate Change
Sea Level Rise



Saltwater
Intrusion

Salt ions:
Bromide



Public
Water
Supply
Disinfection
Process

Chlorine

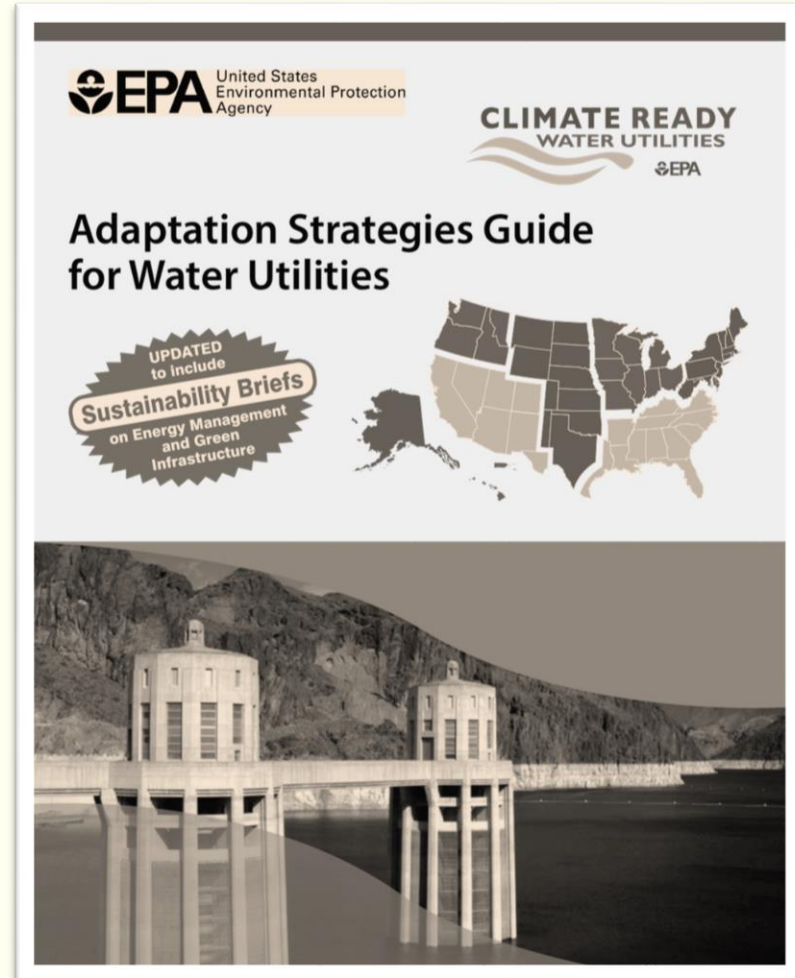


Disinfection
Byproducts

Regulated
Carcinogenic
Compounds

APPLIED SCIENCE FRAMEWORK: UTILITIES ADAPTATION PLANNING

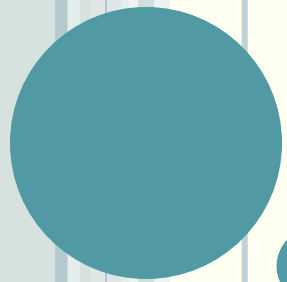
- EPA's Climate Ready Water Utilities
 - Adaptation Strategies Guide
 - Climate Resilience Evaluation and Awareness Tool (CREAT)
- Florida Water and Climate Alliance
 - UF Water Institute



FLORIDA COASTAL UTILITIES SURVEY

- **Objective:** Understand utility mindset towards saltwater intrusion
 - Water supply, management and planning,
 - Concerns and strategies
- **Method:** Online survey (TREEO)
 - Summer 2013, Winter 2013
- Applied science adaptive framework

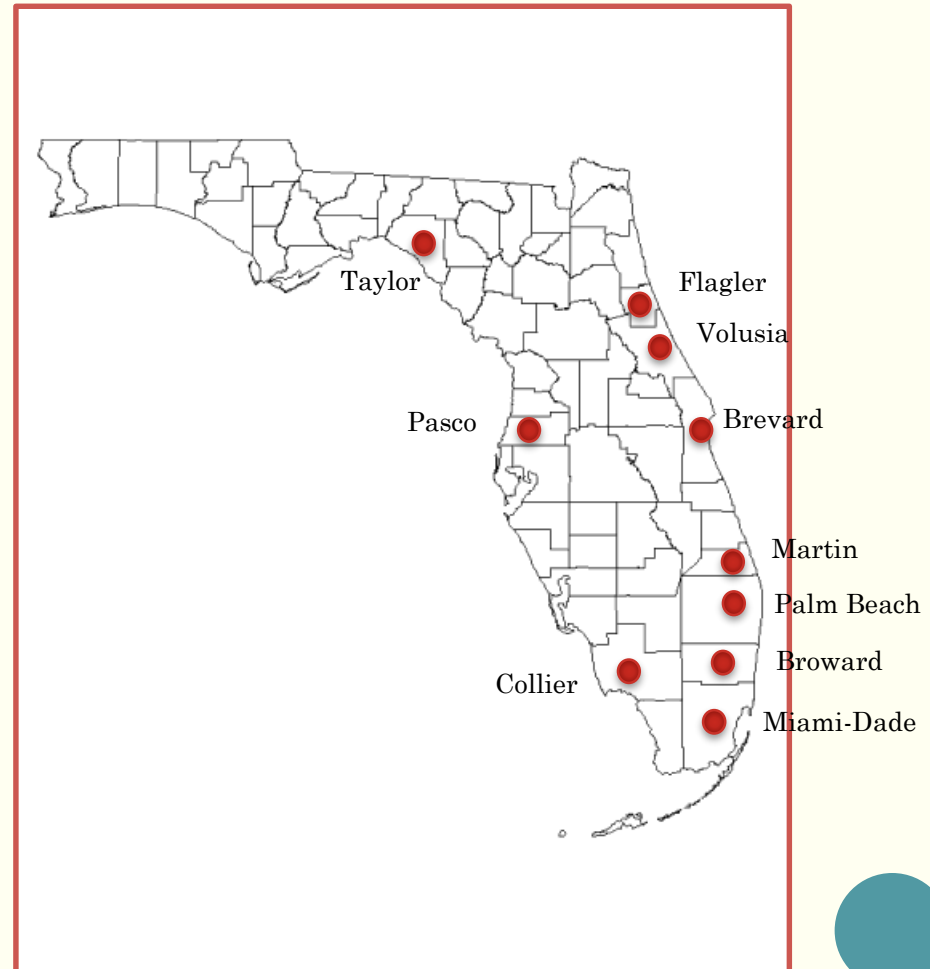




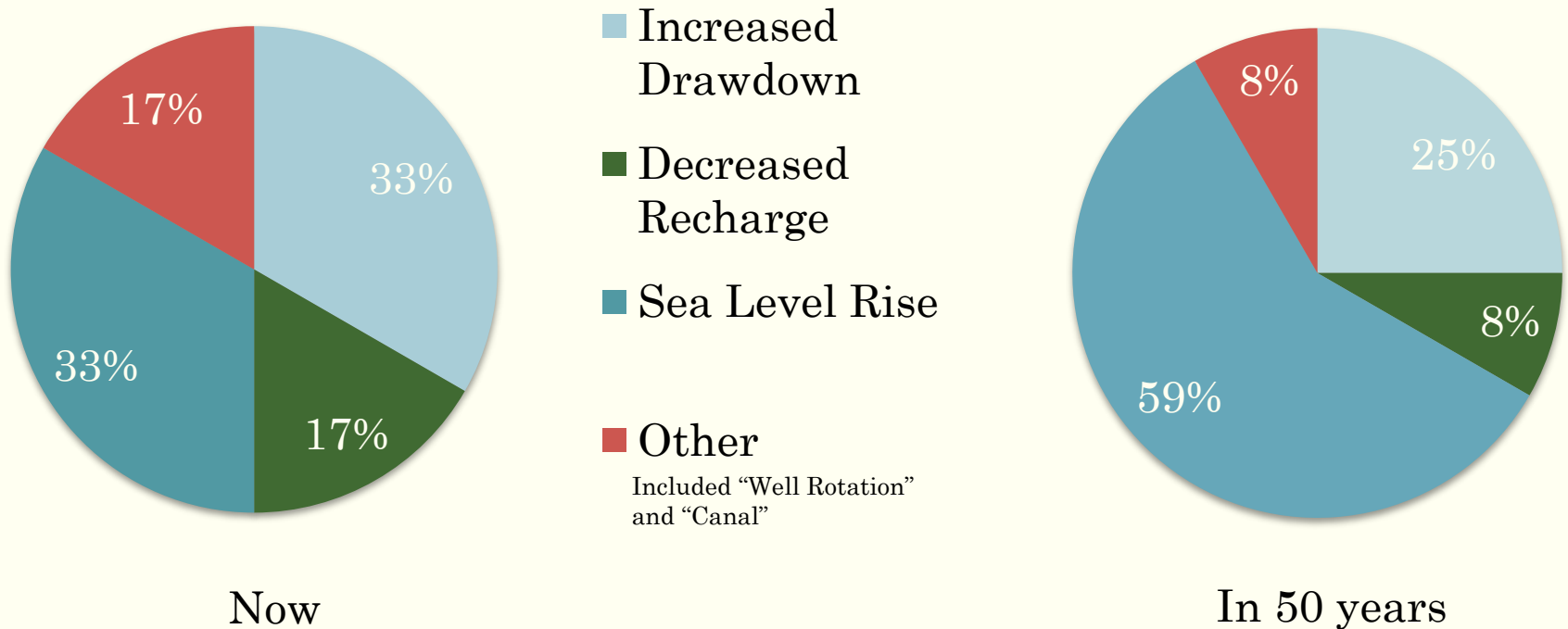
SURVEY RESULTS

UTILITY RESPONDENTS

- 13 analyzed responses
- 10 counties
- Populations served
 - Low 1,346
 - High 156,254
 - Average 69,713
- All 100% groundwater
- Aquifer types
 - Floridan
 - Biscayne
 - Upper Surficial
 - Sand and Gravel
- Wellfield distance from coast
 - Average 9 miles



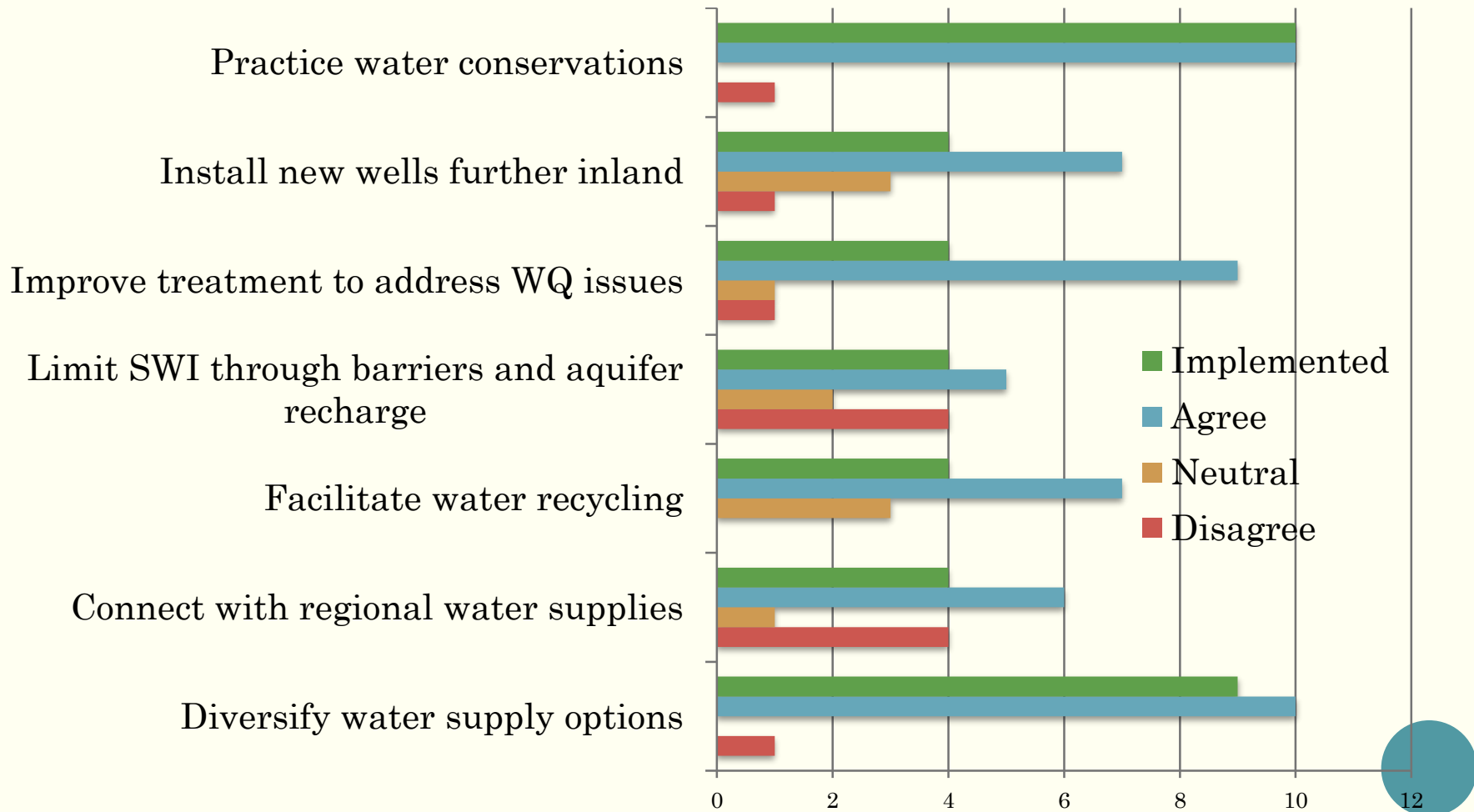
SALTWATER INTRUSION – FACTORS AFFECTING UTILITY



- Saltwater intrusion expected to impact utility:
Average Year 2076



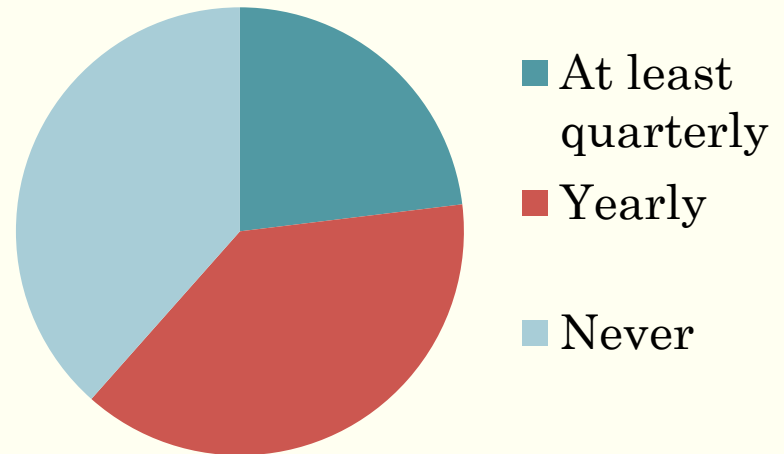
SALTWATER INTRUSION – FEASIBLE AND IMPLEMENTED ADAPTATION STRATEGIES



CLIMATE CHANGE – INFORMATION AND PLANNING

- 85% respondents believe climate change is occurring
- 33% familiar with utility adaptation strategies

- Frequency discussing climate change at utility



FACTORS AFFECTING CLIMATE CHANGE PLANNING

- Utility constraints
 - More immediate problems prioritized
 - Current state of utility and infrastructure
- Information constraints
 - Insufficient science and uncertainty
 - Insufficient dialog between scientists and utilities
 - Unfamiliar with planning tools
 - No utilities used EPA's Strategies Guide or CREAT



CONCLUSIONS

- Some utilities are planning for saltwater intrusion and climate change.
- Need greater understanding of specific impacts and adaptation planning tools
 - Saltwater intrusion is not an imminent concern.
 - Communication between scientists, utilities, and policy makers needs improvement.



NEXT STEPS IN RESEARCH

- Focus on Florida utilities'
 - Saltwater intrusion monitoring, modeling, adaptation
 - Interest in using adaptation planning tools
 - Water quality concerns; water treatment and disinfection process
- Utility interviews and case study

