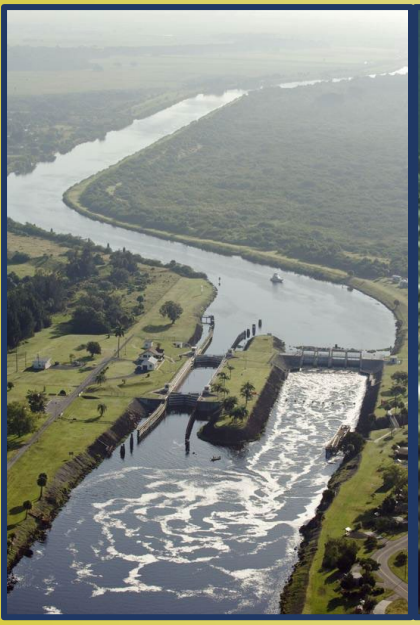
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

2022 Lower West Coast Water Supply Plan Update




Tom Colios

Section Leader

Water Supply Planning

Stakeholder Meeting #3

September 1, 2022

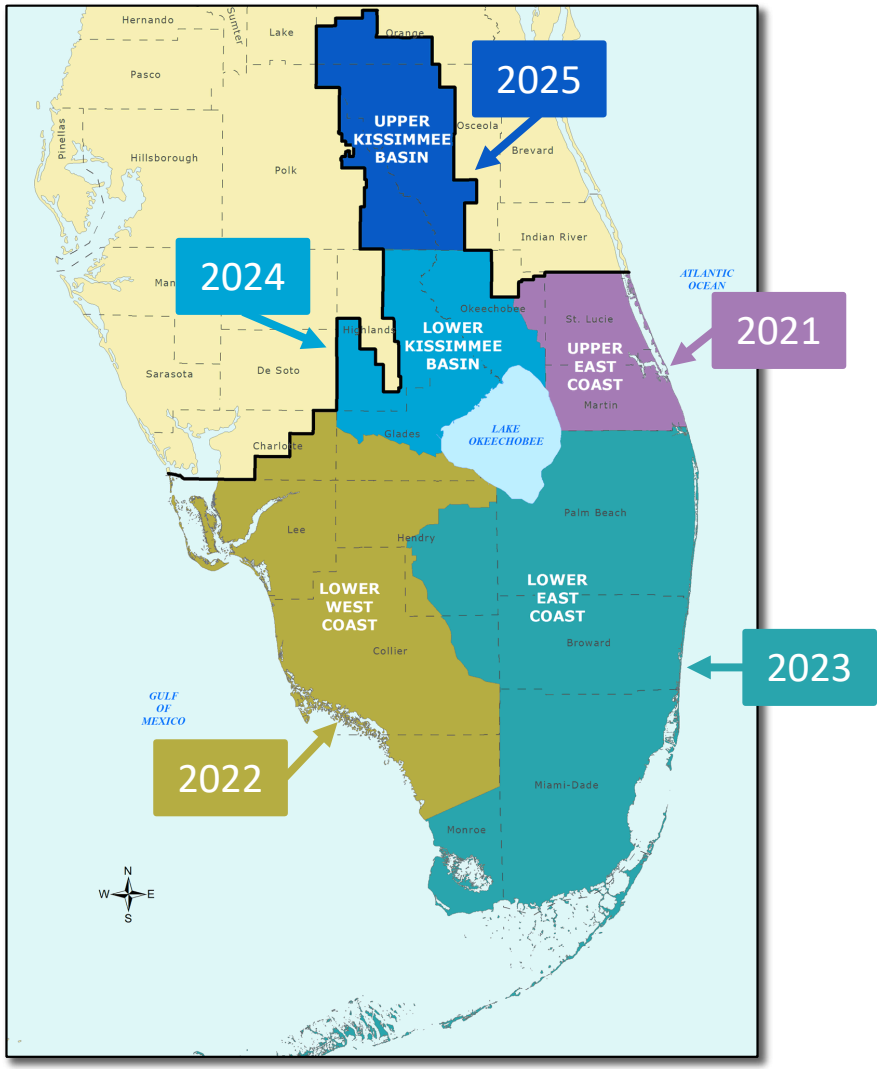
Agenda

- **Welcome and Opening Remarks** – *Tom Colios, SFWMD*
- **Cape Coral Utilities Department** – *Jeff Pearson, Utilities Director*
- **Summary of the Draft 2022 LWC Plan Update** – *Bob Verrastro, SFWMD*
- **Next Steps** – *Tom Colios, SFWMD*
- **Adjourn**

Questions and public comment will occur after each presentation.

Water Supply Plan Requirements

- 20-year planning period
- Demand estimates and projections
- Resource analyses
- Issue identification
- Evaluation of water source options
- Water resource development
  - Responsibility of water management district
- Water supply development
  - Responsibility of water users
- Environmental protective and restoration strategies
  - Minimum flows and minimum water levels (MFLs)



Regional Water Supply Plan

What It Does

- Provides a road map to meet future water needs while protecting water resources and natural systems
- Conducts a planning-level approach
- Projects future water demands
- Identifies and evaluates water source options

What It Does NOT Do

- Does not authorize consumptive use permits
- Does not establish MFLs
- Does not adopt rules
- Does not require water users to implement specific projects
- Does not address surface water quality issues (e.g., algal blooms)

Public Participation

- Governing Board updates
- Three stakeholder workshops
- Discussions with local and tribal governments, agricultural, and utility representatives
- Draft plan documents posted online for public comment on August 25
- Written comments due back **October 5, 2022**

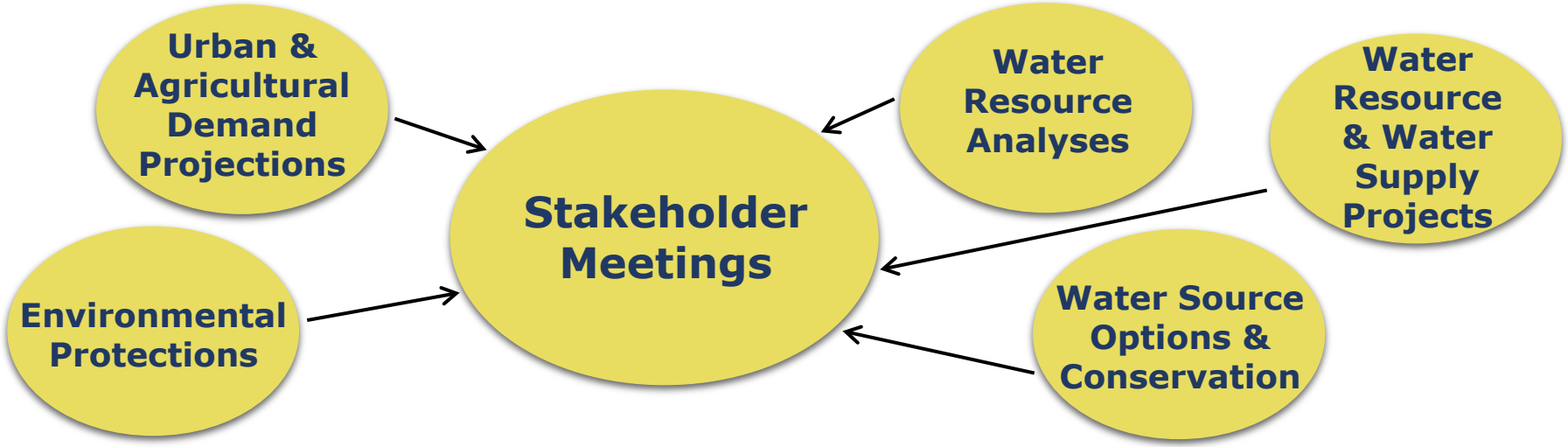
Water Supply Plan Update Timeline

Meetings with Local Governments

Meetings with Other Stakeholders

Public Input

March 15	April 28	May 25	August 25	Sept 1	Oct 5	Oct 27	
Stakeholder Mtg 1	Big Cypress Board Mtg 1	Stakeholder Mtg 2	Draft Plan for Public Review & Comment	Stakeholder Mtg 3	Public Comment Period Ends	Big Cypress Board Mtg 2	Governing Board Approval Nov 10, 2022 (Naples)



Questions and Public Comment

Caloosahatchee River Fort Myers

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- If you are participating via phone:
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  - *6 mutes/unmutes your line
- When you are called on, please state your full name and affiliation prior to providing comments and/or questions.

Reuse Supplementation & Expansion

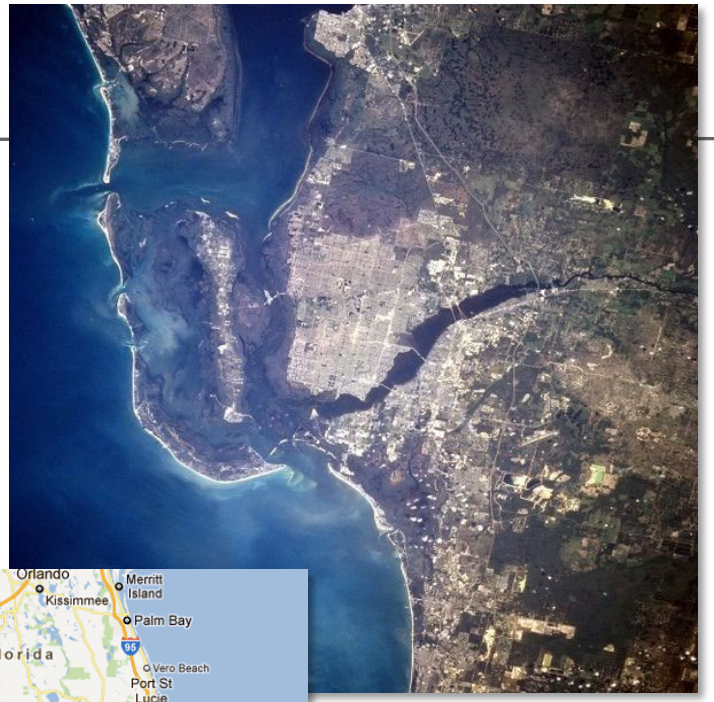
2017 & 2021 Utility of the Future Recipient

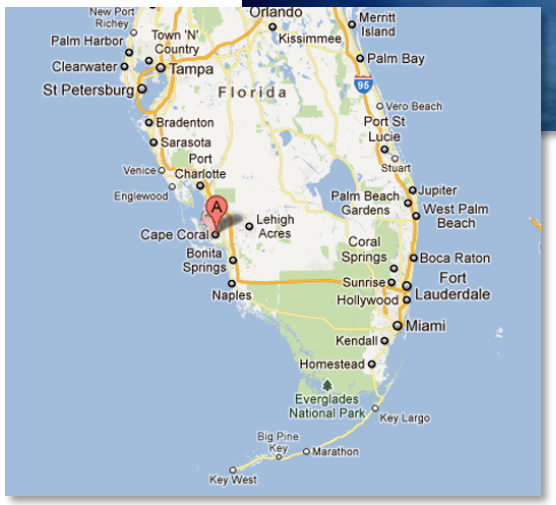
Lower West Coast Water Supply Plan Stakeholder Mtg #3

Jeff Pearson, MSEE, PMP
Utilities Director
City of Cape Coral

City of Cape Coral

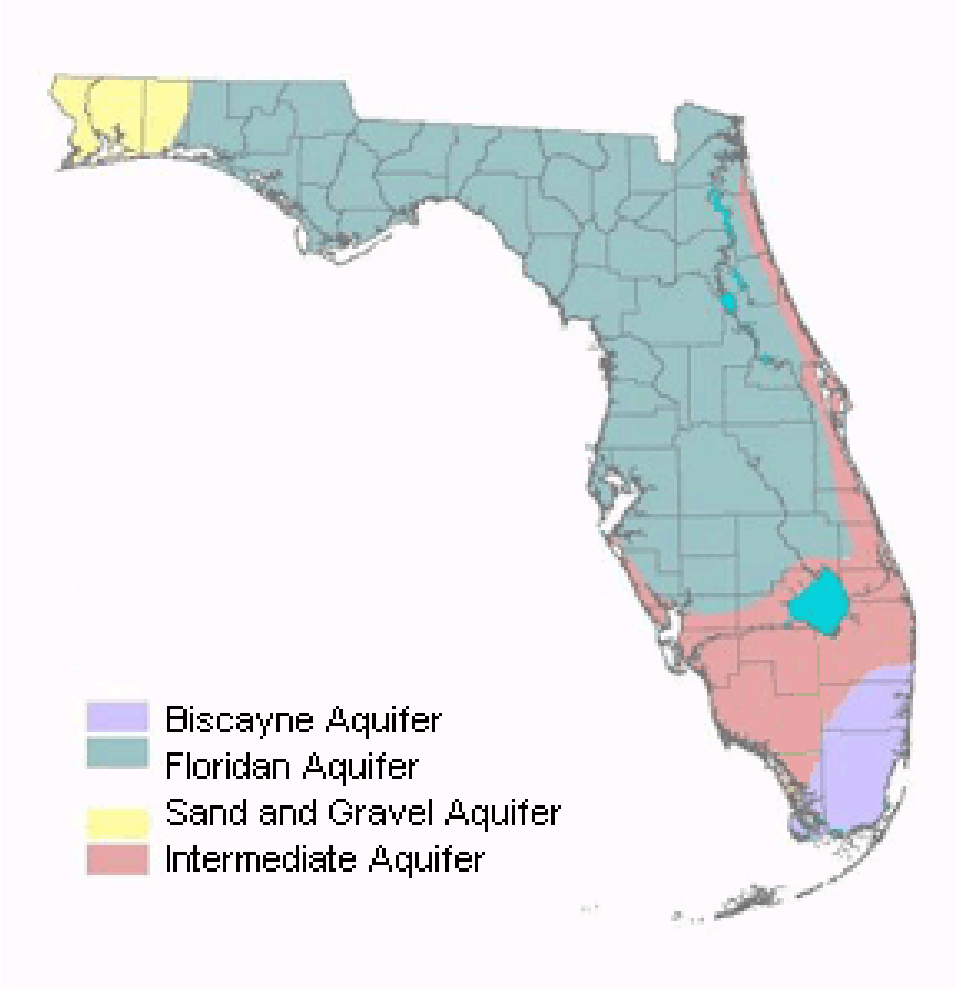
- Southwest Florida Coastal City
- 3rd Largest FL City in Land Area
- 10th Largest FL City in Population
- Peninsula Surrounded by Saltwater
- 2000 Population ~102,286
- 2021 Population ~206,637
- Build-out Population ~400,000



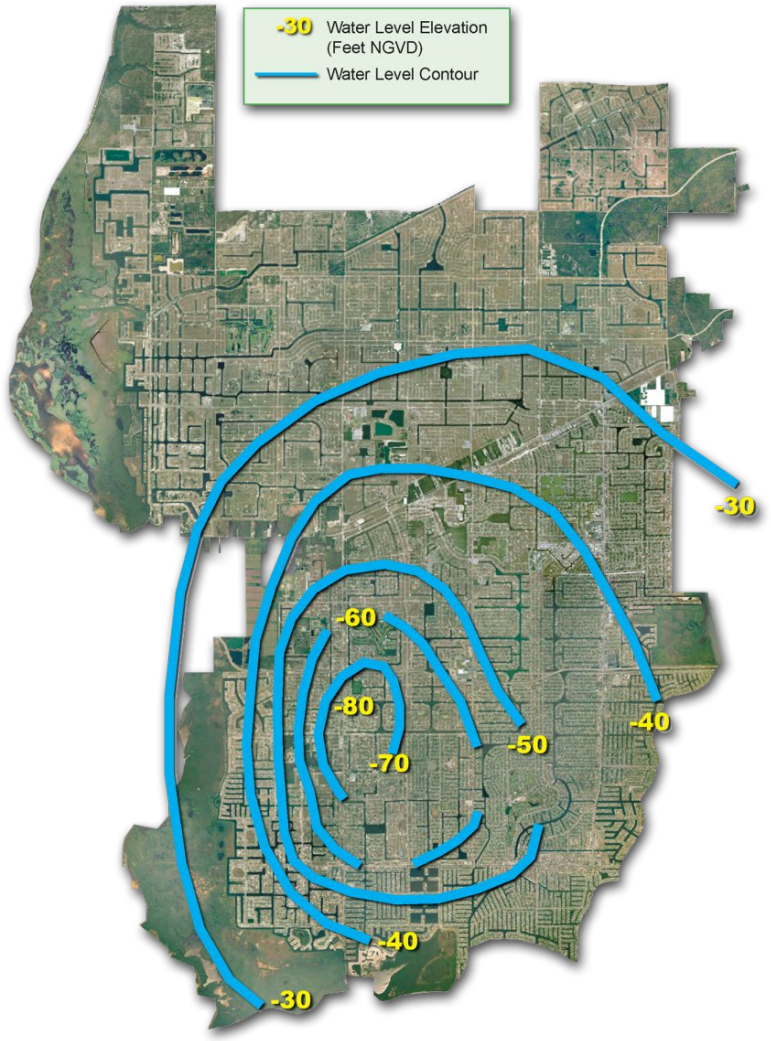


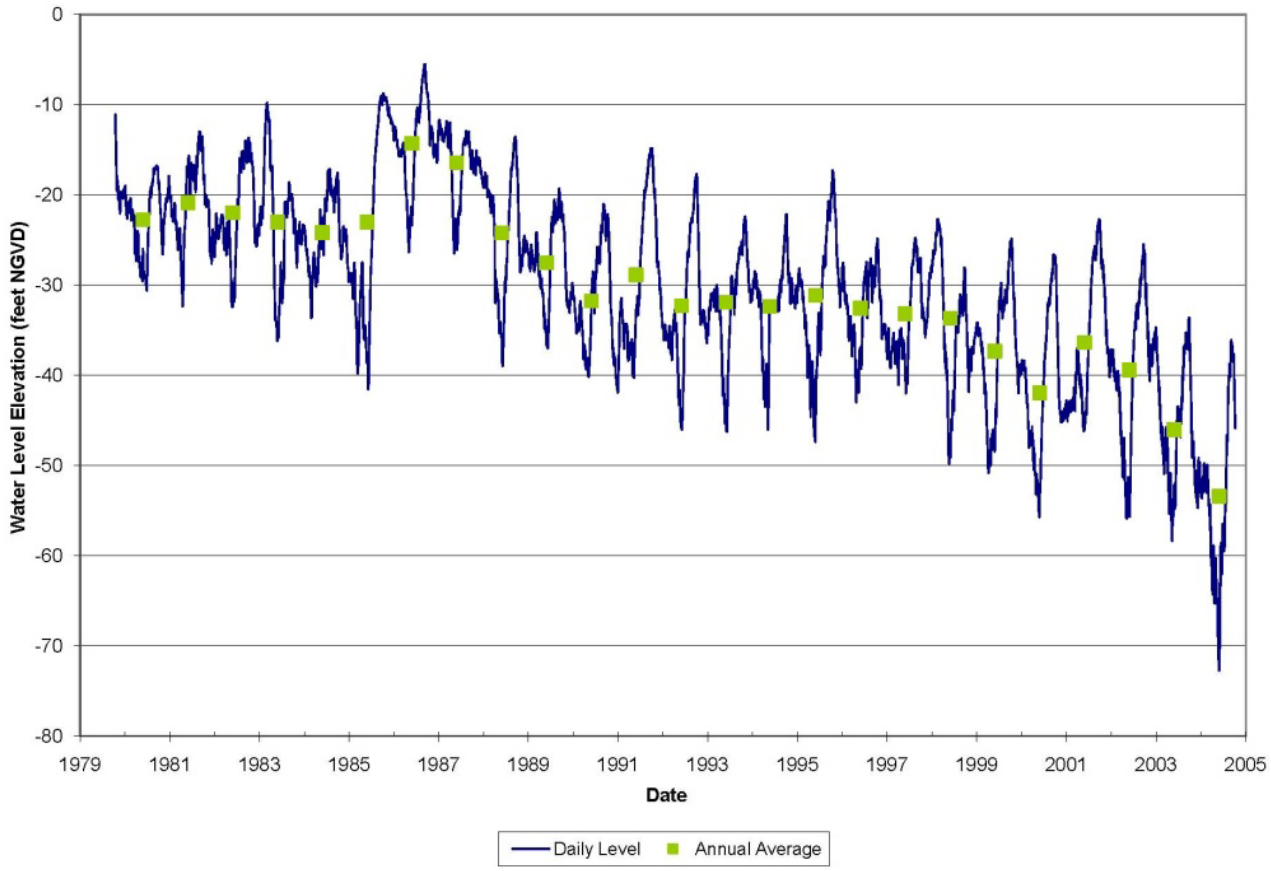
Drivers for Early Adoption of Reuse System

- Limited Availability of Conventional Water Sources
  - No Fresh Floridan Aquifer
  - No Biscayne Aquifer
  - Available sources low yield
- Overtaxed water resources
- Threat of saltwater intrusion
- Utility service to small part of city
- WTP reaching capacity
- Deteriorating surface water quality
- Threatened fines for wastewater disposal
- Threatened building moratorium
- Continued rapid growth



Aquifer Water Level Decline & Threat of Saltwater Intrusion





Cape Coral Reuse Program Considerations

- Recognition of limited water resource availability
- Early focus on “total water management”
- Consideration of all water sources and all water demands
- Elimination of wastewater surface water discharges
- Up to 50% municipal demand used for irrigation of lawns
- 400 miles of canals seen as a resource (but not to drink)
- Pre-platted residential community
- Minimal industry and agriculture base

Cape Coral Reuse Program Components

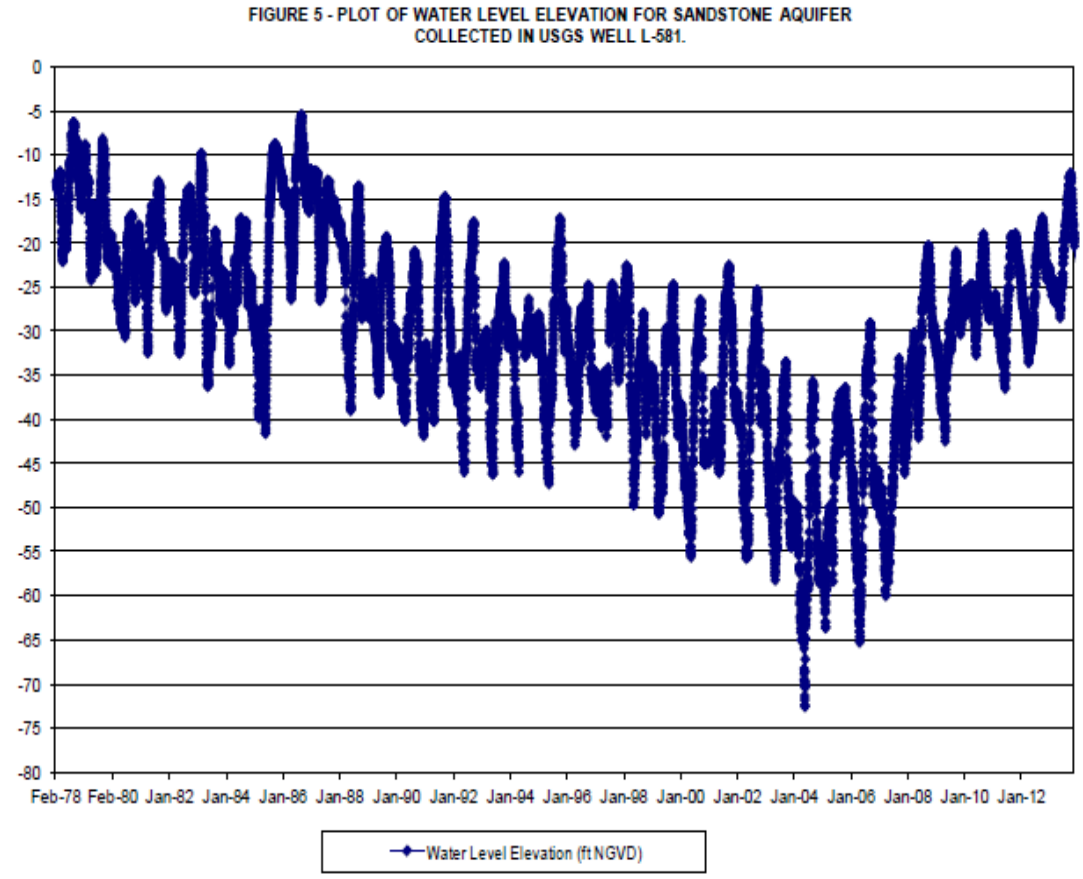
- Separation of inside and outside water uses
- RO treated brackish groundwater reserved for potable uses
- Reuse of treated wastewater for residential/commercial irrigation
- Stormwater harvesting of canals to supplement reuse
- 3 pipes to every house – W / WW / IQ
- Demand management - 2 days per week watering restriction

Lessons Learned

- Canal system improvements were needed to supplement reuse
  - Raised fixed crest weirs and added controls
  - Inflatable weirs provide added storage and flood control
  - Pumping interconnects conveys water from other basins
- Over 1.5 billion gallons of water storage added
- Excess stormwater discharges to estuarine environment reduced
  - Today – limited excess discharge and canal water exceeds reuse water in IQ water supply

Results

- Virtual elimination of wastewater discharges to estuaries
- Recovery of Groundwater Levels
- Major reduction in per capital use of expensive potable system
- Extended useful life of WTP by 20 years (capital deferment)
- Exemption from drought irrigation restrictions



Results (cont.)

Continued recognition for progressive water management program

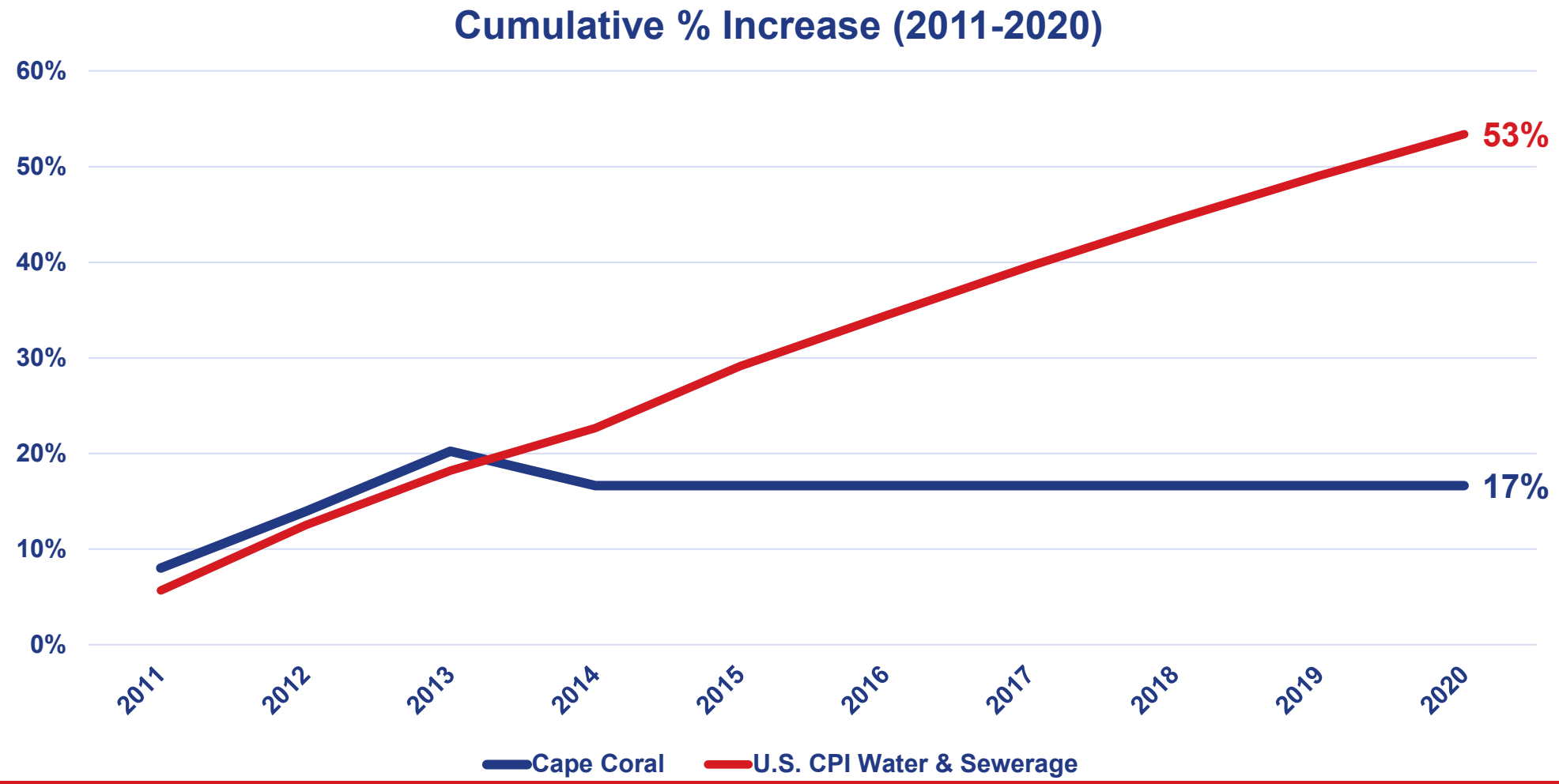
- 100% Alternative Water Supply
- 100% reuse of municipal wastewater
- Effective and robust stormwater harvesting program
- Delivery of >40 MGD Irrigation water during dry season
- Major reductions in stormwater discharges to estuaries
- No utility rate increase since 2012, 3% annual increase begins FY-2023

Financial Management Plan-Key Parameters

- **Maintain Sufficient Operating Reserves & Debt Coverage**
  - Target: 6 months of annual O&M expenses
  - Target: net revenues of at least 1.5 times annual senior debt service
- **Maintain Manageable Levels of Debt**
  - Goal: no additional long-term borrowing during next 10-years (except for UEP)
  - Potential to pay down existing debt in the future as debt becomes redeemable

Indicative of a financially healthy system per rating agency criteria

National Industry Cost Trends

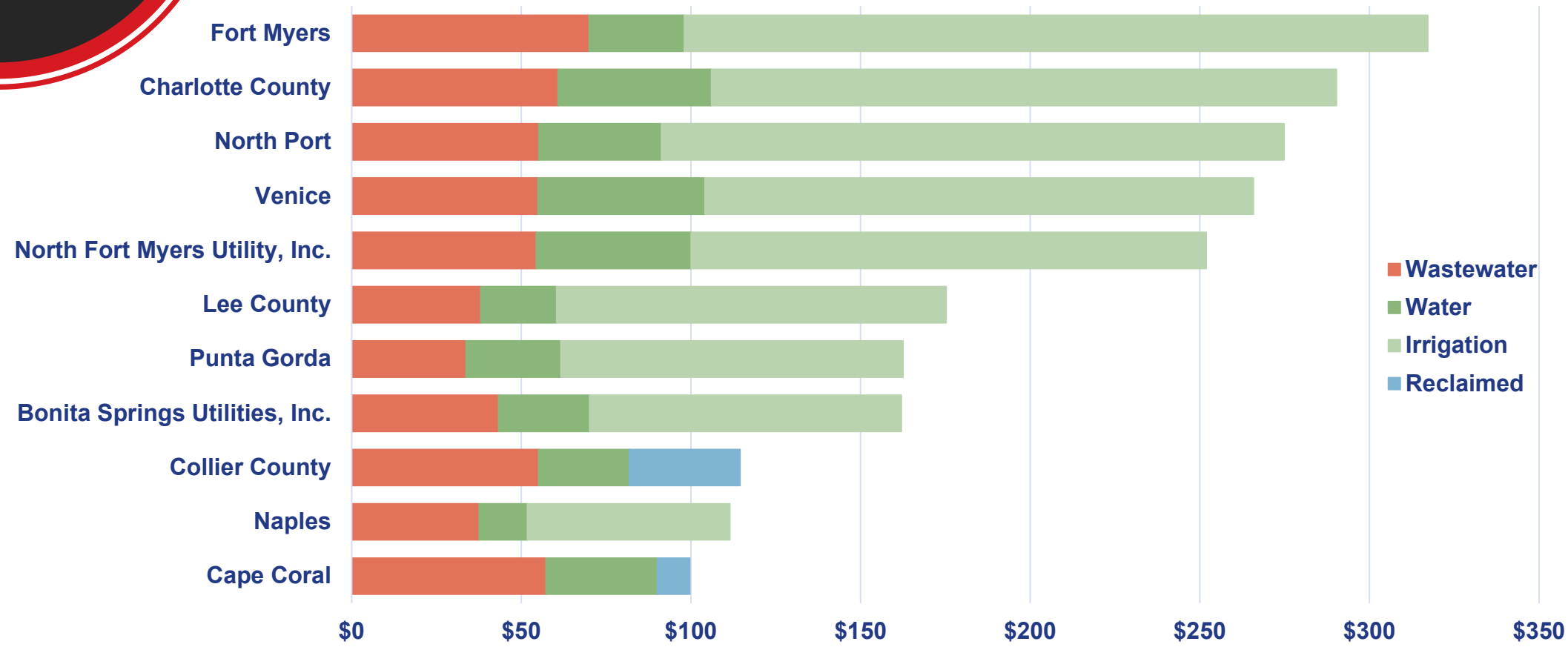


Measures the national average change in the cost of water and sewer service to households

Much more specific and relevant to utilities than overall CPI

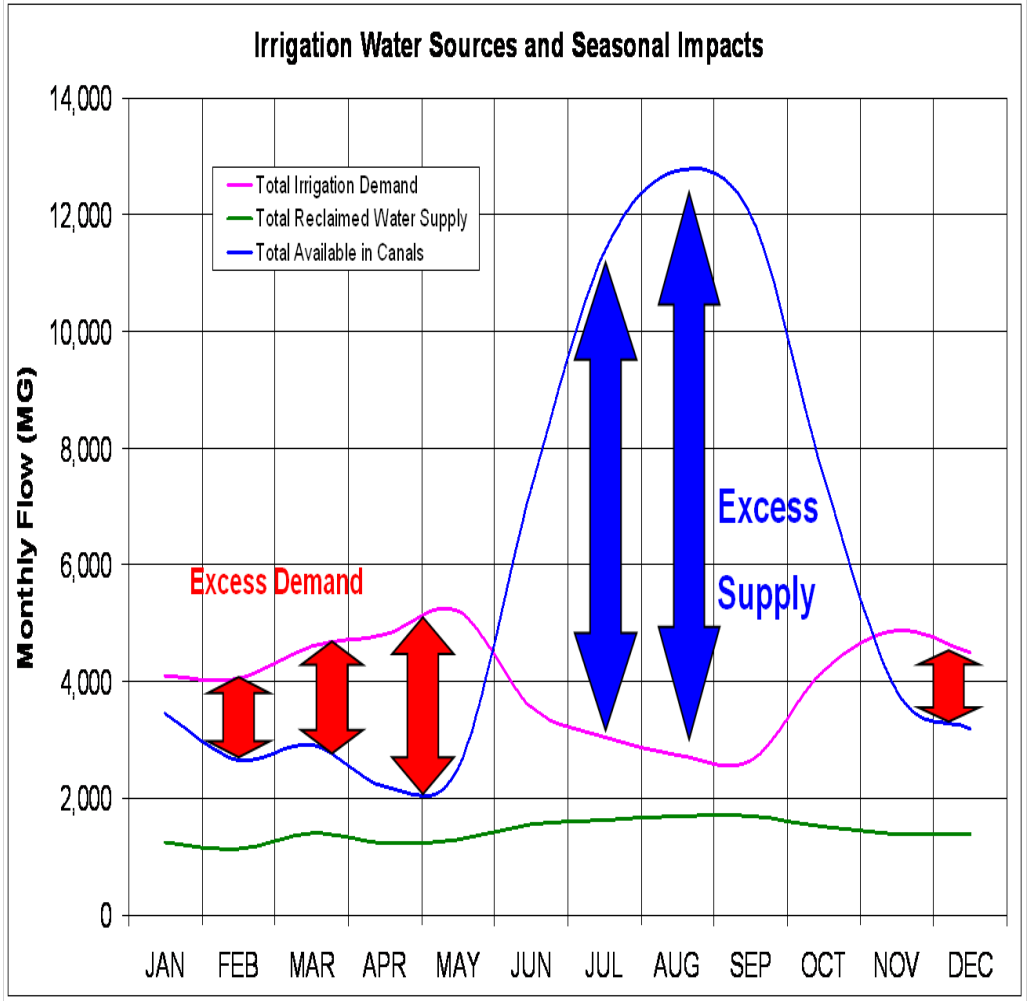
10-year average annual increase = 5.5%

2020 Residential Utility Bill Comparison

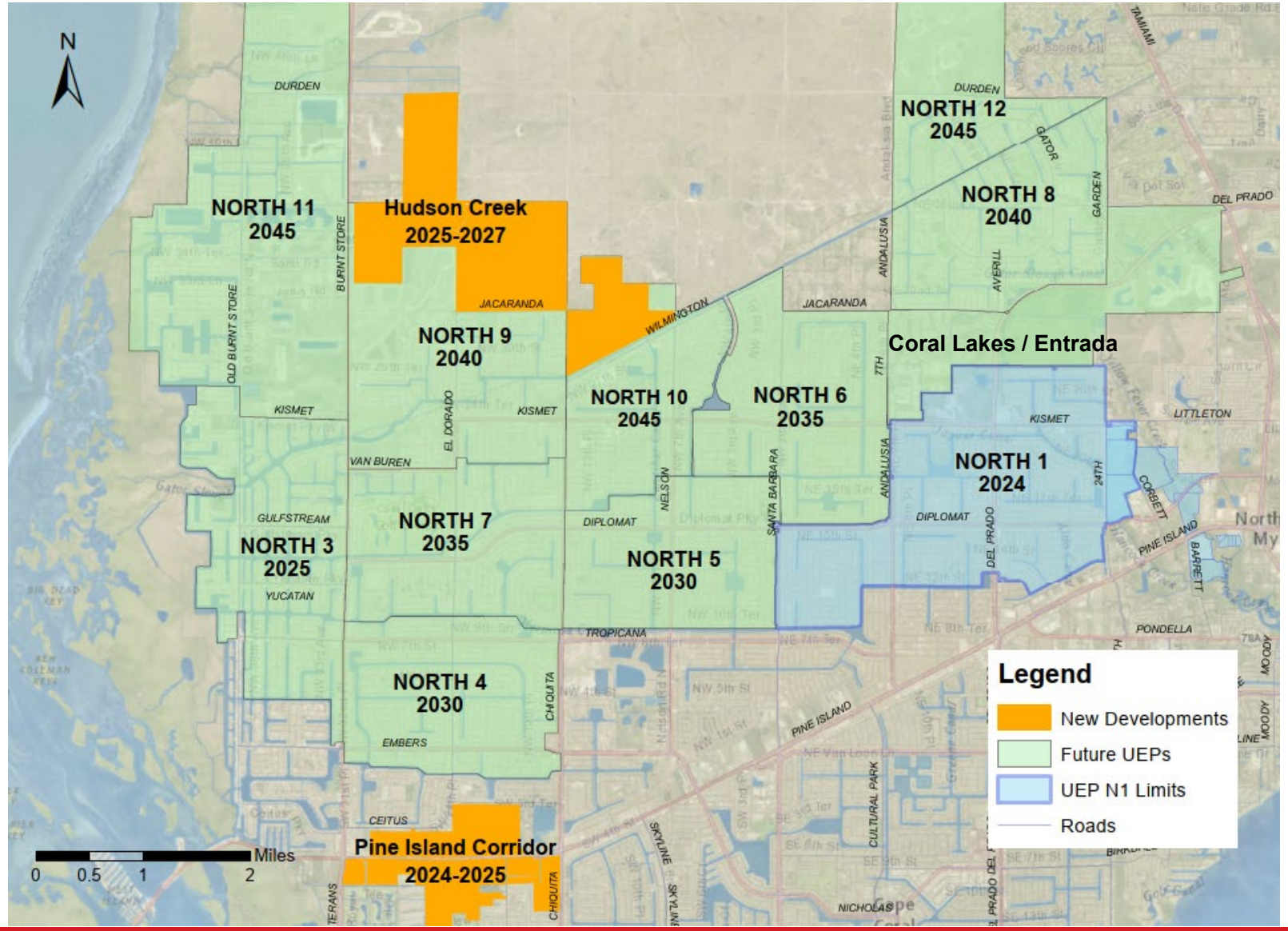


Current Reuse Initiatives

- Inter-local Agreements with FGUA and City of Ft. Myers for reuse interconnects
- Continued Aggressive Utilities Extension Program (UEP) North 1 will add 3,000 additional reuse customers by 2025
- In 2022, Council passed new outdoor watering schedule
- Working on comprehensive irrigation ordinance that will regulate automatic sprinkler systems to achieve minimum 70% efficiency.



UEP Proposed Schedule



UEP Order	Area (Sq Miles)	2020 # ERU's
North 3	3.62	1561
North 4	2.83	1884
North 5	2.61	1907
Coral Lakes / Entrada	2.53	2067
North 6	3.10	2239
North 7	2.93	1555
North 8	2.76	1370
Hudson Creek	2.70	2036
North 9	3.41	Included in Hudson Creek*
North 10	2.00	Included in Hudson Creek*
North 11	6.13	791
North 12	2.85	470

Please Note

UEP borders shown may be adjusted as needed to address construction and serviceability issues

UEP Commercial / Residential Growth

UEP #	2020 # of ERUs	Buildout # of ERUs	Added ERUs (2020 to Buildout)	Percent Developed 2020	UEP Septic Density
North 3	1561	5607	4046	28%	1.06
North 4	1884	4928	3044	38%	1.27
North 5	1907	4670	2763	41%	1.60
Entrada & Coral Lakes	2067	2888	821	72%	Served
North 6	2239	6668	4429	34%	1.70
North 7	1555	4278	2723	36%	1.39
North 8	1370	4884	3514	28%	1.14
North 9 (includes Hudson Creek)	1170	8063	6893	15%	0.67
North 10 (includes Hudson Creek)	866	2870	2005	30%	1.00
North 11	791	6721	5930	12%	0.38
North 12	470	2680	2210	18%	0.41

Current Reuse Initiatives (cont.)

Southwest Reuse Tank Project: Const. Cost $12.5M

- Awarded $1.7M SFWMD Grant
- Construction complete July 2022
- Adds 10 MG of irrigation water storage (two 5 MG Crom Tanks
- Both can collect rainwater on roof to fill tanks

Current Reuse Initiatives (cont.)

- **Ft Myers Reclaimed Water Transmission Main**
- **Est. const. cost $22.5M (>$10M grants)**
- Started overland construction – Mar. 22’
- Begin subaqueous construction – Jan. 23’
- Substantial completion – Aug. 23’

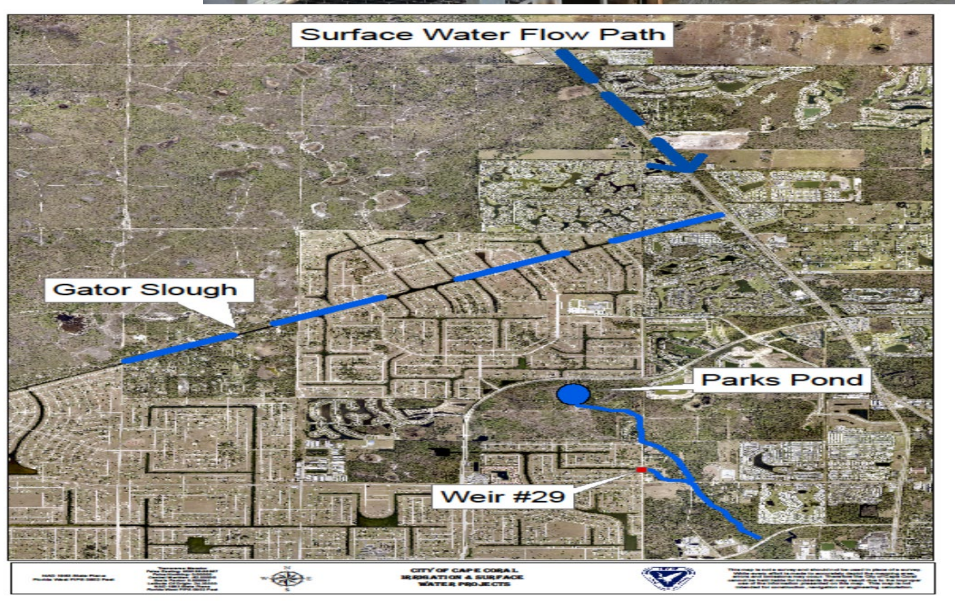
Current Reuse Initiatives (cont.)

- **Reservoir Pipeline and Pump Station Eng. Cost: $822K**
- **($1.5M Grant)**

- Complete engineering-Sept. 22’
- Bid project – Nov. 22’
- Est. project completion – Mar. 24’

Current Reuse Initiatives (cont.)

Weir 29 Project-Adds ~800 MG of freshwater canal storage



- Construction cost $828,588
- Construction completed Aug. 22’

THANK YOU
Any questions?

Questions and Public Comment

Caloosahatchee River Fort Myers

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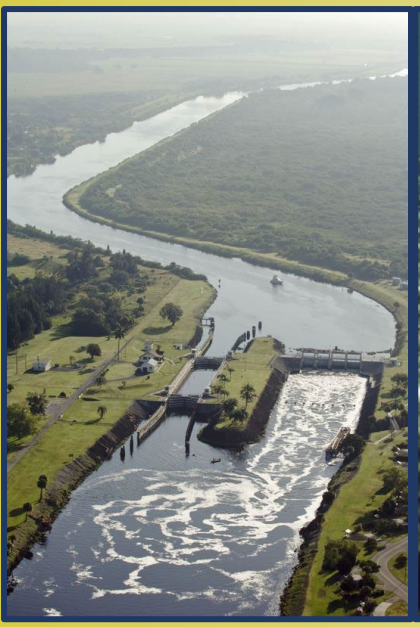
Summary of the Draft 2022 LWC Plan Update



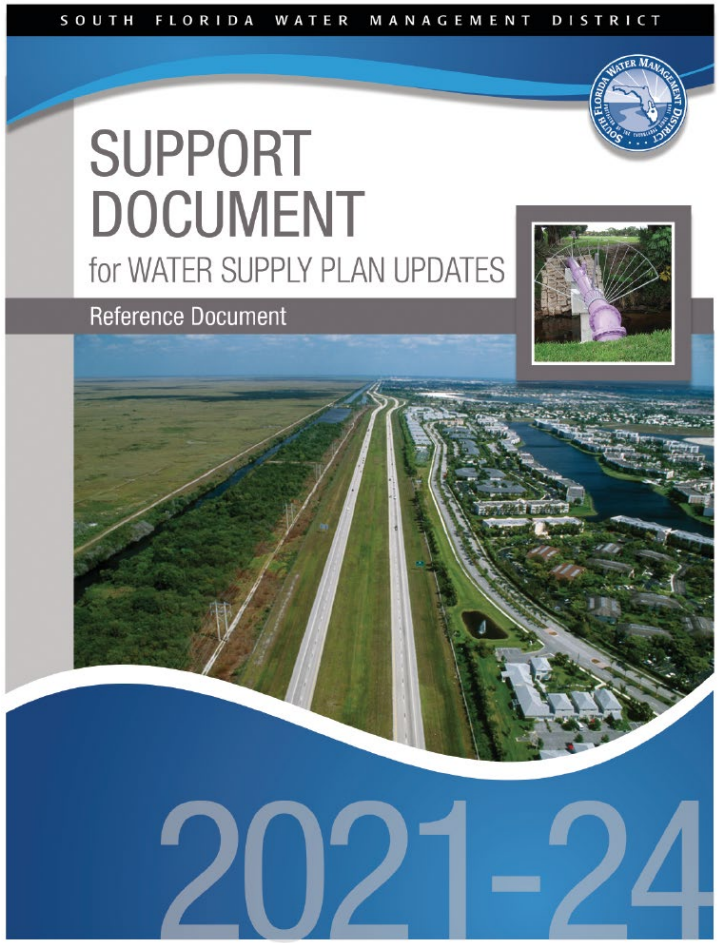

Bob Verrastro, P.G.

LWC Water Supply
Plan Manager

Water Supply Plan Documents

Planning Document/Appendices

Support Document



Objectives

- Identify available water supplies
- Increase water conservation & alternative water source development
- Protect & enhance natural systems
- Ensure compatibility and linkage with other efforts
- Provide linkage with local governments

Estero Bay

Planning and Support Document Outlines

Executive Summary

Chapter 1: Introduction

Chapter 2: Demand Estimates and Projections

Chapter 3: Demand Management – Water Conservation

Chapter 4: Water Resource Protection

Chapter 5: Water Source Options

Chapter 6: Water Resource Analyses

Chapter 7: Water Resource Development Projects

Chapter 8: Water Supply Development Projects

Chapter 9: Conclusions and Future Direction

Appendices:

- A: Water Demand Projections
- B: Public Supply Utility Summaries
- C: MFLs and Recovery and Prevention Strategies
- D: Groundwater Monitoring Analyses
- E: Wastewater Treatment Facilities

Support Document:

- Chapter 1: Introduction
- Chapter 2: Water Conservation
- Chapter 3: Water Use Permitting
- Chapter 4: Water Resource Protection
- Chapter 5: Ecosystem Restoration and Water Resource Development
- Chapter 6: Water Source Options and Treatment
- Appendix: Conservation Glossary

Planning Area

- Planning Horizon 2020 - 2045
- Population (permanent)*
  - 2020 1,188,599 residents
  - 2045 1,634,838 residents

  36% increase
- Irrigated agricultural acreage**
  - 2020 291,765 acres
  - 2045 307,062 acres

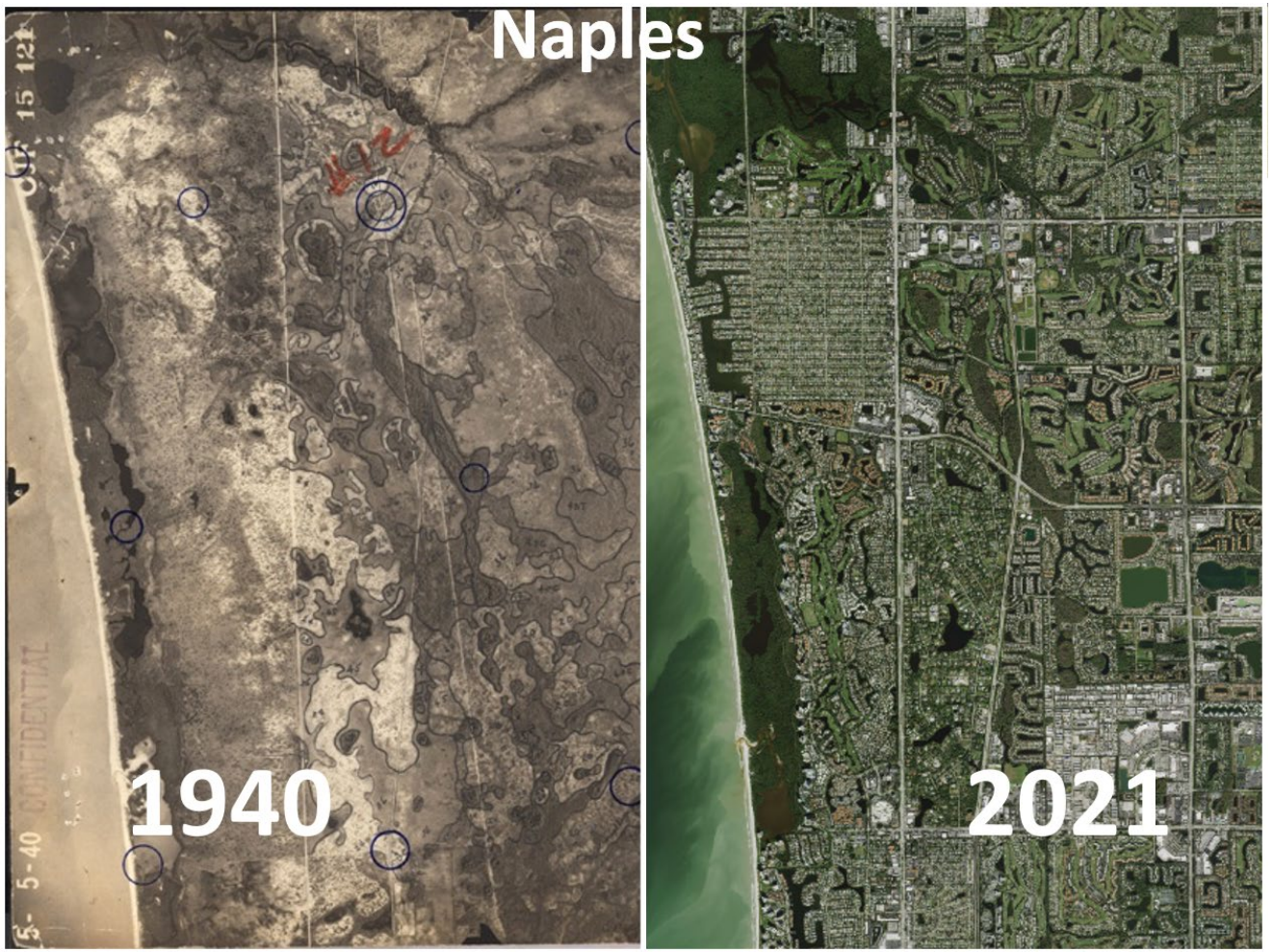
  5% increase
- Gross water demands
  - 2020 1,013 mgd
  - 2045 1,181 mgd

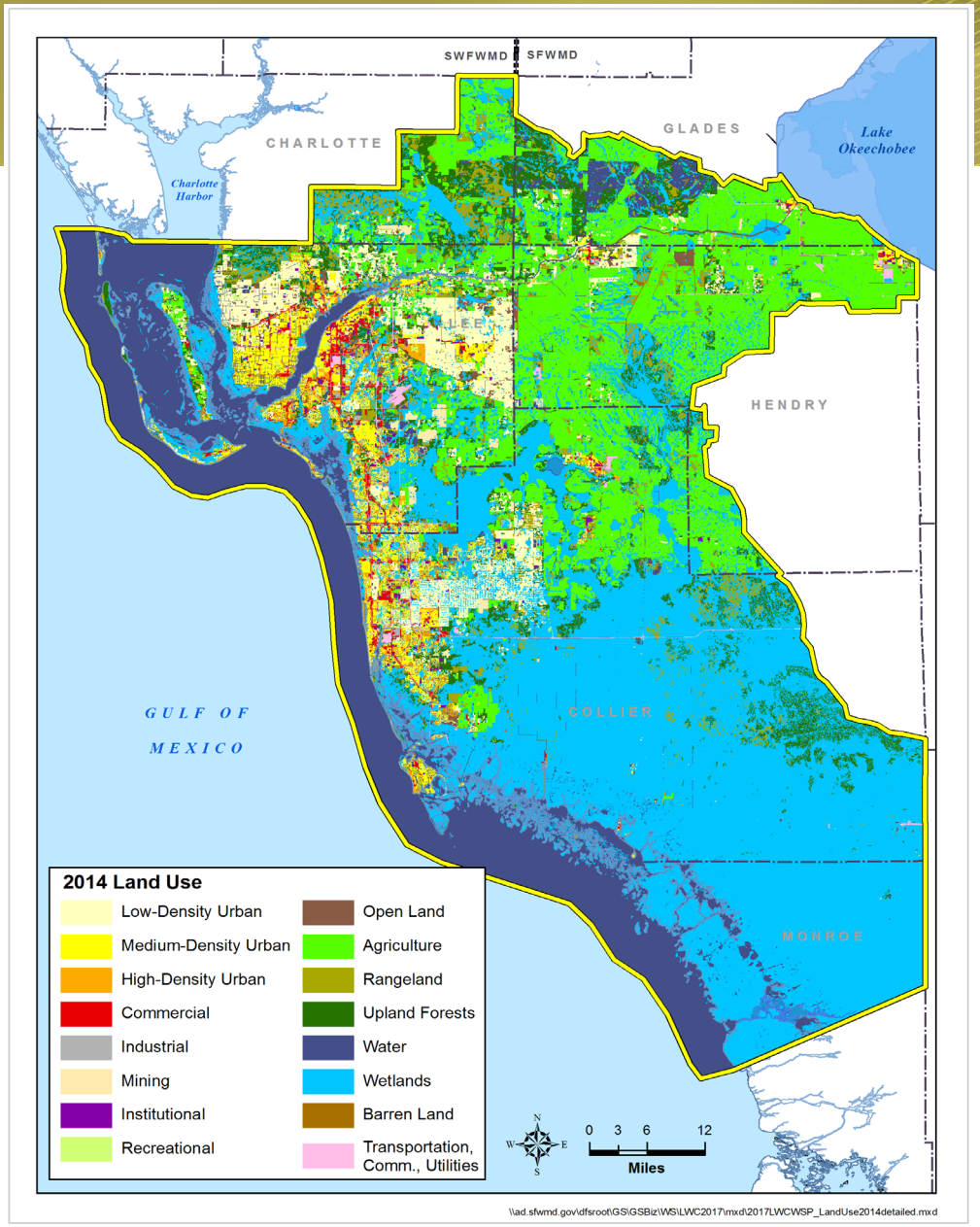
  17% increase

* Data from University of Florida Bureau of Economic and Business Research

** Data from Florida Department of Agriculture and Consumer Services

Land Use


Naples
1940
2021


SWFWMD
SFWMD
CHARLOTTE
GLADES
Lake Okeechobee
Charlotte Harbor
LEE
HENDRY
GULF OF MEXICO
COLLIER
MONROE
2014 Land Use
Low-Density Urban
Medium-Density Urban
High-Density Urban
Commercial
Industrial
Mining
Institutional
Recreational
Open Land
Agriculture
Rangeland
Upland Forests
Water
Wetlands
Barren Land
Transportation, Comm., Utilities
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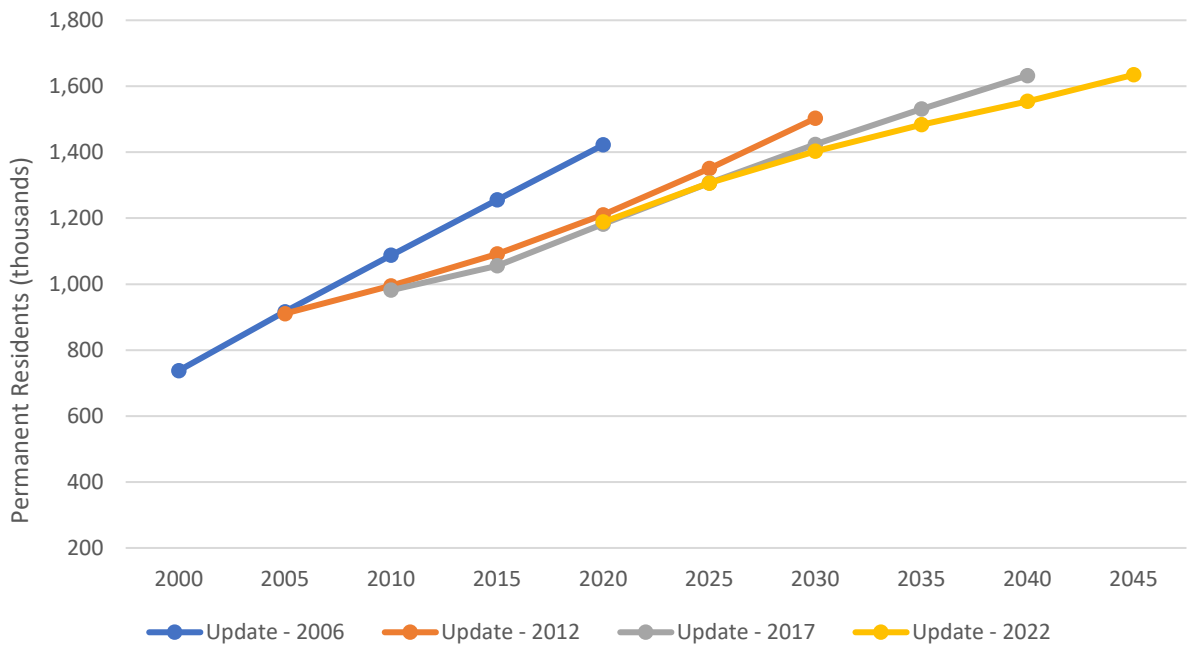
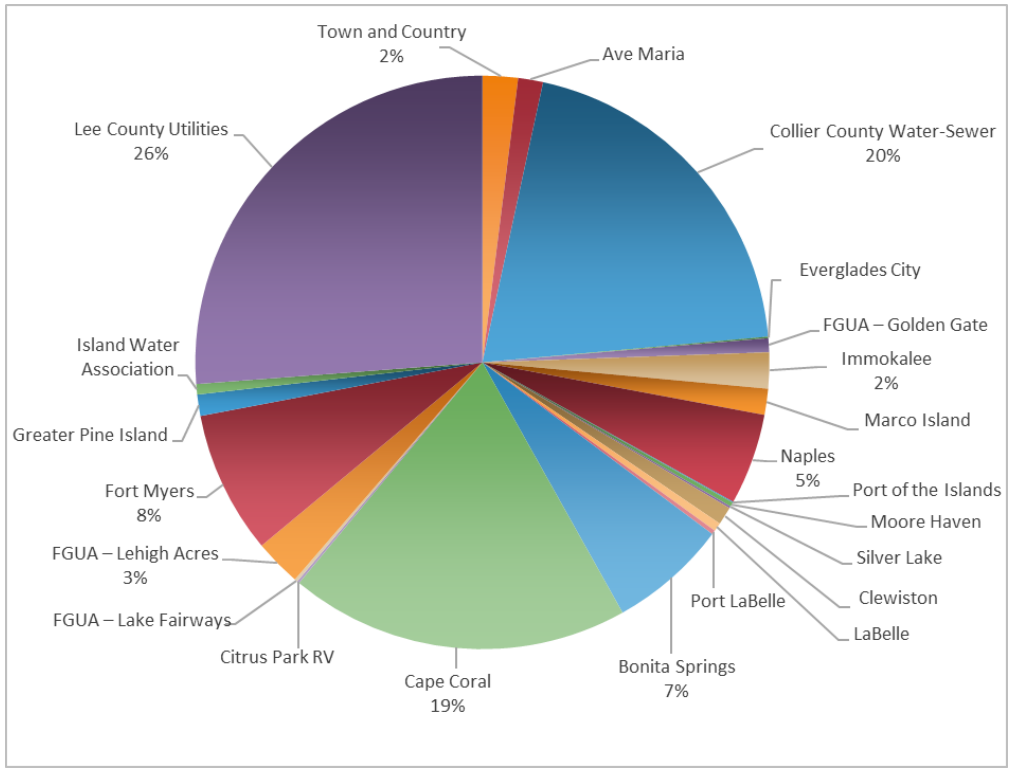
Population Projections and Public Supply

Population Forecast



PS Utilities

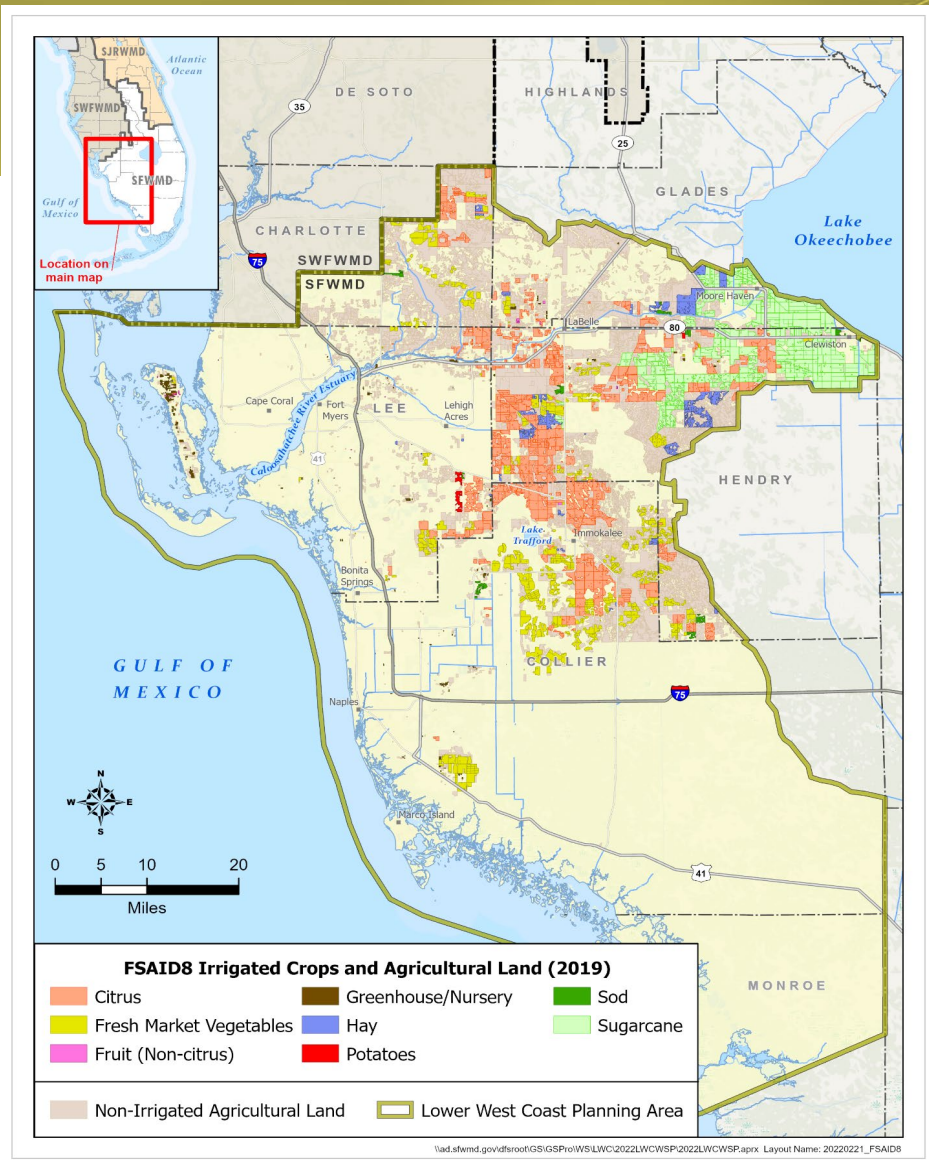


Total 2020 PS demands 138 mgd

Agricultural Acres

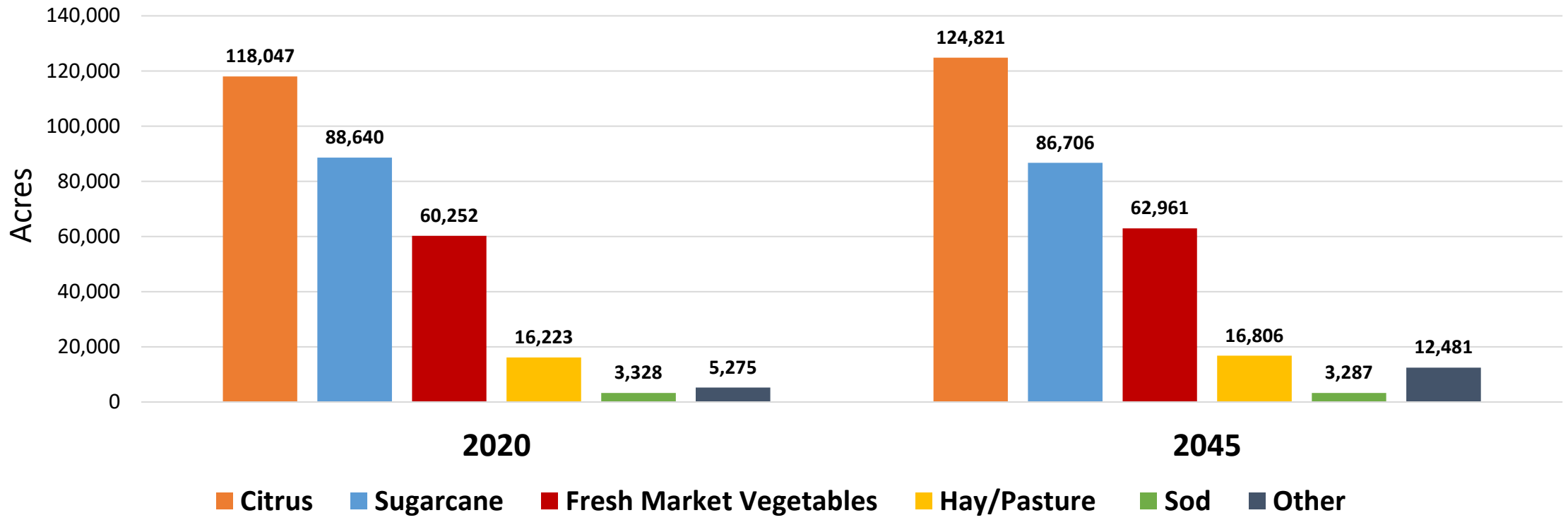
- Largest use category
- Predominant crops are citrus, sugar cane, and fresh market vegetables
- Projected overall growth of 5%

FSAID = Florida Statewide Agricultural Irrigation Demand project



FSAID 8 Irrigated Crops

Agricultural FSAID8 Acreage



Acres	2020	2025	2030	2035	2040	2045
FSAID 8 Updated (2022 LWC Plan)	291,765	291,899	295,709	299,870	303,383	307,062
FSAID 3 Projections (2017 LWC Plan)	315,555	320,967	325,941	332,789	339,648	-

Corn
Potatoes
Non-citrus fruits
Greenhouse/nursery

Landscape and Recreational Irrigation

- Second largest use category
- Includes irrigation for landscape, golf courses, sports fields, parks, common areas, road medians
- Projected to grow at a similar rate as population
- Often supplemented with reclaimed water

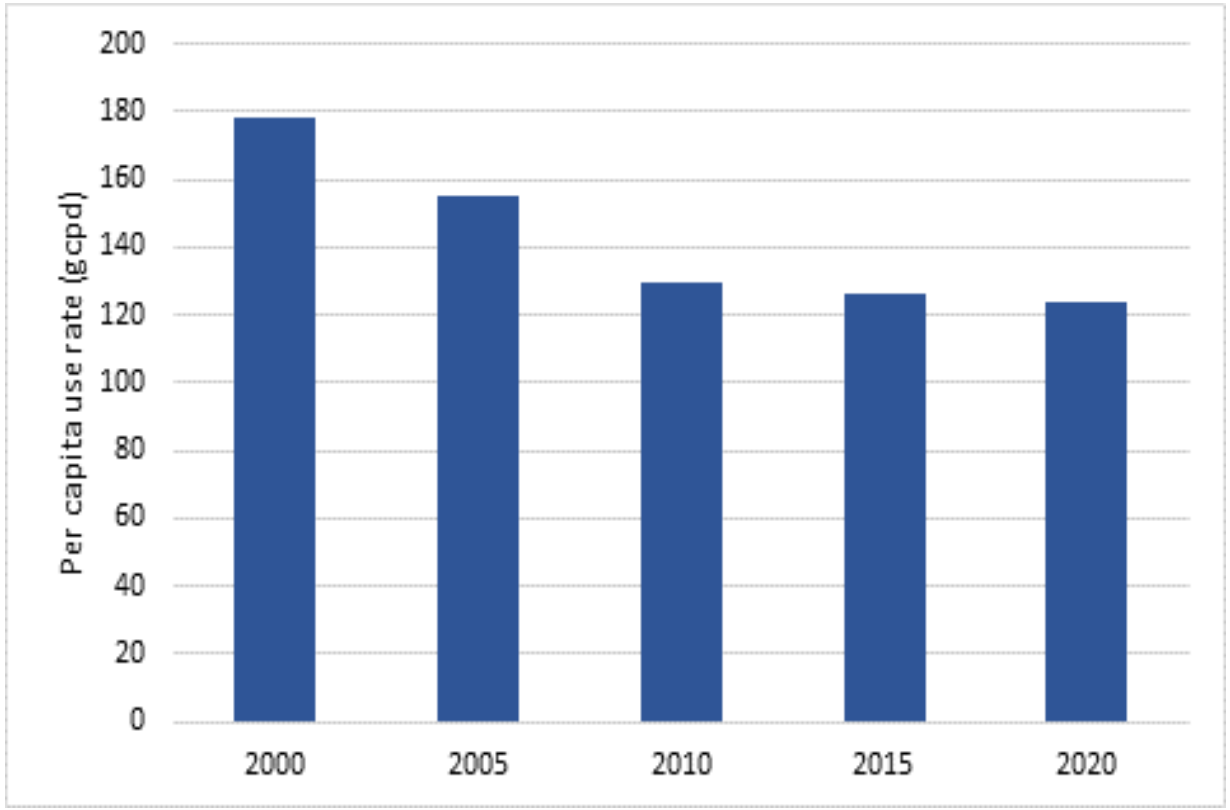
Future Water Demands (mgd) Summary

Water Use Category	2020	2045	2040 From 2017 Plan Update
Public Supply	138.5	186.02	199.88
Domestic Self-Supply	24.53	34.01	33.18
Agriculture	592.02	621.40	678.83
Commercial/Industrial/Institutional	37.73	48.23	29.07
Landscape/Recreational	219.17	289.23	254.32
Power Generation	1.54	2.03	15.40
LWC Planning Area Total	**1,013.49**	**1,180.92**	**1,210.68**

LWC Demand Total = 17% increase from 2020 to 2045

Demands in million gallons per day.

Water Conservation



- Agriculture
  - FDACS best management practices
  - More efficient irrigation systems
- Public supply
  - Indoor and outdoor programs
  - Conservation rate structures
- Public supply per capita use rate (gallons per capita per day)

2000	177
2020	123

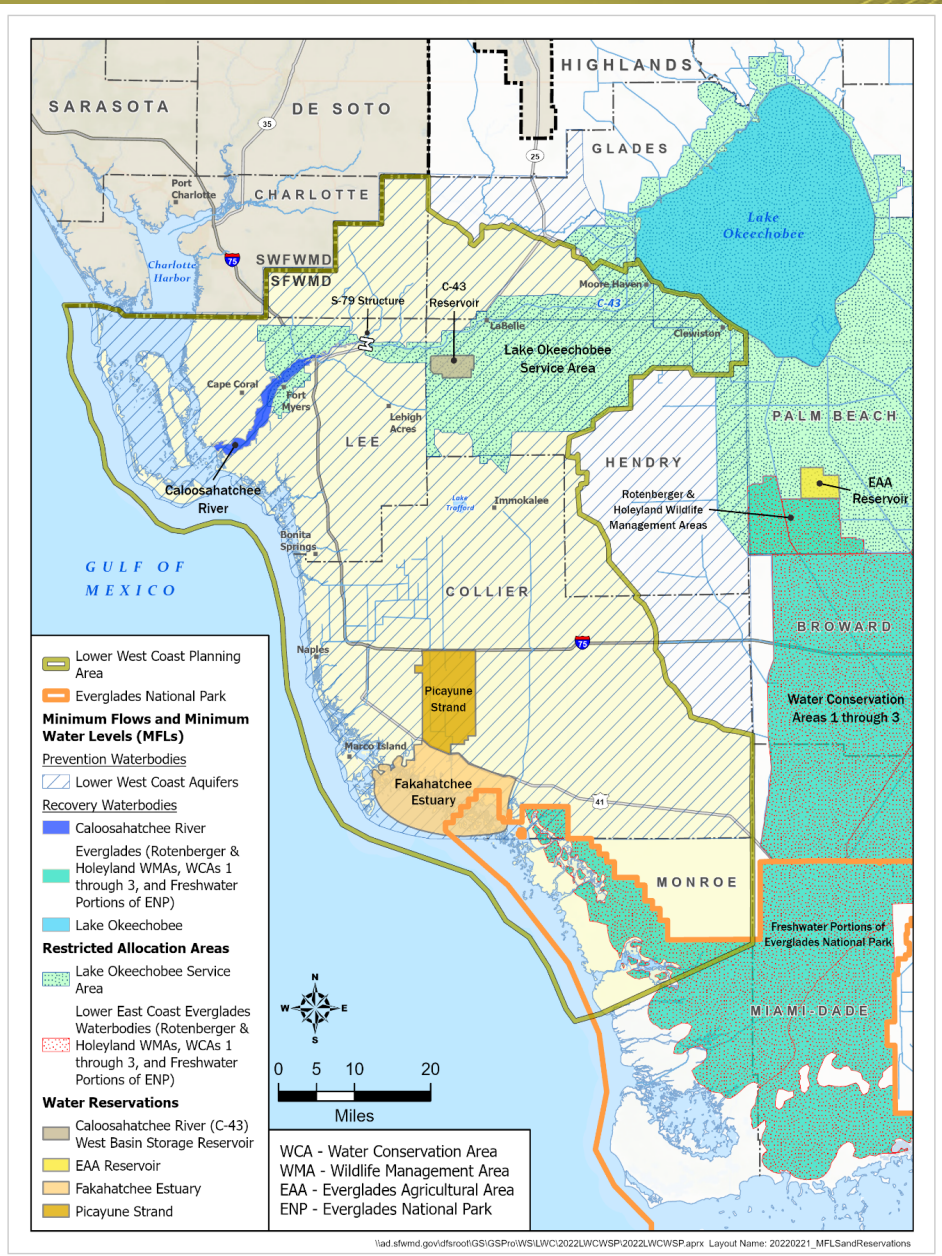
30% decrease

- 45 mgd potential conservation savings through 2045
  - Urban 30 mgd (assuming 30% participation)
  - Agriculture 15 mgd (estimated by FDACS)

The cheapest gallon of water is the gallon we don't use.

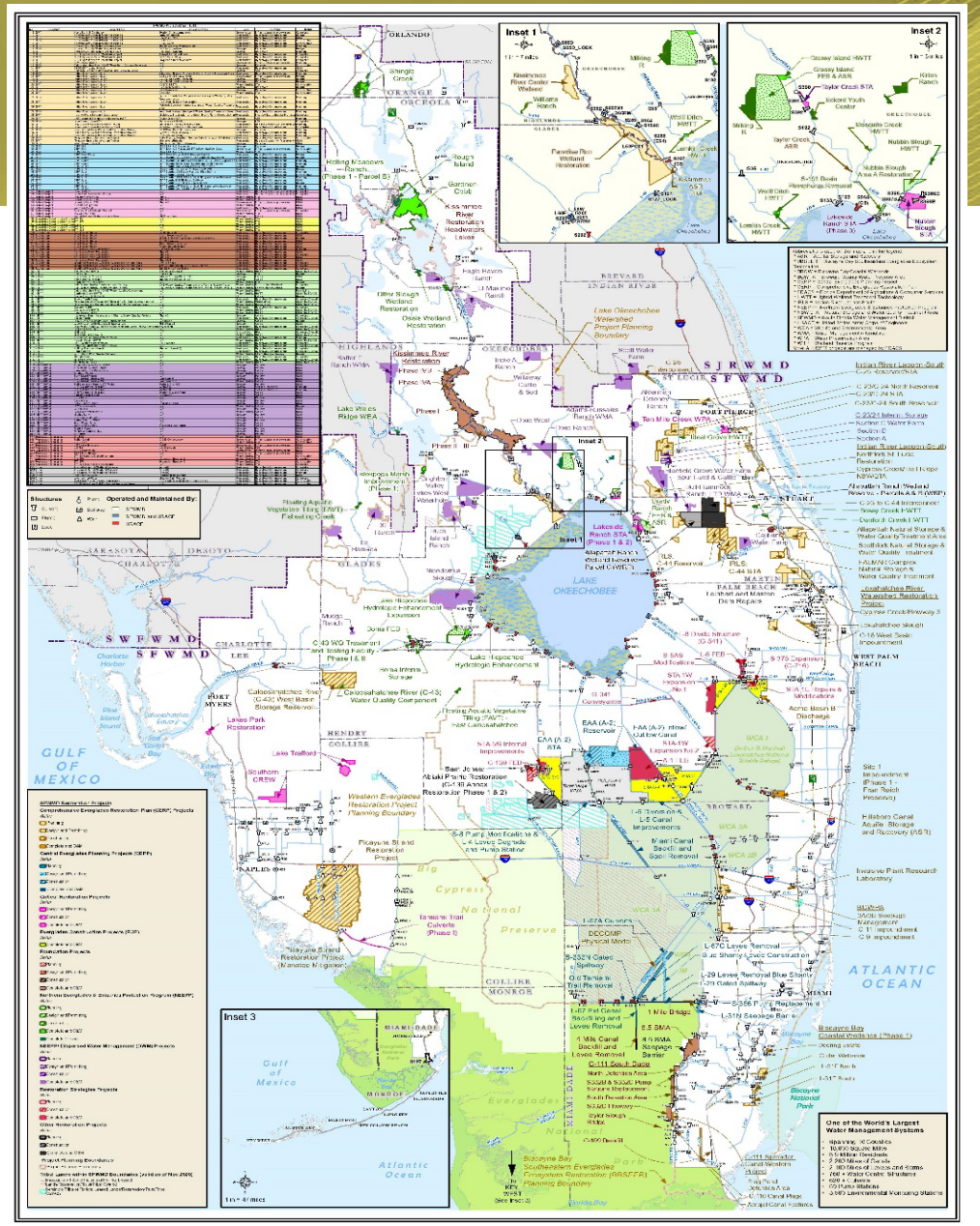
Water Resource Protection

- Water Use Permitting Criteria
- Restricted Allocation Area
  - Lake Okeechobee Service Area
- Minimum Flows and Minimum Water Levels
  - Lower West Coast Aquifers
  - Caloosahatchee River Estuary
- Water Reservations
  - C-43 West Basin Storage Area
  - Fakahatchee Estuary
  - Picayune Strand



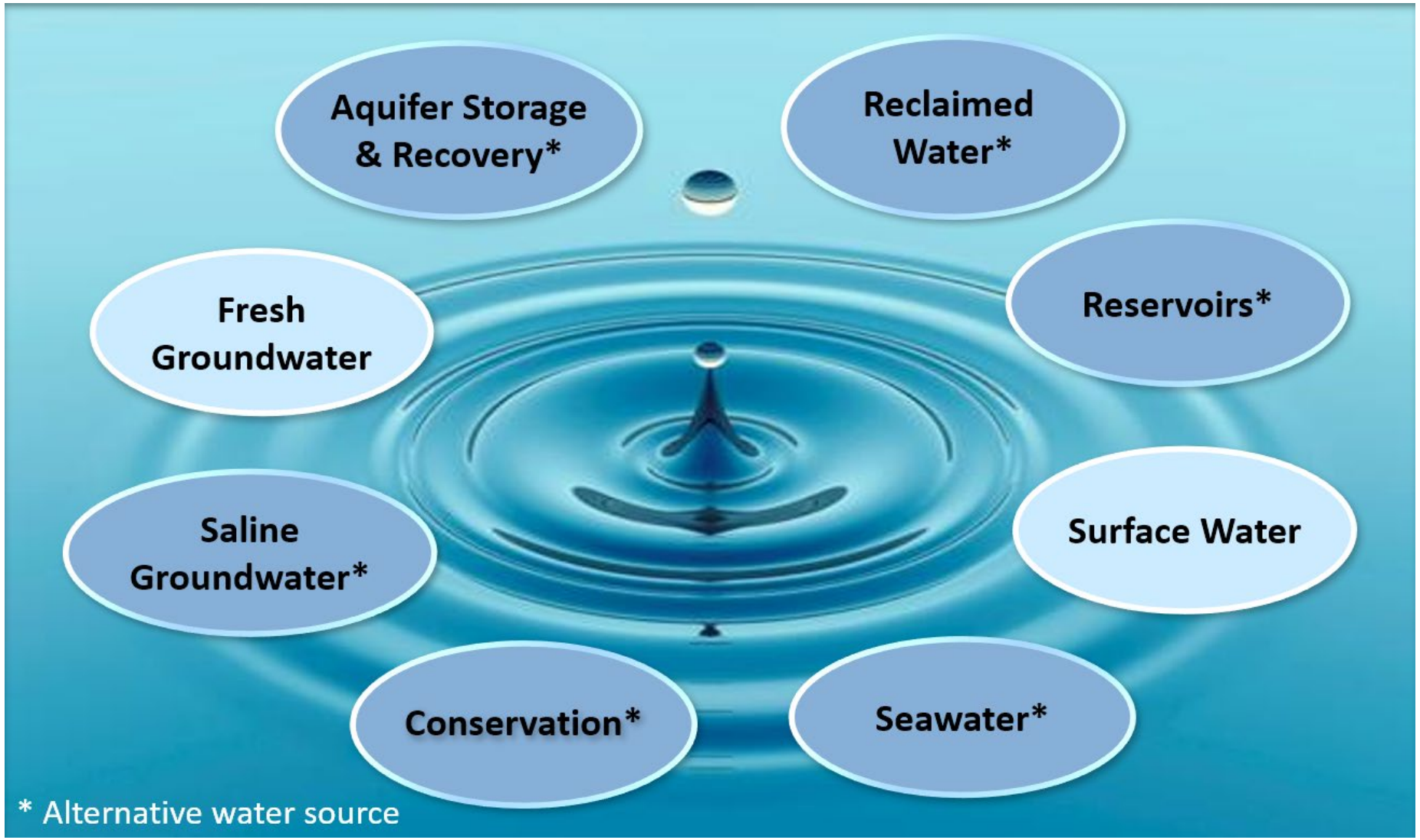
Water Resource Development

- Implementation of CERP*
- Other State projects
- SFWMD hydrogeologic investigations
- Groundwater monitoring and modeling
- Alternative water supply and conservation programs



* *MFL recovery and prevention strategies rely on CERP implementation.*

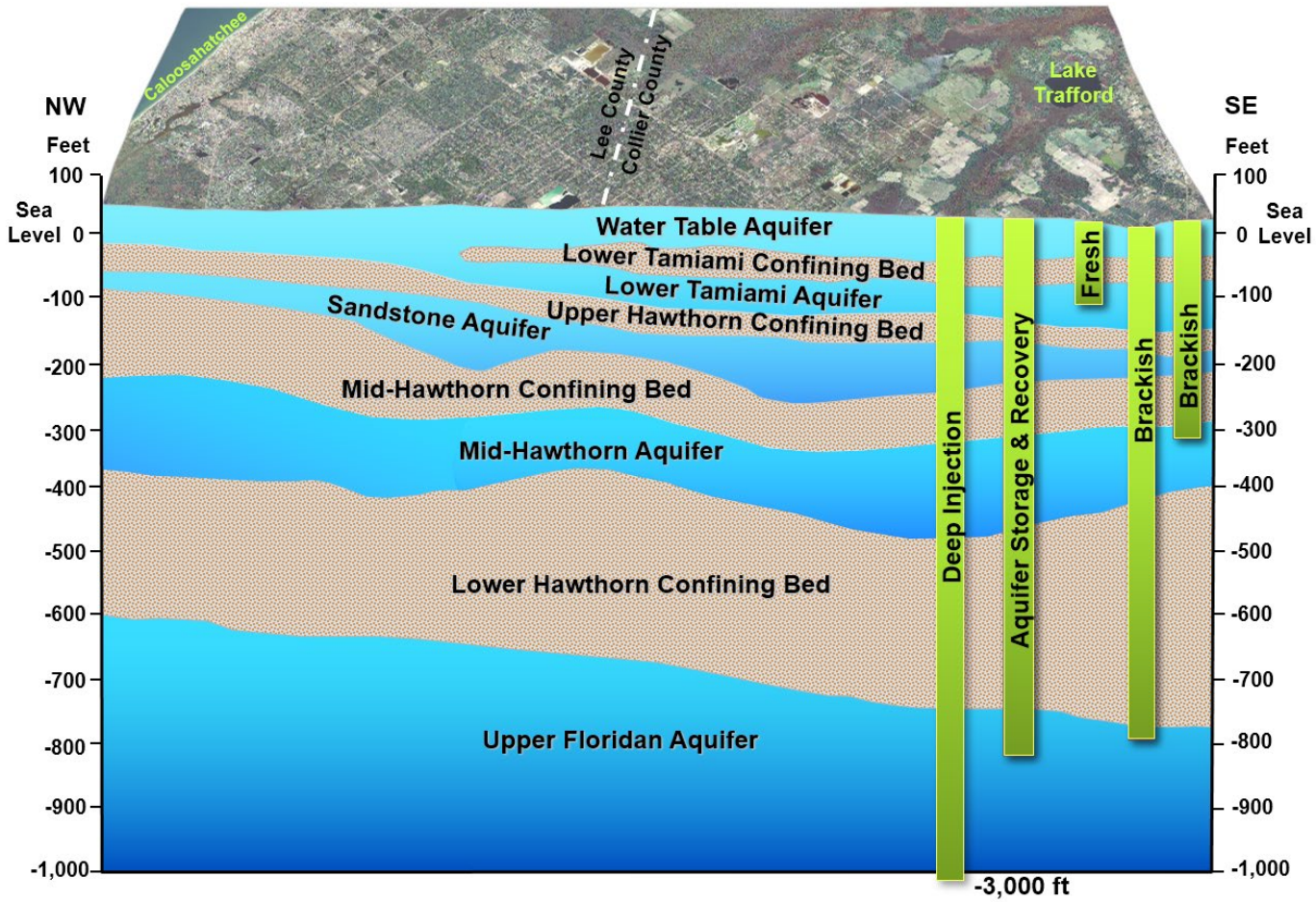
Water Source Options and Alternatives

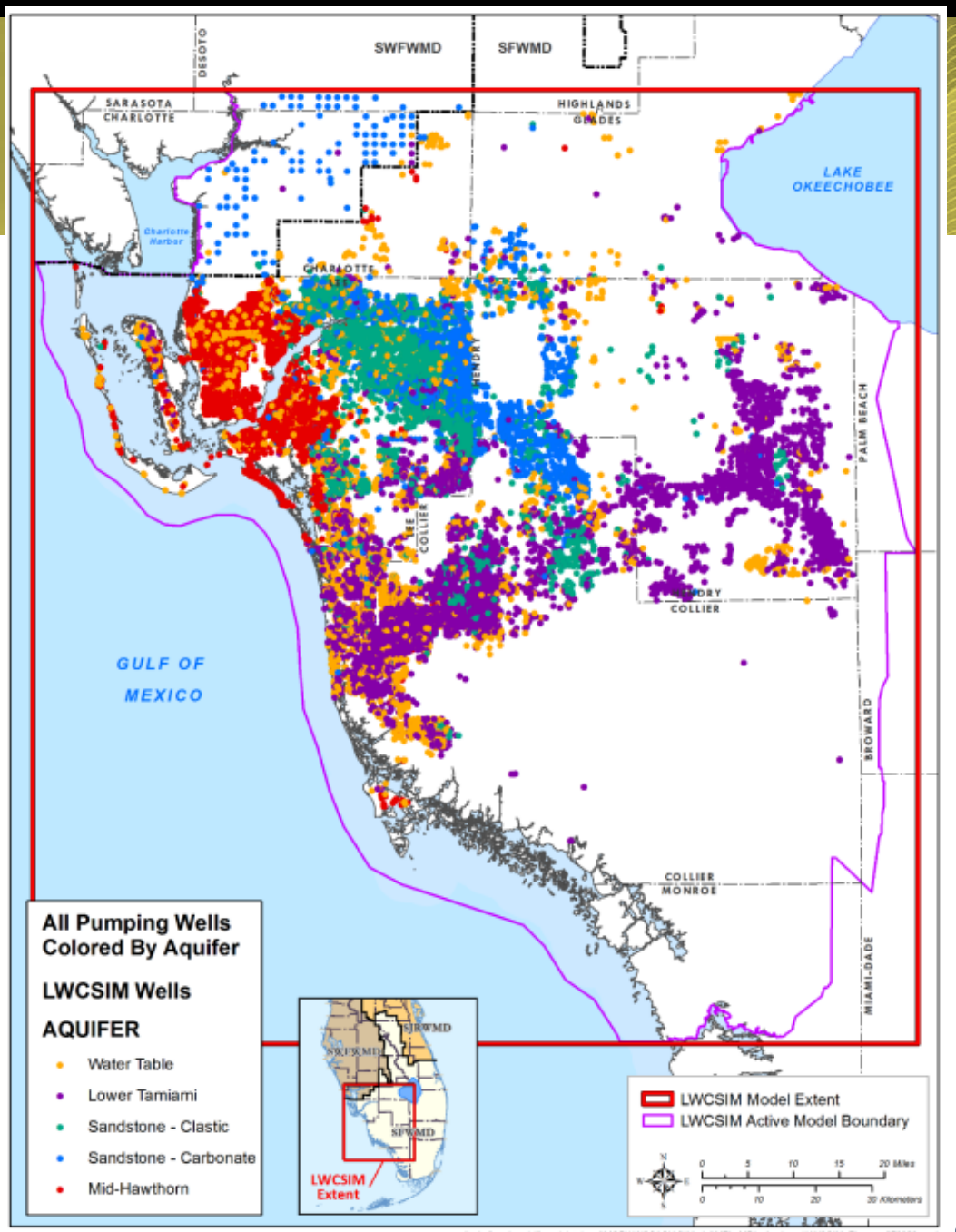


Water Source Options

Category	Surface Water	Fresh Groundwater	Brackish Groundwater	Reclaimed Water	Storage
Public Supply		✓	✓		✓
Domestic Self-Supply		✓			
Agriculture	✓	✓			✓
Landscape/Recreational	✓	✓	✓	✓	✓
Commercial/Industrial/Institutional	✓	✓		✓	✓
Power Generation	✓	✓	✓	✓	✓

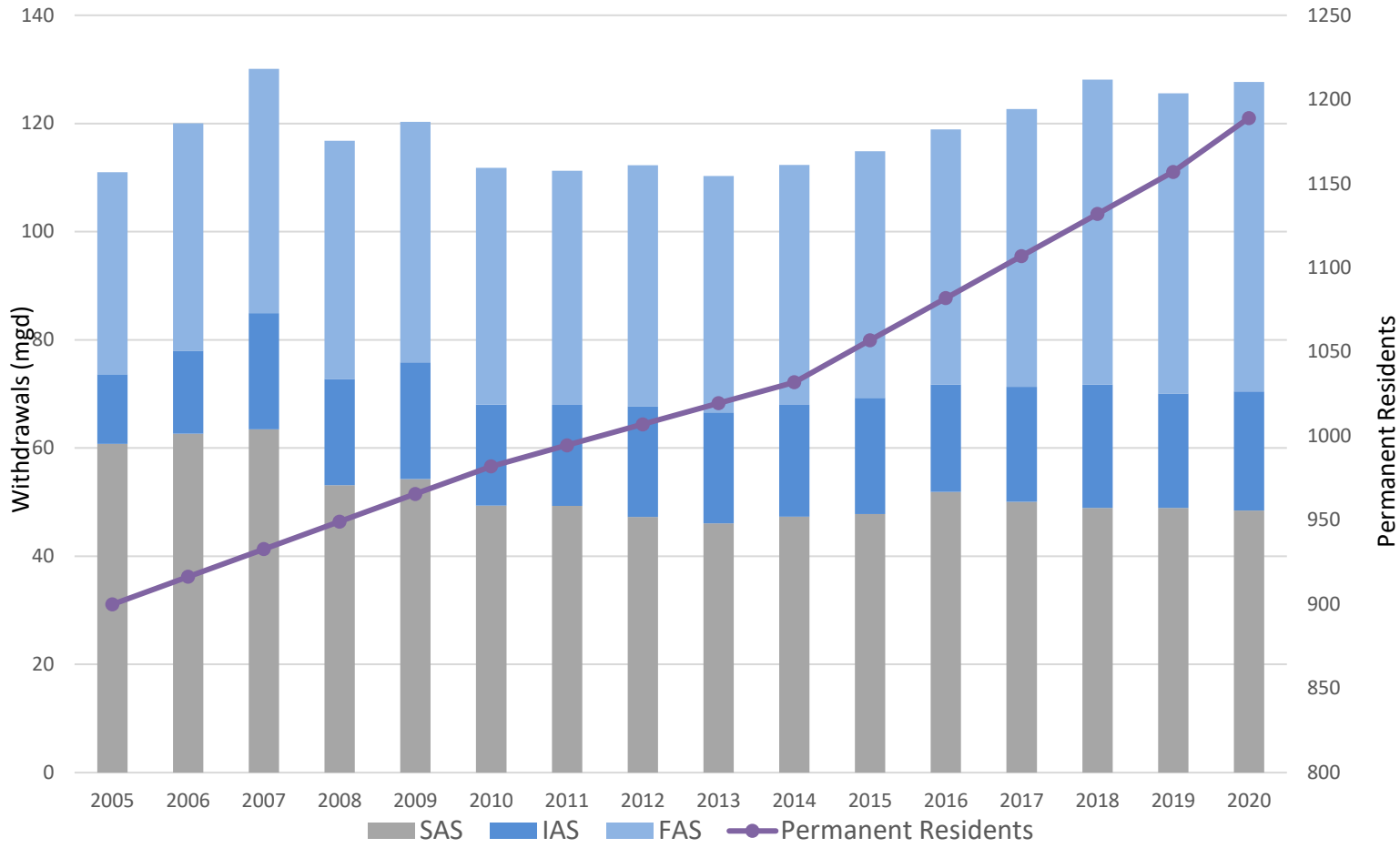
Groundwater Sources



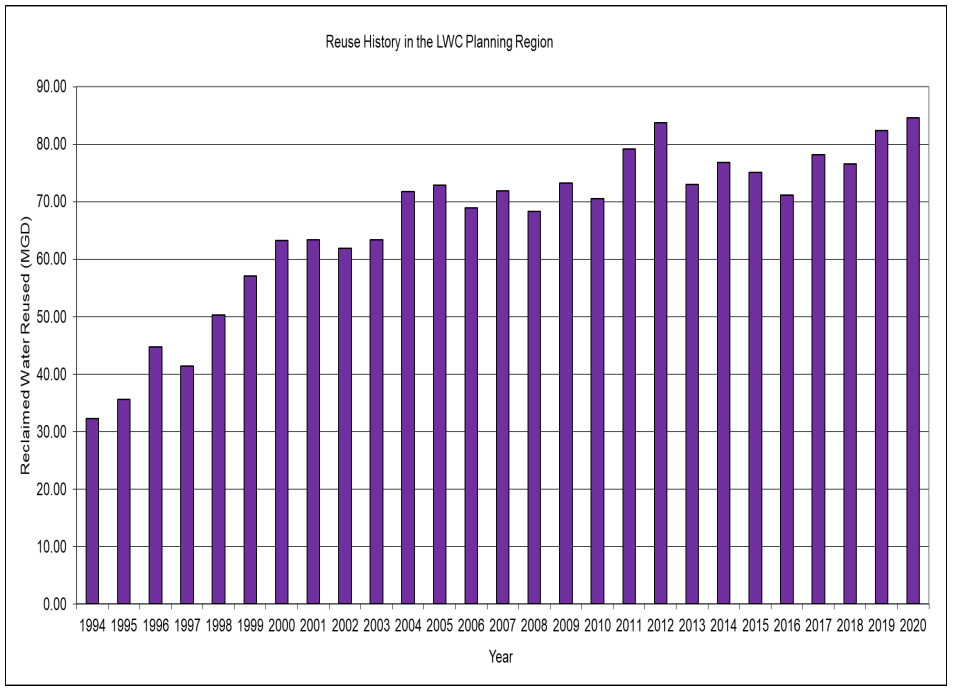


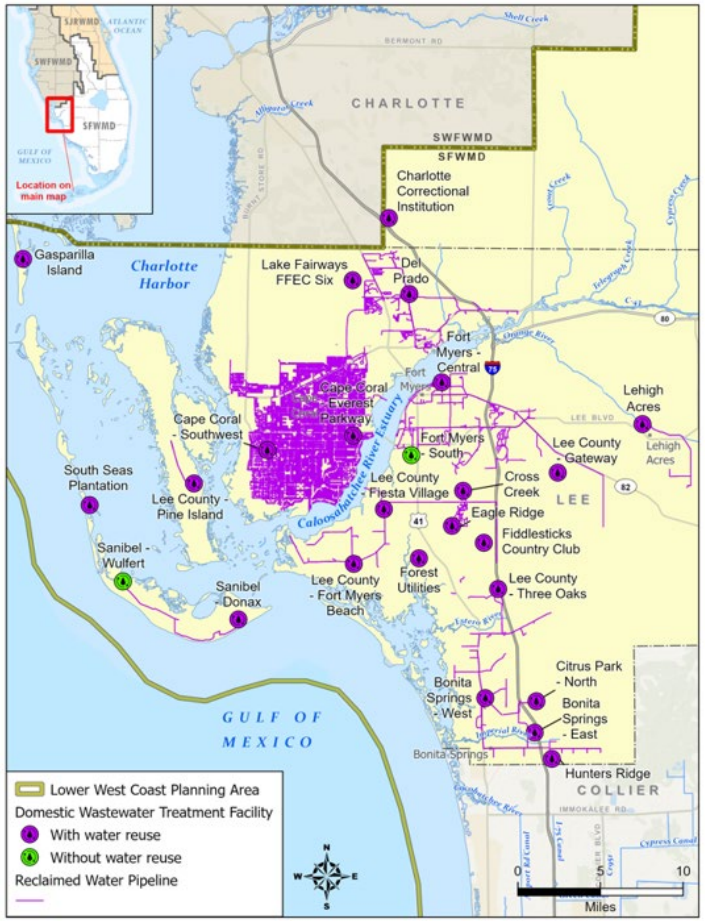
Public Supply Groundwater Use

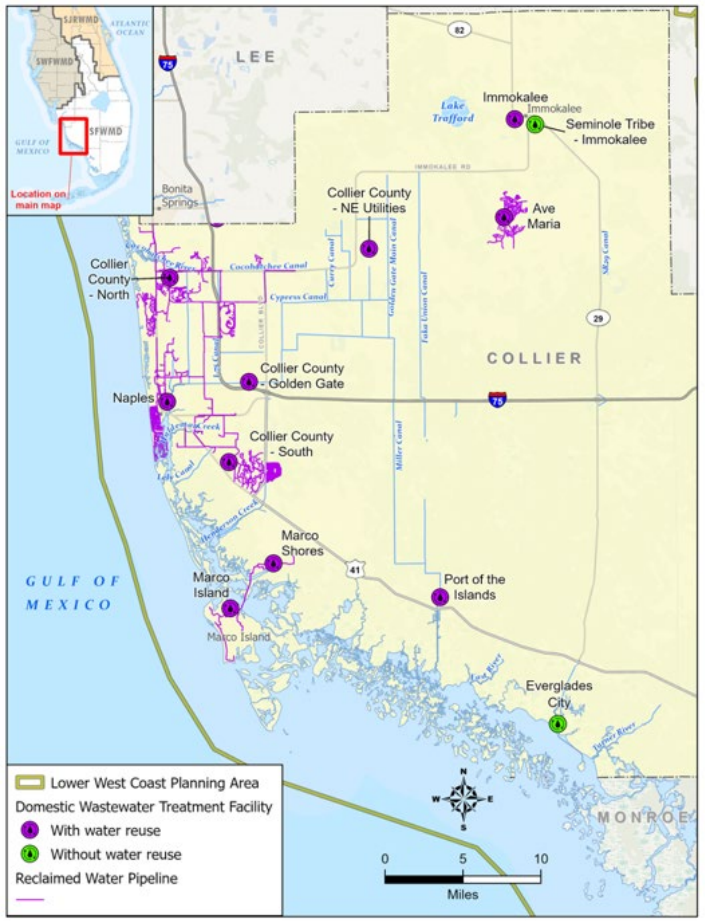
- Conservation and source diversification have been beneficial.
- Surficial aquifer system (SAS) and intermediate aquifer system (IAS) use has remained stable.
- Floridan aquifer system (FAS) use has increased to supply population growth.



Reclaimed Water Usage



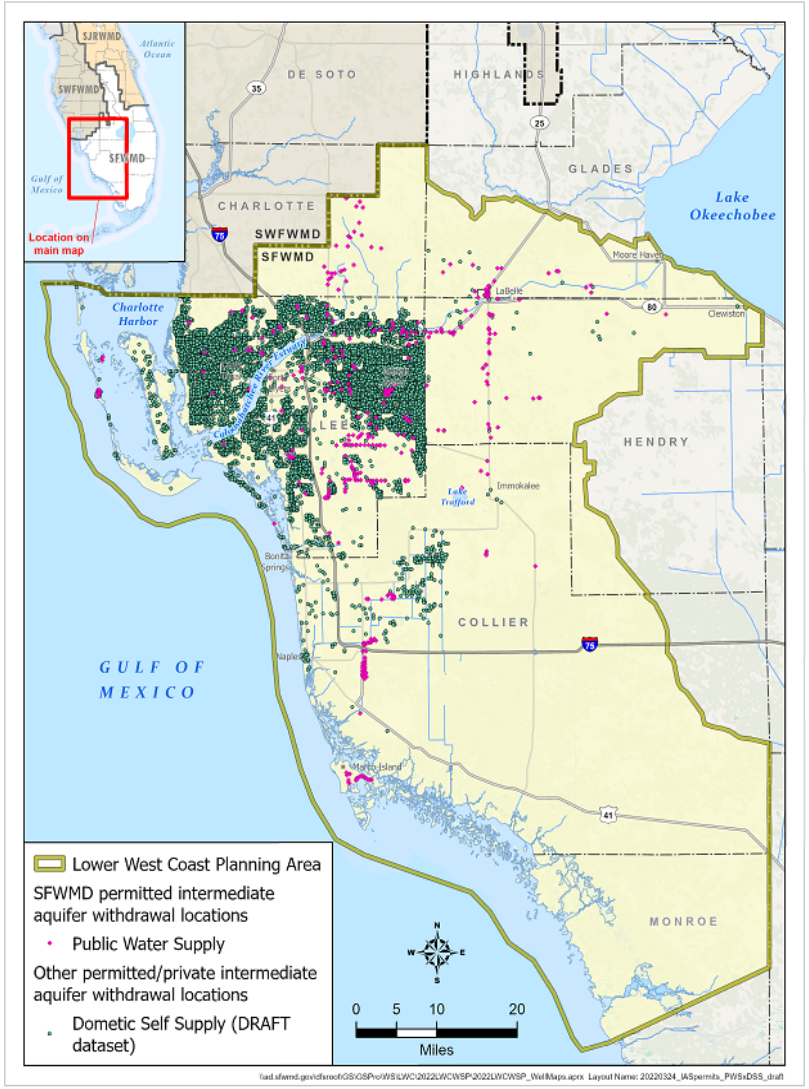




Local Areas of Groundwater Decline

Withdrawals have created localized areas of groundwater decline:

- Mid-Hawthorn aquifer in Northern Cape Coral
  - DSS use
  - Utility has a service expansion plan
- Sandstone aquifer in Lehigh Acres
  - DSS and AG use
  - In need of a coordinated effort
  - Short- and long-term options are being considered



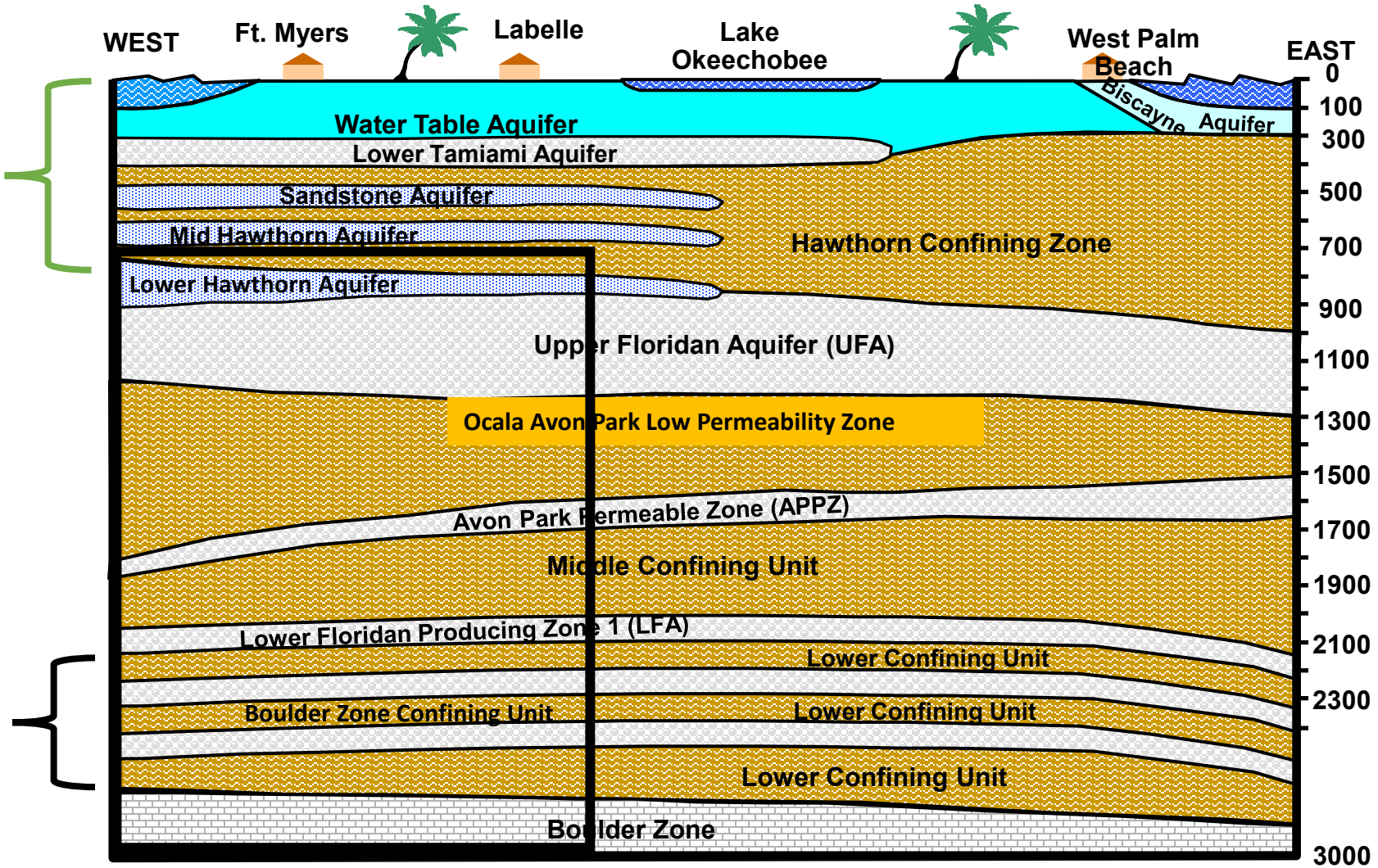
Groundwater Models

Surficial and Intermediate Model

Floridan Model

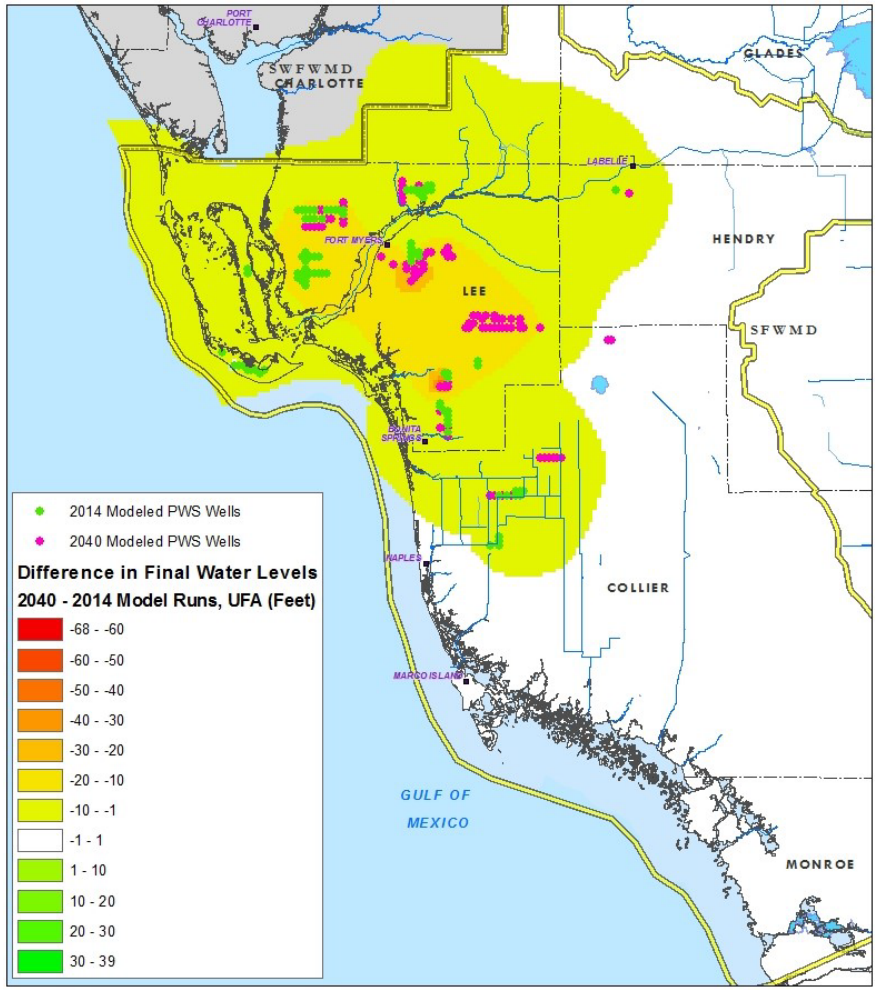
WCFM Layers

- Layer 1
- Layer 2
- Layer 3
- Layer 4
- Layer 5
- Layer 6
- Layer 7



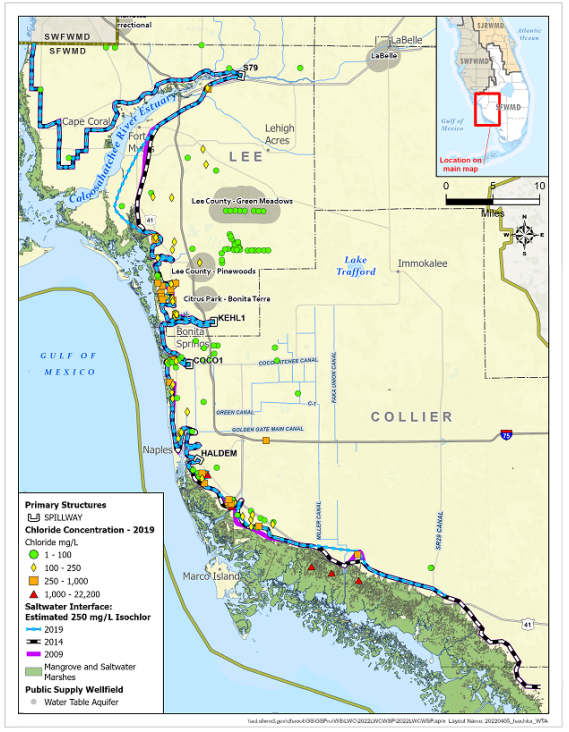
Groundwater Models LWCSIM and WCFM

- LWCSIM: MODFLOW based
  - Indicates that 2040 water demands can be met without undue impacts to water resources and related natural systems, although water levels in the SSA and IAS will decline locally in areas of DSS growth. Water levels rebound in Cape Coral area of MHA as public utility service is provided.
- WCFM: SEAWAT based
  - Based on planning projections with appropriate wellfield management, the 2040 WCFM model results do not indicate a significant adverse impact to groundwater levels and quality, indicating prolonged use of the FAS is sustainable.
- Comparison between 2014 and 2040 conditions

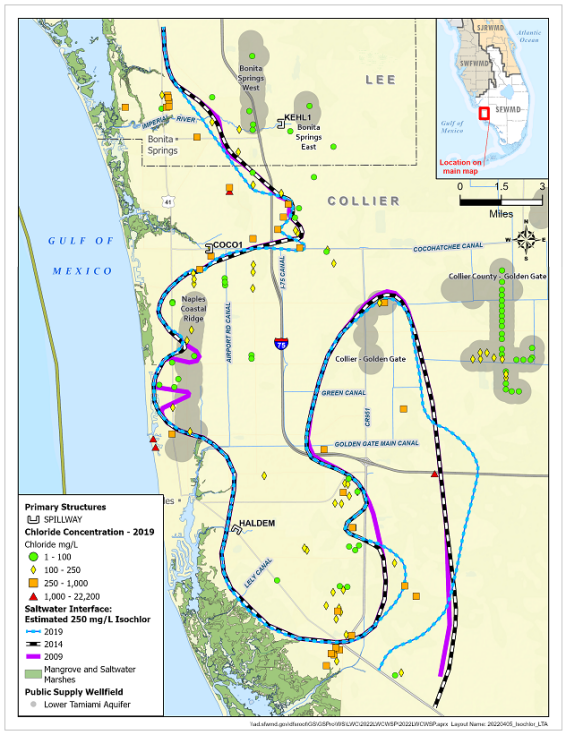


2019 Saltwater Interface Mapping

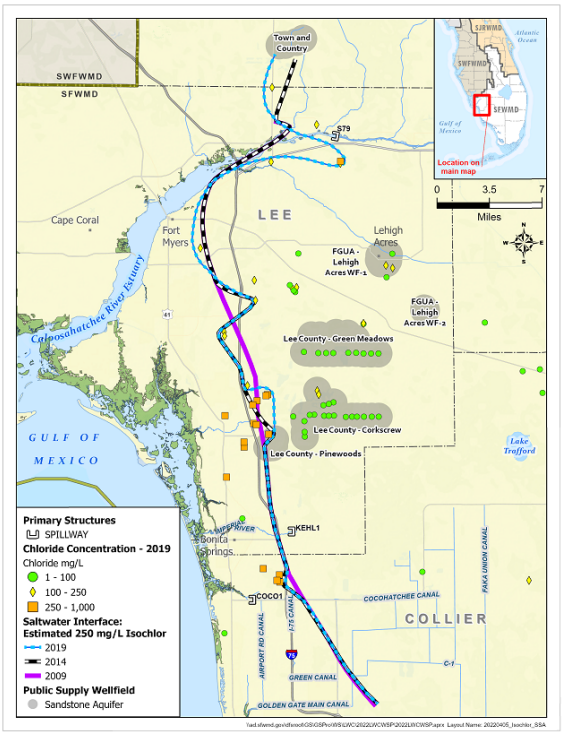
Water Table



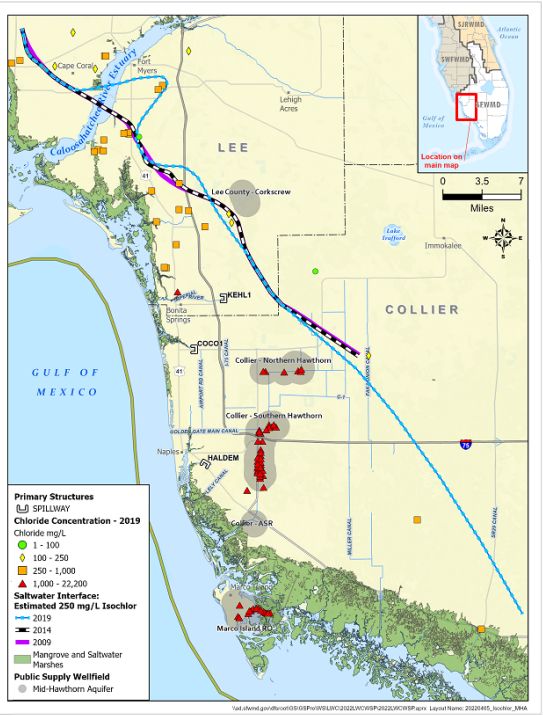
Lower Tamiami



Sandstone



Mid-Hawthorn



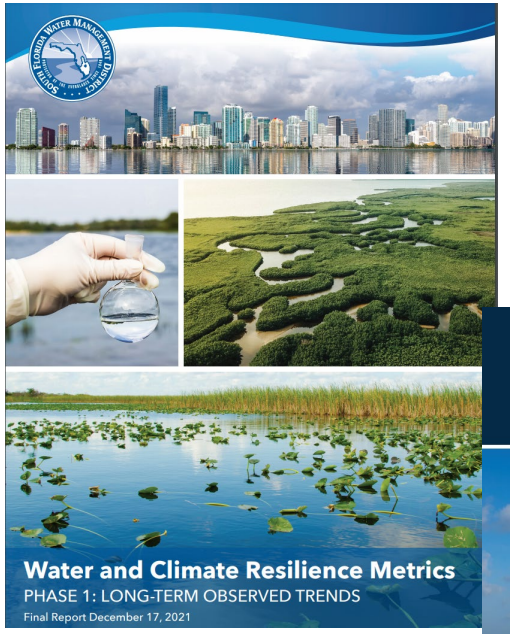
SFWMD Technical Publication WS-58

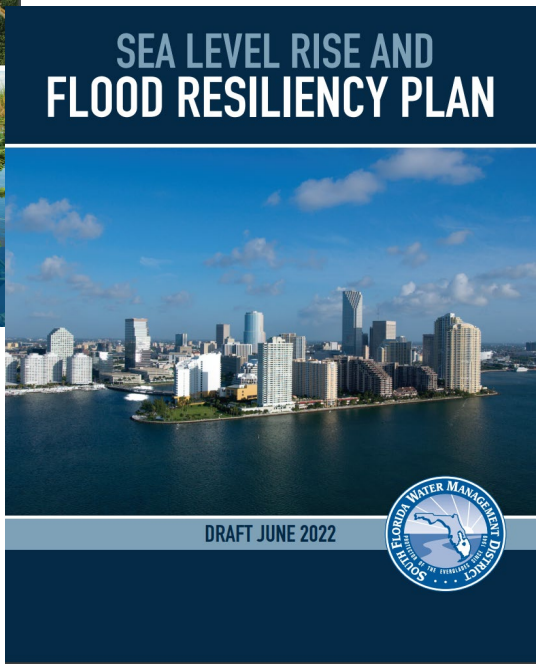
Saltwater Intrusion Conclusions

- Interface is dynamic – advanced and retreated, depending on wellfield pumpage, reclaimed water use, tidal, sea level rise, etc.
- Saltwater intrusion is occurring, emphasizing the importance of continued monitoring (laterally and vertically) and wellfield management
- Localized monitoring may be required at select projects and wellfields by permittees to protect water supplies
- Coupled with the groundwater LWCSIM model results, future conditions are sustainable, although continued resource diversification is encouraged

Sea Level Rise and Climate Change

- South Florida is particularly vulnerable
- Rate of sea level rise is predicted to accelerate
- The SFWMD is preparing by:
  - Conducting research
  - Performing computer simulations
  - Analyzing vulnerabilities in the current water management system and developing adaptation strategies
- Coordinate with other local and state agencies and stakeholders





Website:

Water Supply Development

- Potable
  - 9 Projects proposed by 6 utilities: 25.71 mgd
  - Most utilities have sufficient capacity and permit allocations to meet 2045 demands
  - Only 1 utility needs projects to meet 2045 demand projections or treatment requirements
- Nonpotable
  - 18 projects proposed by 9 utilities: 40.70 mgd

Water Supply Proposed Projects Summary

Water Source	Number of Projects	Capacity (mgd)	Cost ($ million)
Potable Projects			
Surficial Aquifer System	1	3.00	$24.20
Floridan Aquifer System	8	22.71	$180.81
Potable Total	**9**	**25.71**	**$205.01**
Nonpotable Projects			
Reclaimed Water	17	39.70	$588.40
Aquifer Storage and Recovery	1	1.00	$4.00
Nonpotable Total	**18**	**40.70**	**$592.40**
Total	**27**	**66.41**	**$797.41**

Future Direction

- Continue implementation of:
  - SAS, IAS, and FAS monitoring programs
  - Water conservation programs
  - Alternative water supply development projects
  - CERP and other ecosystem restoration projects
- Evaluate, monitor, and design solutions in response to sea level rise and climate trends
- Implement long-term management measures for the IAS and FAS in coordination with counties and utilities
- Coordinate with other agencies, local and tribal governments, and utilities on water supply elements

Estero River
From: http://www.shminhe.com/images/134557.html

Draft Plan Conclusion

The future water supply and ecosystem needs of the region can continue to be met through the 2045 planning horizon with appropriate management, conservation, and implementation of projects in this plan.

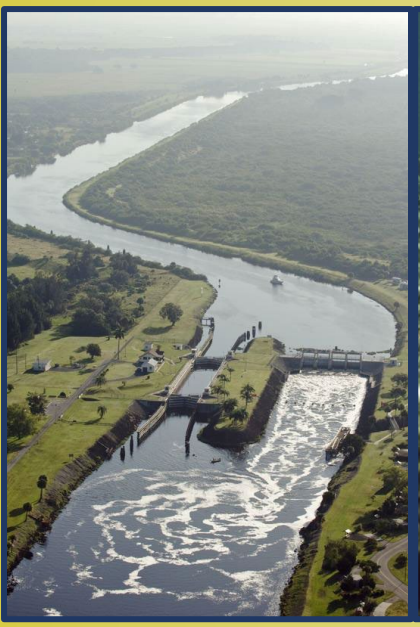
- Construction of potable water supply development project by one PS utility.
- Implementation of the CERP C-43 Reservoir, Picayune Strand, and other ecosystem restoration projects.

Questions and Public Comment

Caloosahatchee River Fort Myers

- If you are participating via Zoom:
  - Use the Raise Hand feature
- If you are participating via phone:
  - *9 raises hand
  - *6 mutes/unmutes your line
- When you are called on, please state your full name and affiliation prior to providing comments and/or questions.

Next Steps




Tom Colios

Section Leader

Water Supply Planning

Next Steps

- *August 25* — *Posted draft document*
- *September 1* — *Stakeholder meeting #3*
- October 5 — Deadline for Written Public Comments
- October 27 — Presentation to Big Cypress Basin Board
- November 10 — Final plan to Governing Board for consideration

Regional and Local Planning Linkage

- After the District's Governing Board approves the water supply plan update:
  - All local governments must amend their Comprehensive Plan to incorporate a Water Supply Facilities Work Plan within 18 months of the plan update's approval
    - If the plan update is approved in November 2022, Work Plans will be due by May 2024
  - Utilities identify the projects to be developed
  - Utility annual progress reports
    - District's automated WaSUP database – due annually in November

Questions and Public Comment

Caloosahatchee River Fort Myers

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Thank You

- Plan information can be found at www.sfwmd.gov/lwcplan

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