Water Resources of Southwest Florida

RLSA Restudy Public Workshop

September 27, 2018

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Presentation Summary

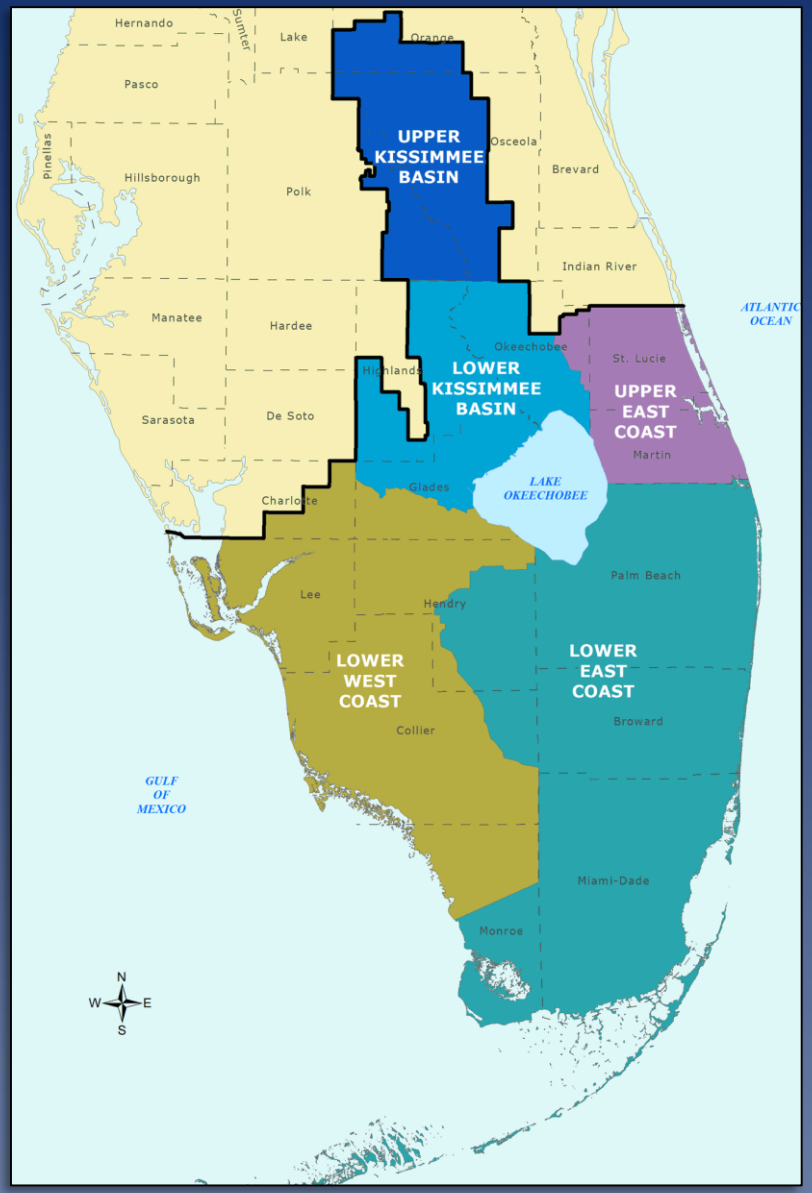
- Water Resource Planning
- Water Use Permitting

Water Resource Planning

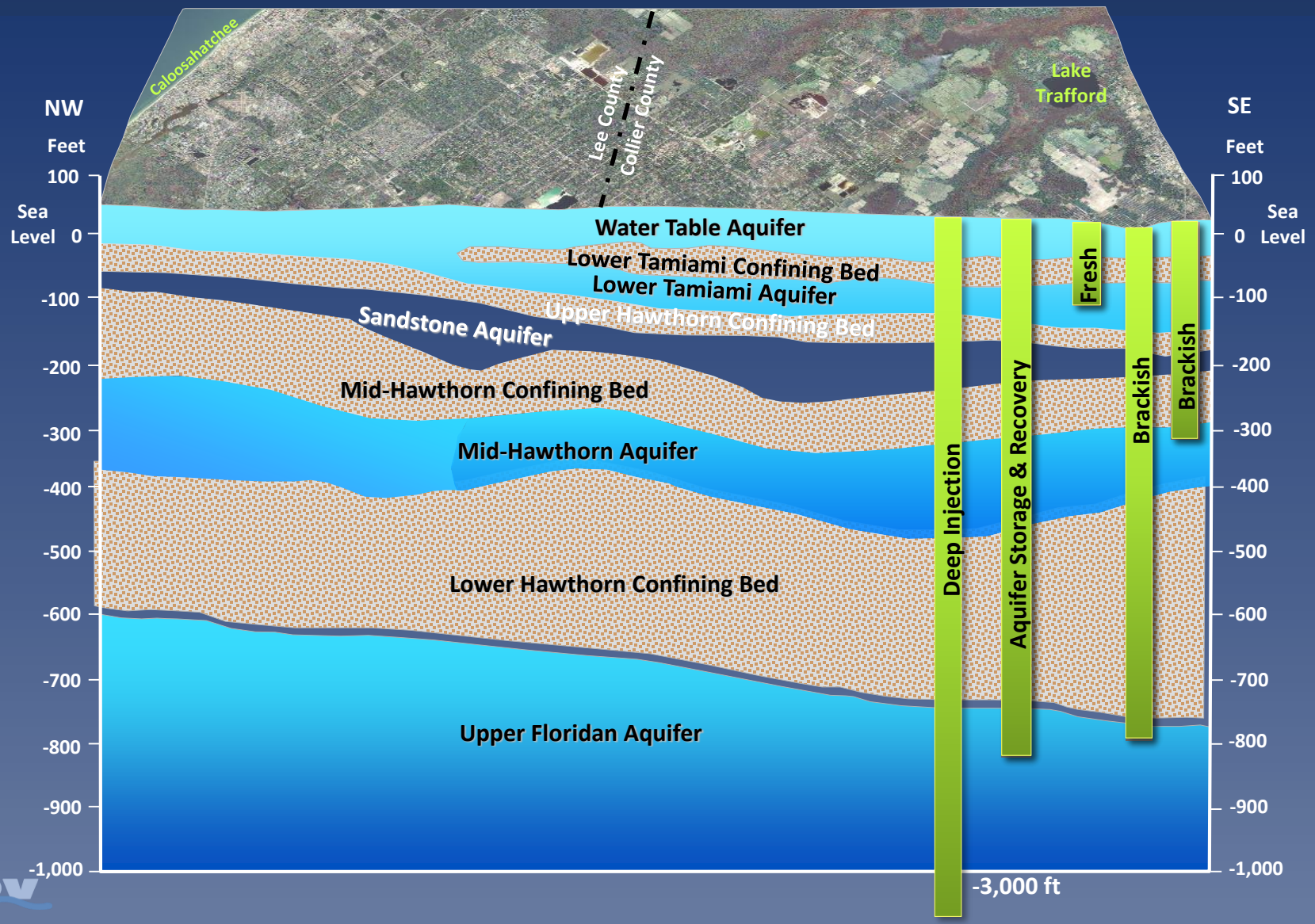
- Water Supply Plans
- Sources (Supply)
- Demand
- Is there enough supply to meet demand?

Regional Water Supply Plans within the SFWMD

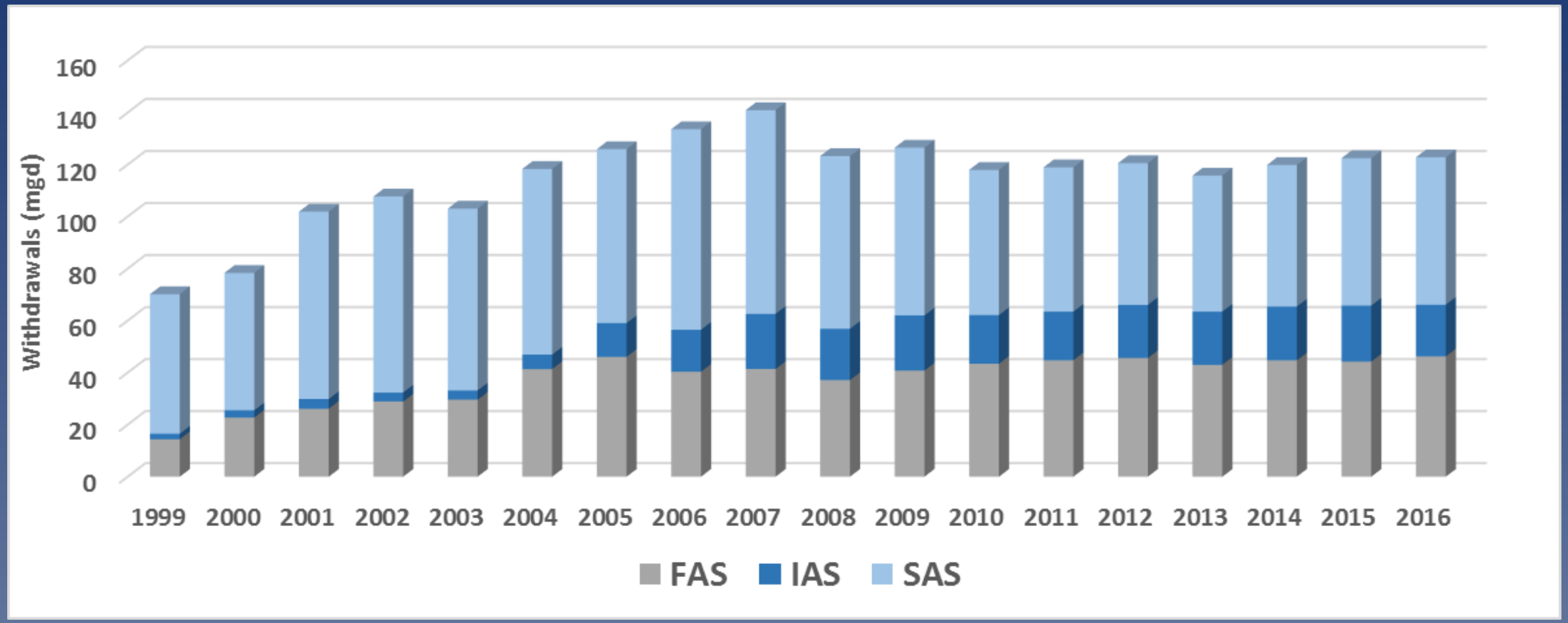
- SFWMD is divided into five regional areas
- Current and future look at water needs
- 20-year planning horizon
- Strategies and sources to meet future water demands
- Updated every 5 years (LWC plan was updated in 2017 and the following information comes from the 2017 update)



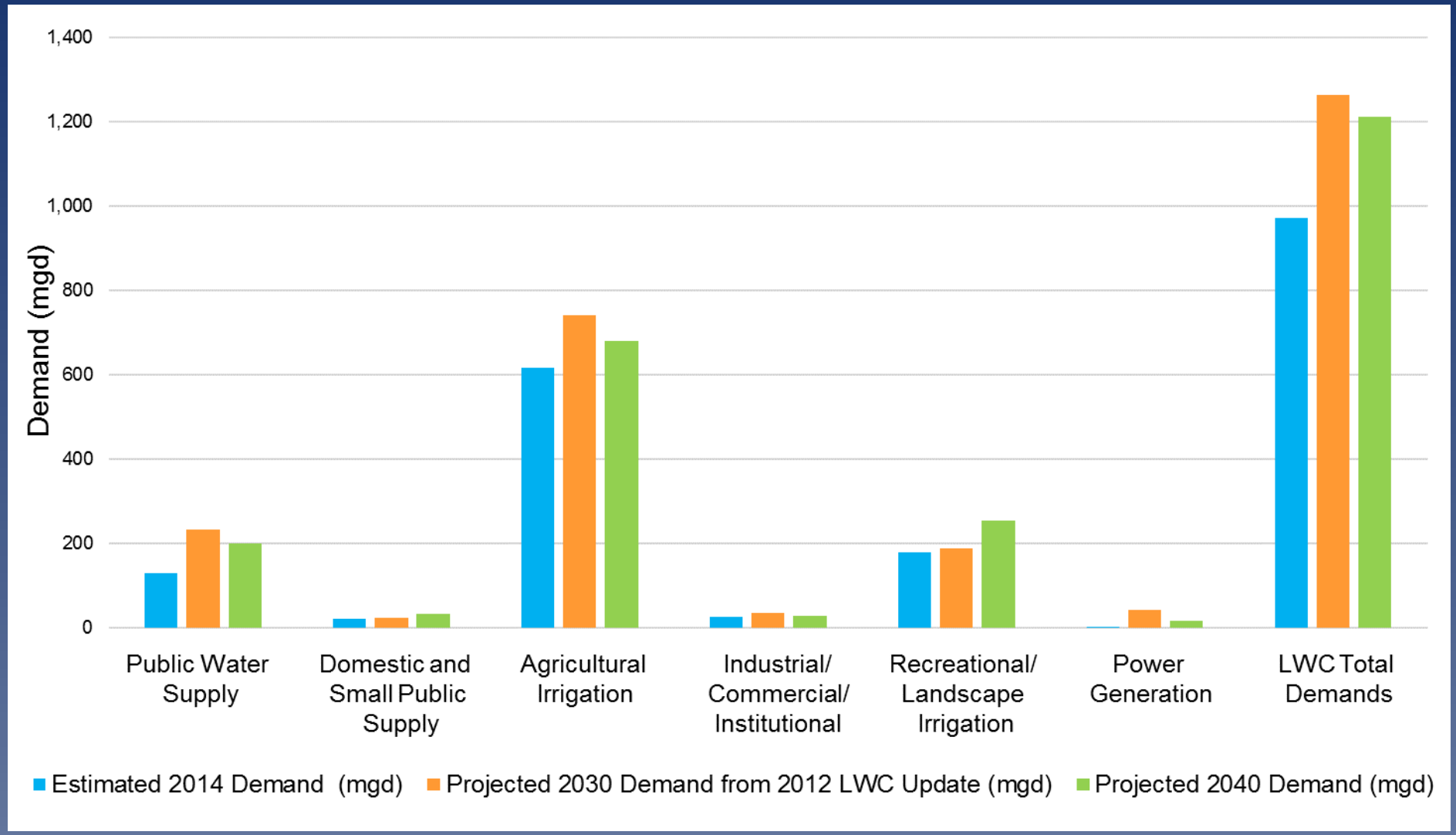
General Hydrogeologic Cross-Section (Sources)



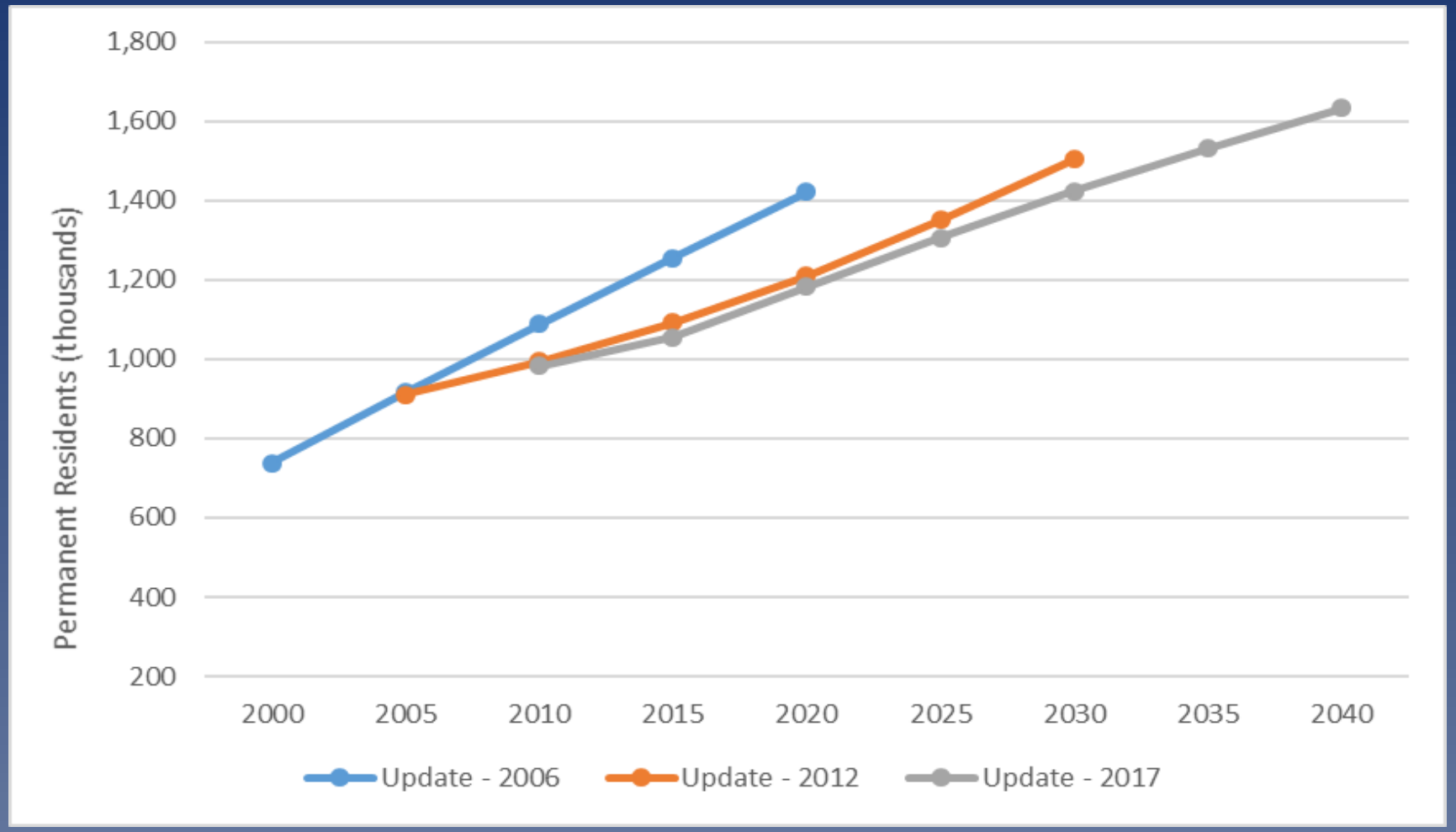
LWC Groundwater Supply



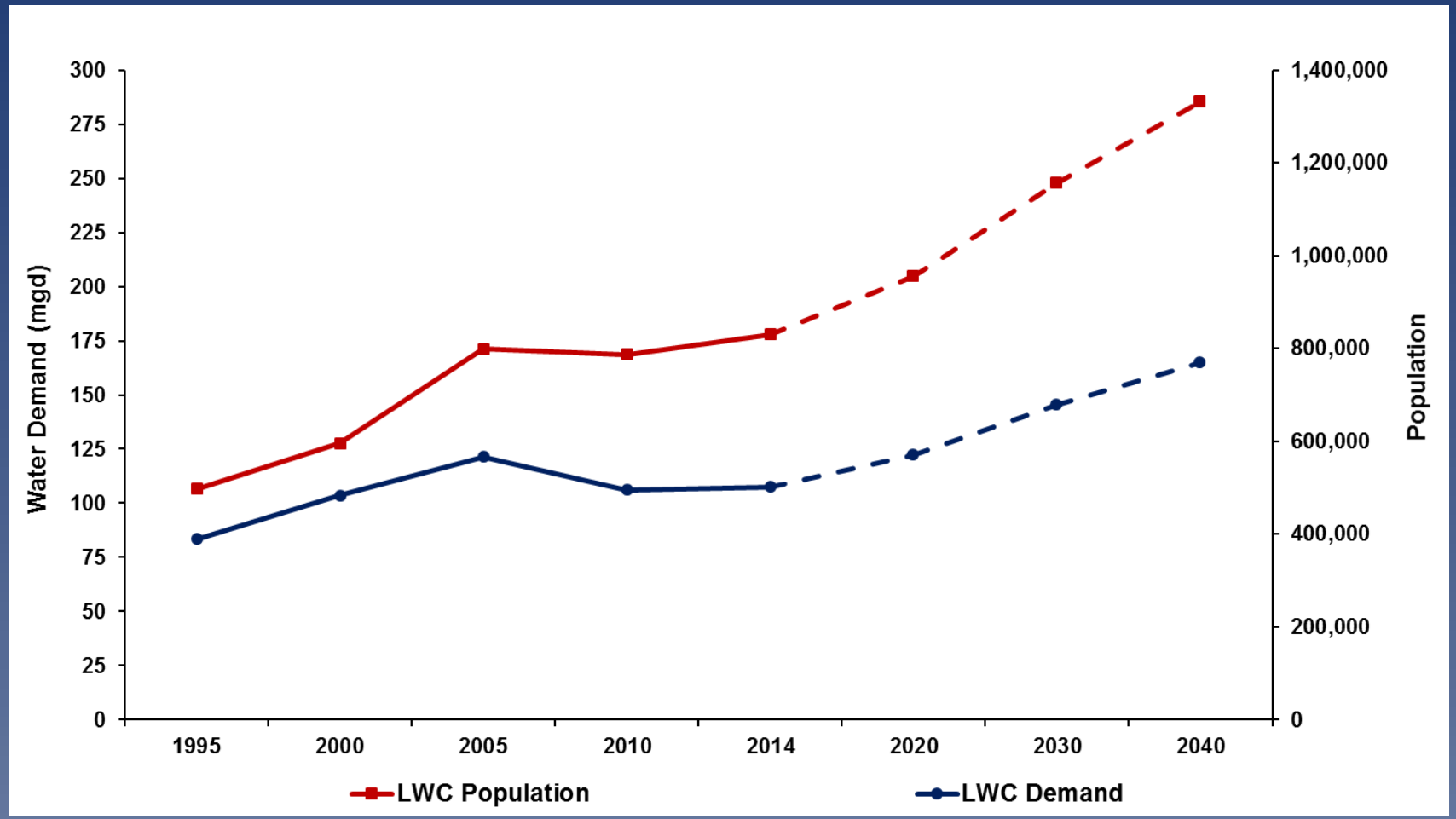
LWC Demand Projections



Population Projection Comparison



Historical PWS Population & Finished Water Demand

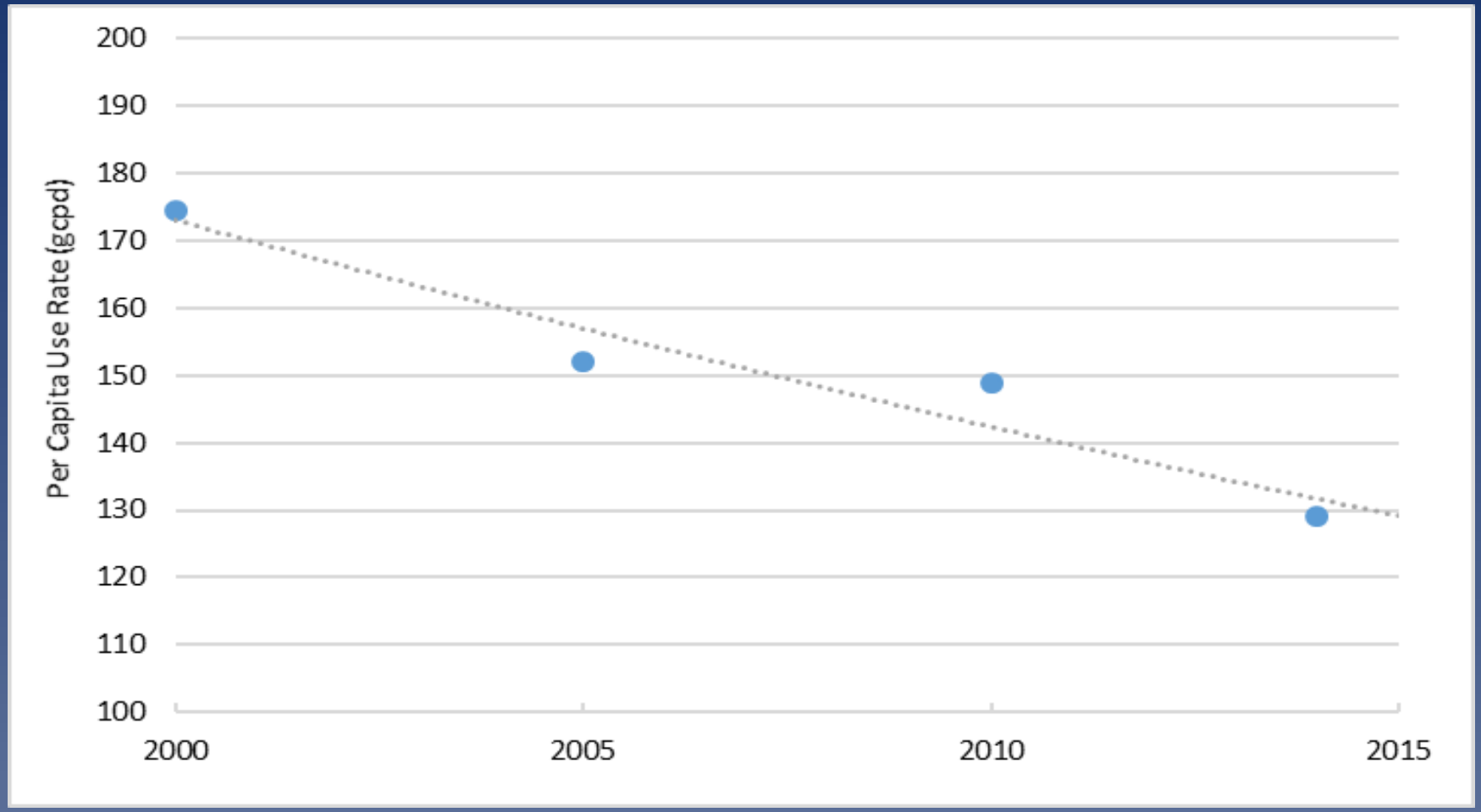


Water Conservation and Reuse

- Conservation
  - Block rate structures
  - More efficient fixtures
  - Irrigation days and times

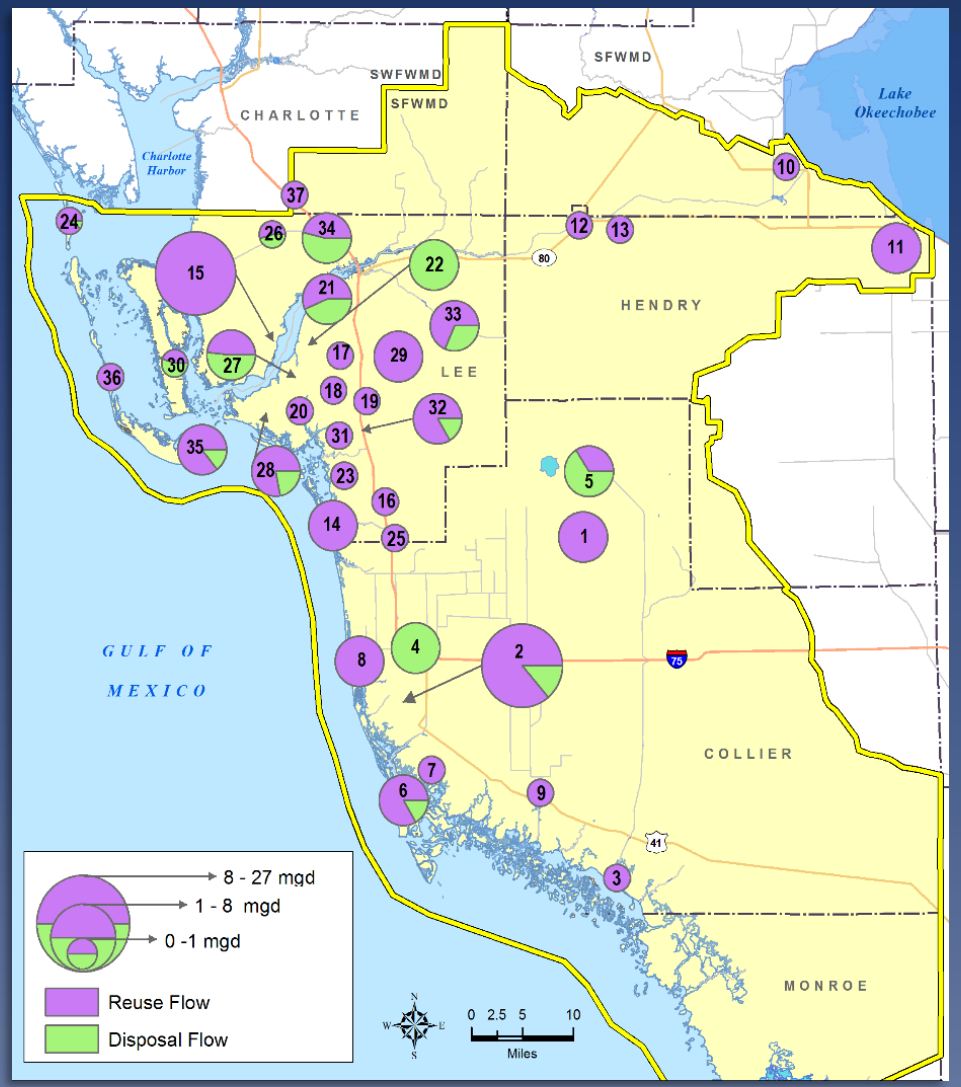
- Reuse for Irrigation
  - Treated wastewater
  - Conveyed using “purple pipes”
  - Also known as reclaimed water
  - Can be used in place of other sources

Water Conservation in the LWC

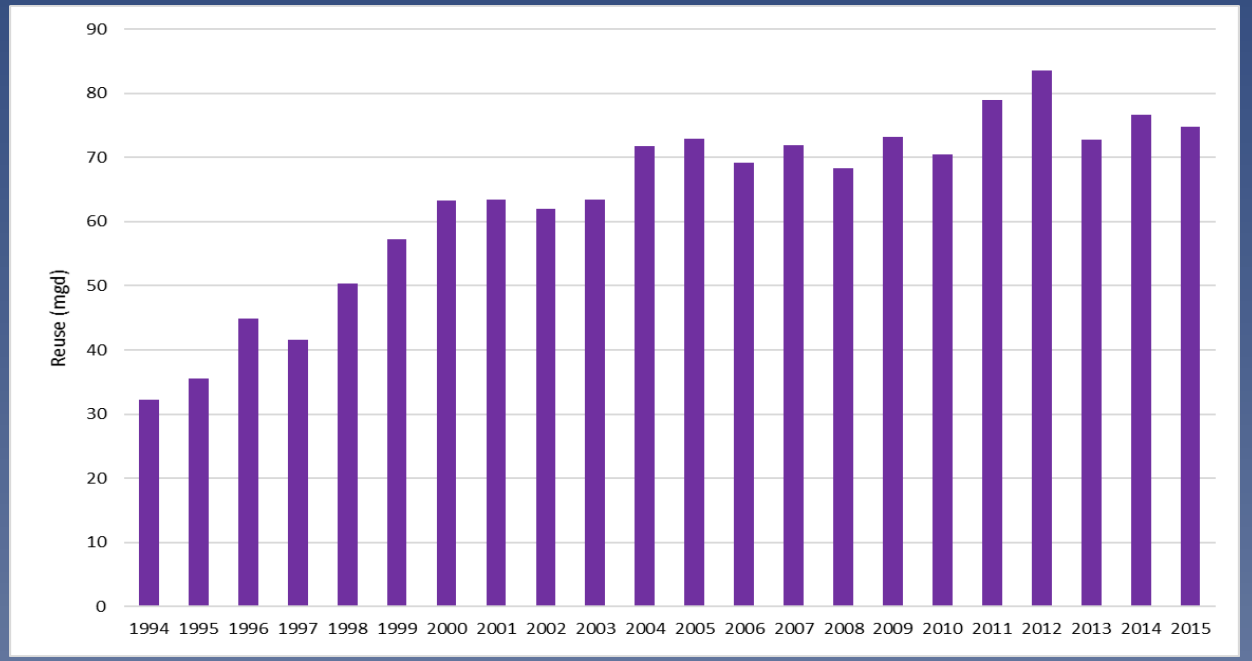


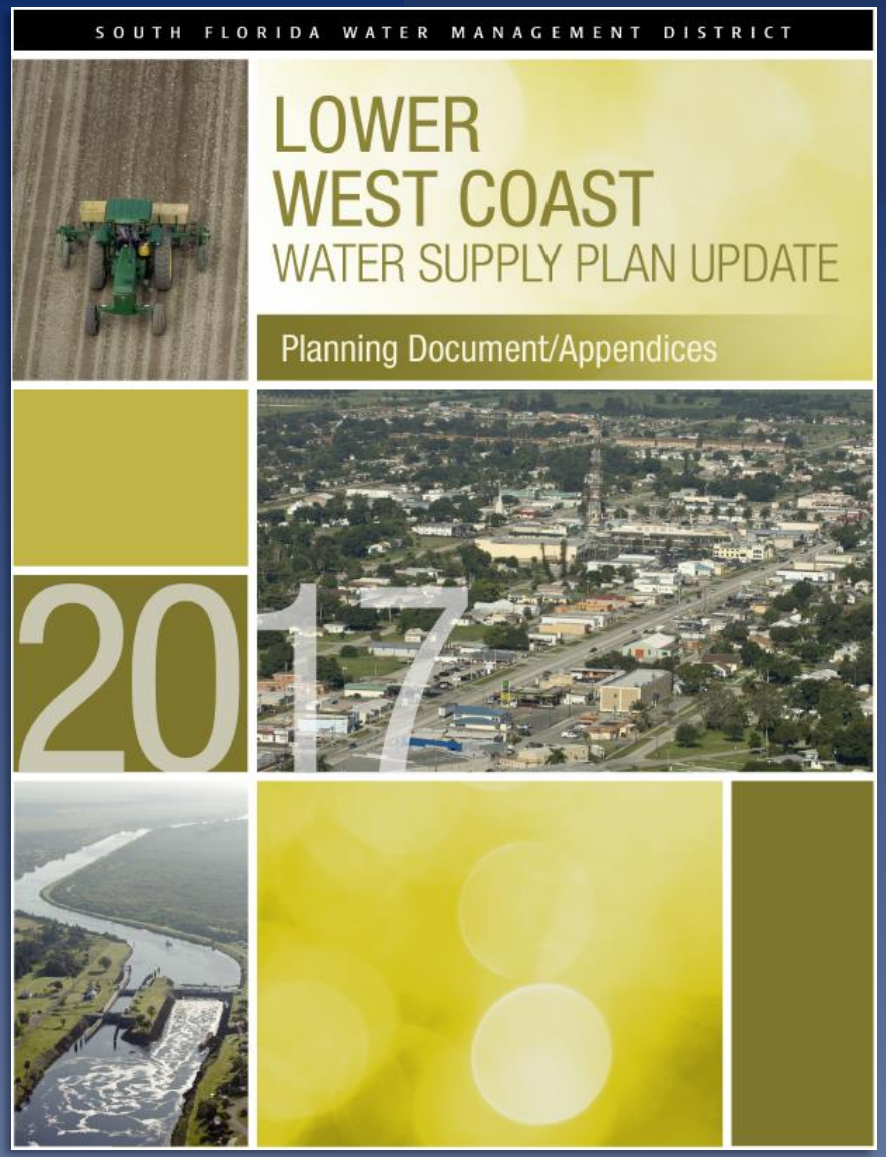
Net (finished) PWS water per capita use rate (in gallons per capita per day) within the LWC Planning Area

Water Reuse



- Currently, ~80 mgd reused
- For irrigation of residential lots, golf courses, parks, & other green space





2017 LWC Water Supply Plan Conclusions

- PWS utilities can meet 2040 demands by implementing additional water supply projects
- Future water demands of the LWC can be met through 2040 with appropriate management, conservation, & implementation of projects identified in the 2017 LWC plan update

LWC Water Supply Plan

- Plan information can be found at:

  www.sfwmd.gov/lwcplan
- 212 page planning document
- 196 pages of appendices

Consumptive Use Permit (CUP) Program

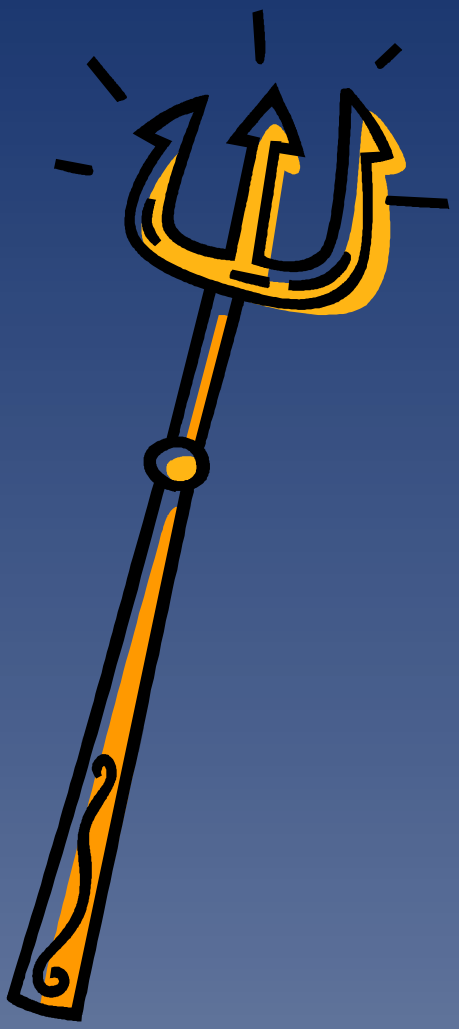
Florida Water Law:

- Water Management Districts given exclusive authority to regulate the consumptive use of water by the Legislature
- No property right to water
- Users must obtain a water use permit to have a water right
- Permits expire; must be renewed

Water Use Permitting Authority

- Florida Statutes - Chapter 373 (Water Resources)
- SFWMD Rules - Chapter 40E-2, Florida Administrative Code
- Water Use Applicant's Handbook

"Three-Pronged" Test
(Chapter 373.223 F.S.)



Conditions for a water use permit:

- Reasonable - Beneficial Use - The use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in the manner which is both reasonable and consistent with the public interest
- Not interfere with presently existing legal uses of water
- Consistent with the public interest

Primary Water Use Classes

- Public Water Supply
- Mining/Dewatering
- Industrial/Commercial
- Irrigation
  - Agricultural
  - Nursery
  - Golf Course
  - Landscape

Uses Exempt from Permitting

- Private Domestic Use (such as single family home & duplex wells)
- Fire Protection
- Reclaimed Water
- Sea Water
- No "Grandfathering"

Water Use Permit Types

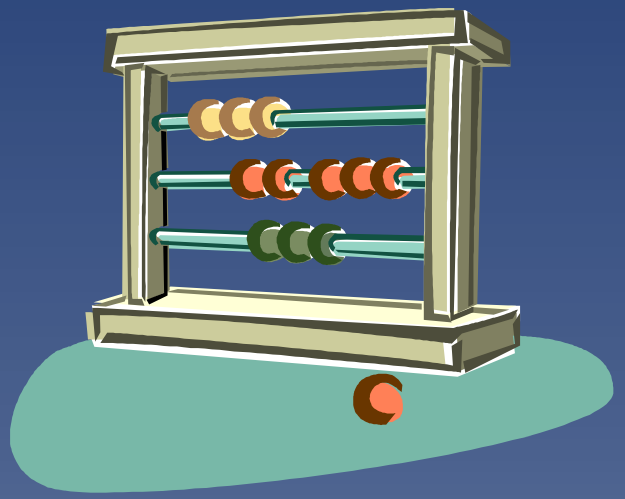
- Noticed General Permit
  - Use less than 100,000 gpd unless from a restricted aquifer, which is less than 10,000 gpd
  - Up to a 20-year permit duration
- Individual Permits
  - Three tiers depending on allocation
  - Allocations over 100,000 gpd have reporting requirements (pumpage, may also include water level, water quality, and/or environmental reporting)
  - 5-year duration for new uses
  - Up to 20-year duration for renewals

Consumptive Use Permitting (aka Water Use Permitting)

- How water use permit applications are evaluated

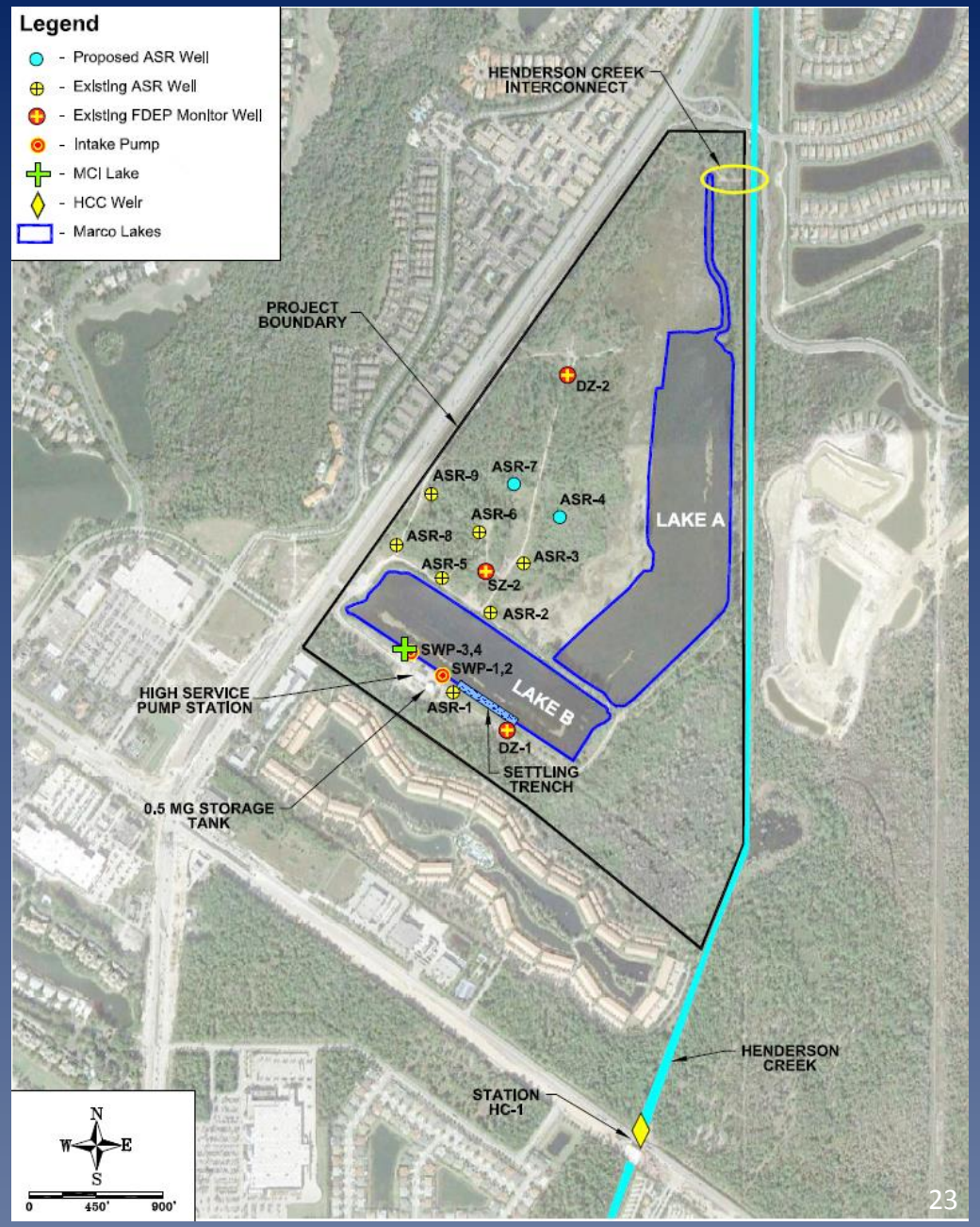
Demand Calculations (how much water is needed?)

- Irrigation demand via Blaney-Criddle equation
  - Effective rainfall (1-in-10)
  - Soil type
  - Crop
  - Irrigated acreage
  - Irrigation system efficiency
- PWS demand via population and per capita use
- Other use types (industrial, mining, dewatering) use project-specific calculations



Other Information

- Site map with pumping facilities
- Specific facility (wells/pumps) information
- Legal control
  - deed, tax record, lease agreement
- >100,000 gpd permits
  - Reclaimed water availability
  - Water use accounting
- Application processing fee

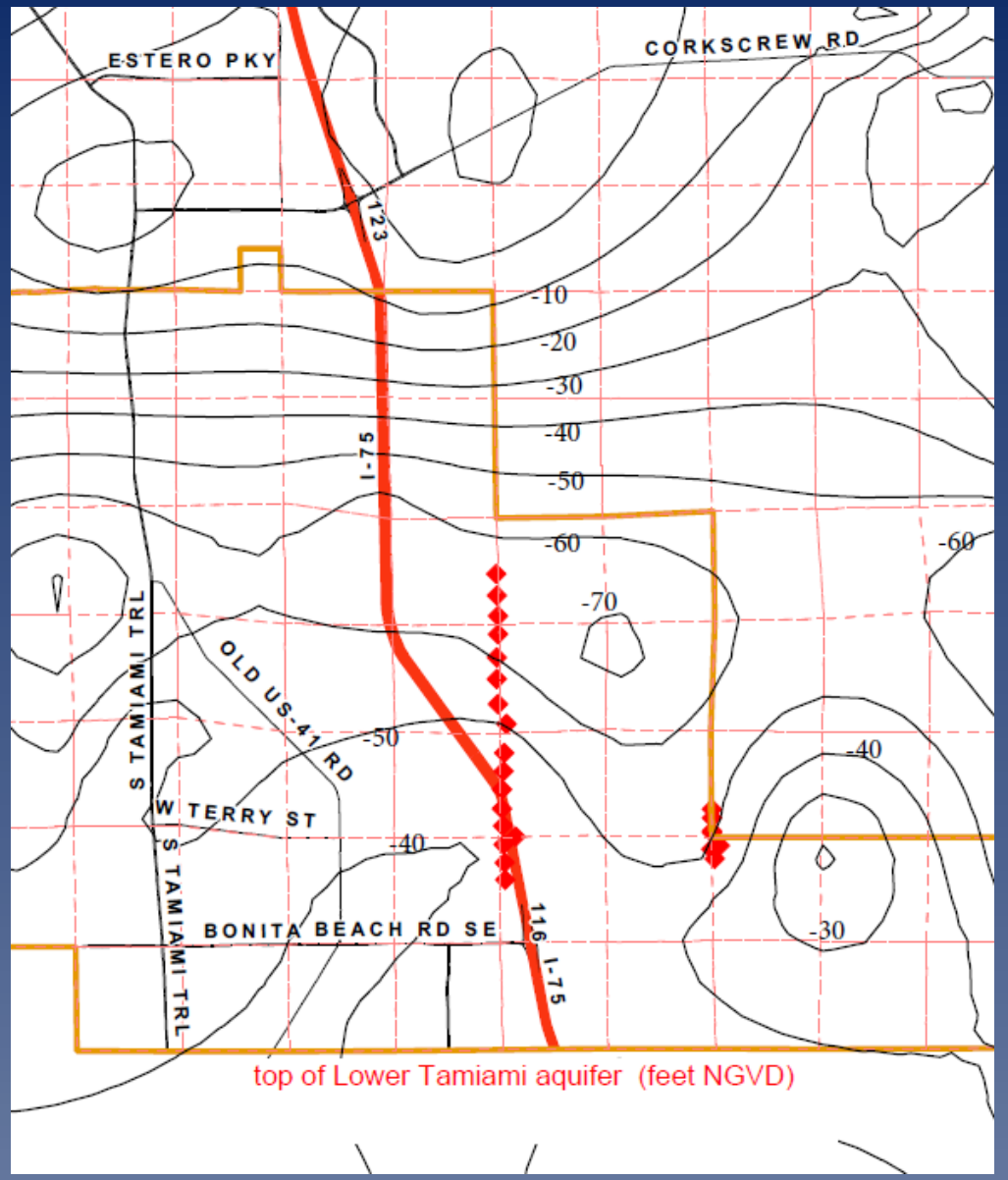


Impact Assessment included for proposed uses >3 MGM

- Impact Analysis:
  - Water Resource Availability
  - Existing Legal Users
  - Existing Domestic Users
  - Saline Intrusion/Upconing
  - Wetland Environments
  - Contamination/Pollution Movement

Water Resource Availability

- Evaluate Maximum Developable Limit (MDL) which applies to LTA, SSA, and MHA – the potentiometric head shall not be allowed to drop to less than 20 feet above the top of the uppermost hydrogeologic strata that comprises the aquifer during a 1 in 10 drought condition



Water Resource Availability

- Determine top of aquifer elevation (source is generally the District's hydrostratigraphic layer report)
- Determine historical water levels near the project in the aquifer of interest (source is generally USGS monitoring well)
- Check status of MDL

Application Number: 100216-12 **Source: Lower Tamiami aquifer**

Project: Lely Resort Community

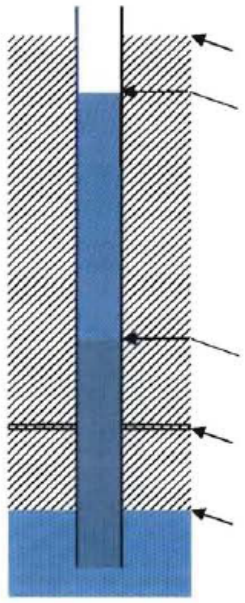


Illustration not to scale

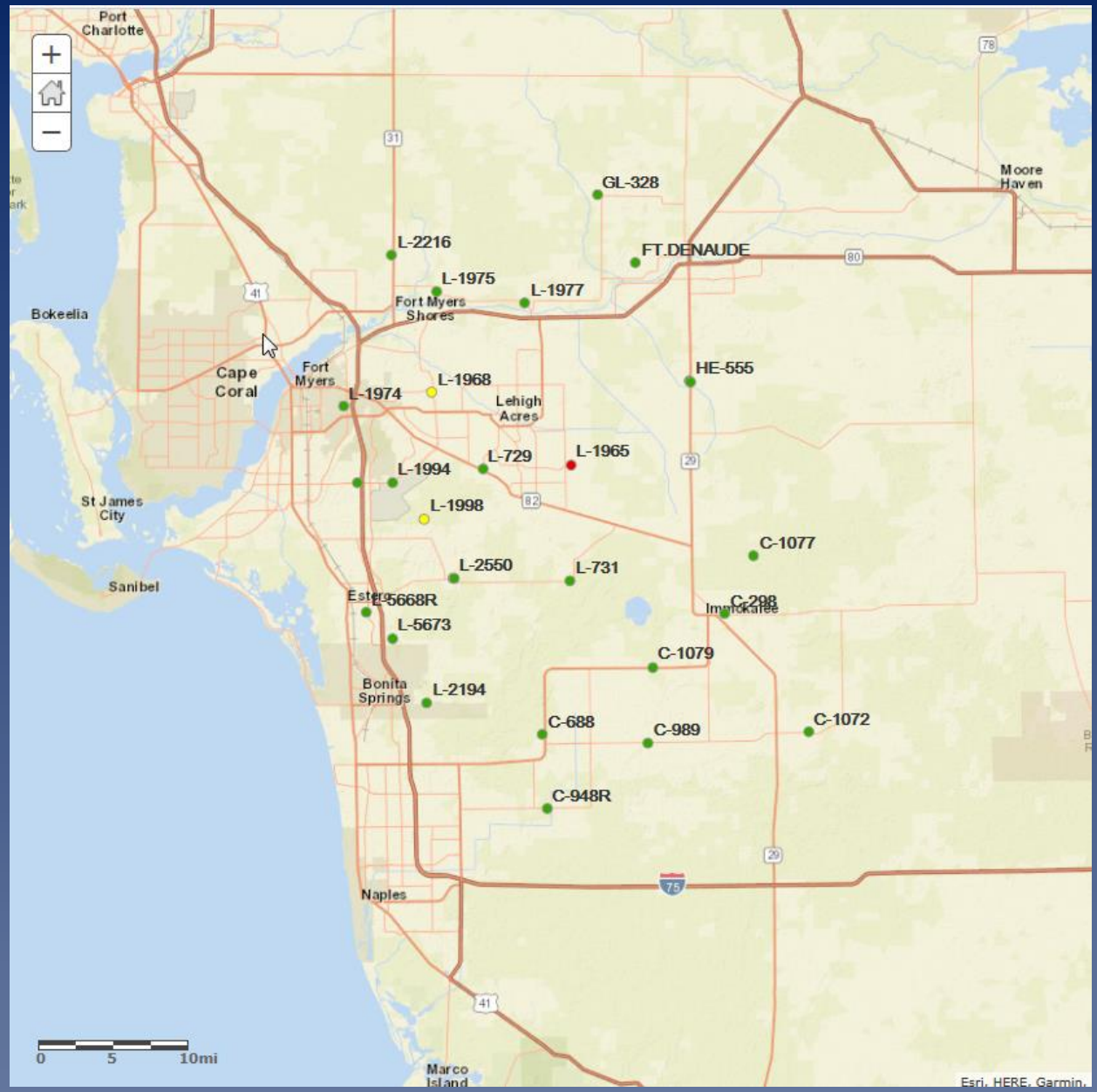
Reference Item	Reference Value, Units	Information Source
Land Surface Elevation	10 feet NGVD	USGS Topo Map
Water Level	2.5 feet NGVD	USGS Well C-600 & C-1224 End of dry season water level Location: 6,606 feet east of the project and adjacent to project's southeast boundary
Additional Drawdown	0.89 feet	
Maximum Developable Limit	20 feet above top of aquifer	BOR Section 3.2.4
Top of Aquifer	-50 feet NGVD	SFWMD TP 86-1

Remaining Head Above MDL **31.61 feet**

Elevation of Water level - Additional Drawdown - (Elevation of Aquifer Top + Maximum Developable Limit)

MDL Monitoring

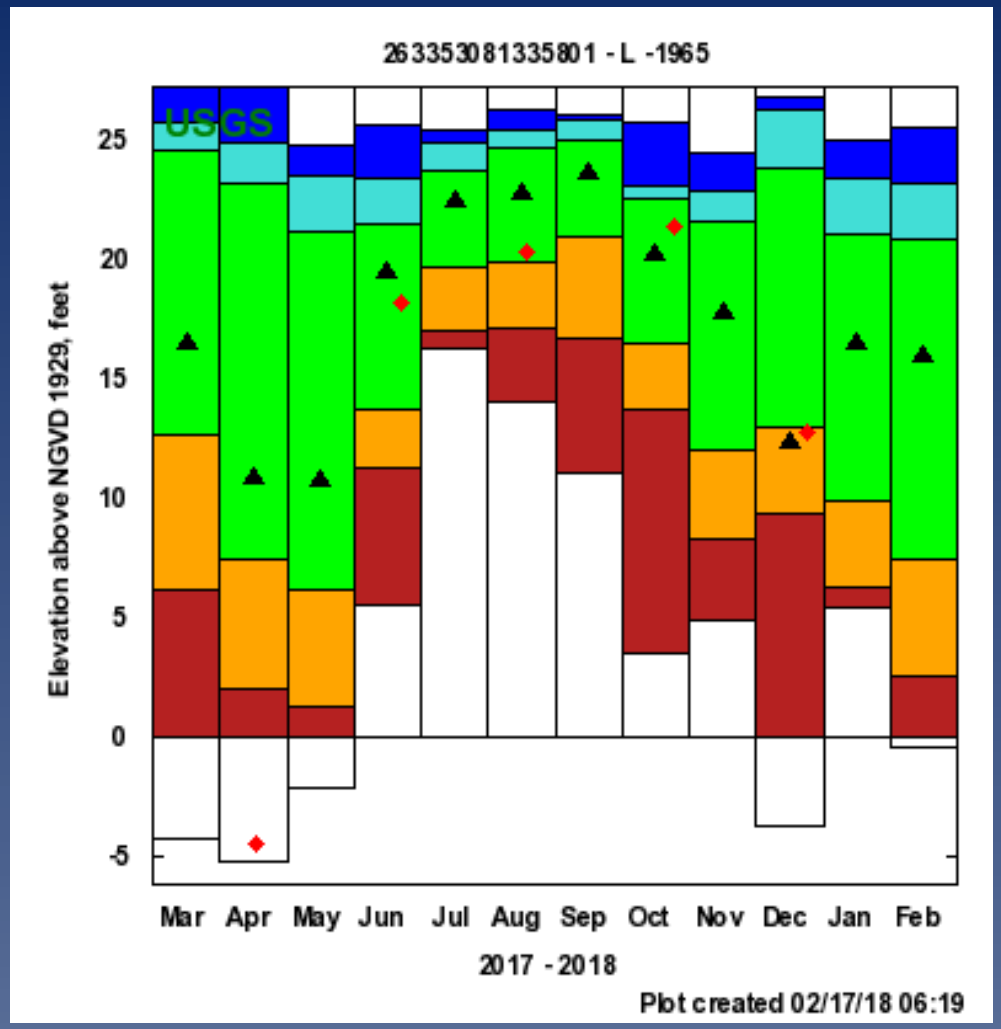
Sandstone aquifer
June 5, 2017 (end of dry season)

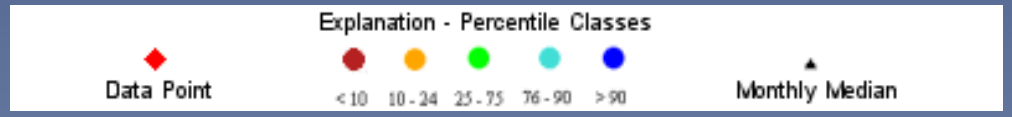


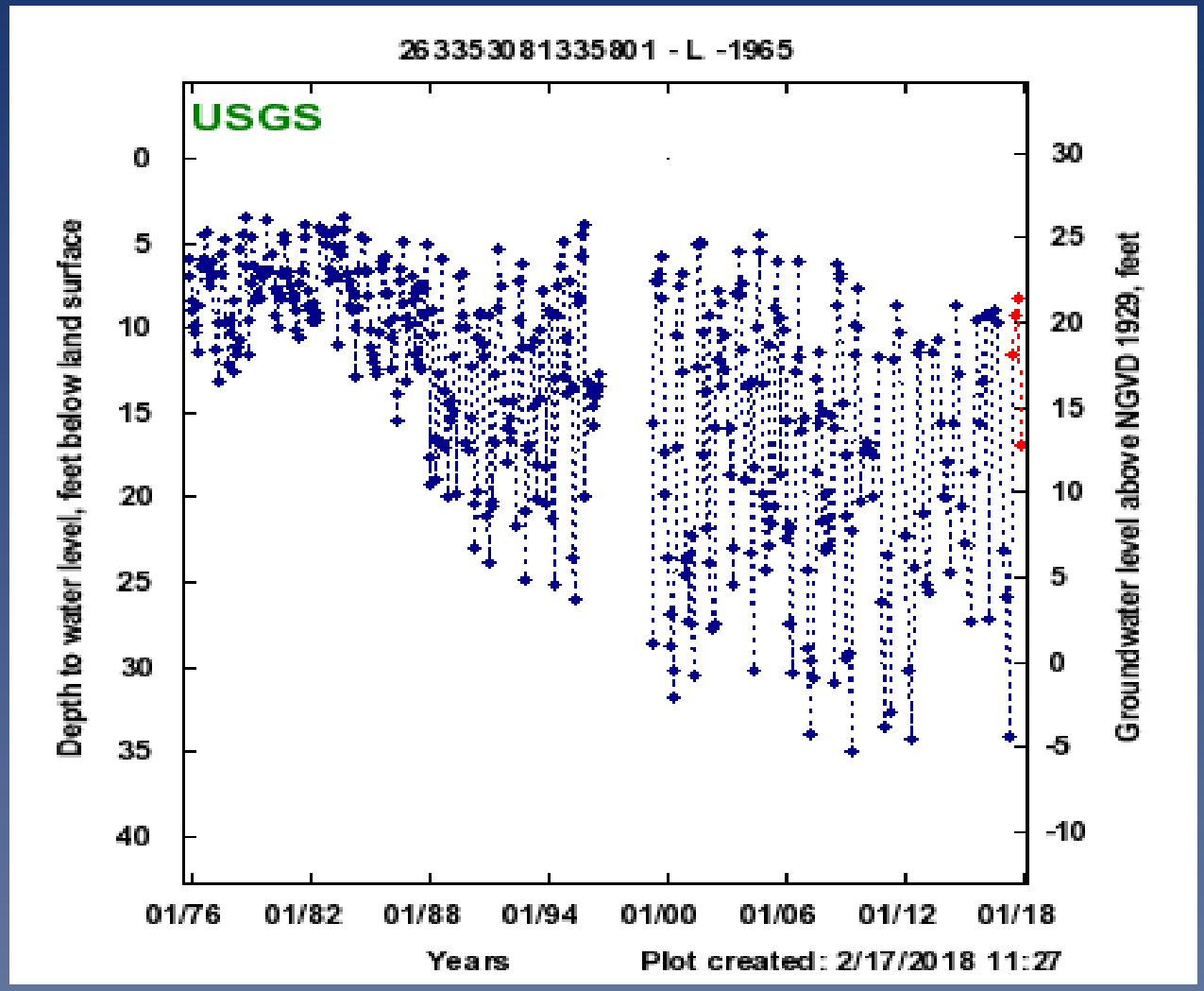
KEY

	More than 20 ft above MDL
	Between 10 - 20 ft above MDL
	Less than 10 ft above MDL

USGS Well L-1965 (SSA)







Water Resource Availability
Existing Legal Users

- Groundwater modeling to estimate drawdown
- Based on aquifer hydraulic parameters, pumpage rate
- Rules require 90-day, no-recharge pumping scenario (conservative)

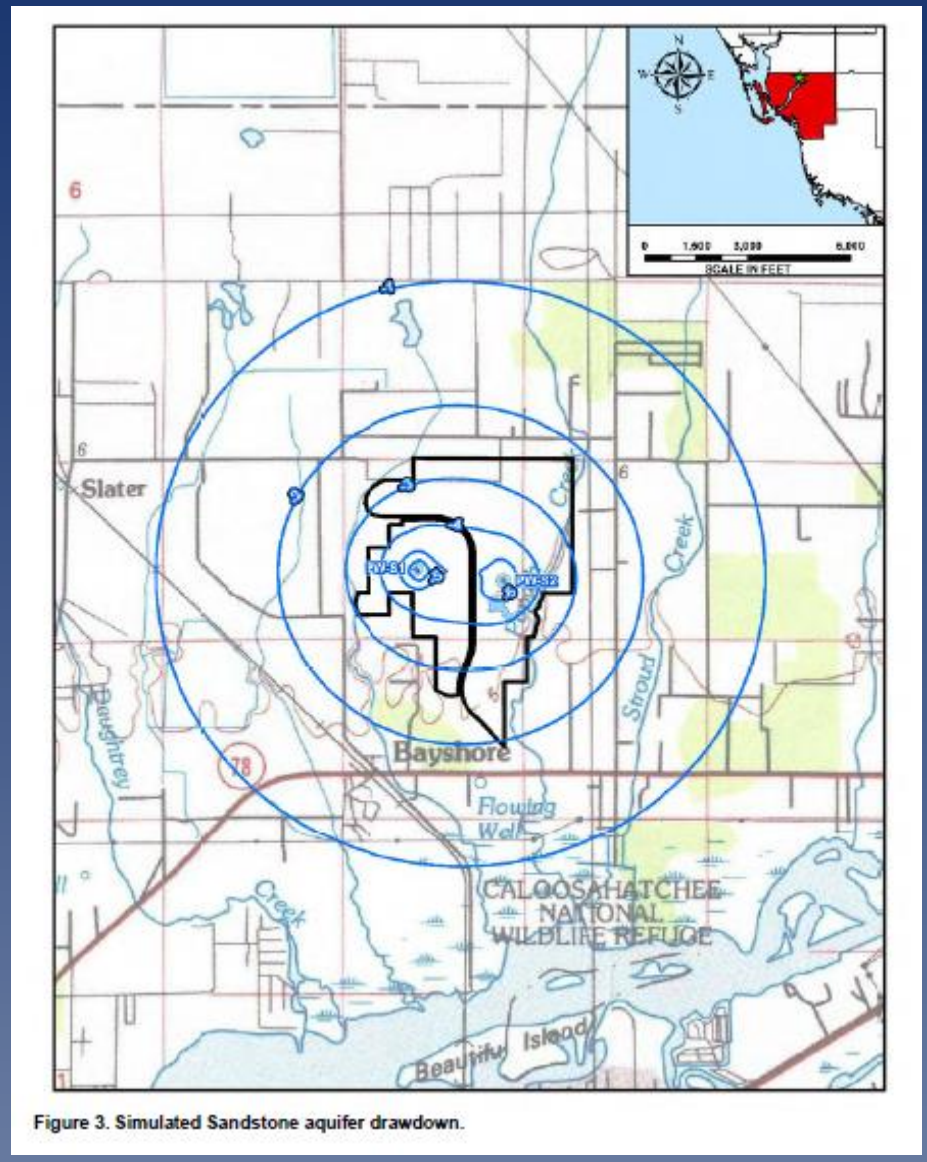
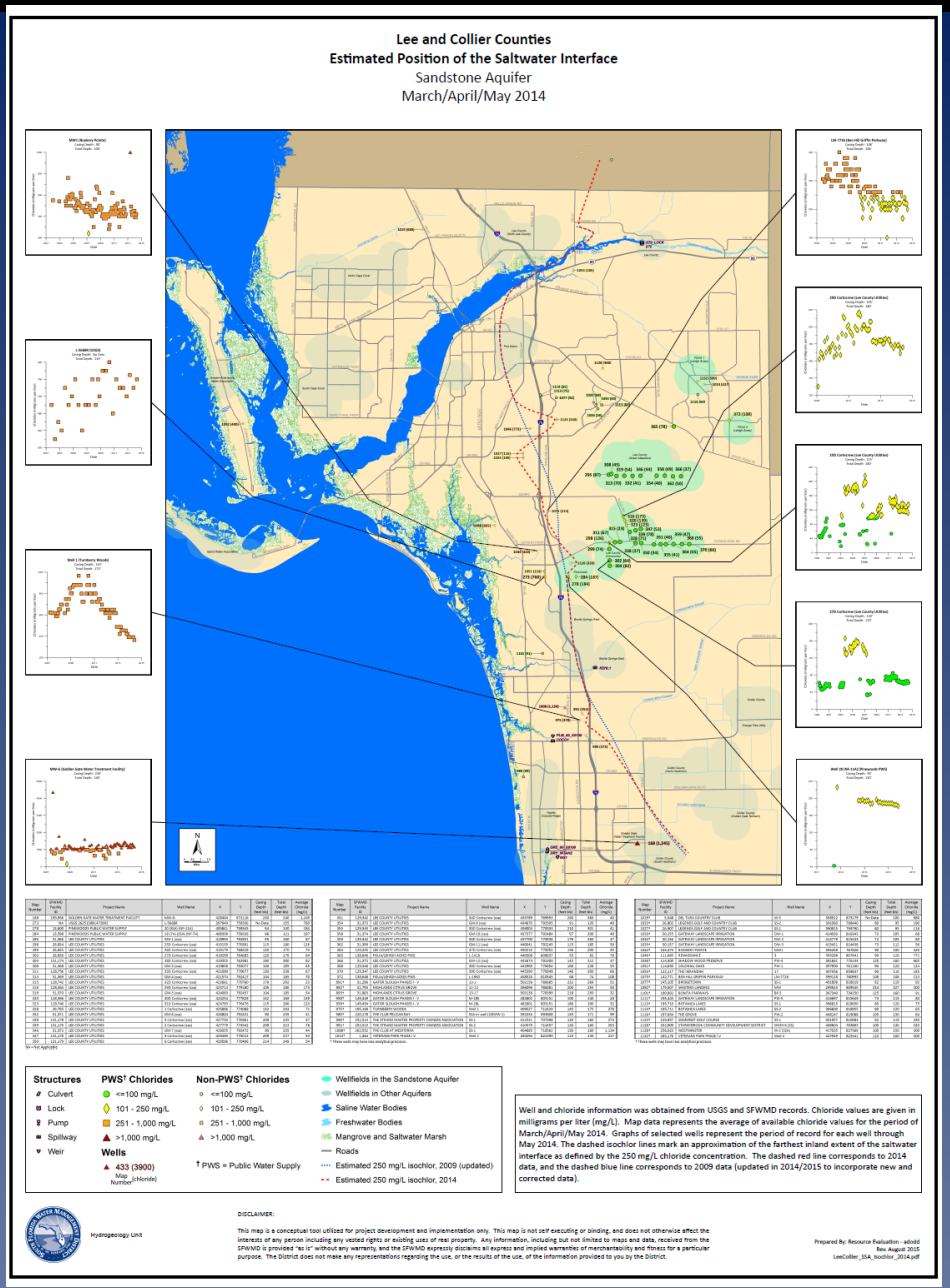


Figure 3. Simulated Sandstone aquifer drawdown.

Saline Water Evaluation

- Estimated position of the 250 mg/L isochlor
- District has maps for each aquifer based on monitoring data
- Evaluate the potential for saline intrusion via lateral migration or upconing

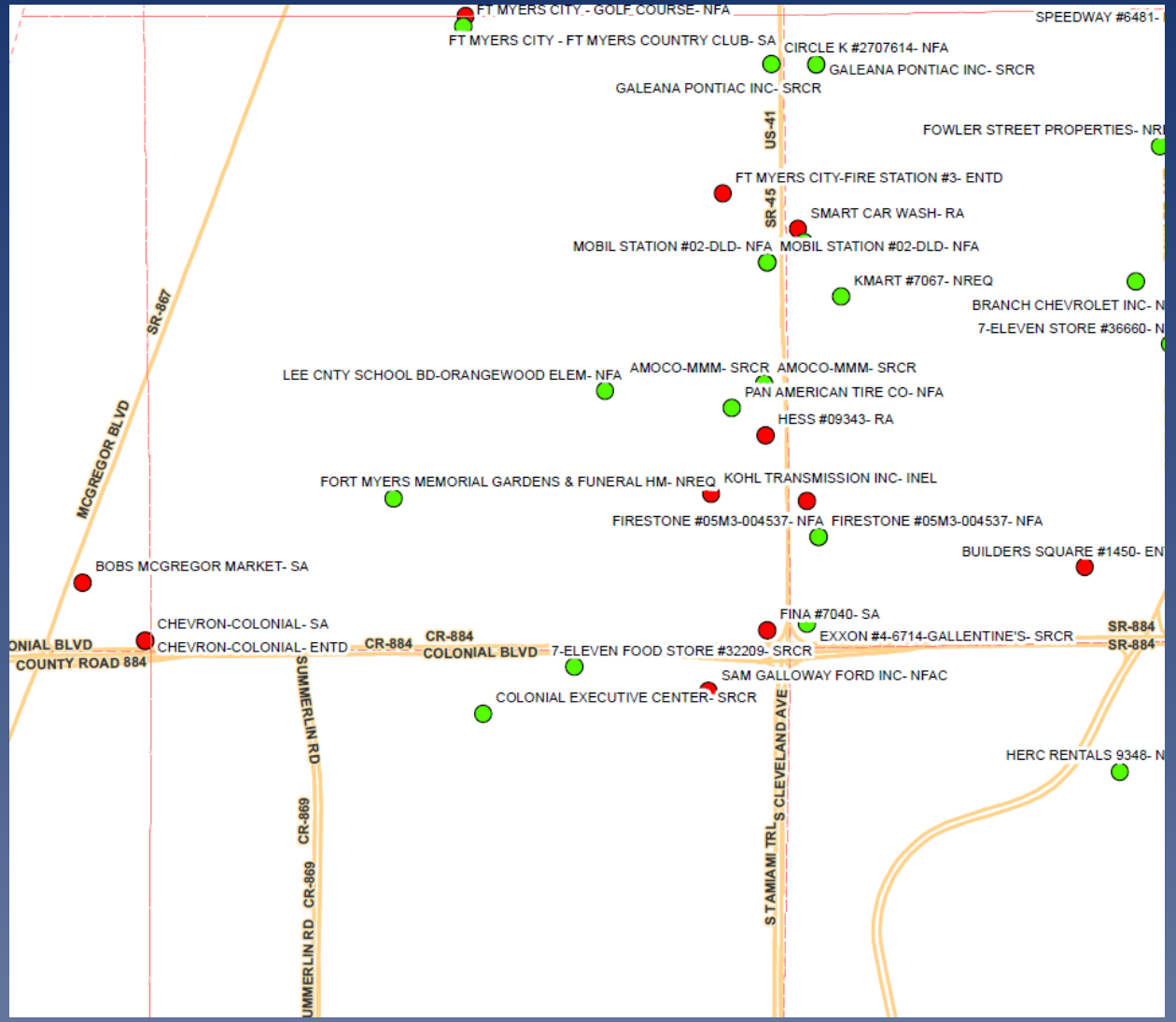


Wetlands Evaluation

- Evaluate water level drawdown impact to wetlands
- May include water level monitoring to provide assurances of no harm
- In some cases, a shallow supply source (lake) is recharged by a deeper, hydraulically separated source to replace withdrawals

Soil/Groundwater Contamination

- Evaluate potential for contamination migration as a result of the water use
- FDEP database provides sites and status:
  - Brownfields
  - Dry Cleaning
  - National Priorities
  - Petroleum (see figure)
  - Solid Waste
  - Superfund
  - Institutional Controls



Water Use Permit

- Allocation
  - Annual
  - Maximum Month
- Duration
- Withdrawal Facilities
- Permit Conditions
  - Irrigation Hours
  - Water Use Accounting
  - Saline Water Monitoring
  - Wetland Monitoring
  - Other specific restrictions

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:

   Vista Palms, Inc.
   1035 Collier Center Way, #7
   Naples, FL 34110

2. This permit shall expire on May 23, 2037.

3. Use classification is:

   Landscape Irrigation

4. Source classification is:

   Groundwater from:
   Lower Tamiami Aquifer

   Surface Water from:
   On-site Lake(s) / Pond(s)

5. Allocation:

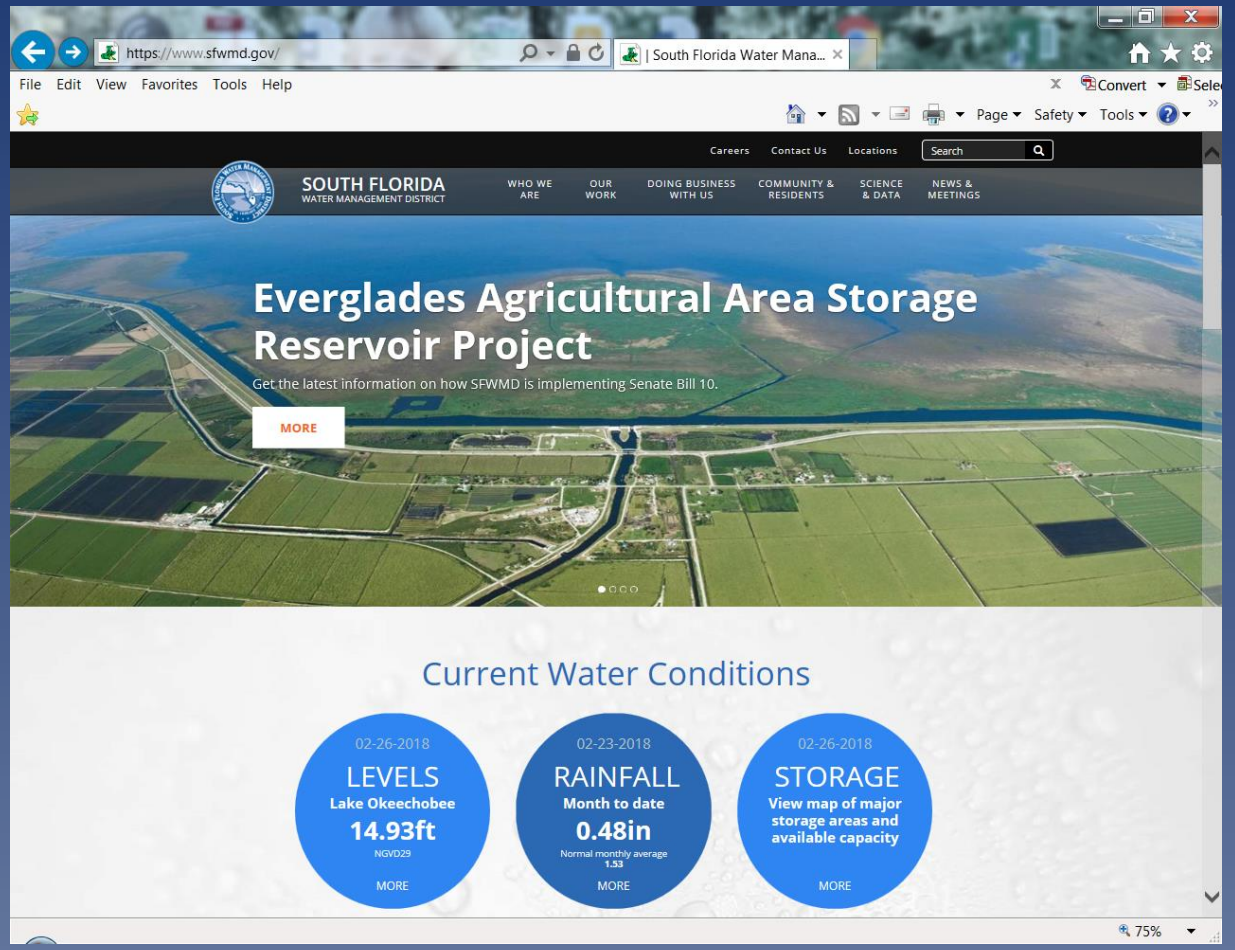
   Total annual allocation is 4.23 million gallons (MG). (11,589 GPD)

   Total maximum monthly allocation is 0.52 million gallons (MG).

   These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

More Information

- Web page: www.sfwmd.gov
  - What We Do
  - Permitting
  - Water Use/Consumptive Use
  - Application Forms & Rules



Thank you!