



**WITHLACOOCHEE
REGIONAL
WATER
SUPPLY
AUTHORITY**

The background is a blue gradient with abstract, overlapping shapes in various shades of blue, creating a modern and professional look. The text is centered and reads:

Withlacoochee 2010
Regional Water Supply
Master Plan

Presentation Outline

- Background on Regional Water Supply Plan
- Changes in Regional Setting from 2005 to 2010
- Summary of Issues Addressed in Plan
- Plan Recommendations



Statutory Mission

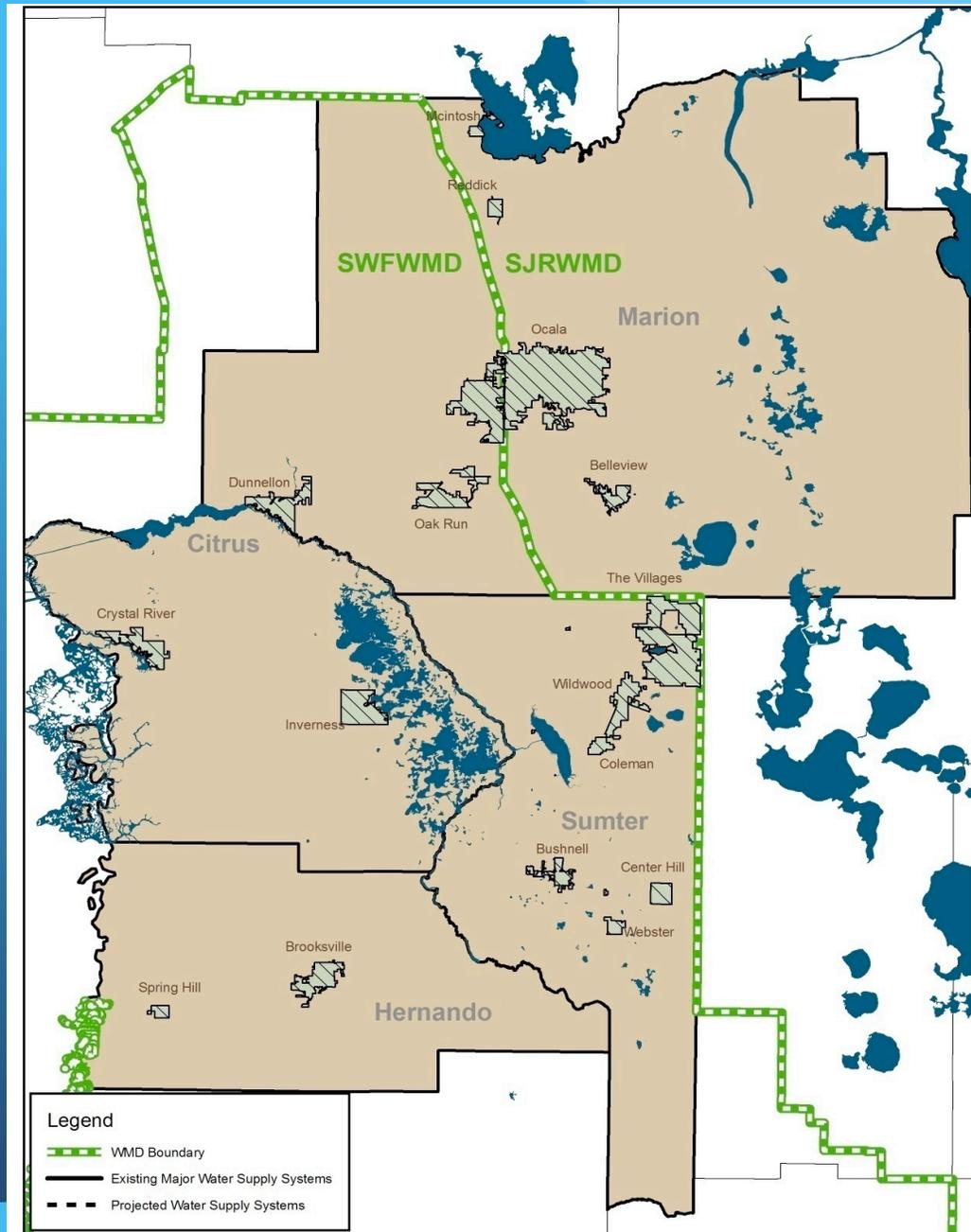
Chapter 373.1962 F.S.

- Plan for future water supplies for member governments
- Locate, develop, deliver wholesale water supply to member governments as needed

Mission Statement

- The WRWSA is a multi-county special district of the State of Florida charged with planning for and developing cost efficient, high quality water supplies for its member governments. The Authority promotes environmental stewardship through its water conservation programs and in the future will develop alternative water sources to augment groundwater supplies to meet the region's long -term needs.

Service Area



Master Regional Water Supply & Implementation Program

- In 2005 WRWSA Board approved development of a master water supply and implementation program.
- Co-funded by the Authority and the Withlacoochee and Coastal Rivers Basin Boards. SWFWMD staff used WRWSA information to include in the northern District Regional Water Supply Plan.
- Study covered the period from 2010 to 2030.
- The study was prepared by Water Resource Associates and completed in March 2010.
- The recession changed the emphasis of the Plan over the 2005-2010 time frame.



2005

Regional Setting at the Start of the Study

- Phenomenal Growth Occurring in the Region
- Population and Water Demand Projections Skyrocketing
- Pessimistic View on the Availability of new Groundwater sources
- Emphasis on Alternative Water Supply Development
- Minimum Flows and Levels (MFLs) Had Begun to be Established in the Region
- AWS Conditions Were Starting to be Placed on Some of the Major WUPs Within the WRWSA (The Villages, Hernando County, Ocala)
- There were no Per Capita Consumption requirements for Utilities – only goals



2010

Regional Setting at the End of the Study

- Severe Economic Downturn
- Population and Water Demand Projections Had Levelled Off
- More Optimistic View on the Availability of New Groundwater Sources - New Assessment Technology (GW Modeling)
- Emphasis on “Prevention” of Impacts Through Conservation and Reuse
- Setting Minimum Flows and Levels (MFLs) Were Accelerated in the Region
- AWS Conditions Were Now Being Placed on Nearly All Major WUPs Within the WRWSA
- Per Capita Consumption Requirements Had Been Established by Rule in SWFWMD area (150 gpcpd by 2018)



Summary of Issues

- Water Supply Demand
 - Even considering the recession, total water demand in WRWSA service area will increase by 55% by 2030.
 - Four of the five water users will increase; Industrial and Commercial will decline slightly.
 - Public water supply will increase the most - 83%.
 - Substantial competition for limited remaining groundwater.



Summary of Issues (con't)

- Water Conservation and Reclaimed Water
 - There are numerous utilities in the region with high per capita consumption rates. Average for the region is 187 gpcpd, but the range is 60 to 300+ gpcpd.
 - There are a number of WWTPs not currently maximizing their potential “beneficial reuse.”
 - The Authority’s objective is to help the region’s utilities reach the 150 gpcpd compliance rate by 2018.



Summary of Issues (con't)

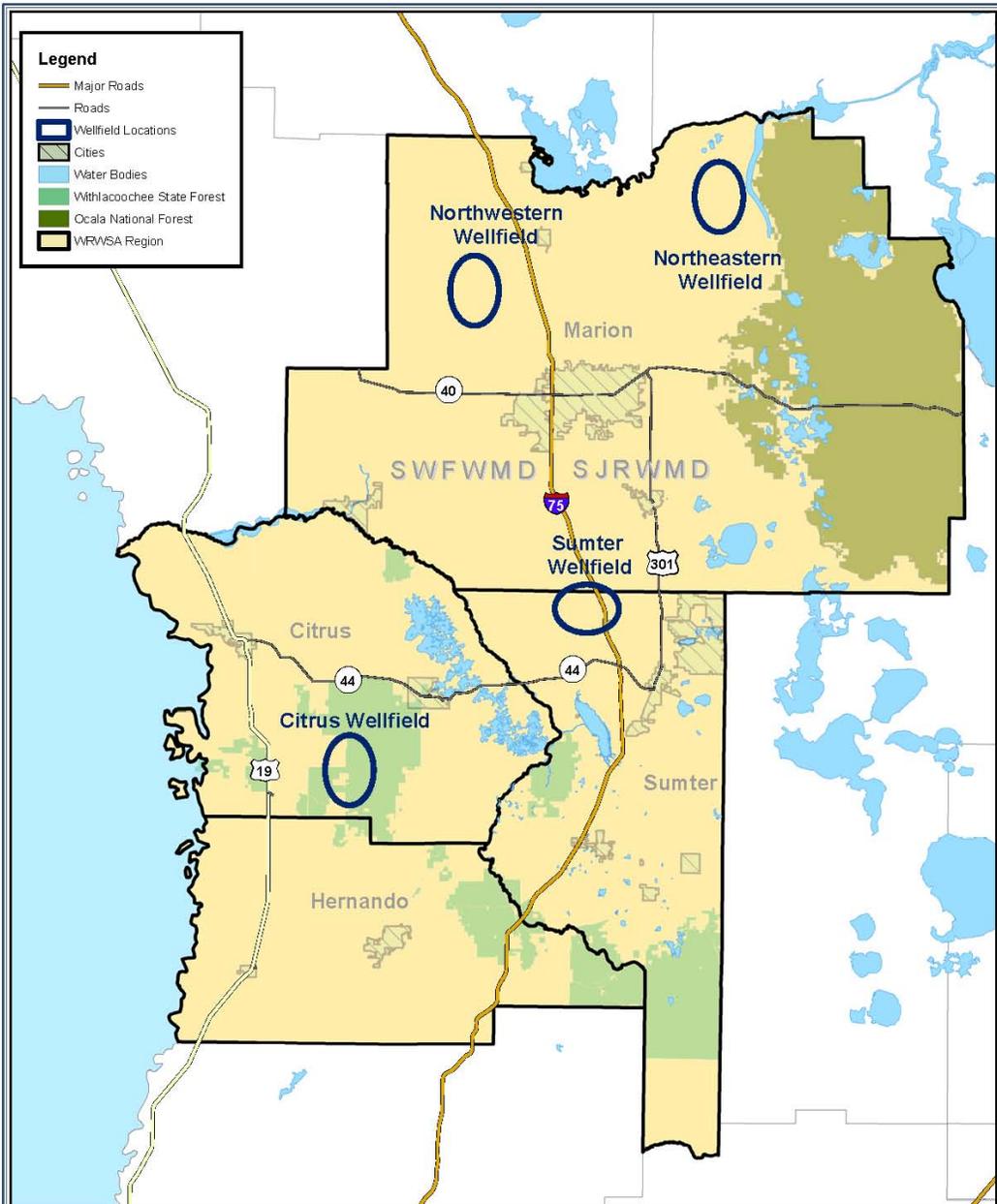
- Proposed Water Supply Projects
 - Extend use of groundwater through conservation
 - Use GW modeling to find where existing regional groundwater supplies are available and can be permitted
 - Begin developing a long-range plan for eventual transition to an integrated system that includes alternative water supplies (surface water and desalinated water)



Water Supply Projects Identified in Master Plan

- **Regional Groundwater Available in:**
 - Southern Citrus County
 - Northern Sumter County
 - Eastern & Western Marion County





Water Resource Associates, Inc.
 Engineering • Planning • Environmental Science
 4260 West Linebaugh Avenue
 Phone: 813-265-3130
 Fax: 813-265-8610
 www.wraconsultants.com

PROJECT: 0468 - Withlacoochee Phase II

**Figure 6-1
 Fresh Groundwater
 Project Options**

ORIGINAL DATE: 01-06-10

REVISION DATE: NA
 JOB NUMBER: 0468
 FILE NAME: Figure6-1...mxd
 GIS OPERATOR: DR



1 inch equals 10 miles

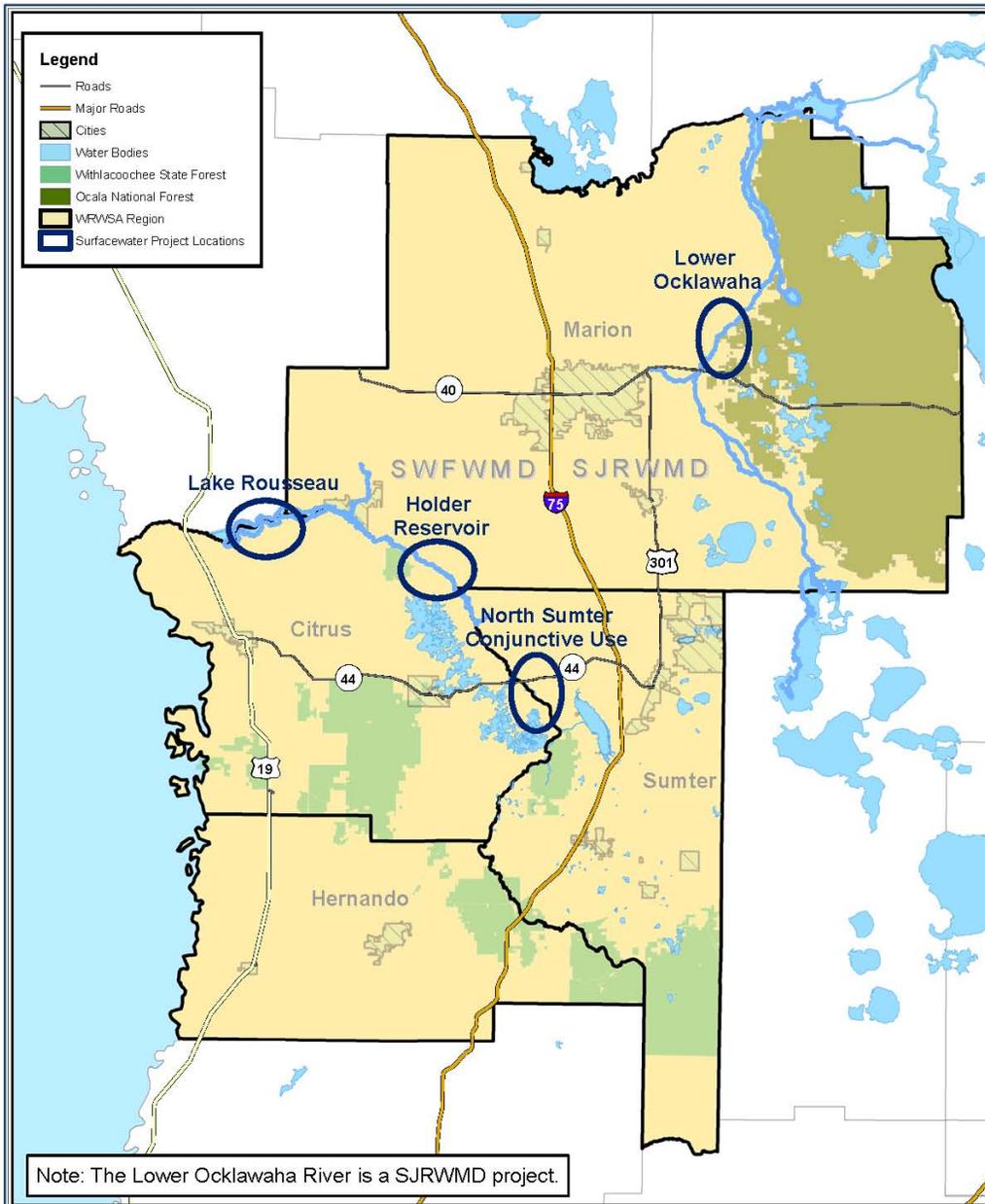


Alternative Water Supply Project Options

- **Withlacoochee River**
 - Lake Rousseau
 - Holder “Offstream Reservoir”
 - North Sumter “Conjunctive Use”
- **Lower Ocklawaha River (SJRWMD Project)**
- **Seawater Desalination**
 - Desalination near Crystal River
 - Coquina Coast in Flagler County (SJRWMD Project)

Note: Lower Ocklawaha River and Coquina Coast projects are being promoted by the SJRWMD





Water Resource Associates, Inc.
 Engineering • Planning • Environmental Science
 4250 West Linebaugh Avenue
 Phone: 813-265-3130
 Fax: 813-265-6610
 www.wraconsultants.com

PROJECT: 0468 - Withlacoochee Phase II

Figure 8-1
Potable Surfacewater
Project Options

ORIGINAL DATE: 01-06-10

REVISION DATE: NA

JOB NUMBER: 0468

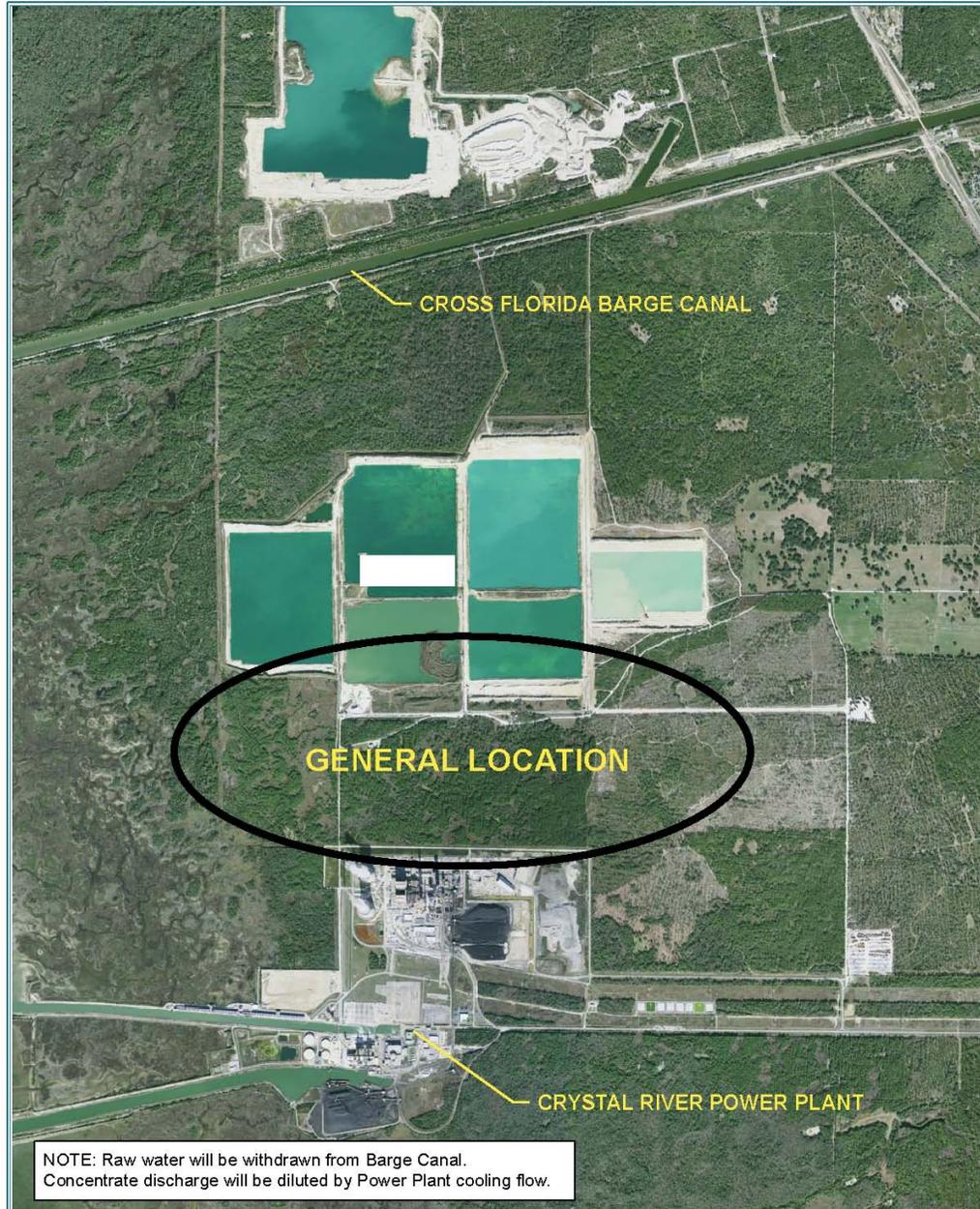
FILE NAME: Figure 8-1...mxd

GIS OPERATOR: DR



1 inch equals 10 miles





NOTE: Raw water will be withdrawn from Barge Canal.
 Concentrate discharge will be diluted by Power Plant cooling flow.



Water Resource Associates, Inc.
 Engineering - Planning - Environmental Science
 4260 West Linebaugh Avenue
 Phone: 813-265-3130
 Fax: 813-265-5610
 www.wraconsultants.com

PROJECT: 0468 - Withlacoochee Phase II

**FIGURE 9-3
 GENERAL LOCATION OF
 SEAWATER DESALINATION FACILITY**

ORIGINAL DATE: 10-28-09

REVISION DATE: 01-11-10

JOB NUMBER: 0468

FILE NAME: Desal location.mxd

GIS OPERATOR: LEF



1 inch equals 1 miles



Comparative Costs for Future Water Supply

- Water Conservation \$.???/1000
- NW Marion Wellfield (GW) \$.63/1000
- NE Marion Wellfield (GW) \$.81/1000
- Sumter Wellfield (GW) \$.77/1000
- Lake Rousseau (AWS) \$2.38/1000
- Holder (AWS) \$3.15/1000
- Crystal River Plant Desal (AWS) \$4.27/1000



Long-Range Development of Alternative Water Supplies

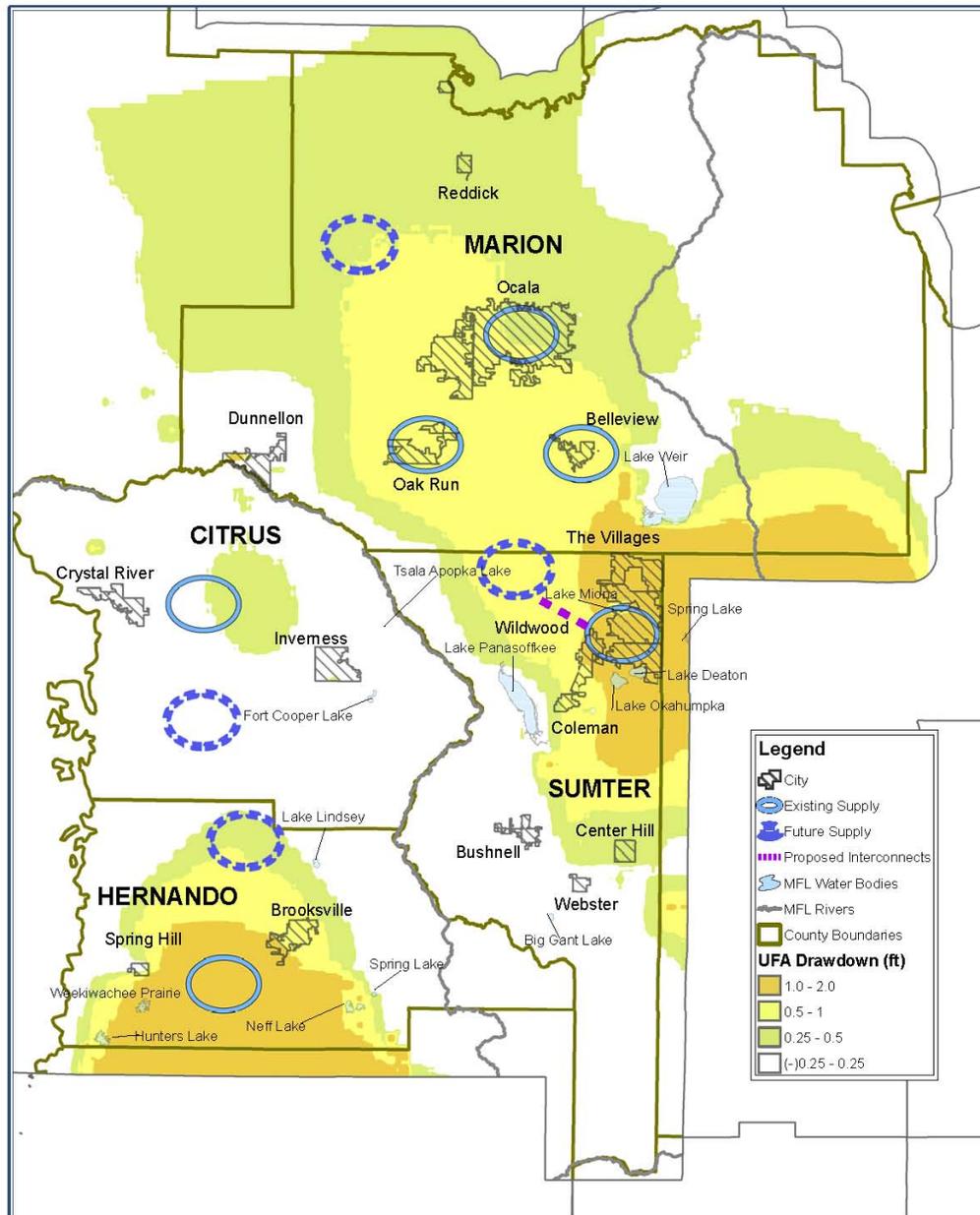
- The region will at some point need to develop alternative water supplies
- The long-term need for alternative supplies is estimated to be approximately 20-35 years in the future
- How should the region transition over time from use of strictly groundwater to an integrated system, which will include surface and desalinated water?
- The Authority has proposed a long-term program of transition to an interconnected system to allow introduction of AWS when needed
- A “Regional Framework”



Regional Framework Initiative (Conceptual)

- ✓ Identify the groundwater supply facilities that can provide a framework for an interconnected system.
- ✓ Identify pipeline alignments, rights-of-way and land acquisition needed for the interconnected system.
- ✓ Provide for agreements that the facilities will be dedicated to be part of the interconnected regional framework when required.
- ✓ Monitor development, make adjustments and interconnect system over time.
- ✓ Introduce alternative water supplies into system when needed.





Water Resource Associates, Inc.
 Engineering • Planning • Environmental Science
 4250 W. Linebaugh Ave.
 Phone: 813-265-3130
 Fax: 813-265-6610
 www.wraconsultants.com

PROJECT: 0468 - Withlacoochee - Phase II

**Figure 12-2
 Regional Framework
 Short-Term Groundwater Development**

ORIGINAL DATE: 12-23-2009

REVISION DATE: NA

JOB NUMBER: 0468

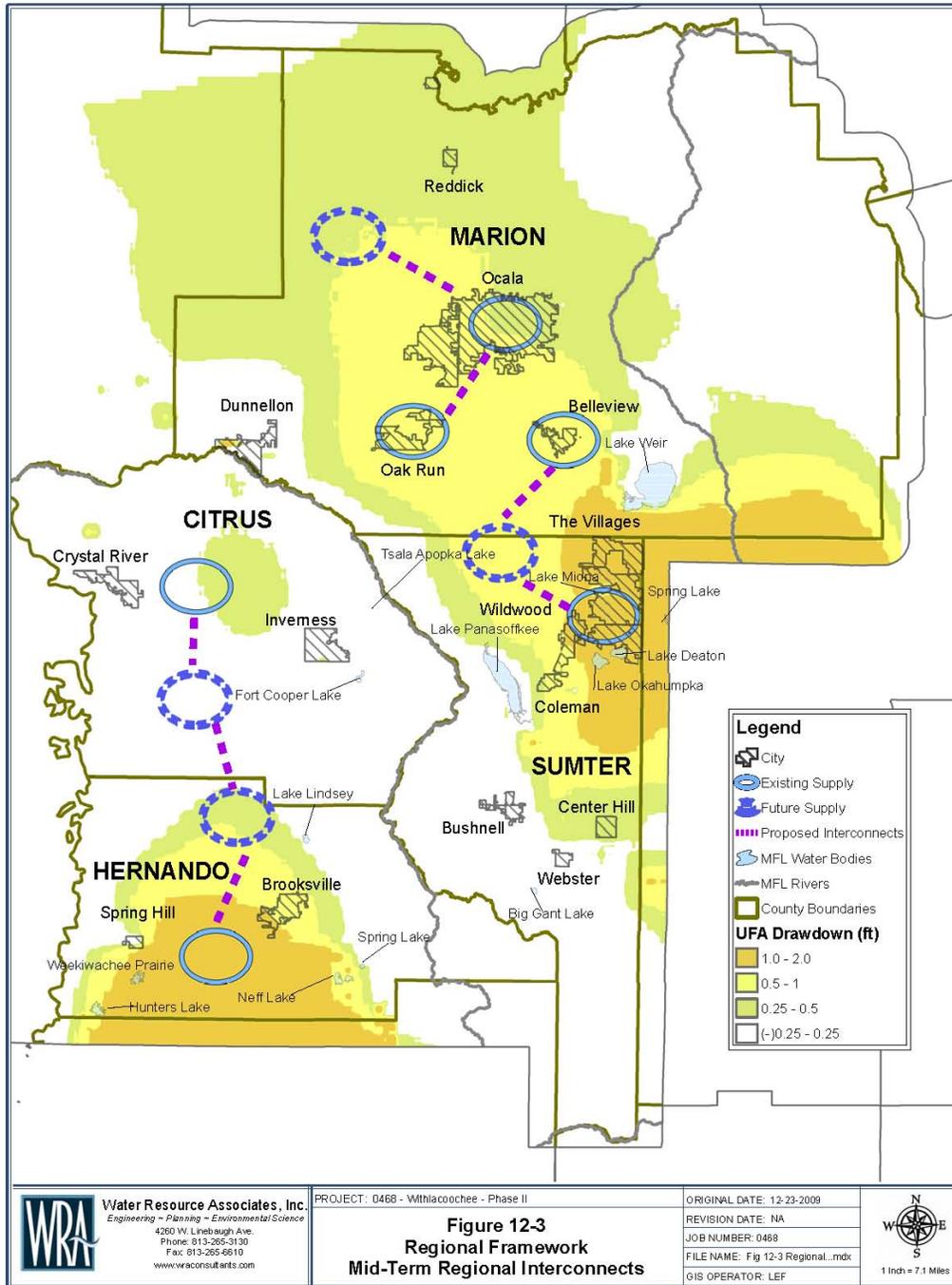
FILE NAME: Fig 12-2 Regional.mxd

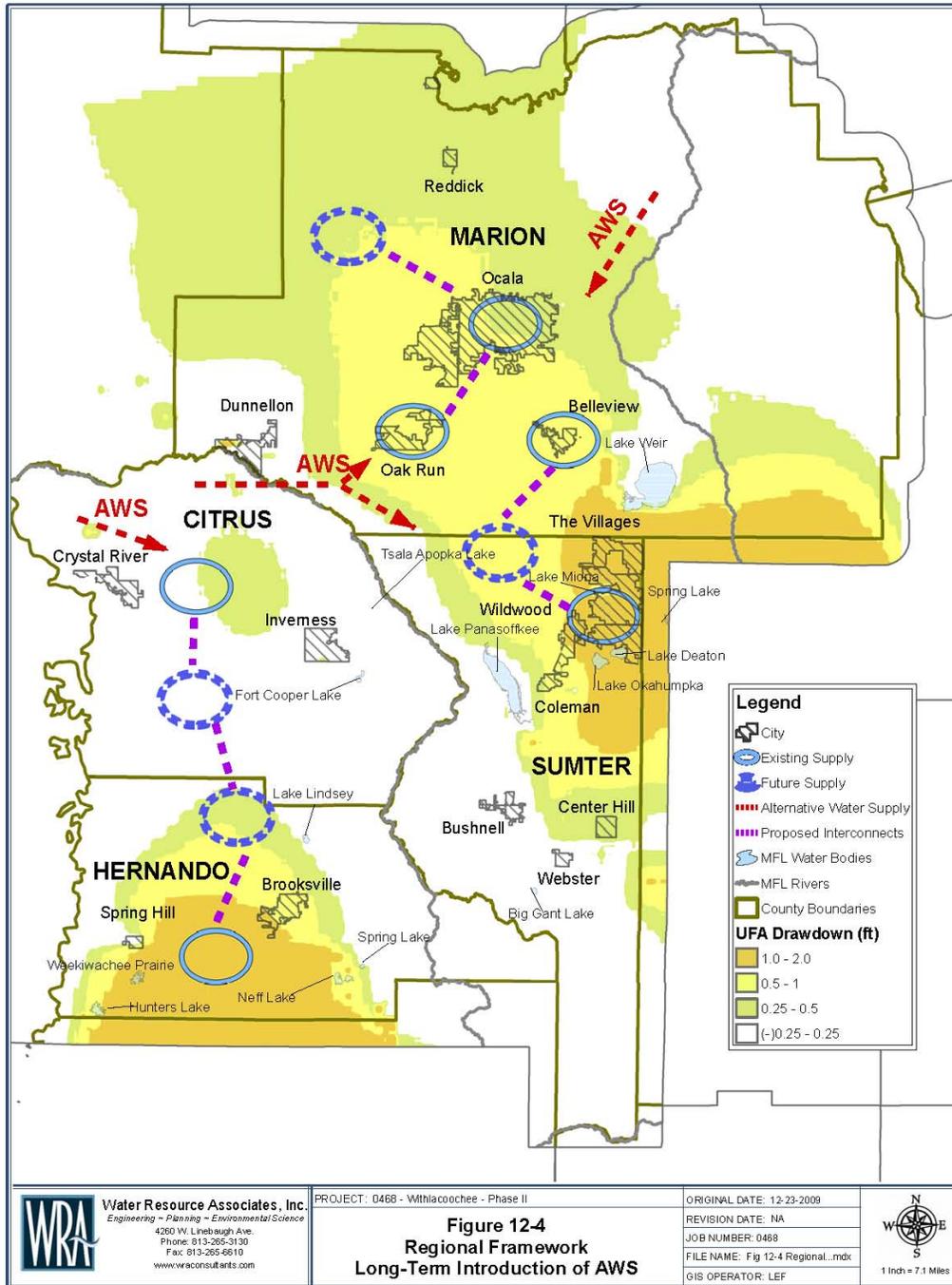
GIS OPERATOR: LEF



1 Inch = 7.1 Miles







Water Resource Associates, Inc.
 Engineering - Planning - Environmental Science
 4260 W. Linebaugh Ave.
 Phone: 813-265-3130
 Fax: 813-265-6810
 www.wraconsultants.com

PROJECT: 0468 - Withlacoochee - Phase II

**Figure 12-4
 Regional Framework
 Long-Term Introduction of AWS**

ORIGINAL DATE: 12-23-2009

REVISION DATE: NA

JOB NUMBER: 0468

FILE NAME: Fig 12-4 Regional.mxd

GIS OPERATOR: LEF



1 Inch = 7.1 Miles

Master Plan Recommendations

- The Plan's 30 recommendations are summarized under eight (8) major categories:
 - Population and Water Demand
 - Hydro-geologic Data Collection and Monitoring
 - Regional Groundwater Assessment
 - Water Conservation
 - Reclaimed Water
 - Water Supply Project Options
 - Water Supply Partnership Opportunities
 - Water Supply Regional Framework



Plan Recommendations

- For budgetary and staffing purposes, these categories have been further summarized as:
 - Data Collection
 - Water Conservation/Reclaimed Water
 - Water Supply Project Development



Data Collection Recommendations

- Population and Water Demand
- Hydro-geologic Data Collection and Monitoring
- Regional Groundwater Assessment

These recommendations deal with updating the Master Plan population and water use data and ensuring that comprehensive and consistent groundwater analyses are prepared and applied in the region.



Water Conservation/Reclaimed Water Recommendations

- Water Conservation
- Reclaimed Water

These recommendations deal with proposed initiatives to:

- *Survey and identify high water use utilities and use the SWFWMD water conservation model to identify appropriate conservation projects for each individual utility.*
- *Work with remaining WWTPs where “beneficial reuse” has not been implemented.*
- **Note:** SWFWMD staff are pursuing these same programs as a “utility outreach” program. We will monitor and liaison with SWFWMD staff. WRWSA will target the SJRWMD portion of Marion County to implement these recommendations.

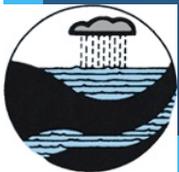


Water Supply Project Development Recommendations

- Water Supply Project Options
- Water Supply Partnership Opportunities
- Development of the Regional Framework Concept

These recommendations deal with the Authority:

- *Working with local governments to implement the short, mid and long-term water projects identified in the Master Plan.*
- *Determining land requirements for water supply development and infrastructure in the future.*
- *Developing a conceptual plan for the WRWSA Regional Framework concept; develop alternatives for interconnections between partners; and, consider potential routes for pipelines and other utility infrastructure.*



Questions??

