

CFWI STORMWATER SUBTEAM PROJECTS REPORT

Steering Committee Meeting

October 24, 2014

Stephen R. Miller, PE
Subteam Leader

Stormwater Sub-team Project Types

- **Water Supply**, primarily reclaimed water systems augmentation (**WS**)
- **Natural systems/ MFL Recovery** with secondary leakage to Floridan Aquifer (**MFL**)
- **Recharge** into known high infiltration sites directly impacting Floridan water supply sources and springs flows (**RE**)
- **Riverine** Systems Augmentation with secondary benefits to the Indian River Lagoon (**R**)

Potential Water Supply Benefits of MFL Restoration and Recharge Projects

- **Natural systems MFL's restoration** with stormwater (in areas historically impacted by wellfield systems) coupled with associated leakage into the upper Floridan Aquifer could help facilitate achieving the targeted 50 MGD of additional groundwater withdrawal. *GAT to quantify*
- **Recharge** of stormwaters into the Upper Floridan in known high infiltration areas such as Conserve I & II and the Upper Wekiva Basin, coupled with retrofitting of certain Orlando area drainage wells could allow for additional future groundwater withdrawals. *GAT to quantify*

Stormwater Projects Evaluations

- Judge Farms, Osceola County **(WS)** – 6 MGD
- Ocoee / SR 50, Orange County **(WS)** – 1 MGD
- Reedy Creek / RCID, Orange & Osceola Counties **(MFL)** – 4 MGD
- Winter Garden, Orange County **(RE)** – 2 MGD
- Lake Wailes / Peace Creek, Polk County **(MFL)** – 1.4 MGD

Stormwater Projects Evaluations (cont.)

- Winter Haven Area/ Peace Creek, Polk County
(WS/RE) - 10 MGD*
- C-1 Canal/ SJ River/ Palm Bay, Brevard County
(R) - 50 MGD
- Future project concepts for Wekiva, Econ, Shingle Creek and Lake Jesup Basins **(RE & MFL)** - 30 MGD

*subject to rerating and ET analysis

Judge Farms, Osceola County (WS)

Stormwater Supplement Reclaimed Water Project – 6 MGD

Purpose: Judge Farms Project is stormwater water storage facility utilizing natural topography and berming to create approximately a 200 acre reservoir for a 6 MGD supplemental reclaimed water source.

Cost Estimates:

- ❖ Components: Wells, Pipes, Pumps, and Treatment
- ❖ Total Capital: \$25M
- ❖ Operation and Maintenance: \$250 K/year
- ❖ Unit Production Cost: \$ 0.92/1,000 gallons

Water Resource Constraints: Pending Model Results. Reliability of this water supply is 77% at 5 MGD; 95% reliability at 10 MGD with E. Lake Toho augmentation

Partners & Governance: St. Cloud, Osceola, TOHO, FDEP and SFWMD

Judge Farms, Osceola County (WS)

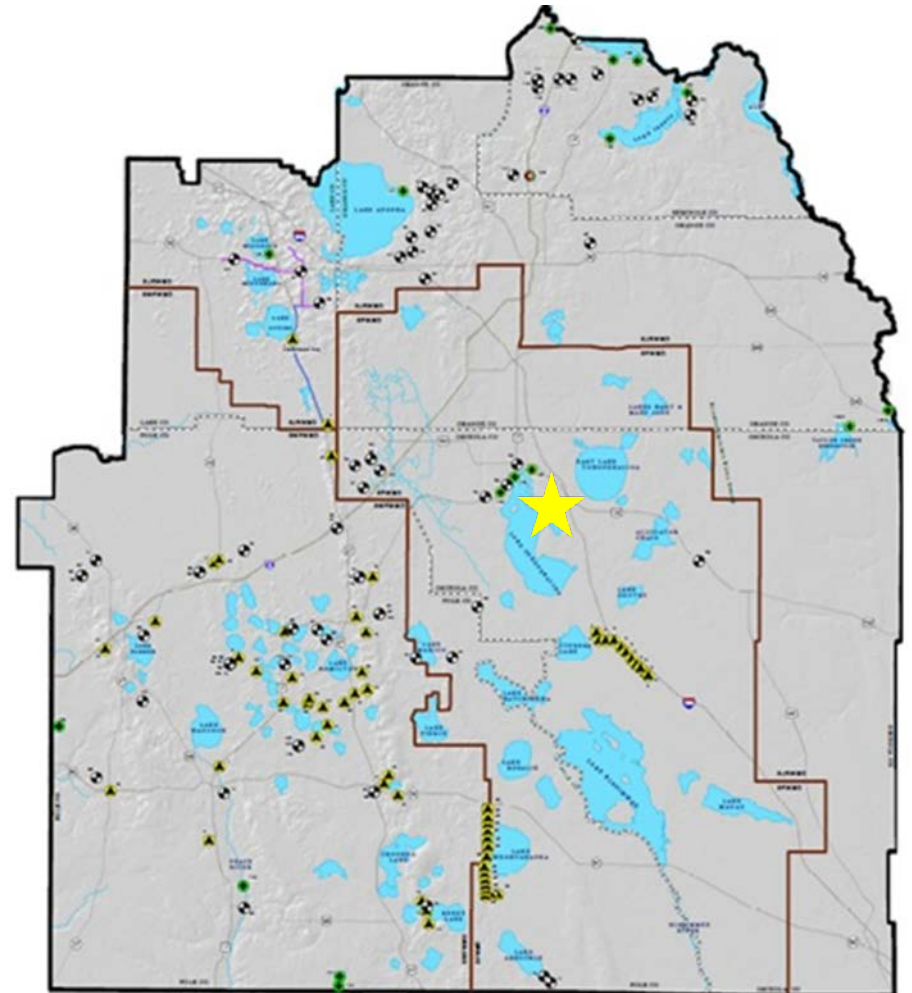
Stormwater Supplement Reclaimed Water Project – 6 MGD

Feasibility: Planned components are neither complex nor difficult to construct. Determination of willing partners, community's support, water quality and groundwater model effects under investigation.

Funding Options: State appropriation, impact fees, revenue bonds

Implementation Schedule:

- ❖ Feasibility Study: 2015-2016
- ❖ Land Acquisition: 2016
- ❖ Project Design: 2017
- ❖ Construction: 2018-2020



Project Evaluation Status: Over 90% Complete

Ocoee/SR 50, Orange County (WS)

Stormwater Reclaimed Water Project – 1 MGD

Purpose: Capture stormwater in FDOT rights-of-way and pond systems to supply the City of Ocoee with reclaimed water system augmentation. Project to coincide with planned FDOT widening project.

Funding Options: FDOT, City of Ocoee

Cost Estimates: The SR 50 widening project is not finalized at this time. The intent is to partner with FDOT to develop a stormwater design that would produce savings in land required and enable this stormwater capture approach to be made cost feasible.



Ocoee/SR 50, Orange County (WS)

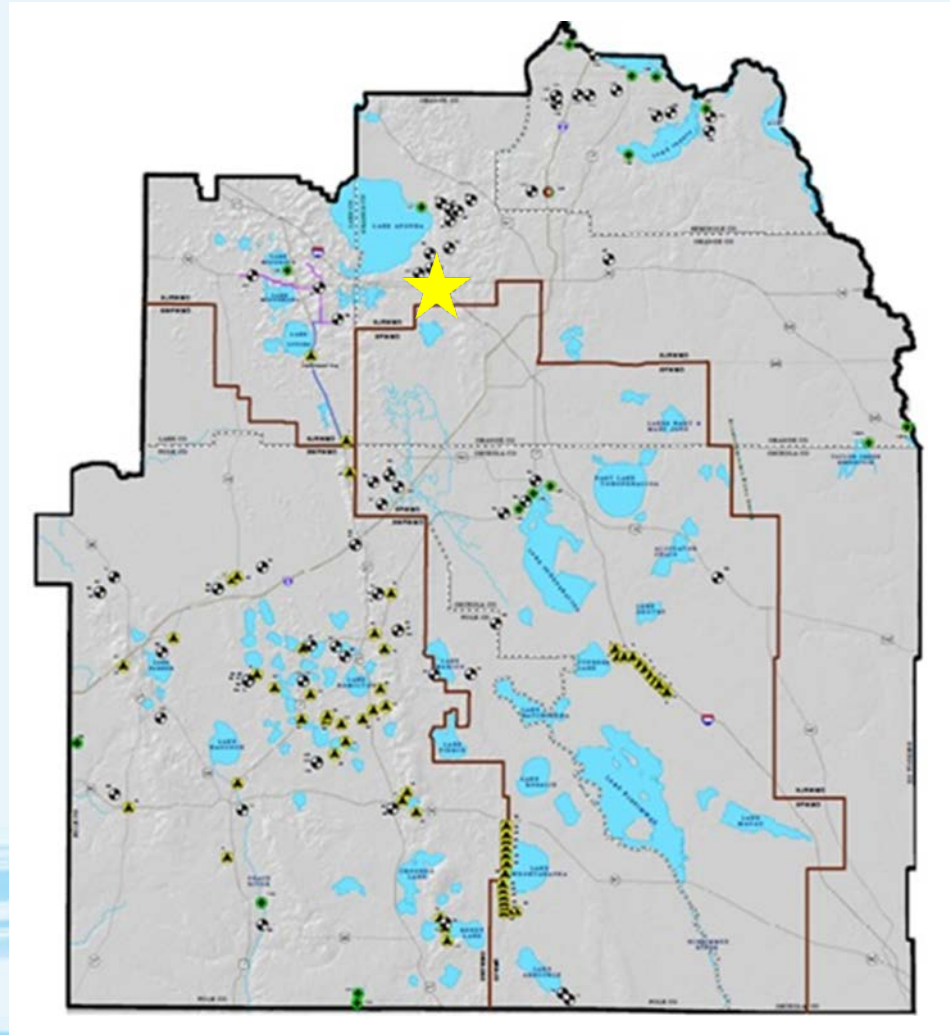
Stormwater Reclaimed Water Project – 1 MGD

Water Resource Constraints:

Water quality projections and related treatment requirements need to be determined. It is estimated that the water supply will be 60% reliable at 1.2 MGD, and 90% reliable 0.6 MGD.

Implementation Schedule:

- ❖ Feasibility Study: TBD
- ❖ Land Acquisition: TBD
- ❖ Project Design: TBD
- ❖ Construction: TBD



Reedy Creek/RCID, Orange & Osceola Counties (MFL)

Stormwater Mitigation & Recharge – Option 1: 4mgd; Option 2: 7mgd

Purpose: Address altered/urbanized RCID stormwater impacts by capturing base flows in the drainage system that have resulted from drainage system infrastructure interception of the pre 1960's surficial water table. Use that water as a source for natural systems MFL restoration and associated recharge in tactically beneficial locations.

Cost Estimates: Options 1&2

- ❖ Components: Pipes, Pumps, Surface water intake, and RIBS
- ❖ Total Capital: \$1 M, \$10 M
- ❖ Operation and Maintenance: TBD
- ❖ Unit Production Cost: \$0.05/1,000 gallons, \$1.10/1,000 gallons.

Partners & Governance: RCID, FDOT, WMD local government

Reedy Creek/RCID, Orange & Osceola Counties (MFL)

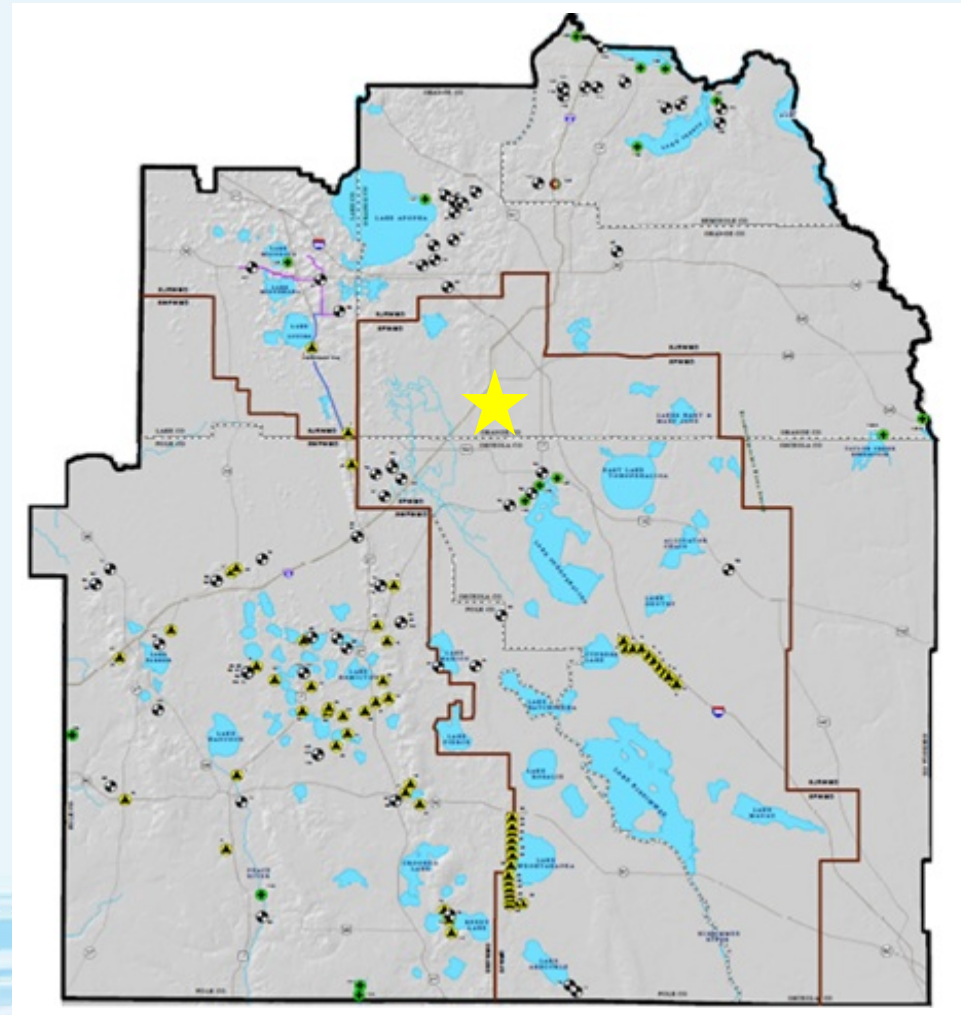
Stormwater Mitigation & Recharge – Option 1: 4mgd; Option 2: 7mgd

Water Resource Constraints:

Water quality requirements need more investigation. There is early support for a FDOT “Environmental Look Around” (ELA) process, as well as other collaborations. Refining the modeled groundwater impacts analysis and ongoing data needs.

Implementation Schedule:

- ❖ Feasibility Study: 2015-2016
- ❖ Land Acquisition: NA
- ❖ Project Design: 2017
- ❖ Construction: 2019-2020



Project Evaluation Status: Over 90% Complete

Winter Garden, Orange County (WS & RE)

Stormwater Capture Project – 2 MGD

Purpose: Intercept and capture stormwater flows near Lake Apopka in two locations on City properties for reclaimed water augmentation and recharge purposes. Benefits also include surcharge of Floridan Aquifer for City wellfield and reductions in nutrient loading to Lake Apopka.

Funding Options: City of Winter Garden, SJRWMD

Cost Estimates:

- ❖ Components: Pipes, Structures, Excavation and Berms, and Pumps
- ❖ Total Capital: \$2.41 M
- ❖ Operation and Maintenance: <\$150K/ year
- ❖ Unit Production Cost: <\$0.50/ 1,000 gallons

Winter Garden, Orange County (WS & RE)

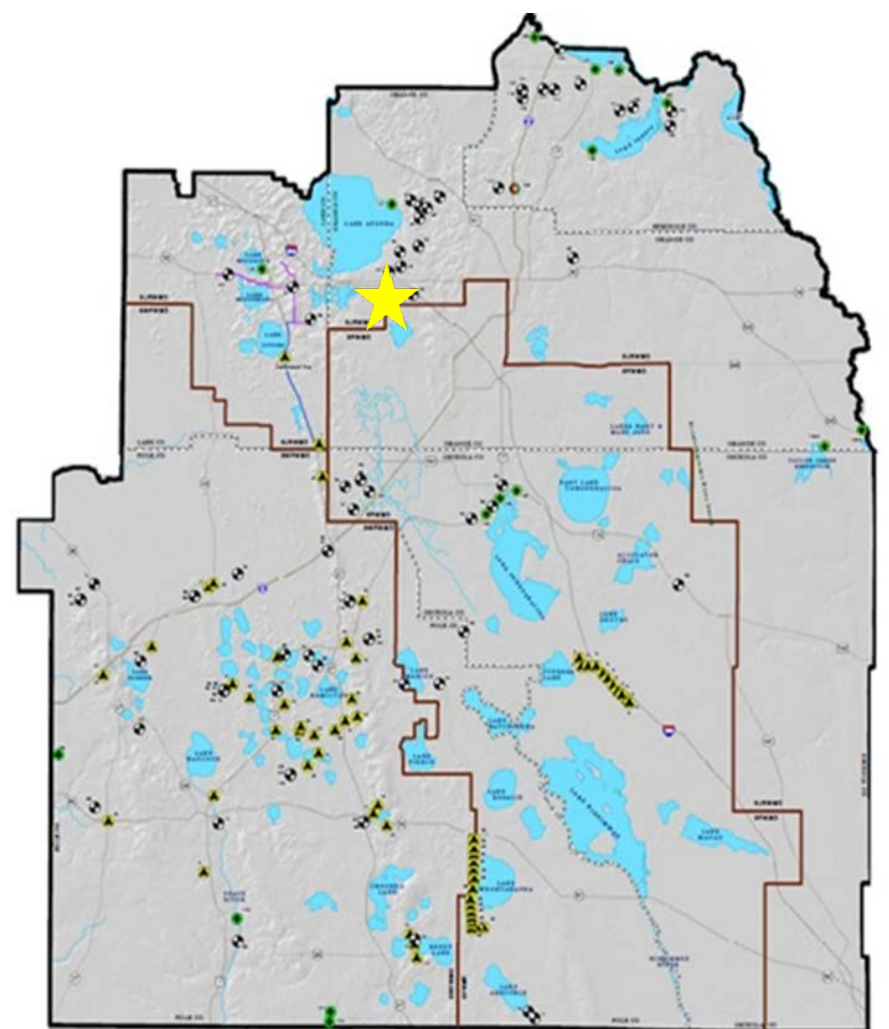
Stormwater Capture Project – 2 MGD

Water Resource Constraints:

The reliability of this water supply requires additional evaluation, but is estimated as 60% at 2.5 MGD, and 90% at 1.2 MGD. Water quality treatment for reclaimed use provided by City WWTP.

Implementation Schedule:

- ❖ Final engineering and funding: 2015-2016
- ❖ Construction: 2016-2018



Lake Wailes, Polk County (MFL)

Stormwater Mitigation Project – 1.4 MGD

Purpose: Augment Lake Wailes to meet established MFL. The project takes stormwater flow from Peace Creek Canal (PCC), when available, and conveys water to Lake Wailes.

Funding Options: State grants, impact fees, revenue bonds and state revolving fund loans

Cost Estimates:

- ❖ Components: Pipes, Pumps, Surface water intake, and RIB
- ❖ Total Capital: \$13.5 M, \$20 M
- ❖ Operation and Maintenance: \$32,550, \$190,168
- ❖ Unit Production Cost: \$1.30/1,000 gallons (Option 1), \$2.21/1,000 gallons (Option 2)

Lake Wailes, Polk County (MFL)

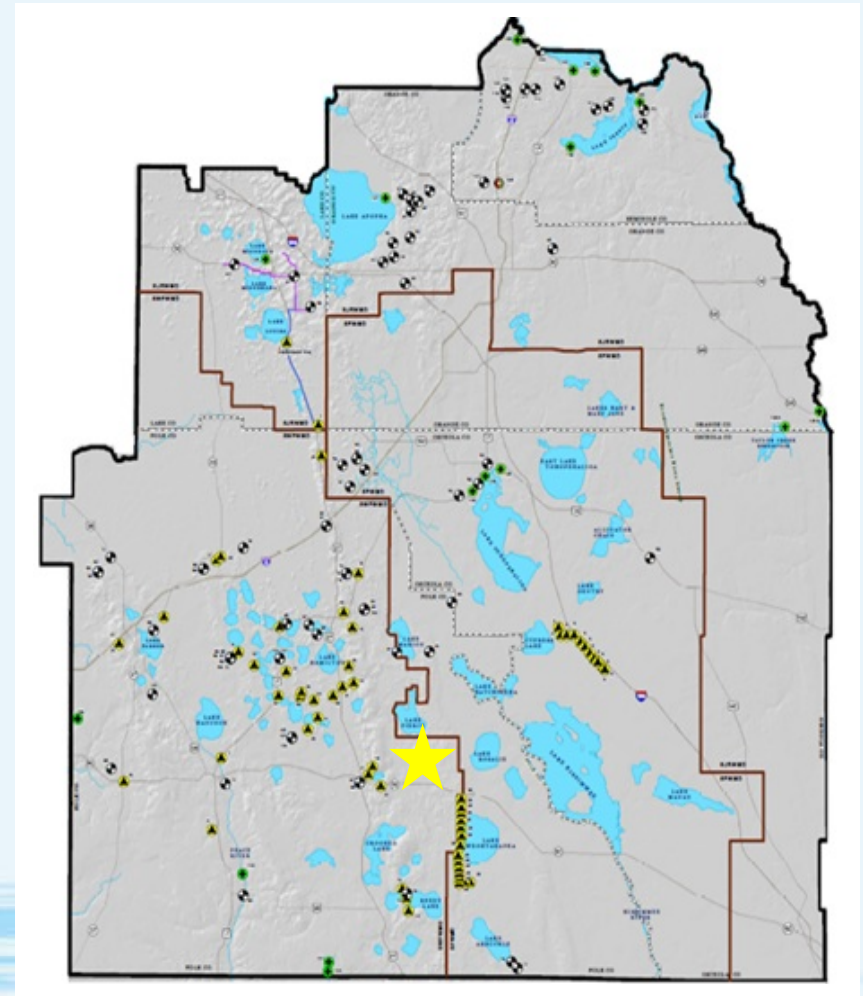
Stormwater Mitigation Project – 1.4 MGD

Water Resource Constraints:

Water quality requirements need more investigation. The project proposes use North Lake Wailes to provide a level of treatment to improve water quality and a RIB for the second option.

Implementation Schedule:

- ❖ Feasibility Study: 2015-2016
- ❖ Land Acquisition: 2016
- ❖ Project Design: 2017
- ❖ Construction: 2018-2020



Project Evaluation Status: Over 90% Complete

Winter Haven Area/Peace Creek, Polk County (WS/RE)

*Stormwater Restoration Project – 10 MGD**

Purpose: To restore the natural hydrology of up to 10,000 acres of wetland systems currently drained and impacted by the Peace Creek Canal, enhance lake levels for surrounding natural systems, and harvest stormwaters for reclaimed water supply and/or recharge in the City of Winter Haven and adjoining municipalities.

Funding Options: P3's and Private Investments associated with CSX ILC; SWFWMD and local municipalities

Cost Estimates:

- ❖ Total capital: \$100M -\$200M
- ❖ Operation and maintenance: \$3M-\$7MYear
- ❖ Unit production cost: \$1.5-\$3/1,000 gallons

* Subject to rerating and ET analysis of applicable program elements for current "Sapphire Necklace" proposal

Winter Haven Area/Peace Creek, Polk County (WS/RE)

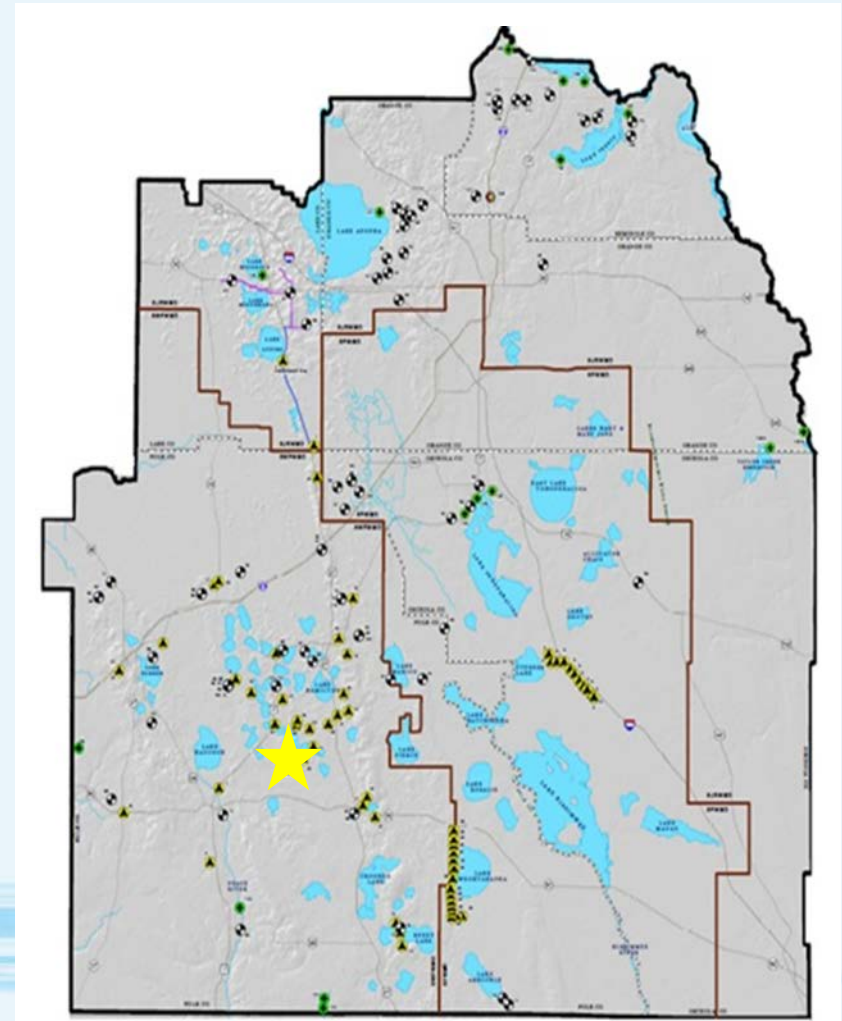
*Stormwater Restoration Project – 10 MGD**

Water Resource Constraints: ET analyses have not been prepared for this project as proposed, nor have leakage benefits to the Floridan Aquifer been quantified (GAT). Benefitting lakes and related MFL adoption require further study. Peace River MFL could also be positively impacted.

Implementation Schedule:

- ❖ Feasibility studies and Land Acquisition: 2015-2017
- ❖ Design and Permitting : 2017-2019
- ❖ Construction: Phase 1: 2019-2022, Phase 2: 2023-2035

*Subject to rerating and ET analysis of applicable elements for current “Sapphire Necklace” proposal



C-1 Canal/Palm Bay, Brevard County (R)

SJ River Augmentation Project – 50 MGD

Purpose: Capture and redirect 50 MGD (average) of fresh water discharges from the C-1 Canal system in southern Brevard County into the St. Johns River. Today, this system discharges an average of 37.5 billion gallons per year, or 103 MGD, into the Indian River Lagoon (IRL). This would augment river flows to support planned surface water supply projects in Orange and Seminole counties.

Funding Options: State of Florida, SJRWMD, FDOT, Regional and local utilities, US EPA, U.S. Congress

Cost Estimates:

- ❖ Components: Land, reservoir, construction, structures, pumps and piping
- ❖ Total Capital: \$15 M - \$90 M
- ❖ Operation and Maintenance: \$2.0 M/Year
- ❖ Unit Production Cost: \$0.07 - \$0.42/1,000 gallons

C-1 Canal/Palm Bay, Brevard County (R)

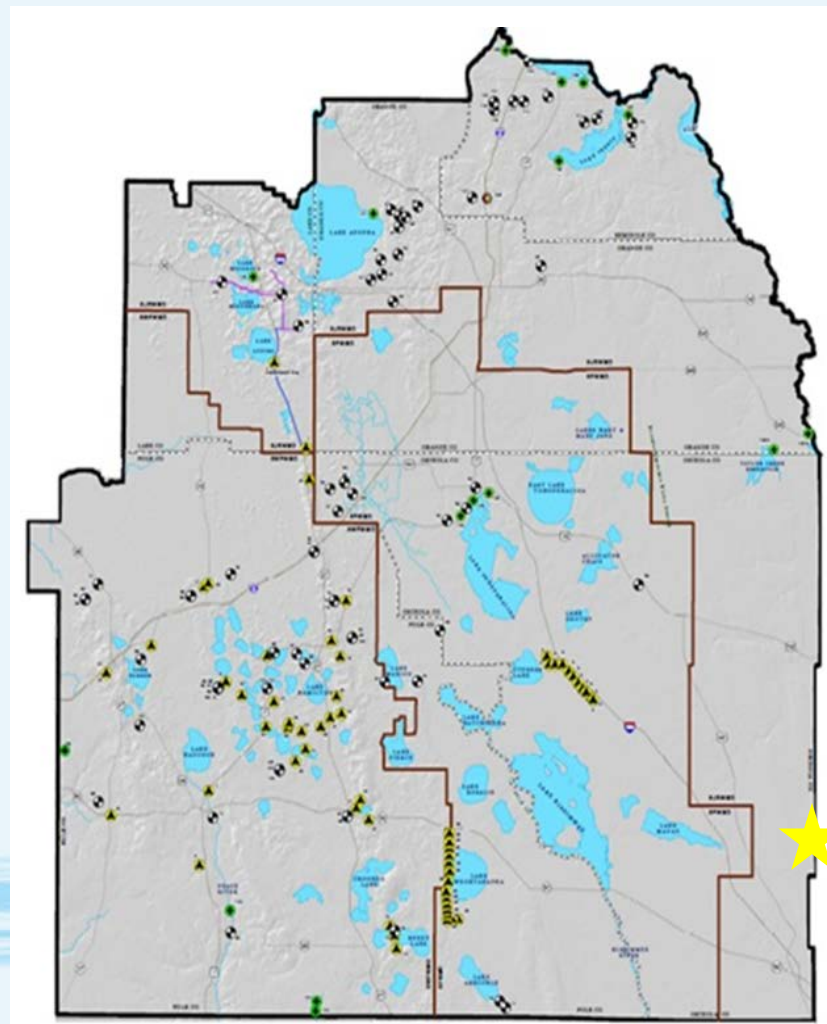
SJ River Augmentation Project – 50 MGD

Water Resource Constraints:

Diverted flows would not prohibit discharges to IRL under major storm events. Significant water quality benefits to the IRL include increased salinity, and decreased nutrients. Adequate water quality treatment is expected to be provided in proposed reservoir system.

Implementation Schedule:

- ❖ Design and land acquisition: 2015-2016
- ❖ Land acquisition: 2017-2019
- ❖ Permitting and construction: 2017-2025



Future Project Concepts for Wekiva, Econ, Shingle Creek and Lake Jesup Basins – 30 MGD

Purpose: To capture base flows of urbanized stormwater pond and related storage recovery bleed down systems throughout the Orlando area to provide recharge waters to high infiltration / RIB sites throughout west and Northwest Orange County. Also, retrofitting of certain Orlando area drainage wells and other stormwater management strategies should be evaluated.

Funding Options: State of Florida, FDEP, SJRWMD, SFWMD, Regional utilities

Cost Estimates:

❖ TBD

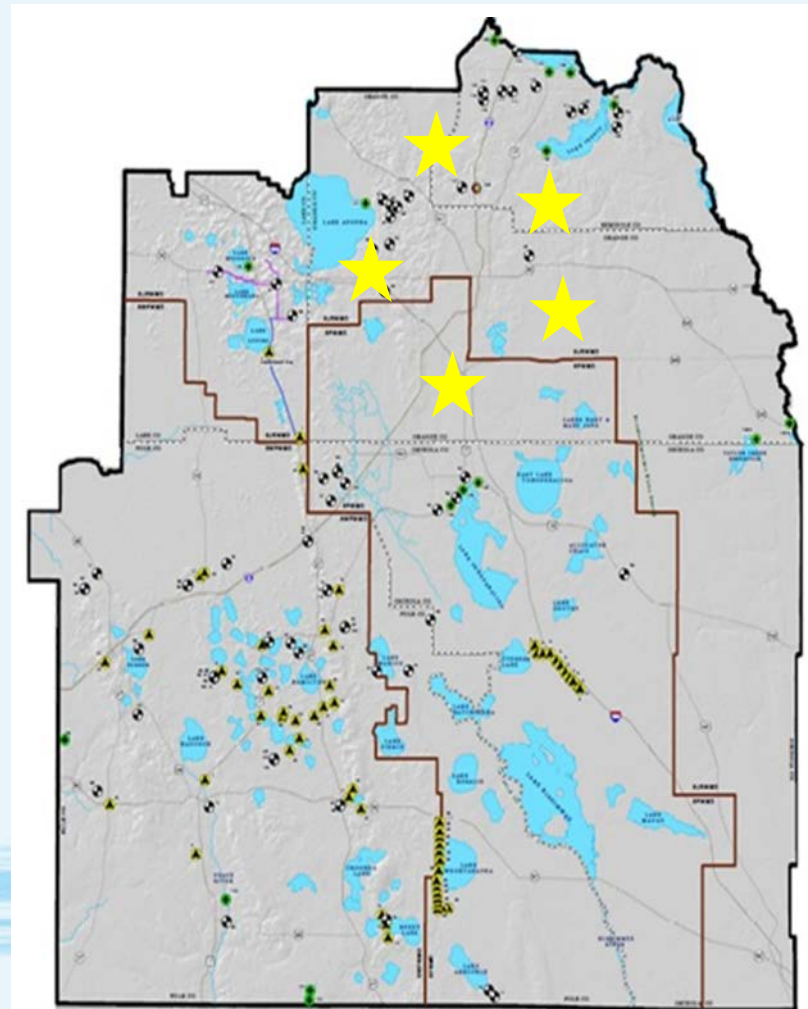
Future Project Concepts for Wekiva, Econ, Shingle Creek and Lake Jesup Basins – 30 MGD

Water Resource Constraints:

The concept for these projects involve collecting and pumping post-treatment stormwaters on a base flow level to RIB's and drainage wells for infiltration into the upper Floridan Aquifer to benefit groundwater withdrawals and MFL's including spring flows. It is not expected that additional water quality treatment would be required. The greatest constraint will be identification of rights-of way and easements for pipeline conveyance systems improvements.

Implementation Schedule:

- ❖ Feasibility Study: 2015-2017
- ❖ Design and Construction: TBD



Stormwater Projects Evaluations

- Judge Farms, Osceola County **(WS)** – 6 MGD
- Ocoee / SR 50, Orange County **(WS)** – 1 MGD
- Reedy Creek / RCID, Orange & Osceola Counties **(MFL)** – 4 MGD
- Winter Garden, Orange County **(RE)** – 2 MGD
- Lake Wailes / Peace Creek, Polk County **(MFL)** – 1.4 MGD

Stormwater Projects Evaluations (cont.)

- Winter Haven Area/ Peace Creek, Polk County
(WS/RE) - 10 MGD*
- C-1 Canal/ SJ River/ Palm Bay, Brevard County
(R) - 50 MGD
- Future project concepts for Wekiva, Econ, Shingle Creek and Lake Jesup Basins **(RE & MFL)** - 30 MGD

The background of the slide features a vertical glass of water on the left side, covered in numerous small, clear water droplets. At the bottom of the slide, there are several concentric, light blue ripples on a surface of water, suggesting a recent splash or drop. The overall color palette is light blue and white, creating a clean and fresh aesthetic.

Questions?

Stormwater Sub-team Basic Project Questions

1. Identify regional water supply project
2. Cost-benefit analysis of yield
3. Cost estimates (Capital & Annual O&M)
4. Identify water resource constraints
5. Identify potential partners and governance options
6. Pumping, storage and transmission configurations

Stormwater Sub-team Basic Project Questions

7. Project feasibility
8. Funding sources
9. Project limitations or constraints resulting from rule inconsistency
10. Other considerations – public concerns or non-technical obstacles
11. Estimated implementation schedule

A First, City of Altamonte Springs (WS)

Stormwater Supplement of Reclaimed Water Project – 4 MGD

Purpose: Integrate stormwater and reclaimed water by capturing a portion of the stormwater from the 'I-4 Ultimate' FDOT project in the City of Altamonte's Regional Stormwater Facility at Cranes Roost. After transfer and treatment, this new integrated water resources system blends the City's reclaimed water with the treated stormwater. When excess reclaimed/stormwater is available, this blended water (additional quantities) from the Regional Water Reclamation Facility will be sent to the City of Apopka for reuse or recharge.

Cost Estimates:

- ❖ Components: Pipes, Pumps, and Treatment
- ❖ Total Capital: \$13.3 M
- ❖ Operation and Maintenance: \$
- ❖ Unit Production Cost: \$0.93/1,000 gallons

Water Resource Constraints: Pending Model Results

Partners & Governance: Inter-local Agreement between Altamonte Springs, Apopka, FDOT and SJRWMD

A First, City of Altamonte Springs (WS)

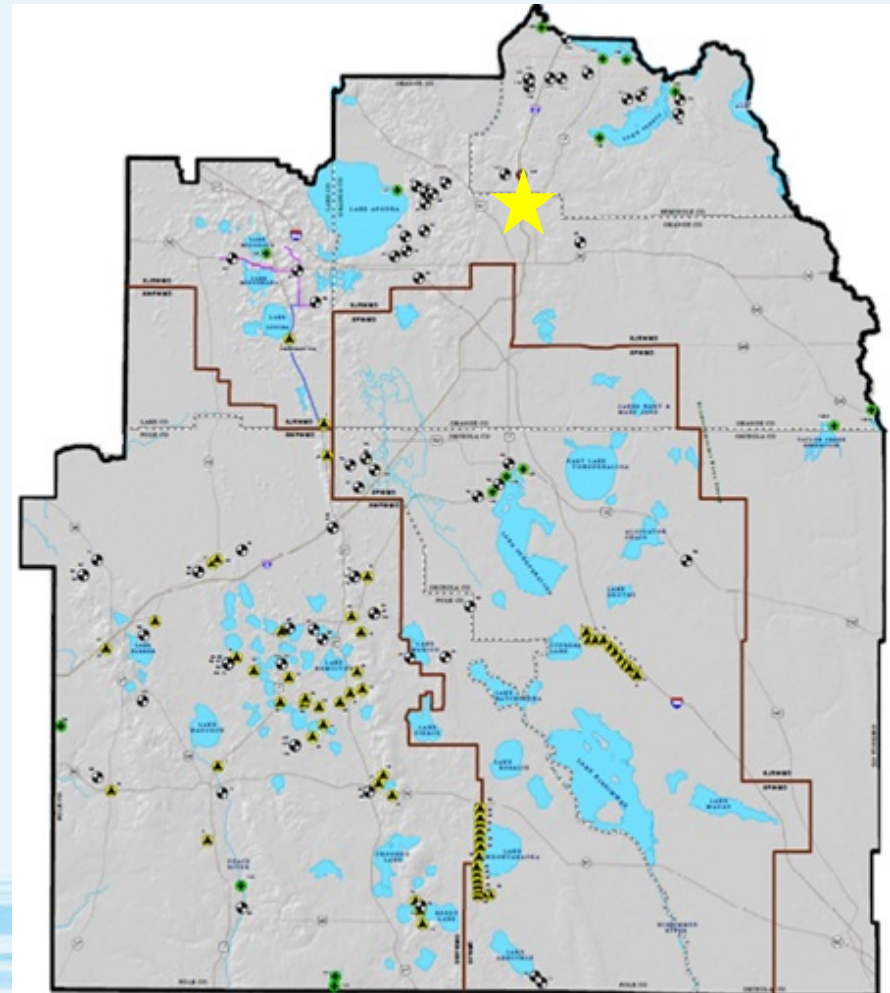
Stormwater Supplement of Reclaimed Water Project – 4 MGD

Feasibility: Local and State agencies creatively solves stormwater issues and land constraints reducing I-4 road construction costs & the project augments the reclaimed water supplies for 2 local governments.

Funding Options: WMD, Local government, FDOT

Implementation Schedule:

- ❖ Feasibility Study – 2007
- ❖ Land Acquisition – N/A
- ❖ Project Design – 2013
- ❖ Construction – 2014 -2016



Project Evaluation Status: 100 % Complete