Protecting Water Resources in the South Florida Water Management District

Toni Edwards, Senior Scientist
Coastal Ecosystems Section
Water Resource Protection Tools

- Minimum Flows and Minimum Water Levels (MFL)
  - *new name in Ch. 373, Florida Statutes (F.S.), same acronym (MFL)*

- Water Reservations

- Restricted Allocation Areas (RAA)

*All three are adopted by rule in the Florida Administrative Code (F.A.C.)*
Factors Considered in CUP Permitting

- General Consumptive Use Permit Rules
- MFLs
- Water Reservations
- Restricted Allocation Areas

Consumptive Use Permit Application

Consumptive Use Permit
Statutory Authority:
Chapter 373, F.S.

Defined in 40E-8.021, F.A.C.

- **Minimum Flows and Minimum Water Levels**: Point at which further withdrawals will cause "significant harm" to the water resources or ecology of an area.

- **Significant Harm**: Temporary loss of water resource functions that takes more than two years to recover, but is less severe than serious harm.

- May be adopted for both surface waters and ground waters.
## Water Resource Protection Conceptual Model

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<tr>
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<tbody>
<tr>
<td>Drought Severity Increasing</td>
<td>Permittable Water Reservation of Water</td>
<td>NO HARM (1-in-10 Level of Certainty*)</td>
<td>Normal Permitted Operations Environmental Restoration</td>
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<tr>
<td></td>
<td>Phase I Water Shortage</td>
<td>HARM</td>
<td>Temporary loss of water resource functions taking 1 to 2 years to recover</td>
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<td>Phase II Water Shortage</td>
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<td><strong>MINIMUM FLOWS &amp; MINIMUM WATER LEVELS</strong></td>
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<tr>
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<td>Phase III Water Shortage</td>
<td><strong>SIGNIFICANT HARM</strong></td>
<td>Water resource functions require multiple years to recover (&gt; 2 year)</td>
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<tr>
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<td>Phase IV Water Shortage</td>
<td><strong>SERIOUS HARM</strong></td>
<td>Permanent or irreversible loss of water resource functions</td>
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* 1-in-10 Level of Certainty – Reasonable assurance that the proposed use will not harm water resources or interfere with existing legal water users up to a 1-in-10 year drought condition (a drought condition that occurs only once in 10 years).
Subsection 373.0421(2), F.S.

- **Recovery Strategy** for those not meeting the MFL at the time of adoption
  - Achieve recovery to the established MFL as soon as practicable

- **Prevention Strategy** for those that are meeting the MFL but not expected to meet it in 20 years
  - Prevent the existing flow or level from falling below the established MFL

- Strategies developed in concert with the planning process; 20-year period coincides with regional water supply plan horizon

- Adopted simultaneously with MFL rule adoption in the SFWMD
With Prevention Strategies

• Biscayne Aquifer – 2001
• Lower West Coast Aquifers – 2001
• St Lucie Estuary – 2002
• Lake Istokpoga – 2006
• Florida Bay – 2006

With Recovery Strategies

• Caloosahatchee River – 2001
• Everglades – 2001
• Lake Okeechobee – 2001
• Northwest Fork of Loxahatchee River – 2003

Cover > 6 million acres districtwide
Adopted in 2001
Section 40E-8.331, F.A.C.

The minimum levels for the
- Lower Tamiami aquifer
- Sandstone aquifer
- Mid-Hawthorn aquifer
shall equal the structural top of the aquifer

An MFL violation occurs when:
Water level drops below the top of the uppermost geologic stratum that comprises the aquifer, at any point in time.
Lower West Coast Aquifers
Prevention Strategy

Subsection 40E-8.421(4), F.A.C. and LWC Water Supply Plan

• Establish "no harm" maximum permittable regulatory levels for each aquifer
  ➢ Maximum developable limits in Section 3.9.3 of the Applicants Handbook for Water Use Permit Applications in the South Florida Water Management District

• Implement rule criteria to prevent harm through consumptive use permitting process
  ➢ Consumptive use permitting criteria in Rule 40E-2.301, F.A.C.

• Construct and operate water resource and supply development projects
  ➢ Alternative water supply and water conservation projects

• Implement Chapter 40E-21, F.A.C. water shortage plan as needed to prevent serious harm during drought conditions in excess of 1-in-10 year level of certainty
40E-8.021(2), F.A.C. Caloosahatchee River – Surface waters that flow through the S-79 structure, combined with tributary contributions below S-79 that collectively flow southwest to San Carlos Bay.
Adopted in 2001
Subsection 40E-8.221(2), F.A.C.

Minimum mean monthly flow of 300 cfs at the S-79 water control structure
(necessary to maintain sufficient salinities at S-79)

An MFL exceedance* occurs when (at the Ft. Myers salinity monitoring station):
• 30-day average salinity exceeds 10 ppt;  
  or
• Single-day average salinity exceeds 20 ppt

An MFL violation occurs when at least one exceedance occurs in each of two consecutive 365-day periods (return frequency)

* Exceedance = MFL is not being met

| Rolling 730-day Window | 365 Days | 365 Days | Exceedance 1 | Exceedance 2 | = Violation |
Subsection 40E-8.421(2), F.A.C.

Components listed in LWC water supply plan:

- Caloosahatchee River (C-43) West Basin Storage Reservoir
- Water reservation rule [Subsection 40E-10.041(3), F.A.C.] to ensure intended benefits of reservoir
Caloosahatchee River (C-43) West Basin Storage Reservoir

- Will capture and store excess basin runoff and a portion of Lake Okeechobee regulatory releases

- Will provide a more natural, consistent flow of fresh water to the Caloosahatchee estuary (improve timing, quality and quantity of water deliveries)

- Will improve salinity balance by reducing peak discharges during wet season and providing essential flows during dry season
Caloosahatchee MFL Reevaluation

Last MFL reevaluation completed in 2003
Current reevaluation began in 2013

Main Steps and Objectives:

• Evaluate new data and information obtained since 2003
• Develop and apply models and a resource-based approach to:
  ➢ Understand water sources and their contributions to the estuary
  ➢ Assess responses of multiple ecological indicators to flow scenarios
  ➢ Reevaluate MFL criteria
• Conduct technical analysis and revise MFL criteria as needed
• Draft technical report
• Conduct independent scientific peer review on technical approach, analysis and report
• Gain public input
• Revise MFL rule as necessary
Reevaluation Activities Completed

• Researched effects of flows on:
  - Ichthyoplankton
  - Zooplankton
  - Phytoplankton
  - Benthic macrofauna

  Oysters (*Crassostrea virginica*)
  Blue crabs (*Callinectes sapidus*)
  Smalltooth sawfish (*Pristis pectinata*)
  Tape grass (*Vallisneria americana*)

• Completed additional data collection and analysis, and model development and update:
  - tidal basin
  - hydrodynamic salinity model (CH3D)
  - *Vallisneria* model

• Drafted Science Summary (*Assessment of the Responses of the Caloosahatchee River Estuary to Low Freshwater Inflow in the Dry Season*)

• Held public Caloosahatchee Science Symposium (September 14 and 15, 2016)

• Finalized Science Summary based public input
Remaining Reevaluation Activities to be Completed

- Complete model calibration, verification, and application to estimates of water contributions to the estuary
- Complete reevaluation and revision of MFL criteria (if needed)
- Draft Technical Report (ongoing)
- Conduct peer review and hold additional public meetings (spring and summer 2017)
- Finalize Technical Report based on peer review recommendations and public input
- Draft revised MFL rule language as necessary and gain public input (fall 2017)
- Hold policy discussions with Water Resources Advisory Commission (WRAC) and SFWMD Governing Board
- Initiate rulemaking as appropriate
**Statutory Authority:** Chapter 373, F.S.

- Reserves water for the protection of fish and wildlife or public health and safety
- Prevents use of reserved water for consumptive uses
- Protects existing legal uses unless they are contrary to the public interest
- Required for Comprehensive Everglades Restoration Plan (CERP) projects per federal Water Resources Development Act of 2000
- May be used as recovery or prevention strategy
Water Reservations Do Not.....

- Prevent use of unreserved water or water allocated under CUPs
- Establish an operating regime
- Drought-proof the natural system
- Ensure wildlife proliferation

Top photo: SFWMD S-26 water control structure; Bottom photo: Drought conditions
From: http://sfwmd.gov

American alligator Alligator mississippiensis
From http://www.photodrom.com
Water Reservations in the SFWMD

- Picayune Strand – 2009
- Fakahatchee Estuary – 2009
- North Fork of the St. Lucie River – 2010
- Nearshore Central Biscayne Bay – 2013
- Caloosahatchee River C-43 West Basin Storage Reservoir – 2014

Cover 344,574 acres districtwide
Subsection 40E-10.041(3), F.A.C.

All surface water contained within and released, via operation, from the reservoir

- Reservation adopted by rule in 2014 for protection of fish and wildlife
- Prospective reservation - water available when reservoir is built and operational
- CERP project being constructed through SFWMD/USACE cost share agreement
Key Features and Timeframes:

- Above-ground reservoir with 10,700-acre footprint and 2 cells
- 170,000 acre-feet of water storage (> 55 billion gallons)
- Normal pool depth when full: 15’ - 25’
- Two pump stations (S-470 and S-476)

- Site prep and construction began in 2015
- Construction to be complete by 2022
- Operational testing and verification to follow (1-2 years)
Picayune Strand – Previous 55,000 acres of failed 1960s Southern Golden Gate Estates development (drained and altered hydrology)

Subsection 40E-10.041(1), F.A.C.

- Reservation adopted by rule in 2009 for protection of fish and wildlife
- Required for CERP Picayune Strand Restoration Project (PSRP) being completed through SFWMD/USACE cost share agreement to restore pre-drainage condition
- Protects existing water in strand and water made available through PSRP
Water Reserved:

- All surface water contained within Picayune Strand
- All surface water flowing into Picayune Strand simulated at weirs:
  - Miller2 (Miller Canal)
  - FU3 (Faka Union Canal)
  - Lucky LA (Merritt Canal)
- All groundwater in the water table and unconfined portions of the Lower Tamiami aquifer underlying Picayune Strand
Fakahatchee Estuary Adopted Water Reservation

40E-10.021(1), F.A.C. Fakahatchee Estuary - The area within the Ten Thousand Islands region including the following river/bay systems, from west to east: Blackwater River/Blackwater Bay, Whitney River/Buttonwood Bay, Pumpkin River/Pumpkin Bay, Wood River, Little Wood River and Faka Union Canal/Faka Union Bay, and Fakahatchee Bay.
Subsection 40E-10.041(2), F.A.C.

- Reservation adopted by rule in 2009 for protection of fish and wildlife
- Supports CERP Picayune Strand Restoration Project (PSRP) objective to improve flows to coastal estuaries
- Protects water made available to estuary through PSRP
**Water Reserved:**

- All surface water flowing into Fakahatchee Estuary simulated at weir:
  - FU1 (Faka Union Canal)
  - Miller@41
  - FU@41
  - Merritt@41
  - Fakahatchee@41

- All groundwater in the water table and unconfined portions of the Lower Tamiami aquifer underlying Fakahatchee Estuary
Restricted Allocation Areas (RAA)

Areas from which new or increased water allocations are restricted

• Implemented where there is a lack of water available to meet the projected needs of the region
• Protect water for natural systems and future restoration projects (CERP)
• May be designated as part of MFL recovery or prevention strategies
• Listed in Section 3.2.1 of the Applicant’s Handbook, incorporated by reference in Rule 40E-2.091, F.A.C.

Wild American flamingos, Phoenicopterus ruber, in Stormwater Treatment Area 2
From: http://whqeps02p:8085/wildlife/#/asset/1353 (SFWMED website)
Restricted Allocation Areas in the SFWMD

- C-23, C-24, & C-25 Canal System - 1981
- L-1, L-2, & L-3 Canal System - 1981
- Lake Istokpoga/Indian Prairie Canal System - 1981
- North Palm Beach County/Loxahatchee River Watershed - 2007
- Lower East Coast Everglades Waterbodies – 2007
- Pumps on Floridan Wells in Martin and St. Lucie Counties - 2007
- Lake Okeechobee & Lake Okeechobee Service Area – 2008

Cover > 4.9 million acres districtwide
Restricted Allocation Areas in the Lower West Coast Planning Area

Lake Okeechobee and Lake Okeechobee Service Area

Water allocations are limited to base condition water uses that occurred from April 1, 2001 to January 1, 2008

Lower East Coast Everglades Waterbodies

Water allocations are limited to base condition water uses permitted as of April 1, 2006
More than one water resource tool can protect a waterbody:

**Caloosahatchee River**
- MFL and C-43 Reservoir Water Reservation
- Lower West Coast Aquifers MFL (full coverage)
- LOSA Restricted Allocation Area (partial coverage in upper reaches)

**Lower West Coast Aquifers**
- MFL
- Caloosahatchee River MFL and C-43 Water Reservation (partial coverage)
- LOSA Restricted Allocation Area (partial coverage)

**Picayune Strand and Fakahatchee Estuary**
- Water Reservations
- Lower West Coast Aquifers MFL (full coverage)
- Everglades Waterbodies Restricted Allocation Area (small area)

*These tools protect 7.4 million acres, or about 69%, of the SFWMD*
Questions?

For more information contact: Toni Edwards (tedwards@sfwmd.gov) or Don Medellin (dmedelli@sfwmd.gov)

https://www.sfwmd.gov/our-work/mfl
https://www.sfwmd.gov/our-work/water-reservations