

# Water Resource Protection

This chapter provides an overview and update of protections afforded to water resources within the Lower West Coast (LWC) Planning Area through statutory and regulatory criteria. The ability to meet the water demands described in **Chapter 2** largely depends on the future availability of water resources. Understanding the relationship among projected water demands, water sources, and limitations imposed on withdrawals is critical to water supply planning.

## TOPICS

- ◆ Water Resource Protection Standards
- ◆ Regulatory Protection of Water Resources
- ◆ Summary of Water Resource Protection

Past analyses indicated groundwater from the surficial and intermediate aquifers as well as surface water from Lake Okeechobee and canals were insufficient to meet the growing needs of the LWC Planning Area during 1-in-10-year drought conditions. Potential impacts on wetlands, the possibility of exacerbating saltwater intrusion, and other factors limit the use of these water bodies as water sources. In 2003, the South Florida Water Management District (SFWMD or District) adopted maximum developable limit criteria for surficial and intermediate aquifers within the LWC Planning Area. Additionally, restricted allocation area (RAA) rules were adopted for the Lower East Coast Everglades Waterbodies in 2007 and for the Lake Okeechobee Basin (Lake Okeechobee and Lake Okeechobee Service Area) in 2008 to address lower lake management levels and storage under the United States Army Corps of Engineers' (USACE's) Lake Okeechobee Regulation Schedule (LORS2008).

## NOTE

MFLs and recovery strategies for Lake Okeechobee and the Everglades affect portions of the LWC Planning Area but are included in the Lower East Coast water supply plan updates.

To further protect water resources in the LWC Planning Area, minimum flows and minimum water levels (MFLs) were adopted in 2001 for the Caloosahatchee River, LWC Aquifers, Lake Okeechobee, and the Everglades (**Figure 4-1**). In addition, water reservations for the protection of fish and wildlife were adopted for Picayune Strand and Fakahatchee Estuary in 2009 and the Caloosahatchee River (C-43) West Basin Storage Reservoir in 2014.

This chapter discusses water use permitting criteria as well as MFLs, water reservations, and RAAs adopted in the LWC Planning Area. Further information about permitting and other resource protections, including those related to Comprehensive Everglades Restoration Plan (CERP) projects, is provided in the *Support Document for the 2021-2024 Water Supply Plan Updates* (2021-2024 Support Document; SFWMD 2021a). Water resource development

projects that provide additional water, including projects supporting MFLs, water reservations, and RAAs, are discussed in **Chapter 7**.

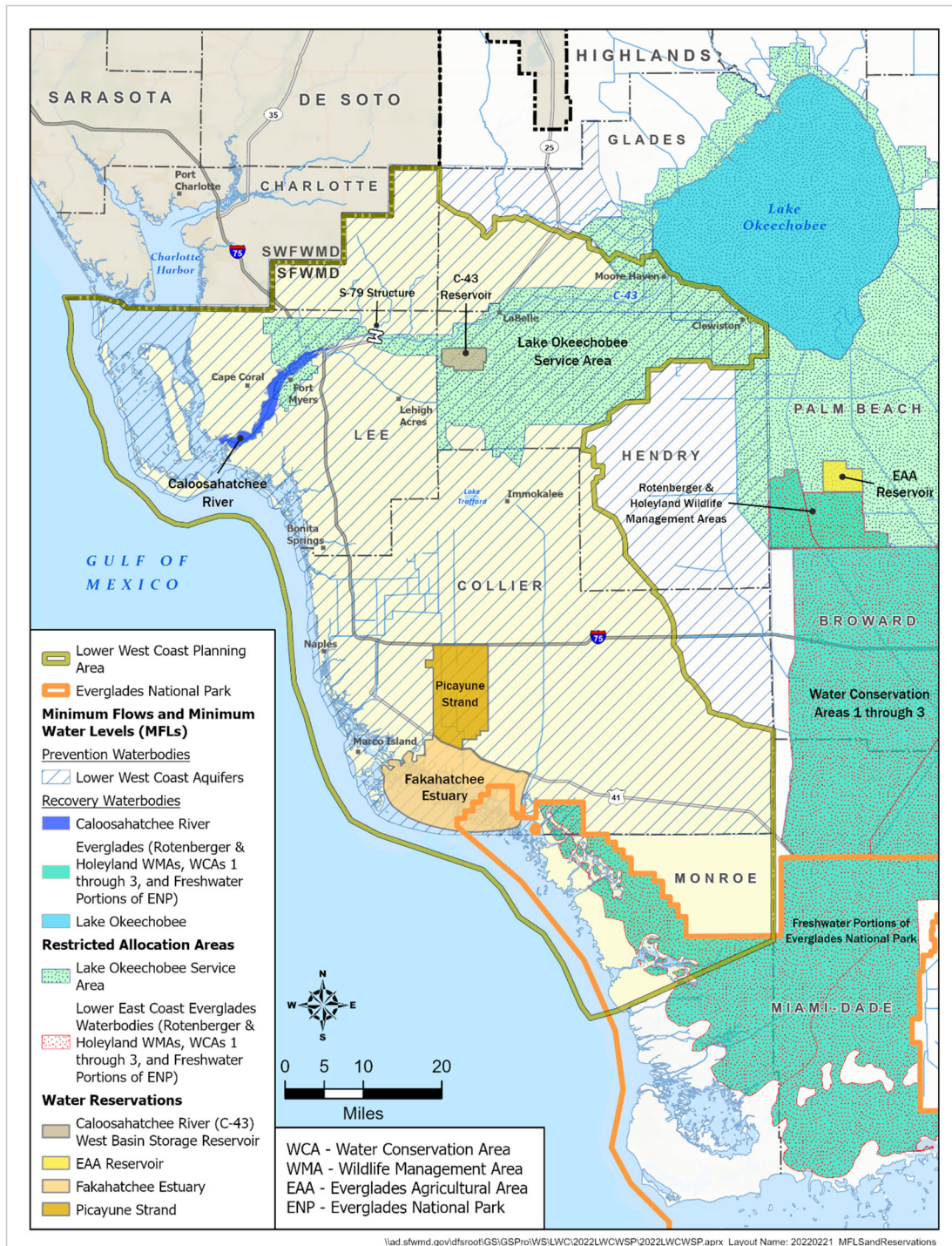


Figure 4-1. Adopted minimum flows and minimum water levels, water reservations, and restricted allocation areas in the LWC Planning Area.

# WATER RESOURCE PROTECTION STANDARDS

The intent of Chapter 373, Florida Statutes (F.S.), is to promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems, Section 373.016(3)(d), F.S. The SFWMD developed water resource protection standards, consistent with legislative direction, that are implemented to prevent various levels of harm (no harm, harm, significant harm, and serious harm). Each standard plays a role in achieving sustainable water resources. For instance, programs regulating surface water management and water use permitting must prevent harm to water resources, including related natural systems. **Figure 4-2** represents the conceptual relationship among water resource protection tools and standards, observed impacts, and water shortage severity. A more detailed discussion of resource protection tools, including water use permitting and water shortage rules, and definitions of the protection standards can be found in the 2021-2024 Support Document (SFWMD 2021a).

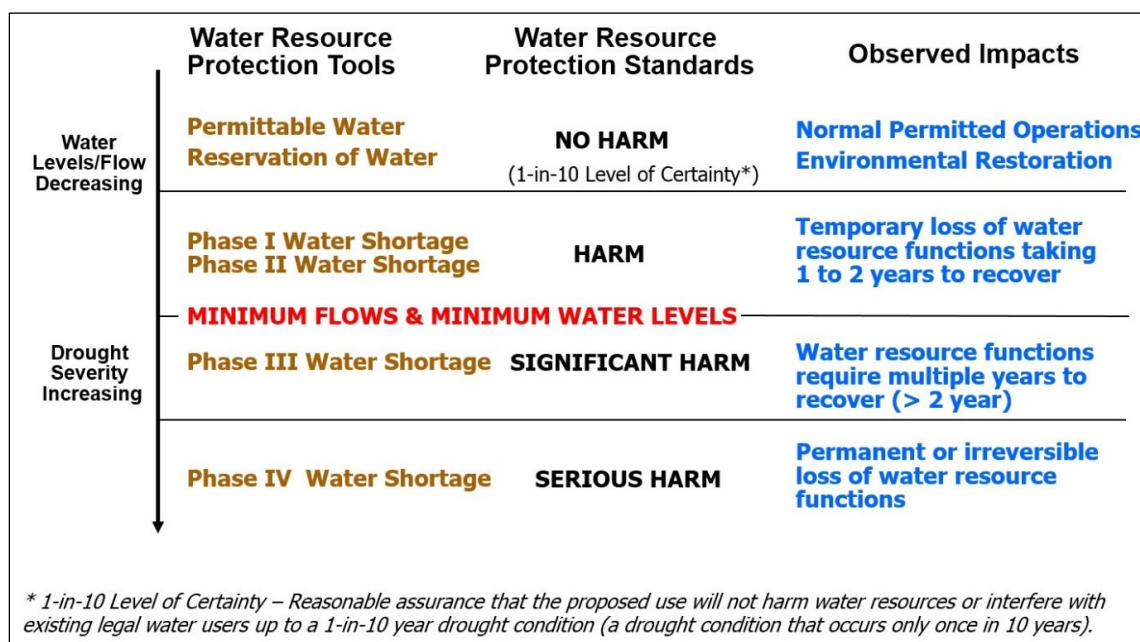


Figure 4-2. Conceptual relationship among water resource protection standards at various levels of water resource harm (Modified from: Rule 40E-8.421, F.A.C.).



# REGULATORY PROTECTION OF WATER RESOURCES

## Water Use Permitting

Unless exempt by statute or identified in the Water Rights Compact of 1987, the right to use water is authorized by permit, which allows for the use of water for reasonable-beneficial uses while protecting natural systems from harm. Water use permit applicants must provide reasonable assurances that the proposed water use (1) is reasonable-beneficial, (2) will not interfere with any existing legal use of water, and (3) is consistent with the public interest, Section 373.223(1), F.S. The proposed water use must comply with the water resource protection criteria (see Rule 40E-2.301, Florida Administrative Code [F.A.C.], and the *Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District* [Applicant's Handbook; SFWMD 2021b]), including (1) implementation criteria for regulatory components of an adopted MFL prevention or recovery strategy, (2) implementation criteria for water reservations, and (3) RAA criteria. Additional information about water use permitting can be found in the 2021-2024 Support Document (SFWMD 2021a).

## Water Rights Compact among the Seminole Tribe of Florida, the State of Florida, and the South Florida Water Management District

The Seminole Tribe of Florida has surface water entitlement pursuant to the 1987 Water Rights Compact among the Seminole Tribe of Florida, the State of Florida, and the SFWMD (Public Law 100-228, 101 Statute 1566, and Chapter 87-292, Laws of Florida, as codified in Section 285.165, F.S.).

## Minimum Flows and Minimum Water Levels

MFLs are set at the point water resources, or the ecology of the area, would experience significant harm from further withdrawals. MFL criteria are applied individually to affected water bodies. MFLs apply to surface water bodies, while minimum water levels apply to groundwater in aquifers. Adopted MFLs in the SFWMD are contained in Chapter 40E-8, F.A.C. The SFWMD adopts a prevention or recovery strategy when an MFL is initially adopted (Rule 40E-8.421, F.A.C.) and, if needed, when an MFL is reevaluated or revised. The SFWMD fulfills its statutory obligation to identify key water bodies for which MFLs should be developed or reevaluated by providing a Priority Water Body List and Schedule in Chapter 3 of the annual updates to the *South Florida Environmental Report – Volume II*, Section 373.042(3), F.S. Detailed information about MFLs, including descriptions of recovery and prevention strategies, is provided in the 2021-2024 Support Document (SFWMD 2021a). Additional information about MFLs can be found on the SFWMD website (<http://www.sfwmd.gov/mfls>) and in Chapter 40E-8, F.A.C.

Within the LWC Planning Area, MFLs have been adopted for the Caloosahatchee River and LWC Aquifers (**Figure 4-1**). Brief summaries of the MFLs are provided here; additional information, including the recovery and prevention strategies, can be found in **Appendix C**. The Lake Okeechobee and Everglades MFLs and their associated recovery strategies affect

portions of the LWC Planning Area but are included in the Lower East Coast water supply plan updates.

### ***Caloosahatchee River***

The SFWMD adopted an MFL for the Caloosahatchee River in 2001, Subsection 40E-8.221(2), F.A.C. A recovery strategy was adopted simultaneously with MFL adoption. The original MFL criterion for the Caloosahatchee River was a minimum mean monthly flow of 300 cubic feet per second (cfs) at the S-79 structure, which, at the time of MFL adoption, was determined necessary to maintain a balanced and healthy salinity regime in order to prevent an MFL exceedance (when the MFL is not met) and sustain submerged aquatic vegetation in the Caloosahatchee River Estuary. The MFL was reevaluated between 2013 and 2019. The result of that reevaluation was a change in the flow criterion to 457 cfs at the S-79 structure. Additional details about the MFL, the reevaluation, and the revised recovery strategy are provided in **Appendix C**.



Caloosahatchee River

### ***Lower West Coast Aquifers***

The LWC Aquifers with MFLs consist of the Lower Tamiami, Sandstone, and Mid-Hawthorn aquifers. In 2001, the SFWMD adopted an MFL specifying the minimum water levels for the LWC Aquifers must equal the elevation of the structural top of the aquifers, Rule 40E-8.331, F.A.C. A prevention strategy was adopted simultaneously with MFL adoption. Additional information about the MFL and a description of the prevention strategy are provided in **Appendix C**.

### **Water Reservations**

Water reservations in the SFWMD are adopted by rule in Chapter 40E-10, F.A.C. A water reservation sets aside a volume of water for the protection of fish and wildlife or public health and safety, Section 373.223, F.S. Reserved volumes of water are unavailable for allocation to consumptive uses. However, any unreserved volumes of water may be certified by the District's Governing Board as available and allocated to consumptive uses. Water reservations do not (1) prevent the use of unreserved water or water allocated in consumptive use permits, (2) establish operating regimes, (3) drought-proof natural systems, (4) ensure wildlife proliferation, or (5) improve water quality.

Water reservations are developed based on existing water availability or in consideration of future water supplies made available by water resource development projects (**Chapter 7**). Regional water supply plans must list water resource development projects that support water supply development for existing and future uses and natural systems, including those in adopted water reservations, Section 373.709, F.S. Additionally, water use permit

applicants must provide reasonable assurance that their proposed use of water will not withdraw water that is reserved for the protection of fish and wildlife or public health and safety.

Water reservations may be used to protect water for CERP projects prior to their construction and during the operational phase of the project, as required by the Water Resources Development Act of 2000 and Section 373.470(3)(c), F.S. Additionally, a water reservation may be a component of an MFL recovery or prevention strategy. Further information about water reservations, including their role in CERP implementation, is provided in the 2021-2024 Support Document (SFWMD 2021a).

Water reservations have been adopted in the LWC Planning Area for the Caloosahatchee River (C-43) West Basin Storage Reservoir (2014), Picayune Strand (2009), and Fakahatchee Estuary (2009) (**Figure 4-1**). Information about all water reservations adopted throughout the District can be found on the SFWMD website ([www.sfwmd.gov/reservations](http://www.sfwmd.gov/reservations)) and in Chapter 40E-10, F.A.C.

### *Caloosahatchee River (C-43) West Basin Storage Reservoir*

CERP identifies restoration of the Caloosahatchee River Estuary as an integral step in achieving systemwide benefits in the South Florida ecosystem. Promoting a balanced and healthy salinity regime in the Caloosahatchee River Estuary is essential for maintaining the ecological integrity and associated economic benefits of this unique habitat on Florida's southwest coast.

In 2014, the SFWMD adopted a water reservation rule, Subsection 40E-10.041(3), F.A.C., for the Caloosahatchee River (C-43) West Basin Storage Reservoir, a CERP project being constructed through an SFWMD/USACE cost-share agreement to support the USACE's efforts to restore the Caloosahatchee River Estuary. The reservoir and water reservation rule serve as key components of the recovery strategy for the Caloosahatchee River MFL. It is a prospective reservation, meaning the water anticipated to be available when the reservoir is built and operational is protected. The water reservation reserves from consumptive use all water contained within and released from the reservoir, which will cover 10,700 acres and provide 170,000 acre-feet of water storage when completed (for further details, including a site map, see **Chapter 7**). When complete, the reservoir will capture and store a portion of the watershed runoff and regulatory releases from Lake Okeechobee and release the water to the Caloosahatchee River as needed. This process of capture and release will reduce the freshwater flows to the Caloosahatchee River Estuary during wet periods and help maintain a desirable minimum flow of fresh water to the estuary during dry periods. Moderating flows in this manner is anticipated to achieve a more balanced salinity regime in the Caloosahatchee River Estuary. Site preparation for the reservoir and construction began in 2015. Construction is expected to be completed in 2023, followed by 2 years of operational testing and monitoring.

### *Picayune Strand*

Picayune Strand is located in the southwestern corner of Florida between Alligator Alley (Interstate 75) and Tamiami Trail (U.S. 41), and north of Fakahatchee Estuary in the Ten Thousand Islands and the Everglades (**Figure 4-3**). Picayune Strand occupies a 55,000-acre

area that was disturbed by partial development in the 1960s, including construction of canals, levees, and roads, that altered the natural hydrology of the site.

The CERP Picayune Strand Restoration Project was developed to restore and protect native wetlands and uplands in Picayune Strand (**Figure 4-4**). Substantial progress has been made towards restoring the site's hydrology with road removal and placement of plugs in the Prairie and Merritt canals. The three pump stations (Merritt, Faka Union, and Miller) have been installed but cannot be operated for restoration purposes until the Southwest Protection Feature is installed and the Faka Union and Miller canals are plugged. Project construction is anticipated to be completed in 2025. The project will also improve freshwater flows to the southern coastal wetlands of the Ten Thousand Islands region collectively known as Fakahatchee Estuary. When complete, the project will support a more natural fire regime, increase aquifer recharge, provide manatee refugia, and maintain existing levels of flood protection.

The Picayune Strand water reservation was adopted in 2009 to support the Picayune Strand Restoration Project and to protect fish and wildlife, Subsection 40E-10.041(1), F.A.C. The water reservation includes all surface water contained within Picayune Strand; all surface water flowing into Picayune Strand simulated at weirs Miller2 (Miller Canal), FU3 (Faka Union Canal), and Lucky LA (Merritt Canal) (**Figure 4-5**); and all groundwater in the water table and unconfined portions of the Lower Tamiami aquifer underlying Picayune Strand.



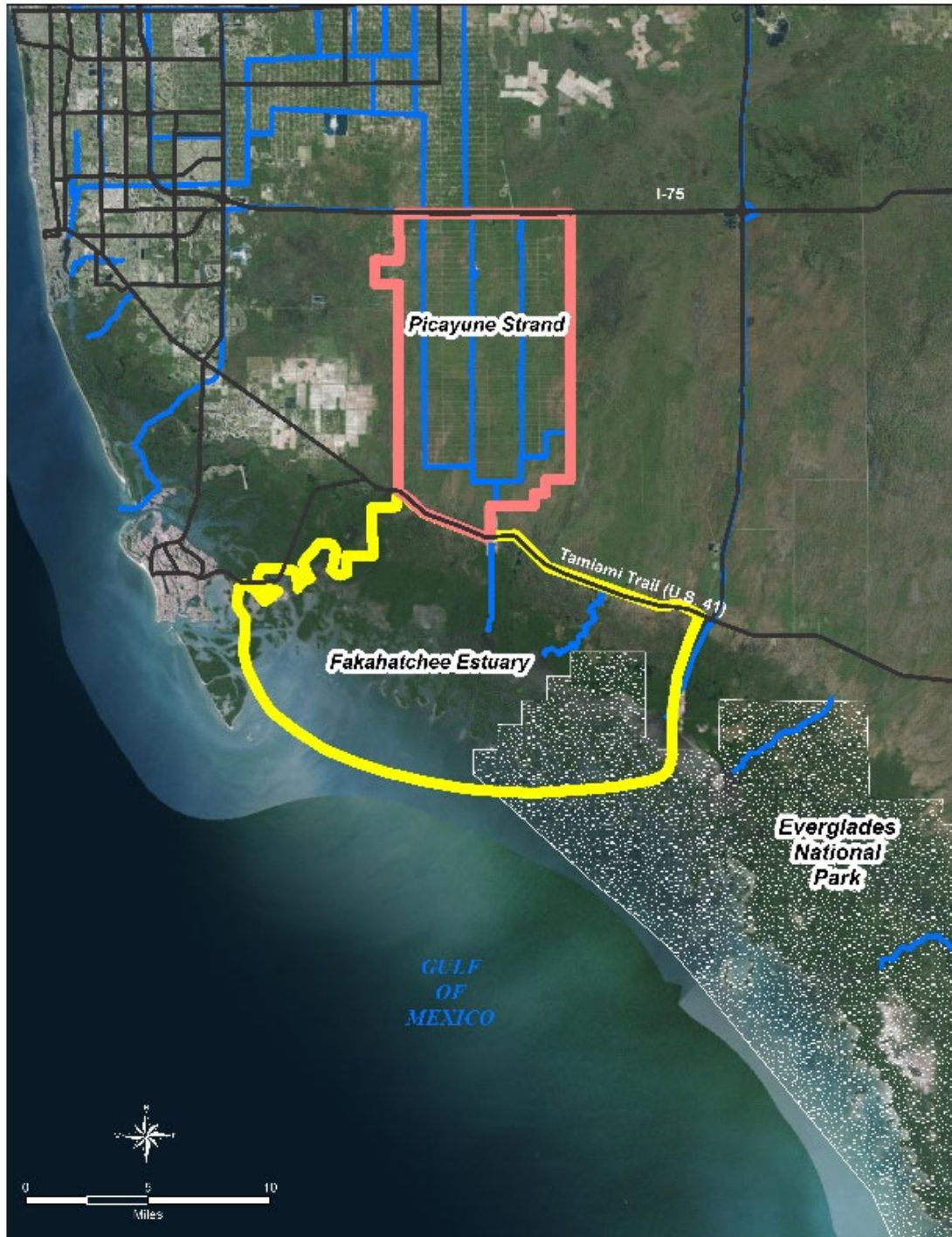


Figure 4-3. Location of Picayune Strand and Fakahatchee Estuary water reservations.



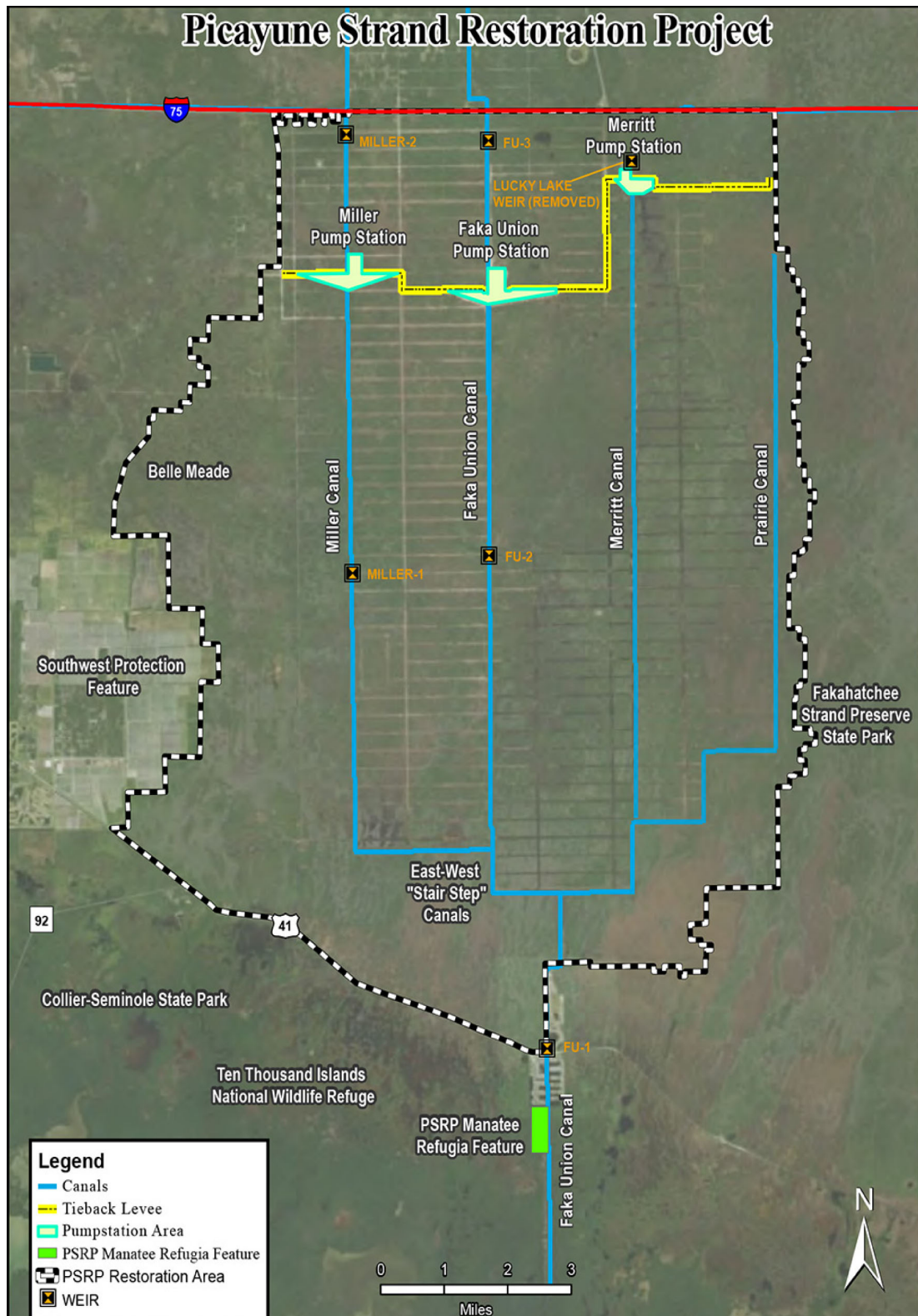


Figure 4-4. Comprehensive Everglades Restoration Plan (CERP) Picayune Strand Restoration Project site (From: USACE 2021).

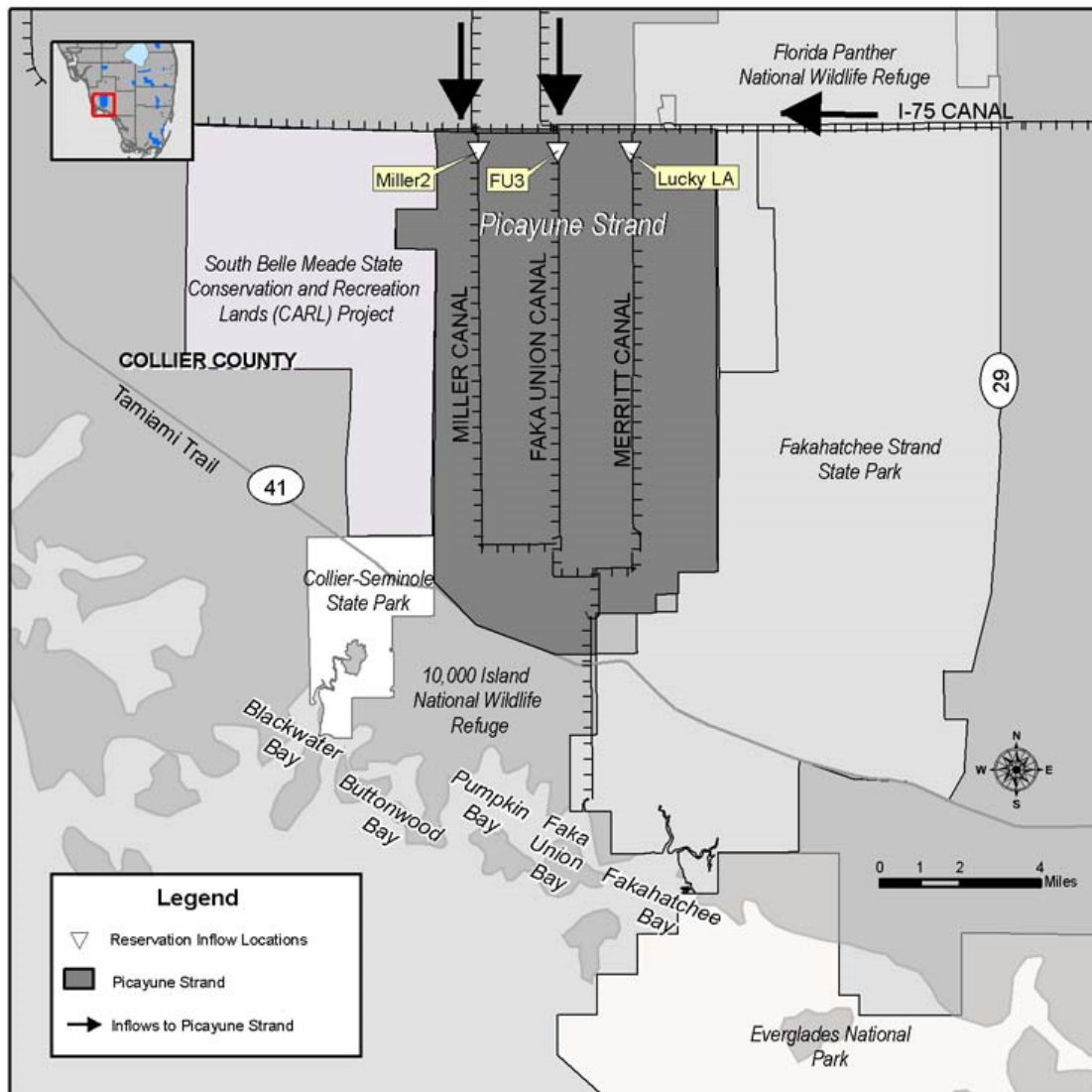


Figure 4-5. Historical water inflow locations into Picayune Strand from Miller, Faka Union, and Merritt canals.

### *Fakahatchee Estuary*

Subsection 40E-10.021(1), F.A.C., defines Fakahatchee Estuary as the area within the Ten Thousand Islands region including the river/bay systems known as Blackwater River/Blackwater Bay, Whitney River/Buttonwood Bay, Pumpkin River/Pumpkin Bay, Wood River, Little Wood River, Faka Union Canal/Faka Union Bay, and Fakahatchee Bay (**Figure 4-5**). Covering almost 100,000 acres, Fakahatchee Estuary is part of the largest expanse of mangrove forest in North America and is home to a rich diversity of native wildlife, including several endangered species (United States Fish and Wildlife Service 2017).

In 2009, a water reservation for Fakahatchee Estuary was adopted, Subsection 40E-10.041(2), F.A.C., simultaneously with adoption of the Picayune Strand water reservation. The reservation protects water made available to the Fakahatchee Estuary through the Picayune Strand Restoration Project, which has a main objective to improve

flows to the southern coastal estuaries. The Fakahatchee Estuary water reservation rule identifies and reserves from consumptive use the water needed to protect fish and wildlife in the estuary. The quantity of water reserved for Fakahatchee Estuary includes all surface water flowing into Fakahatchee Estuary simulated at weir FU1 (Faka Union Canal) and transects Miller@41, FU@41, Merritt@41, and Fakahatchee@41 (**Figure 4-6**) as well as all groundwater in the water table and unconfined portions of the Lower Tamiami aquifer underlying Fakahatchee Estuary.

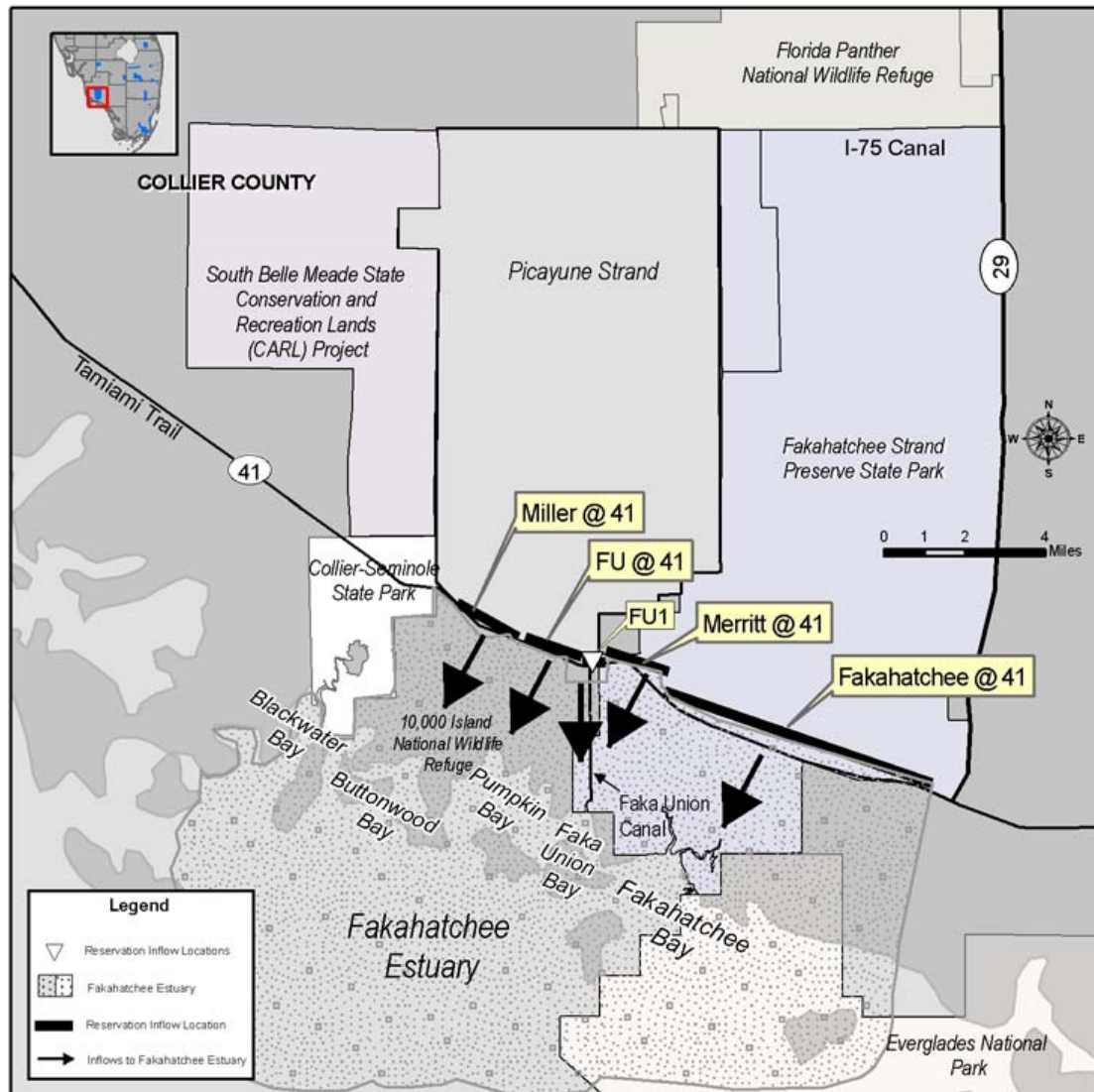


Figure 4-6. Historical inflow locations into Fakahatchee Estuary from Picayune Strand.

## Restricted Allocation Areas

RAAs are defined geographic areas where use of specific water supply sources (e.g., lakes, wetlands, canals, aquifers) is restricted due to concerns regarding water availability. RAA criteria are listed in Section 3.2.1 of the Applicant's Handbook (SFWMD 2021b), which is incorporated by reference in Rule 40E-2.091, F.A.C. Water allocations beyond the criteria

listed in the Applicant's Handbook are limited or prohibited. RAAs are adopted for a variety of reasons, including (1) where there is insufficient water to meet the projected needs of a region, (2) to protect water for natural systems and future restoration projects (e.g., CERP), or (3) as part of MFL recovery or prevention strategies.

Two RAAs extend into the LWC Planning Area (**Figure 4-1**): (1) Lower East Coast Everglades Waterbodies (Section 3.2.1.E of the Applicant's Handbook), and (2) Lake Okeechobee and Lake Okeechobee Service Area (Section 3.2.1.F of the Applicant's Handbook). Both RAAs were adopted as components of MFL recovery strategies. The Lower East Coast Everglades Waterbodies RAA was adopted as part of the Everglades MFL recovery strategy, and the Lake Okeechobee and Lake Okeechobee Service Area RAA was adopted as part of the Lake Okeechobee MFL recovery strategy. These RAAs are discussed with their associated MFLs in the Lower East Coast water supply plan updates.

## SUMMARY OF WATER RESOURCE PROTECTION

- ◆ The LWC Planning Area has the following resource protections in place:
  - ◆ Water use permitting criteria
  - ◆ MFLs for the Caloosahatchee River and LWC Aquifers
  - ◆ Water reservations for the Caloosahatchee River (C-43) West Basin Storage Reservoir, Picayune Strand, and Fakahatchee Estuary
  - ◆ RAAs for the Lower East Coast Everglades Waterbodies and Lake Okeechobee and Lake Okeechobee Service Area
- ◆ MFL, water reservation, and RAA criteria continue to be implemented in the LWC Planning Area and have not been modified since the 2017 LWC Plan Update, except for the MFL and associated recovery strategy for the Caloosahatchee River, as discussed in **Appendix C**.
- ◆ Water shortage and water use permitting rules and criteria have not changed for the LWC Planning Area since the 2017 LWC Plan Update. Further information on water shortage management and water use permitting is available in the 2021-2024 Support Document (SFWMD 2021a).

### NAVIGATE

Detailed information about MFLs is available on the SFWMD website at <http://www.sfwmd.gov/mfls>.

Detailed information about water reservations is available on the SFWMD website at <http://www.sfwmd.gov/reservations>.

Detailed information about RAAs is available in the Applicant's Handbook (SFWMD 2021b), which can be accessed through the SFWMD website at <http://www.sfwmd.gov/raas>.

MFL, water reservation, and RAA status updates are provided annually in Chapter 3 of the *South Florida Environmental Report – Volume II*, available at <http://www.sfwmd.gov/sfer>.

Further information can be found in the 2021-2024 Support Document (SFWMD 2021a) and **Appendix C**.



## REFERENCES

- SFWMD. 2021a. *Support Document for the 2021-2024 Water Supply Plan Updates*. South Florida Water Management District, West Palm Beach, FL.
- SFWMD. 2021b. *Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District*. South Florida Water Management District, West Palm Beach, FL.
- United States Fish and Wildlife Service. 2017. *Ten Thousand Islands National Wildlife Refuge*. United States Fish and Wildlife Service. Available online at <https://www.fws.gov/refuges/profiles/index.cfm?id=41555>.
- USACE. 2021. *Picayune Strand Restoration Project Fact Sheet*. United States Army Corps of Engineers, Jacksonville, FL. September 2021. Available online at <https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/5369>.