

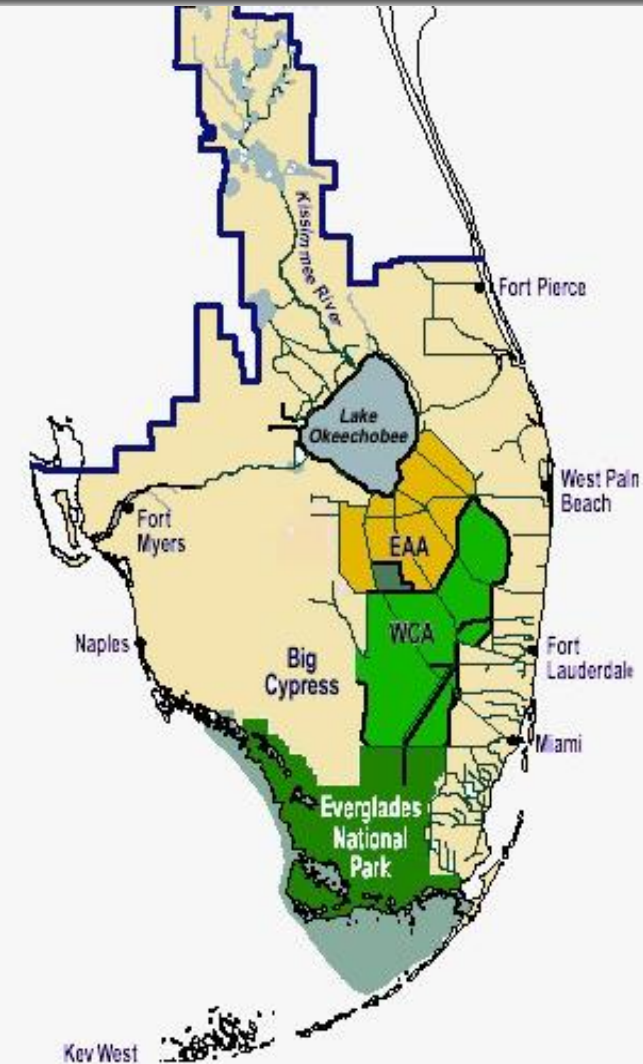


# How SFWMD Manages Levees in South Florida

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# About SFWMD Levee Management

- The water management system in South Florida is one of the largest in the world, providing flood control and protecting water supply for 8.1 million residents and businesses.
- SFWMD has maintained South Florida's earthen levees since their construction by the USACE in the 1950s & 1960s.
- SFWMD Operations and Maintenance staff oversee approx:
  - 2,100 miles of canals,
  - 2,000 miles of levees/berms,
  - 71 pump stations, and
  - more than 600 water control structures and 625 project culverts.



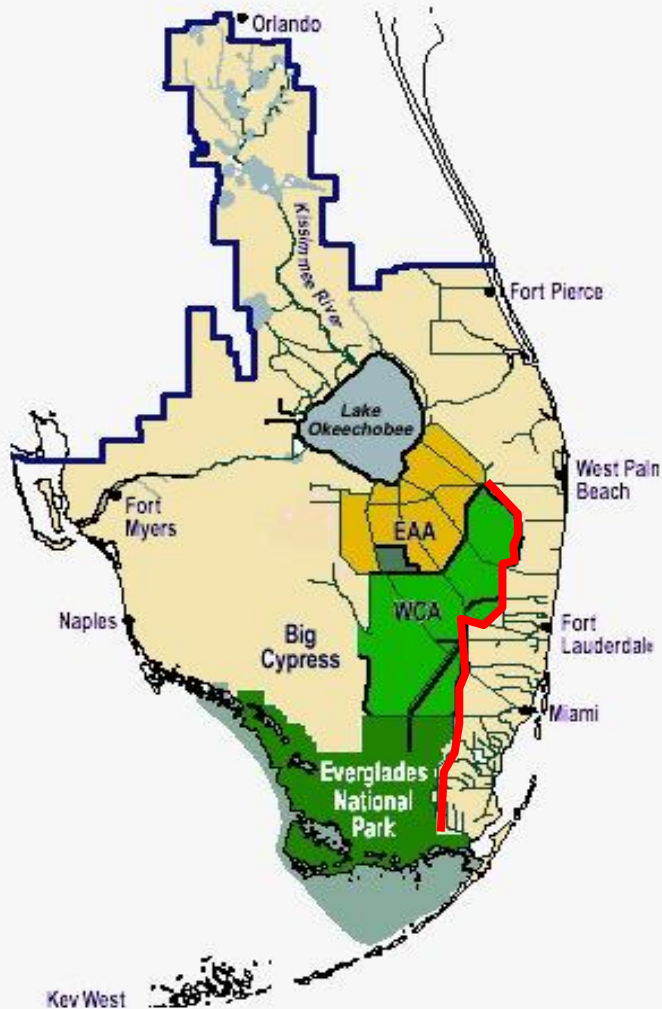
# Importance of Levees in South Florida

- Levees are critical flood control and water supply features in the regional water management system.
- Moving water to meet varying conditions utilizing canals and levees is essential to sustaining South Florida's people, economy and our environment.



L-36 Levee near Boca Raton

# East Coast Protective Levee



- ECPL is 105 miles along the western perimeter of the most populated areas in South Florida, protecting residents and businesses in Palm Beach, Broward and Miami-Dade counties.
- Highest priority levee system is the East Coast Protective Levee (ECPL).
- Originally constructed by the USACE in the 50's and transferred to the SFWMD for operations and maintenance.



## East Coast Protective Levee



- Over time, land use intensified and rural pastures were developed into high density urban areas.
- SFWMD implemented a \$30M effort to rehabilitate the ECPL in Palm Beach and Broward Counties.
- This included flattening some levee slopes, increasing the levee height in low spots, replacing old structures, removing abandoned structures and minimizing encroachments within the levee prism.
- SFWMD certified the ECPL in Broward County in 2014 and in Palm Beach County in 2015 to FEMA.



**Seepage Filter Berm**

# ECPL Broward County



**Maintenance Ramps**



**Levee Top Restoration**



**Emergency Stockpiles**

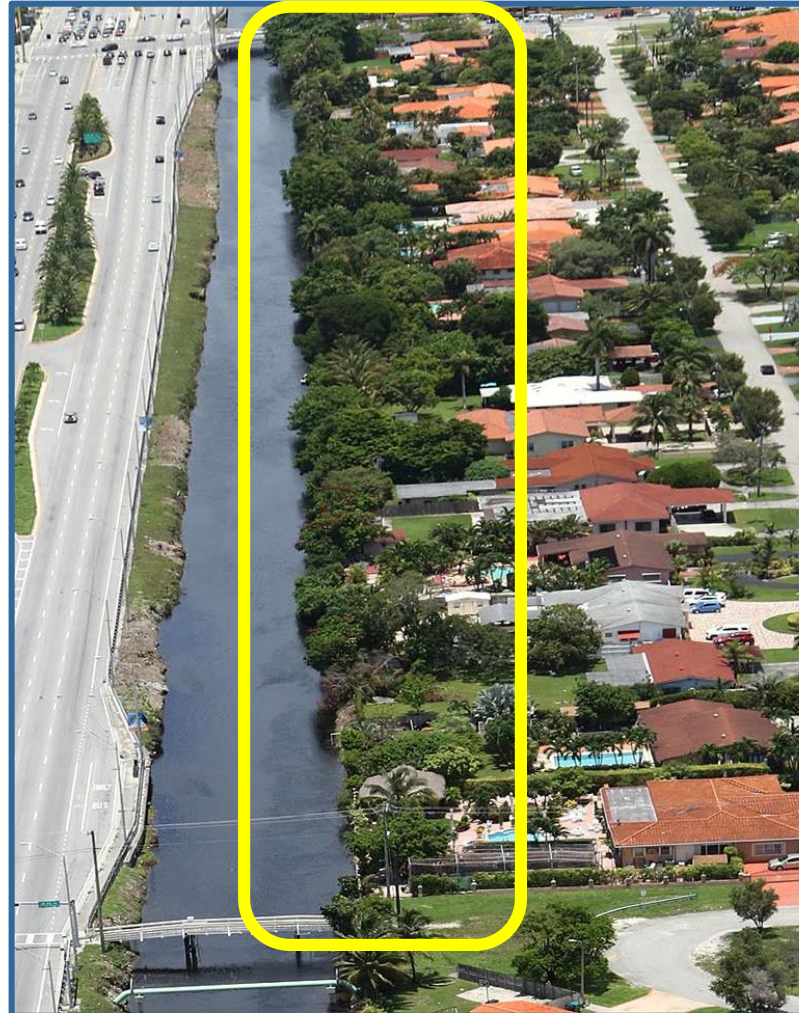
## ECPL – Palm Beach County

- Vegetation clearing and herbicide treatment along the landside levee toe, and removal of encroachments such as abandonment of wells and power pole removals.
- Replacement of water control structures and removal of pump stations.
- Levee height raised in low spots to prevent overtopping during a 100 year storm event with Category 1 hurricane winds.



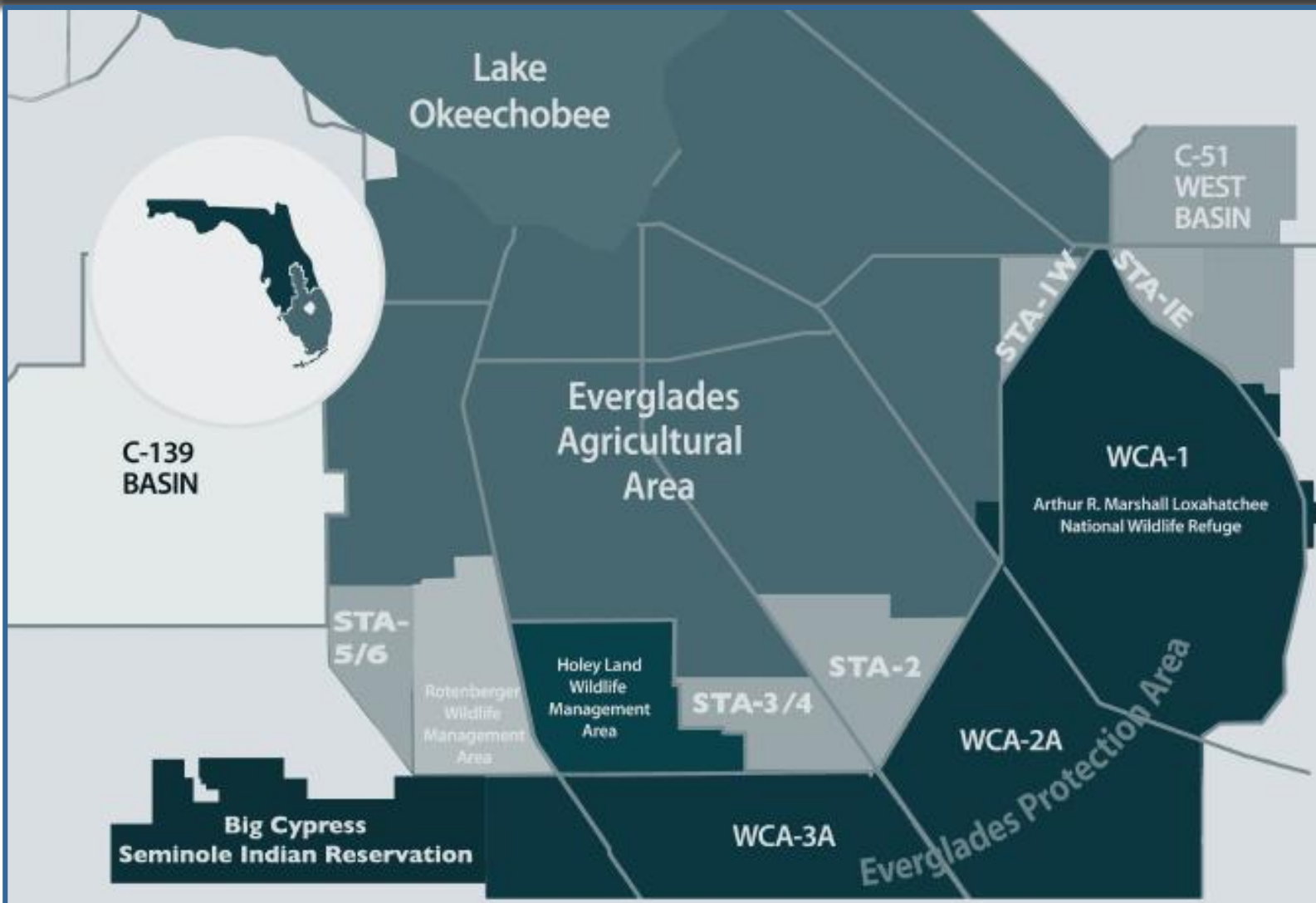
# C4 Canal Bank Improvement & Flood Protection Berm

- C4 Project was launched after storms in 1999 and 2000 that caused localized flooding.
- SFWMD is raising the canal bank elevation to meet the 25-year storm event.
- This also includes vegetation and encroachment removals to reduce risk and provide a bench for operations and maintenance.





# Stormwater Treatment Area Levees



- While levees protect communities in South Florida, SFWMD has constructed and maintains levees for Stormwater Treatment Areas that allow the restoration of the Everglades.
- Varying in size, configuration and period of operation, STAs are shallow, freshwater marshes divided into treatment cells with interior levees, and water flows managed via pump stations, gates and culverts.

## SFWMD Canal and Levee Maintenance

- In 2006, the District established an operations and maintenance plan to ensure regular, timely maintenance of the system.
- Since 2009, the District has invested approximately \$550 million in maintenance work as part of this capital improvement plan.



C-14 Levee Reshaping

- The agency's Operations and Maintenance staff conducts inspections at least once a year on levees, canals and berms to prioritize projects necessary for continued operation of the regional system.

## Levee Summary

- SFWMD's levee inventory includes:
  - Levees originally constructed by the USACE and transferred to the local sponsor (SFWMD) for operations and maintenance.
  - Levees originally constructed by the SFWMD and operated and maintained by the SFWMD.
- SFWMD has prioritized its inventory on a risk-based approach. Highest priority levees have had major refurbishments. Major focus in the capital program is in structure replacements and refurbishments within levee systems to reduce risk.
- SFWMD spends approximately \$53M per year on repair, rehabilitation, and refurbishment of the flood control system, and has 8 Field Stations that are budgeted for maintenance of levees and structures.



**Thank You**