

# 2019 BISCAYNE BAY

MARINE HEALTH SUMMIT: THE ACTION SUMMIT





# FIU INSTITUTE OF WATER AND ENVIRONMENT



**Over 270 undergrads** working in research labs in the Institute

**More than 100 faculty members** across several disciplines are affiliated with the Institute

The Institute includes **over 25 postdocs** working and leading important environmental research

Institute scientists have done research in **all seven continents** and **over 60 countries**

The Institute has amassed **over \$15 million** in research expenditures

The Institute has published more than **1100 peer-reviewed journal articles** since 2009

Citizen scientists with the Institute have logged **over 550 hours** per year



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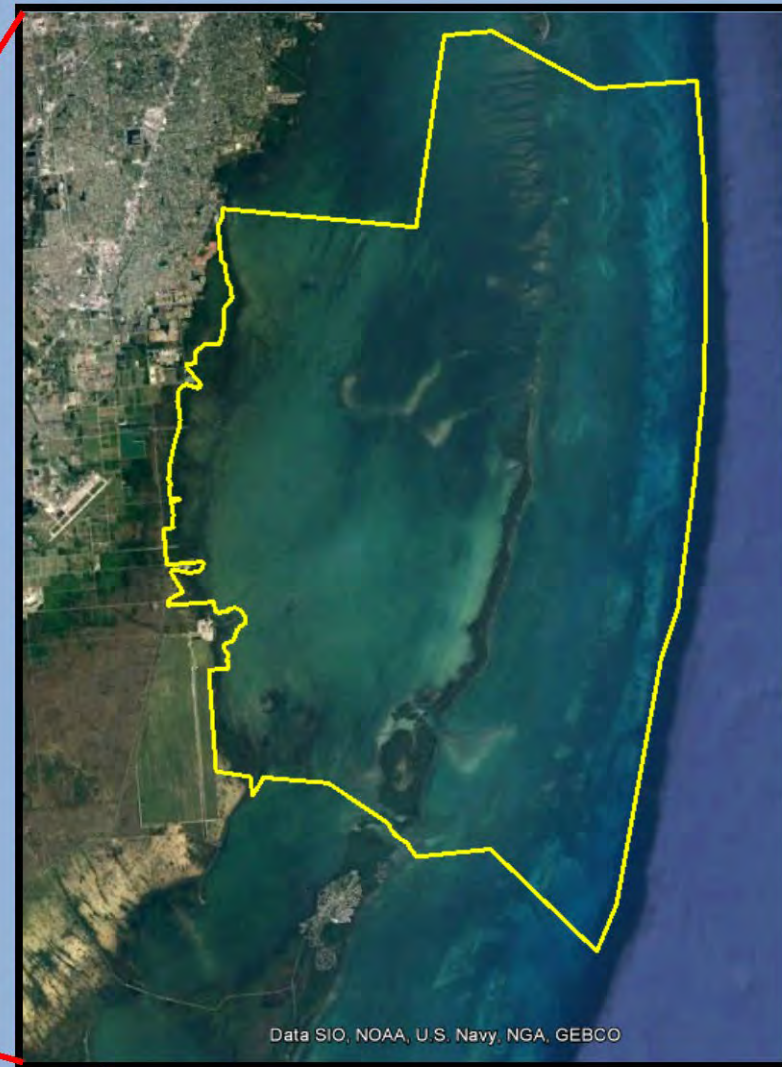
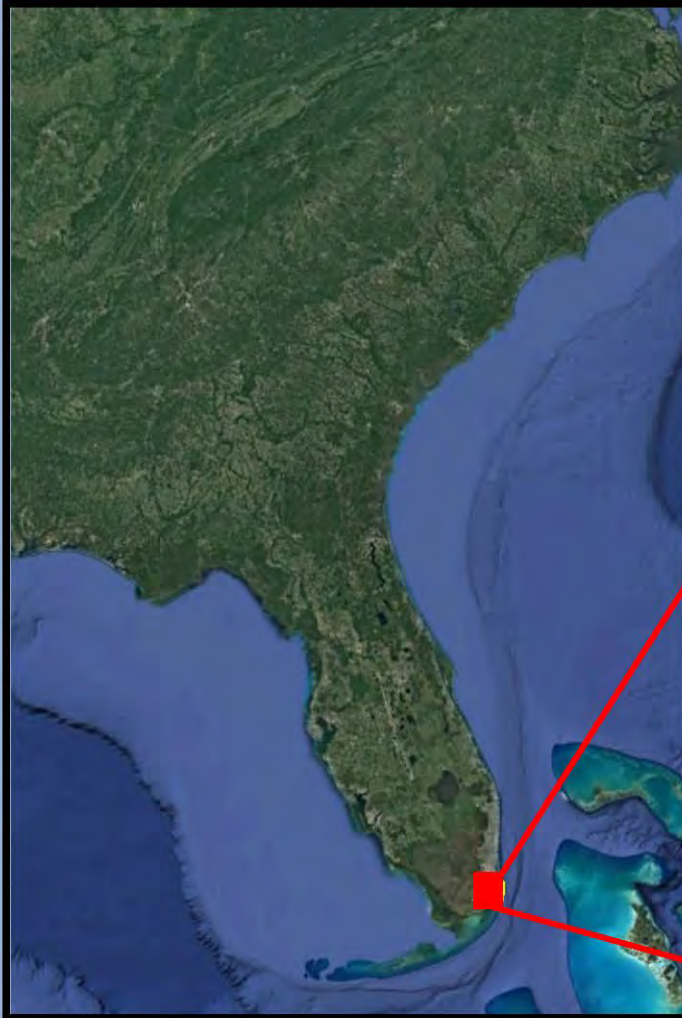
# MARINE DEBRIS REMOVAL AND HABITAT RESTORATION IN BISCAYNE NATIONAL PARK

Joseph Llewellyn  
Acting Superintendent





# BISCAYNE NATIONAL PARK



- Largest marine park in the U.S. National Park system
- 173,000 acres, ~ 22 miles long & ~14 miles wide
- Coastal mangroves » Biscayne Bay » Island Chain » Reef Tract





# Threats to bay health in BNP

## LOCAL SOURCES

- Recreational boating
- Recreational fishing
- Commercial fishing
- Coastal recreation







# Threats to bay health in BNP

## GLOBAL SOURCES

- International Shipping
- Cruise Ships
- Hurricanes/ large-scale weather events







# VOLUNTEER BEACH CLEANUPS

- Park staff supervise small groups (5 to 12 people) on daily trips to park beaches during winter and spring
- Focus is on removing debris from sea turtle nesting beaches and high visitor use areas
- Many of the volunteers come as part of organized groups (e.g. college trip, work trip etc.) and volunteer several days in a row.







## VOLUNTEER BEACH CLEANUP SUCCESS

From 2008 to 2019:

- 2,747 volunteers
- 29,834 hours of volunteer service
- 210,830 pounds of debris removed from the coastline!



**BEFORE**



**AFTER**





# KEEP BISCAYNE BEAUTIFUL CAMPAIGN

- Biscayne National Park Institute takes volunteers to clean mangroves, beaches, or anywhere else where debris removal is needed.
- Currently conducting these activities on Tuesdays from 9am to 12:30pm
- Online registration process, no cost to participants
- Participants enjoy a boat ride, possibly paddleboarding







## KEEP BISCAYNE BEAUTIFUL PROGRAM SUCCESS (mid-June 2019 to present):

- 100 Volunteers
- 189 hours of volunteer service
- 2,908 pounds of debris removed from beaches and mangroves







# POST-IRMA REEF RESTORATION

- Supplemental funding for:
  - large-scale removal of hurricane-exacerbated debris from park reefs, bay and shorelines
  - restoration of storm impacts to corals and reefs
- A dedicated team of biological science technicians has removed (April-August 2019):
  - 3.8 tons of debris from Biscayne Bay, within the park boundary (in collaboration with DERM partners)
  - 3.5 tons of debris from the park's mangrove shoreline
  - 8.2 tons of debris from park reefs







# BEYOND MARINE DEBRIS: HABITAT RESTORATION IN SOUTHERN BISCAYNE BAY

- Restoration of vessel grounding injuries in seagrass habitat
  - 50+ sites restored to date
- Improved marking of shallow seagrass habitat
  - No Name Shoal
  - Featherbed Bank







# BEYOND MARINE DEBRIS: HABITAT RESTORATION IN SOUTHERN BISCAYNE BAY

- Restoration of canal spoil areas
  - Removal of exotic vegetation
  - Planting native vegetation
  - C102 & C103 canals





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# Biscayne Bay Coastal Wetlands Phase 1 Project

**2019 BISCAYNE BAY MARINE  
HEALTH SUMMIT  
Florida International University  
Biscayne Bay Campus**

**Bahram Charkhian  
Lead Environmental Scientist  
September 20, 2019**





# Biscayne Bay Coastal Wetlands Restoration Project Goals

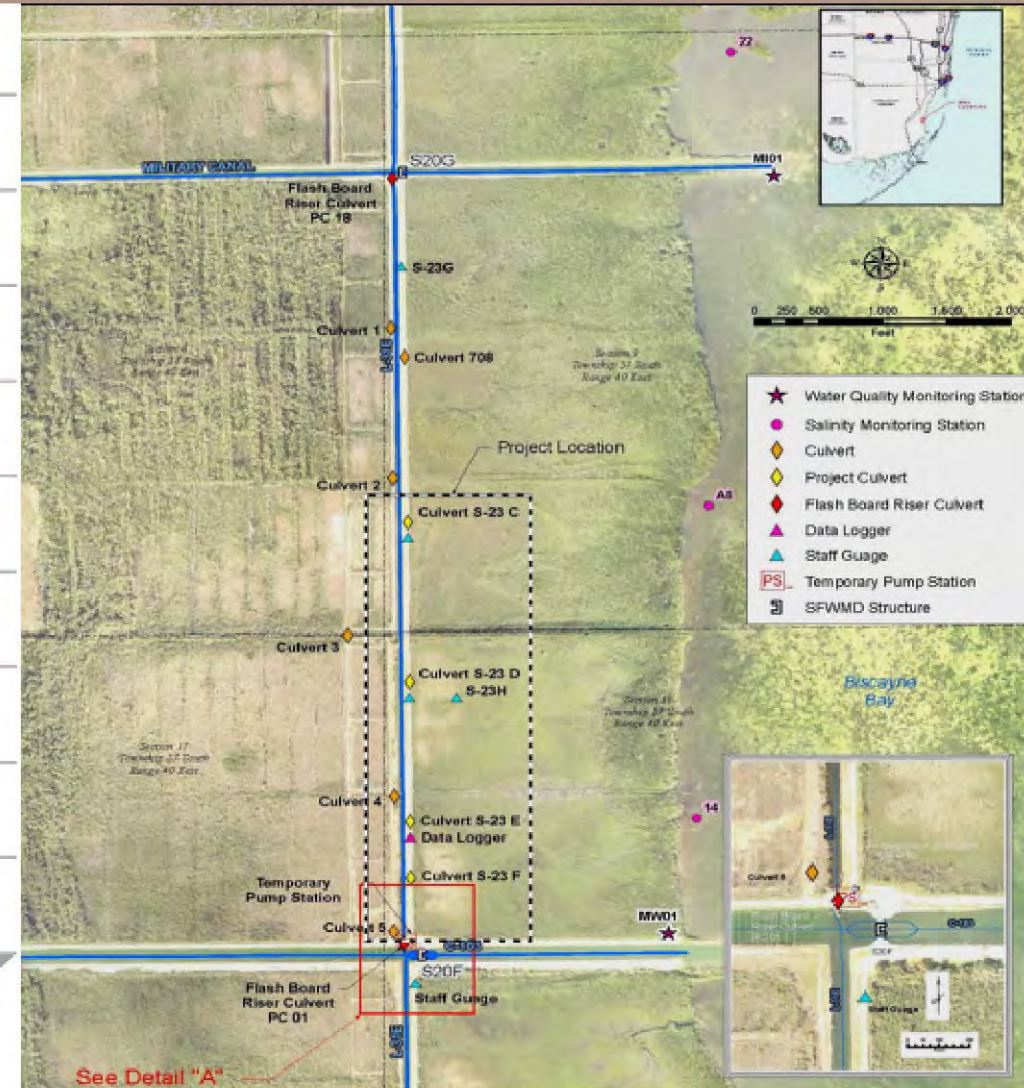
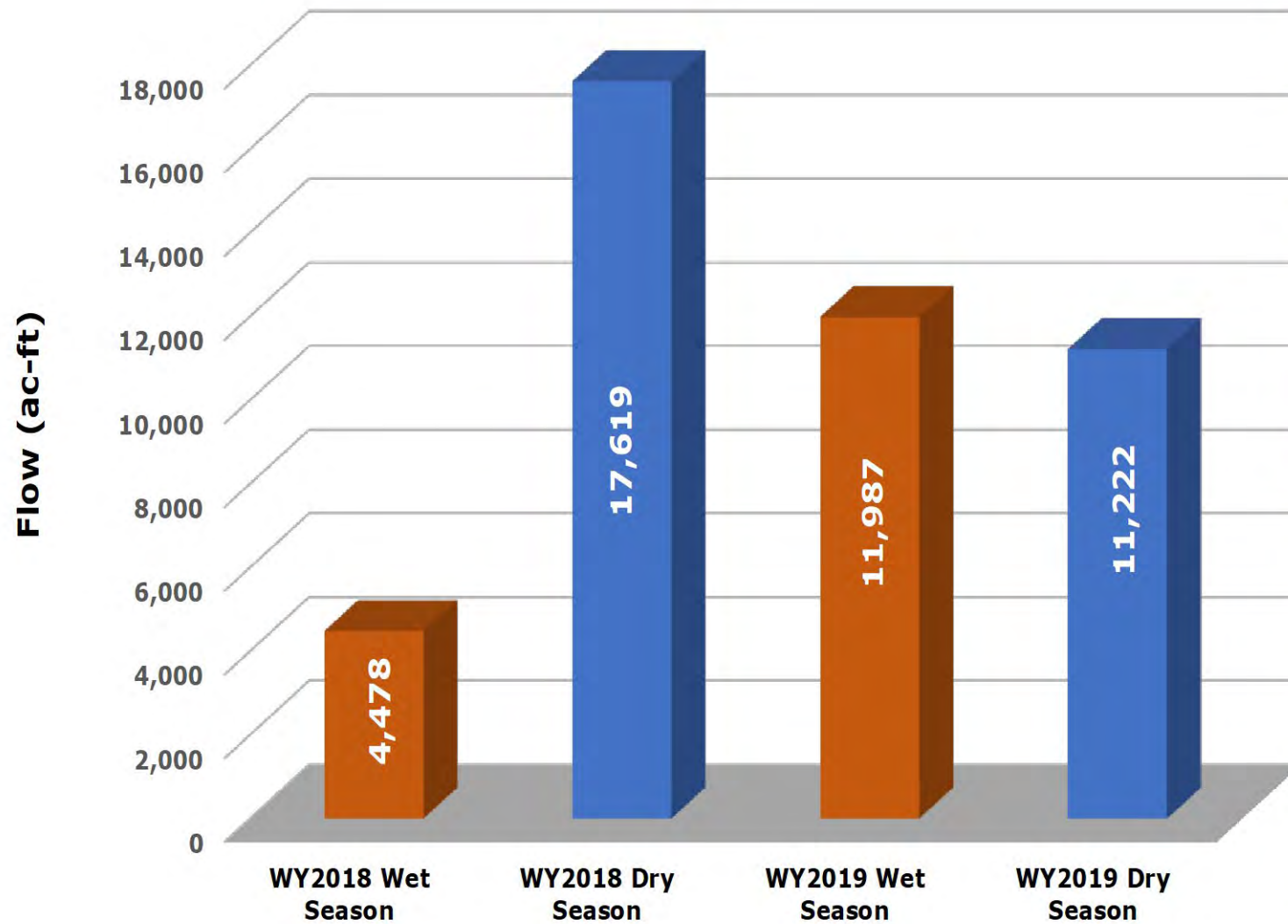
## □ Biscayne Bay Coastal Wetlands Alternative O-Phase 1 Project Objectives

- ✓ Improve freshwater and estuarine habitat
- ✓ Improve salinity distribution and reestablish productive nursery habitat along the shoreline
- ✓ Restore the quantity, quality, timing and distribution of fresh water to Biscayne Bay and Biscayne National Park
- ✓ Preserve and restore the spatial extent of natural coastal glades habitat within the BBCW Project's study area





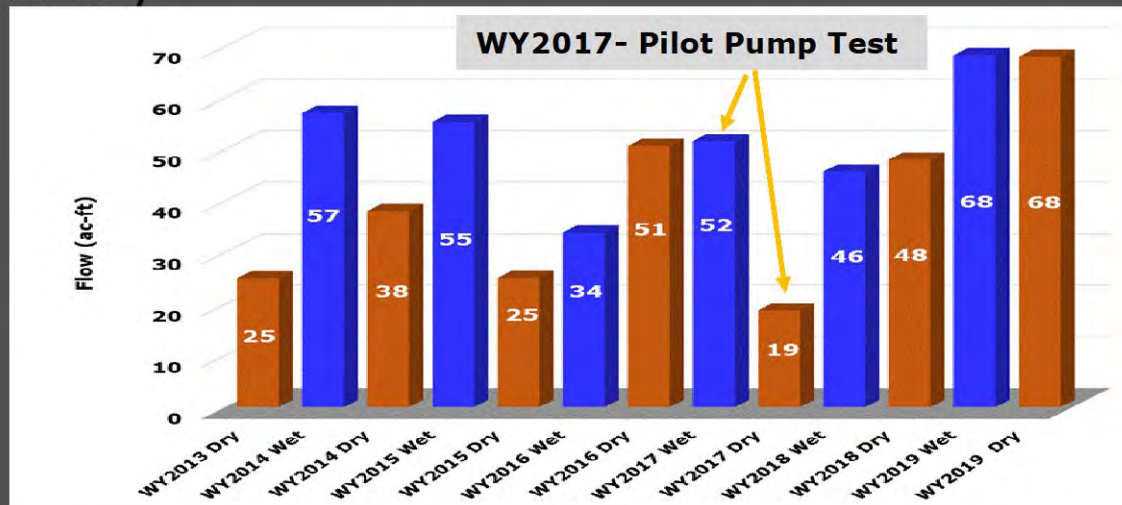
# Biscayne Bay Coastal Wetlands Restoration L-31E Flow-way Pump Operations





# Biscayne Bay Coastal Wetlands Deering Estate Component

- ✓ In WY2017, the Deering Estate component pump test compared pulse releases versus continuous pumping at rates of 25-100 cfs
- ✓ Results led to the recommendation to change from pulsed to continuous operation to keep wetlands hydrated and provide steady, low volume flow to the coast wetlands and Biscayne Bay



Daily average flow through Deering Estate Pump Station (S-700)  
WY2013–WY2019 wet and dry seasons.  
(Note: Dry season is November–April and wet season is May–October.)





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