

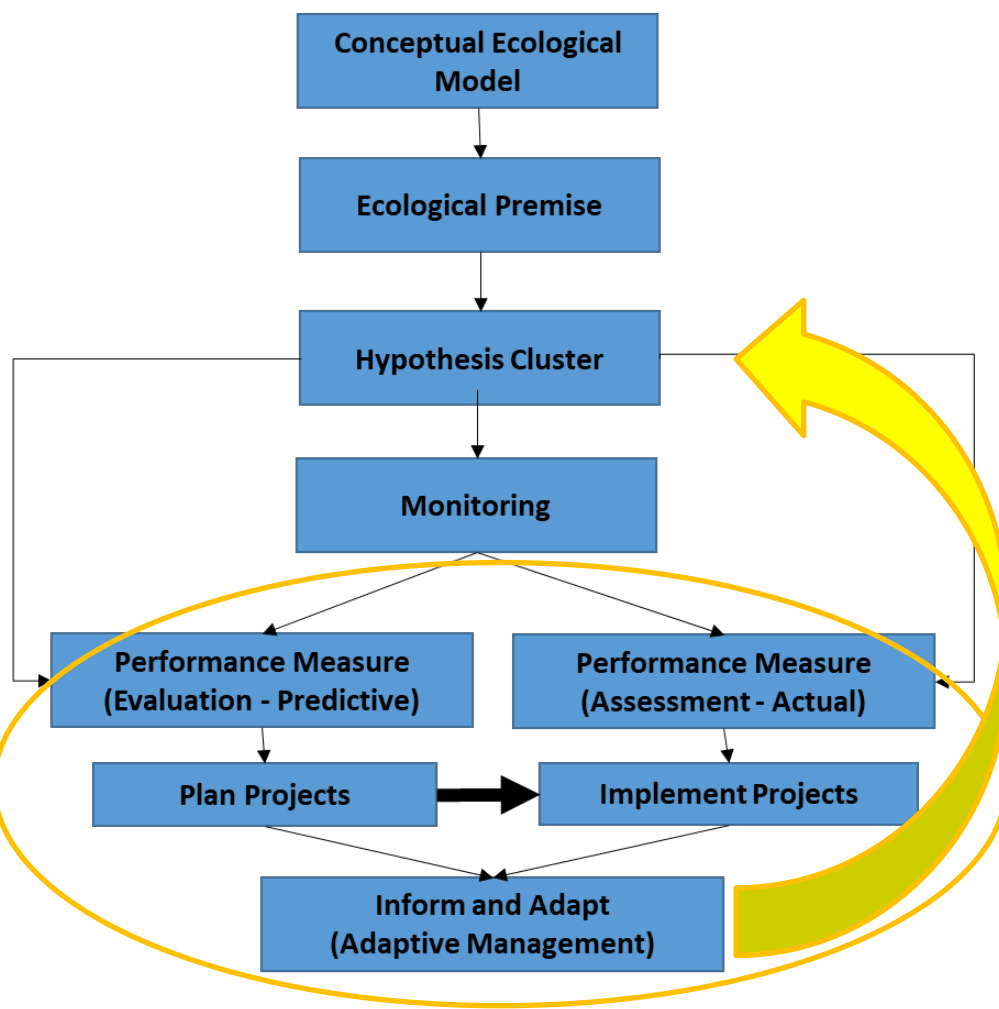


Reducing Uncertainty in the CERP C-111 Spreader Canal Western Project
Brenda Mills, SFWMD
National Conference on Ecosystem Restoration
April 16, 2024





CERP: Applied Science Strategy



CERP MONITORING AND ASSESSMENT PLAN

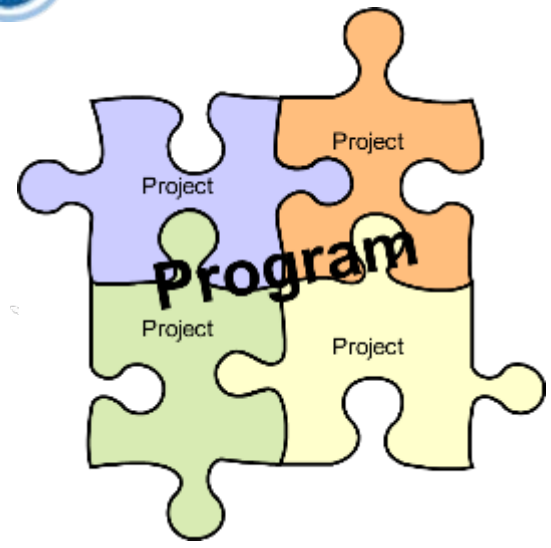
Restoration Coordination and VERification (RECOVER)

the journey to restore America's Everglades

Comprehensive Everglades Restoration Plan

Central and Southern Florida Project

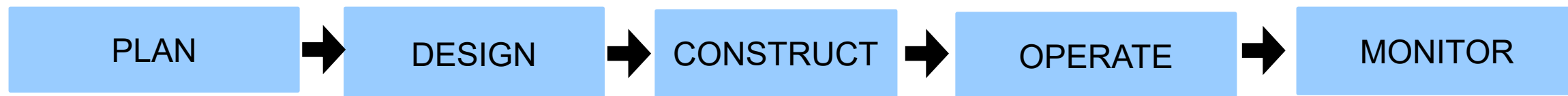
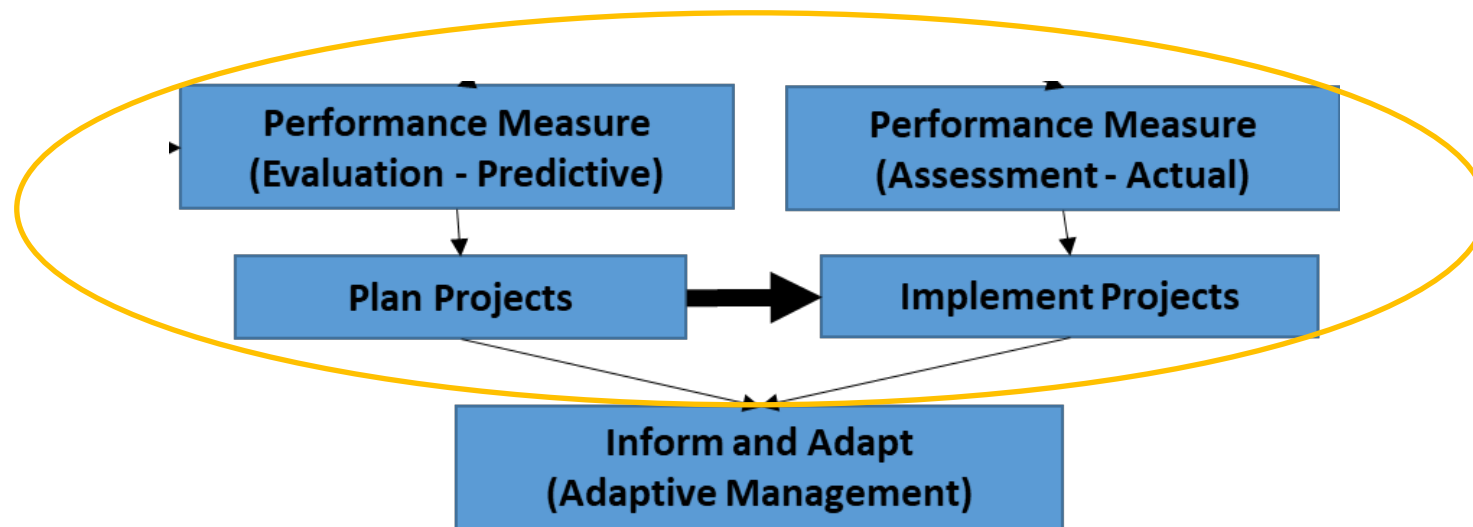
Revised December 2009





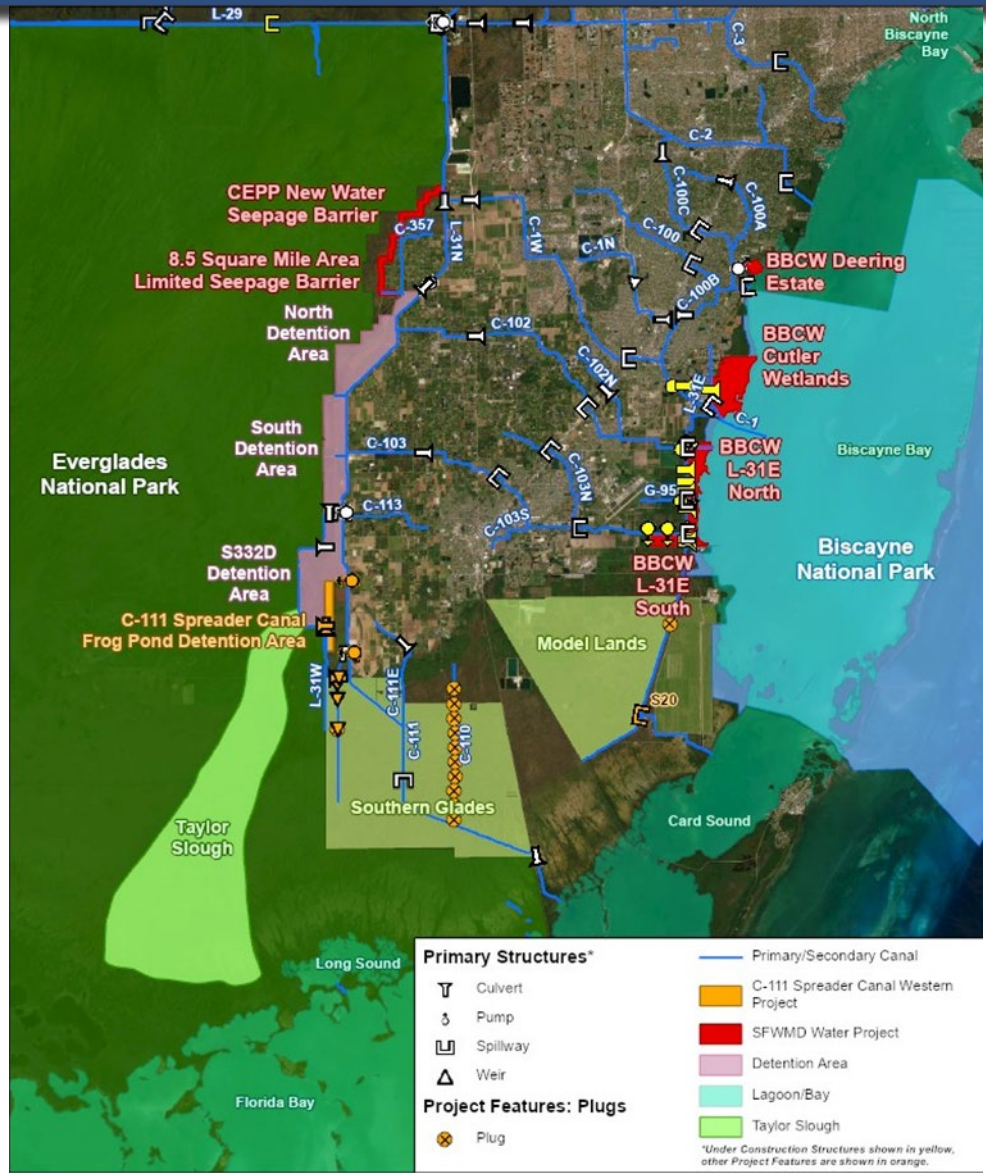
Applied Science Strategy Reduces Uncertainty at All Steps of Project Implementation

- Project Implementation





C-111 SCW Project: Planning



Objectives

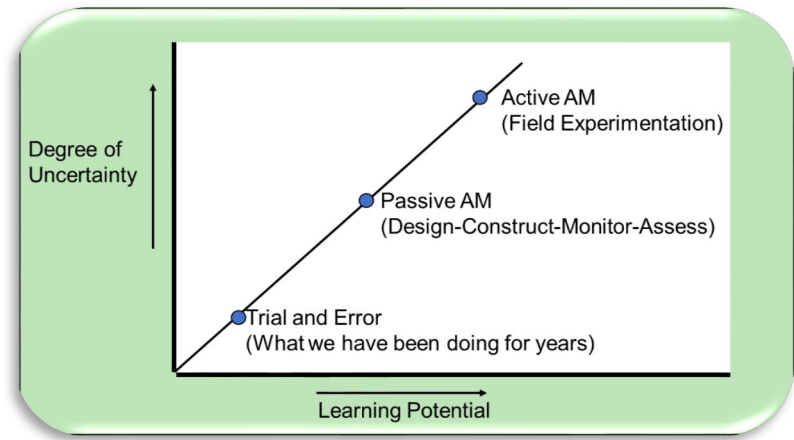
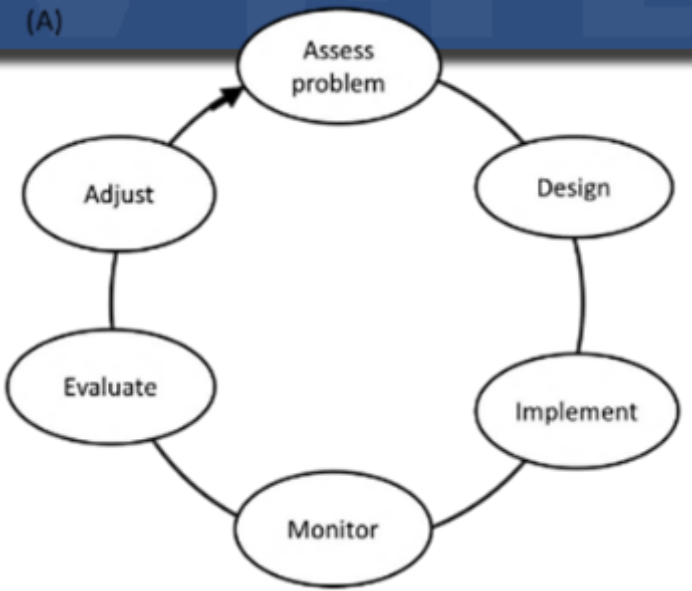
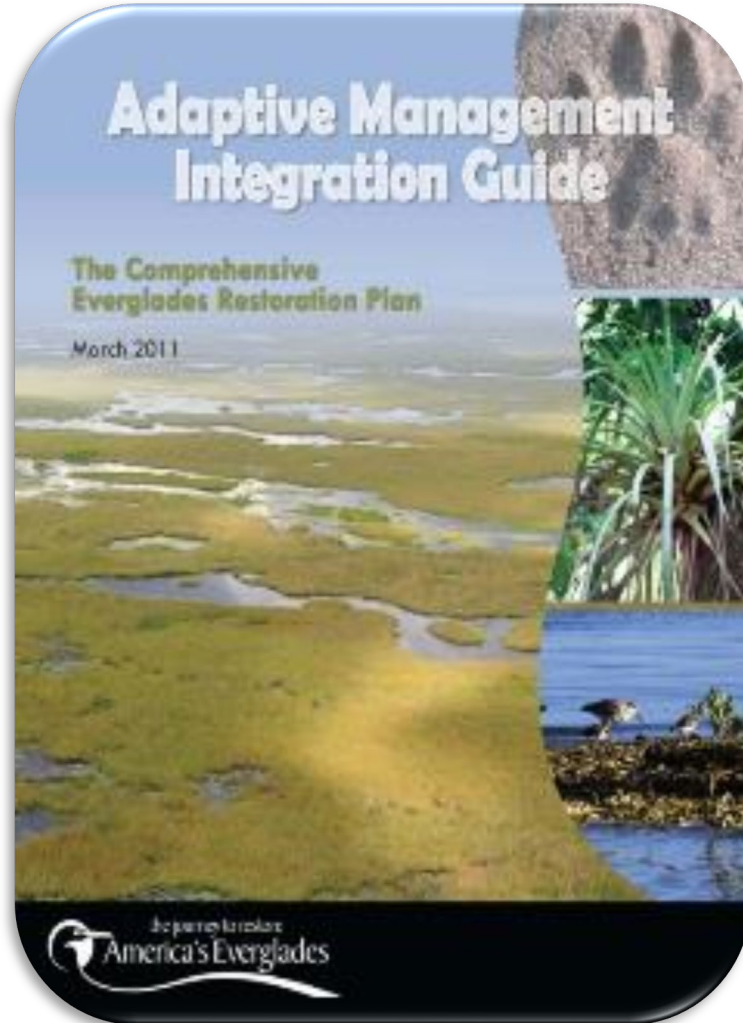
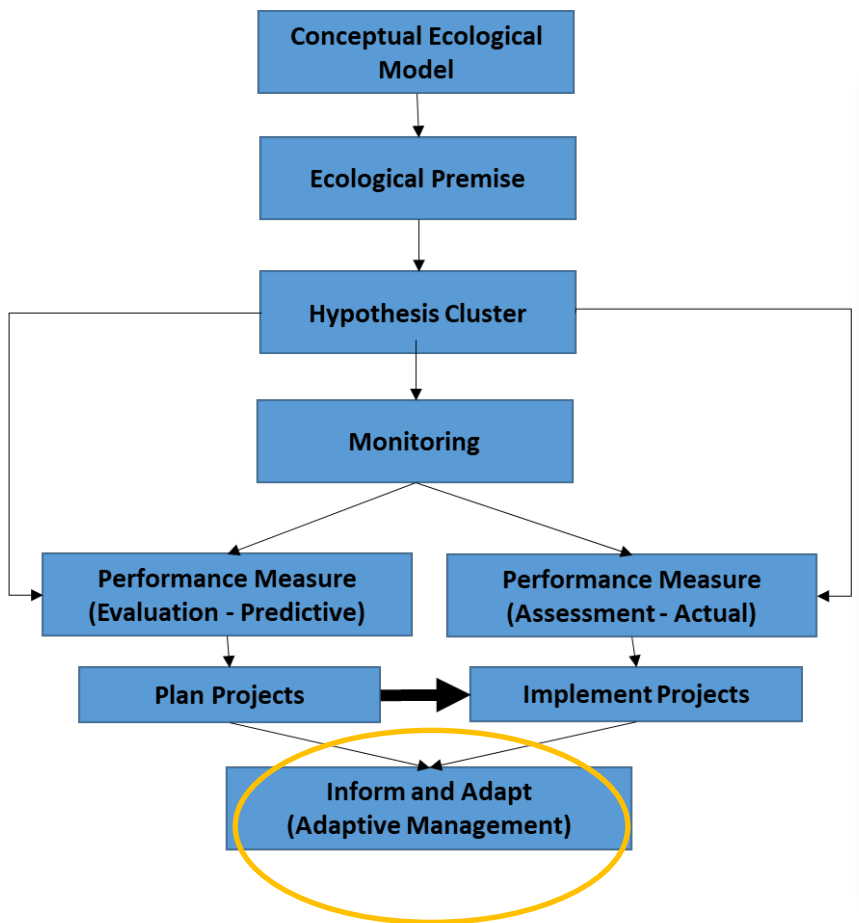
- Improve hydroperiods and hydroperiods in the Southern Glades and Model Lands
- Restore the quantity, timing, and distribution of water delivered to Florida Bay via Taylor Slough
- Improve coastal zone salinities in central and eastern Florida Bay

Planning in a nutshell

- Identify predictive performance measures where hydrologic changes needed to achieve objectives. These performance measures based on the hypothetical clusters and resulting monitoring.
- Formulate alternatives plans, then select best one based on hydrologic models and other information



CERP: Applied Science Strategy



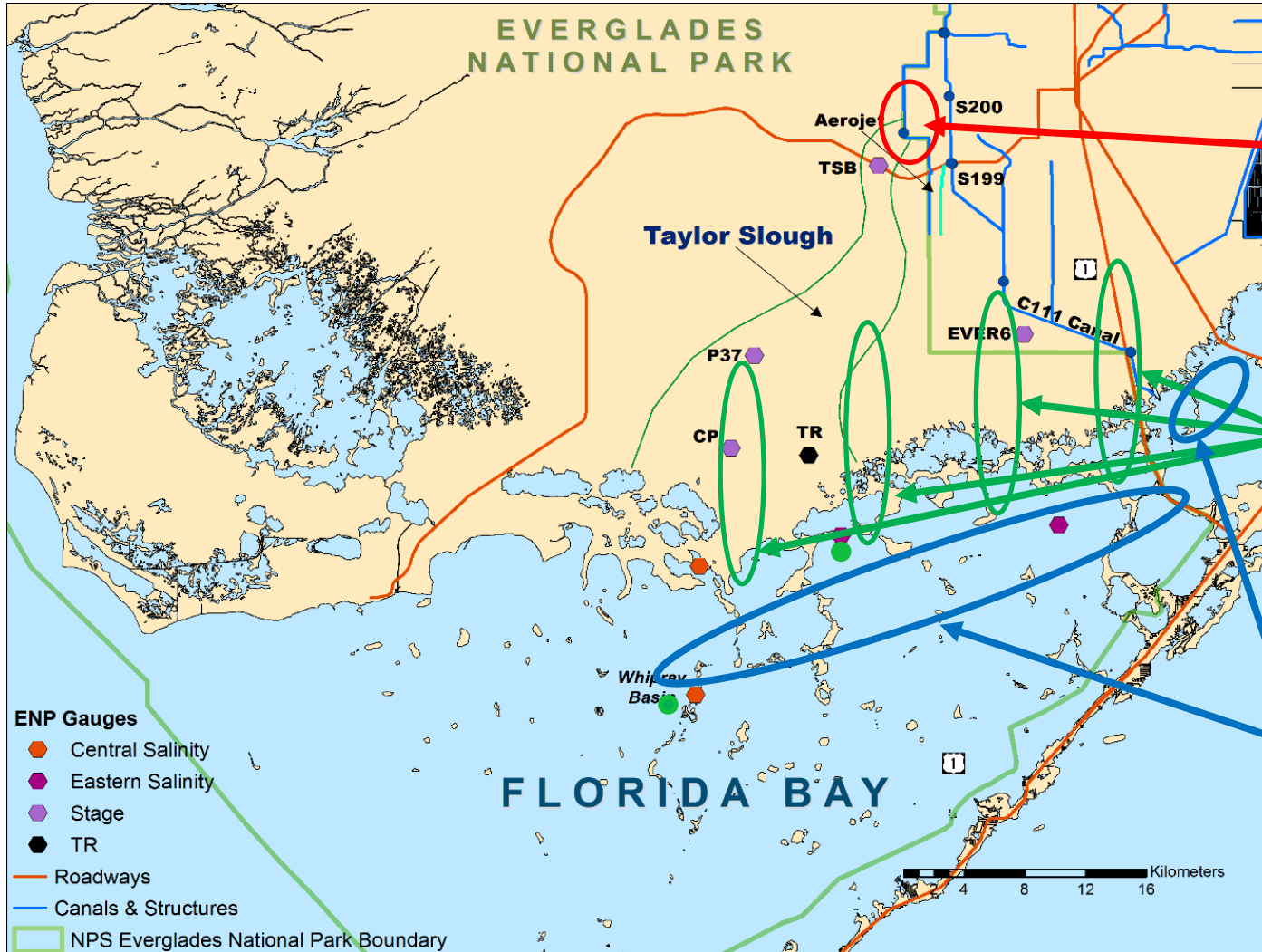


Operate and Monitor

- Original monitoring plans (~2007) included intense data collection but lacked details on how the data would be utilized to understand performance
- SFWMD revised the monitoring plans in 2011 prior to completion of project construction to ensure regulatory compliance, provide reasonable assurances, and track project performance
- Project Monitoring Plans:
 - Water Quality Monitoring Plan
 - Hydrometeorological Plan
 - Groundwater Monitoring and Analysis - University of Florida Institute of Food and Agricultural Sciences (IFAS)
 - Ecological Monitoring Plan
 - Biological Opinion



Multi-scale Response: Landscape

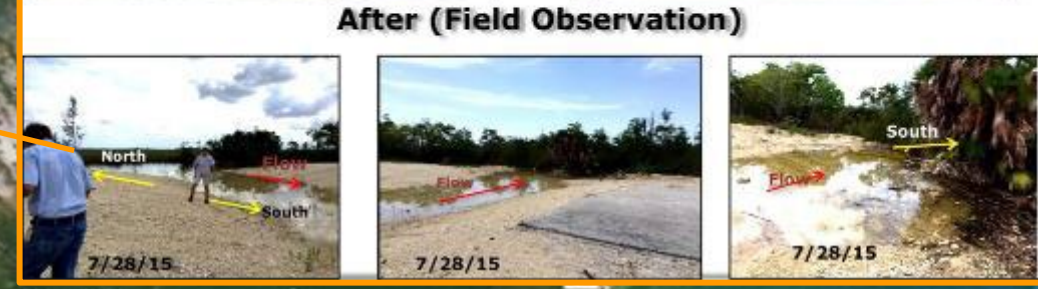
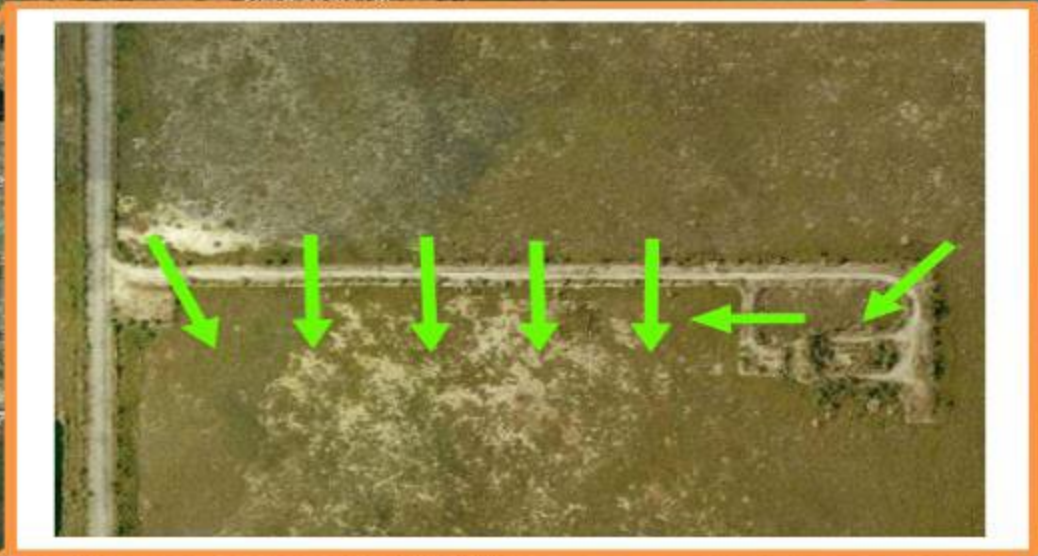
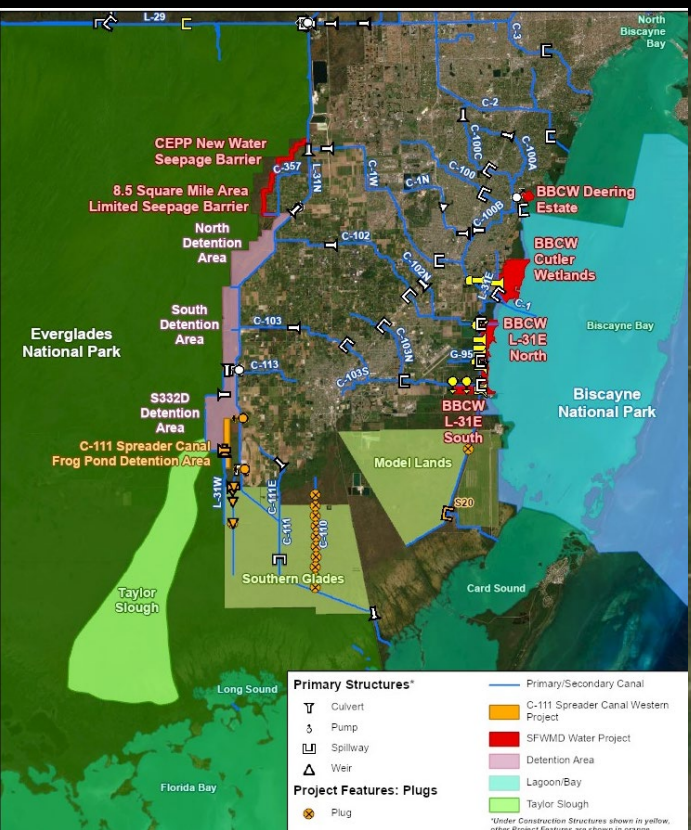


Upper Taylor Slough:
Direct influence of loading, flow, and hydroperiod

Mangrove Transition Zone:
Downstream influence of salinity, discharge and hydroperiod

Open Water SAV:
Mixed influence of currents, discharge, rain and SLR

SOUTH FLORIDA WATER MANAGEMENT DISTRICT



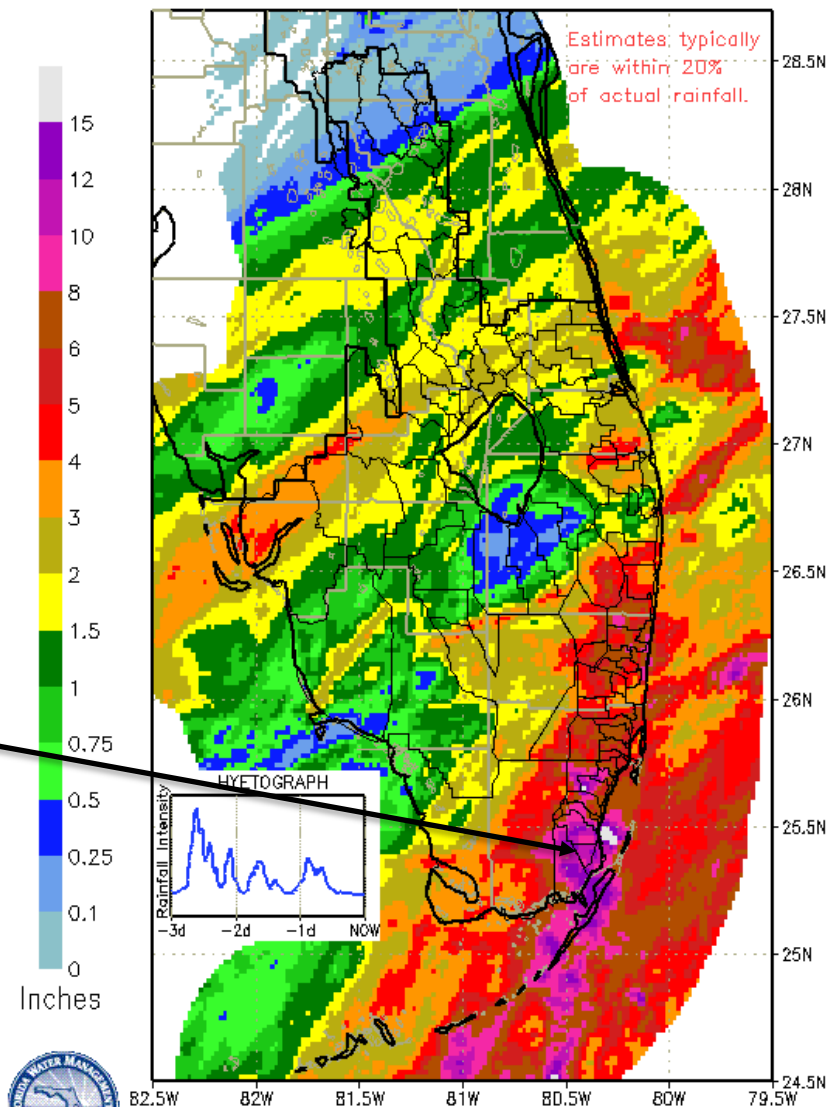


December 2015 Rainfall Event Characteristics

- Most intense rain fell between December 3-5, 2015
- For Miami Dade County
 - Wettest 3-day rainfall in the last 15 years (wet or dry season)
 - Wetter than Tropical Storm Gordon (Nov 1994) or Hurricane Katrina (Aug 2005)
- While all basins along the east coast affected, heaviest rains in south Miami-Dade, C-111 and C-103 basins
- 1 inch of rainfall equates to 6-inch rise in groundwater table
- Limited topographic relief. Ground ranges between 3.5 – 6 ft NGVD 29

SFWMD PROVISIONAL RAINDAR 3-DAY RAINFALL ESTIMATES

FROM: 1015 EST, 12/03/2015 THROUGH: 1015 EST, 12/06/2015



DISTRICT-WIDE RAINFALL ESTIMATE: 2.235"



Crop flooding adjacent to C-111 and S-177 & S-199



Flooding east of S-178 and north side of SR 9336



Farm field at SW 124th Ave and SR9336, plastic covered field is underwater



Street flooding, Villages of Homestead



Response to December 2015 Rain Event: Change Ops and Increase Pump Capacity

- Operate 0.5 ft lower (August-December only) to make seasonal operations more robust.
- Pumping capacities of S-199 and S-200 Pump Stations increased by 75 cfs for a total of 300 cfs at each station
- Capacity increase will send 5,000-10,000 acre-feet of freshwater to Florida Bay per year
- Contract executed August 2017. Regular operations began October 2018

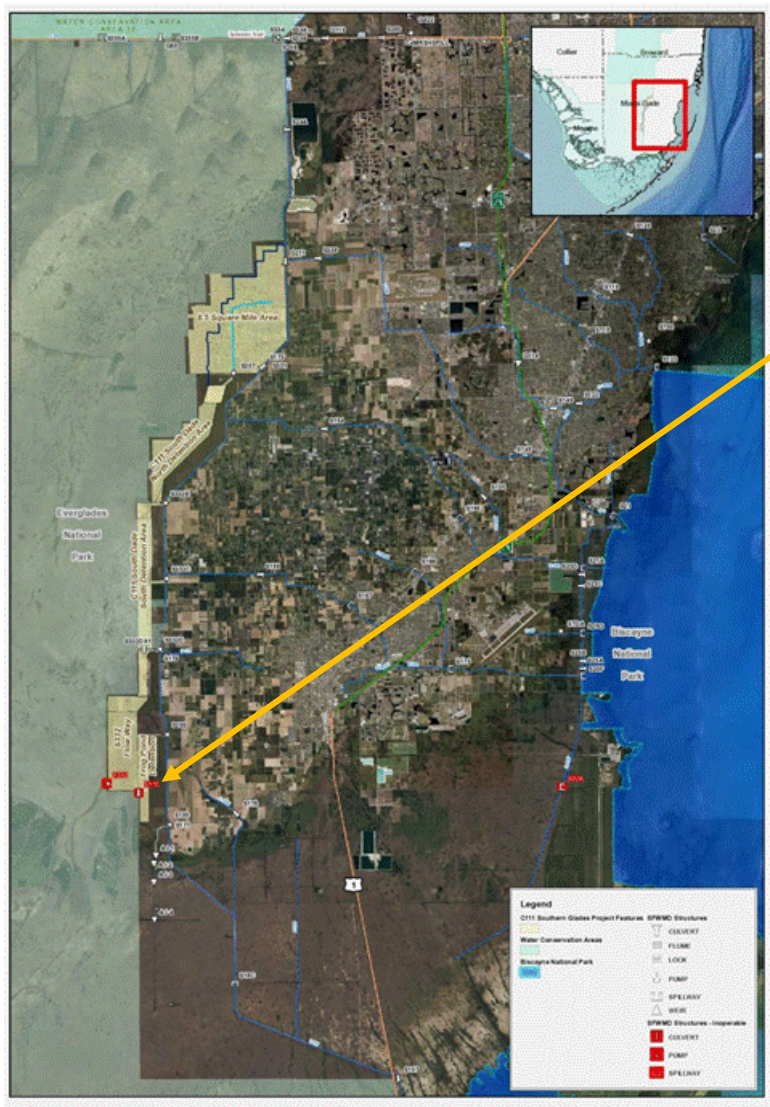


S-199 (top) and S-200 (bottom) with new pumps under going testing and commissioning





Response to December 2015 Rain Event: Convey More Water West to Taylor Slough



G-737



G-737 and L-31W Canal



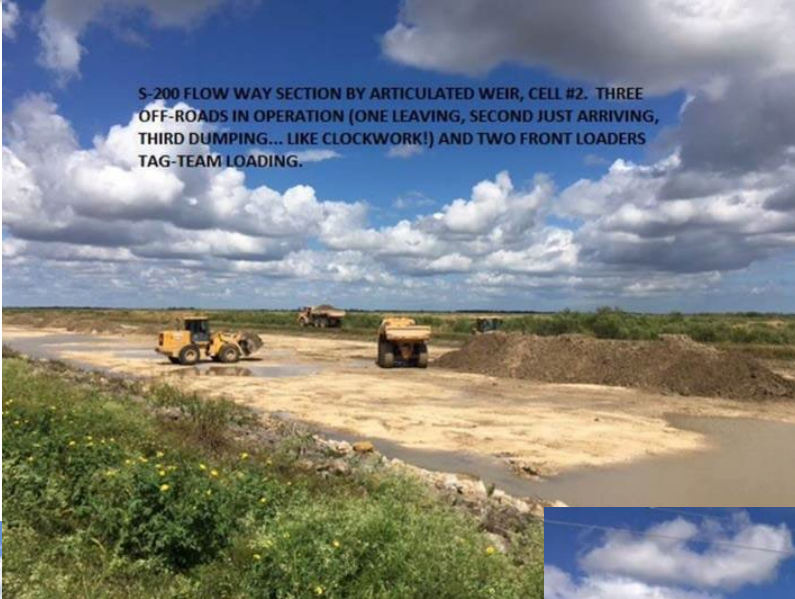
L-31W Canal



Response to December 2015 Rain Event: Maintenance Activities Downstream of Pump Stations



S-200 FLOW WAY ADJACENT TO CELL #1. HUMP-NO-MORE! HUMP REMOVED/ROCK-PLOWED.



S-200 FLOW WAY SECTION BY ARTICULATED WEIR, CELL #2. THREE OFF-ROADS IN OPERATION (ONE LEAVING, SECOND JUST ARRIVING, THIRD DUMPING... LIKE CLOCKWORK!) AND TWO FRONT LOADERS TAG-TEAM LOADING.



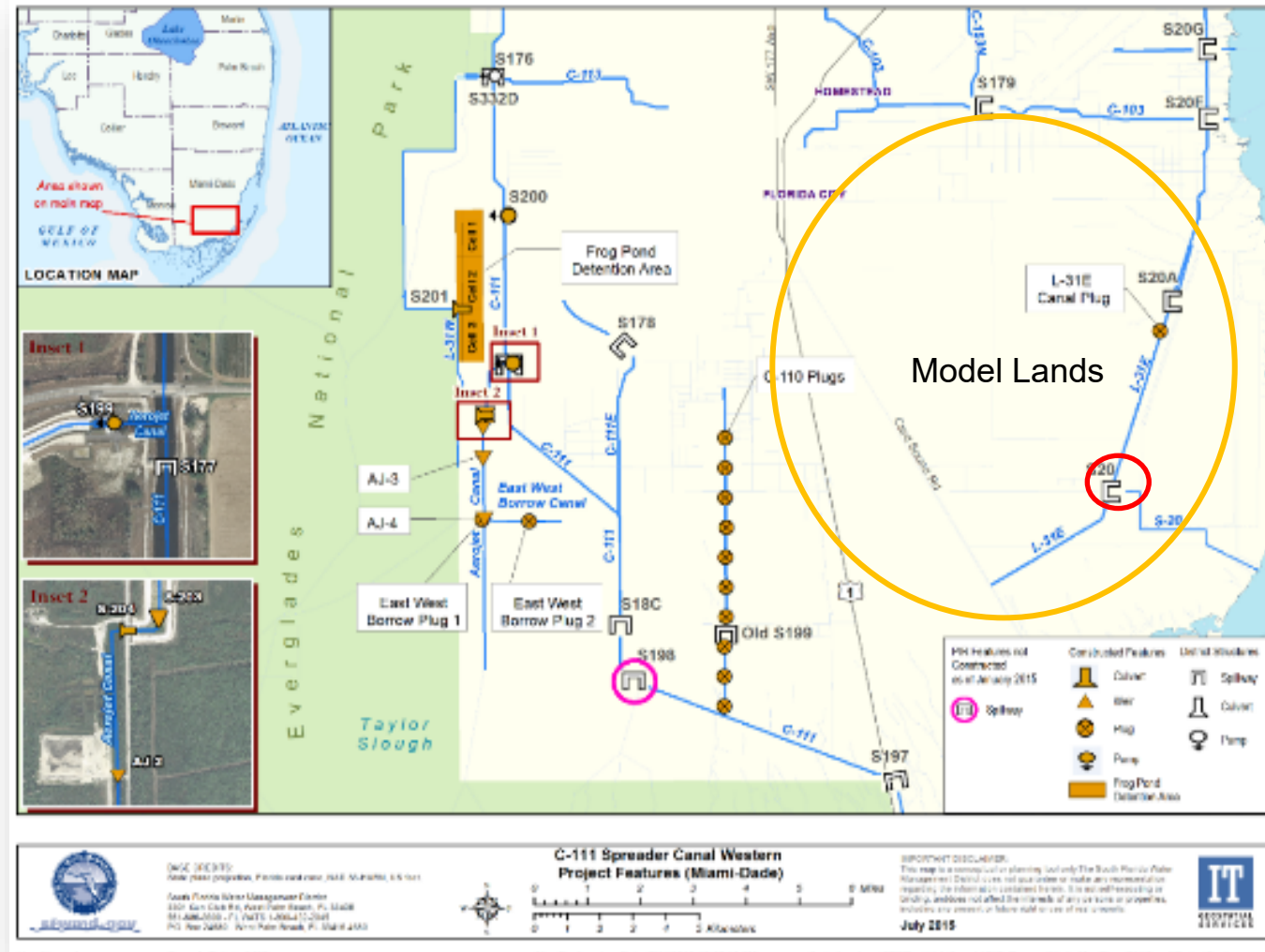
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S-200 FLOW WAY SECTION ADJACENT TO CELL #2, BY S-201 SCRAPED/CLEARED OF SPOIL

Reducing Uncertainty: Testing S-20 Temporary Operations

- Objective is to maximize restoration within the project area by increasing hydroperiods within the Model Lands
- Plan recommended temporary increase to the operational range at S-20 of up to 0.5 feet to occur incrementally over a 5-year testing period
- USACE approved 2-year deviation in October 2019
- Deviation expired September 2021
- SFWMD seeking additional 3-years of testing





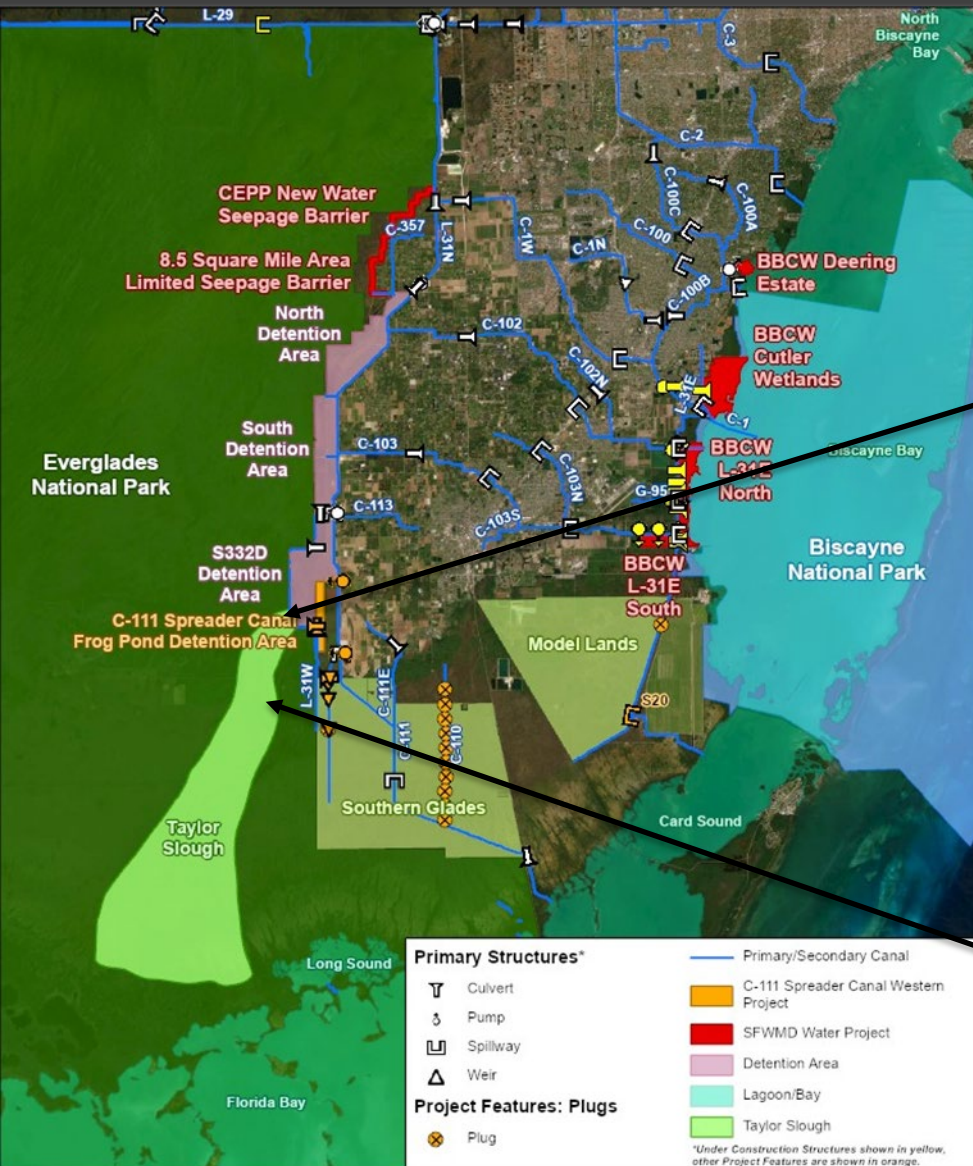
Why Does the Project Work?



- By applying the applied science strategy throughout the planning and implementation process, we were able to modify project features and operations to ensure success.
- Some new information was based on planned processes, e.g., monitoring feedback, while other information based on real world events, that had not been anticipated.
- Future performance will be influenced by planned projects affecting regional conditions and the continued risk of sea level rise.



Questions



Taylor Slough