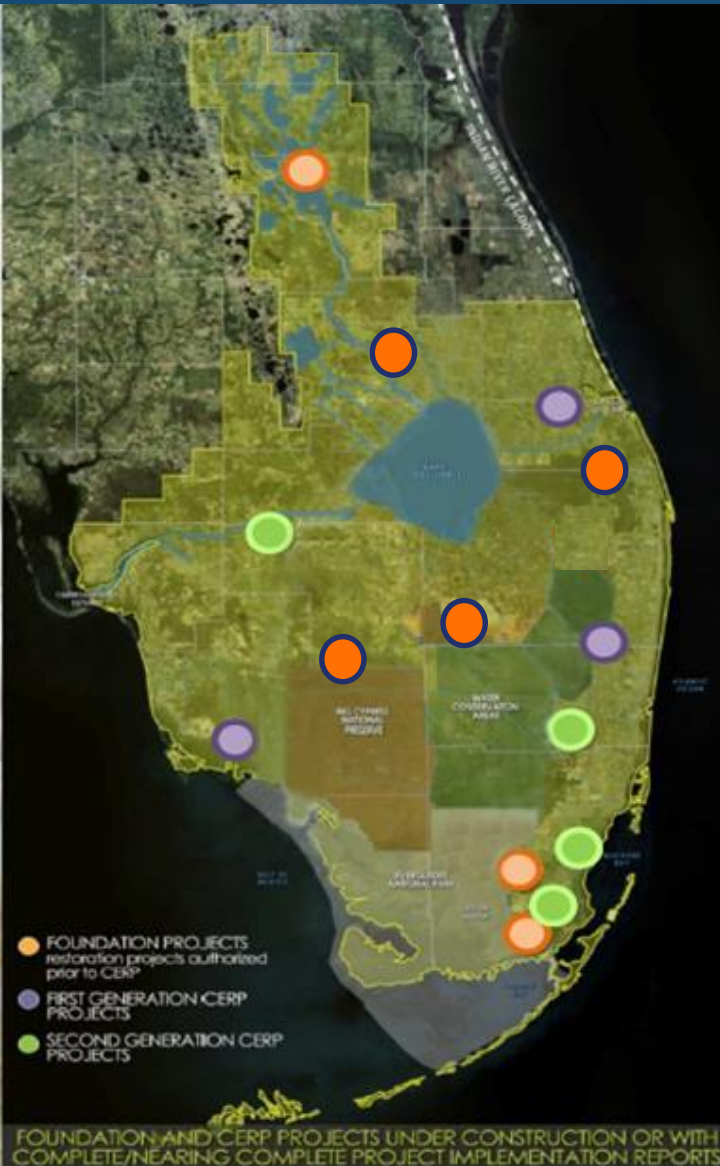




Loxahatchee River Watershed Restoration Project

Florida Earth Foundation
The 2016 Water Module - "Helping a River and a Lagoon"

South Florida Ecosystem Restoration Implementation



Pre-CERP Foundation Projects

- ▶ Kissimmee River Restoration
- ▶ Modified Water Deliveries
- ▶ C-111 South Dade

Significant Progress/
Nearing Completion

1st Generation CERP

- ▶ Indian River Lagoon-South
- ▶ Picayune Strand
- ▶ Site 1 Impoundment - Construction Completed

Under Construction

2nd Generation CERP

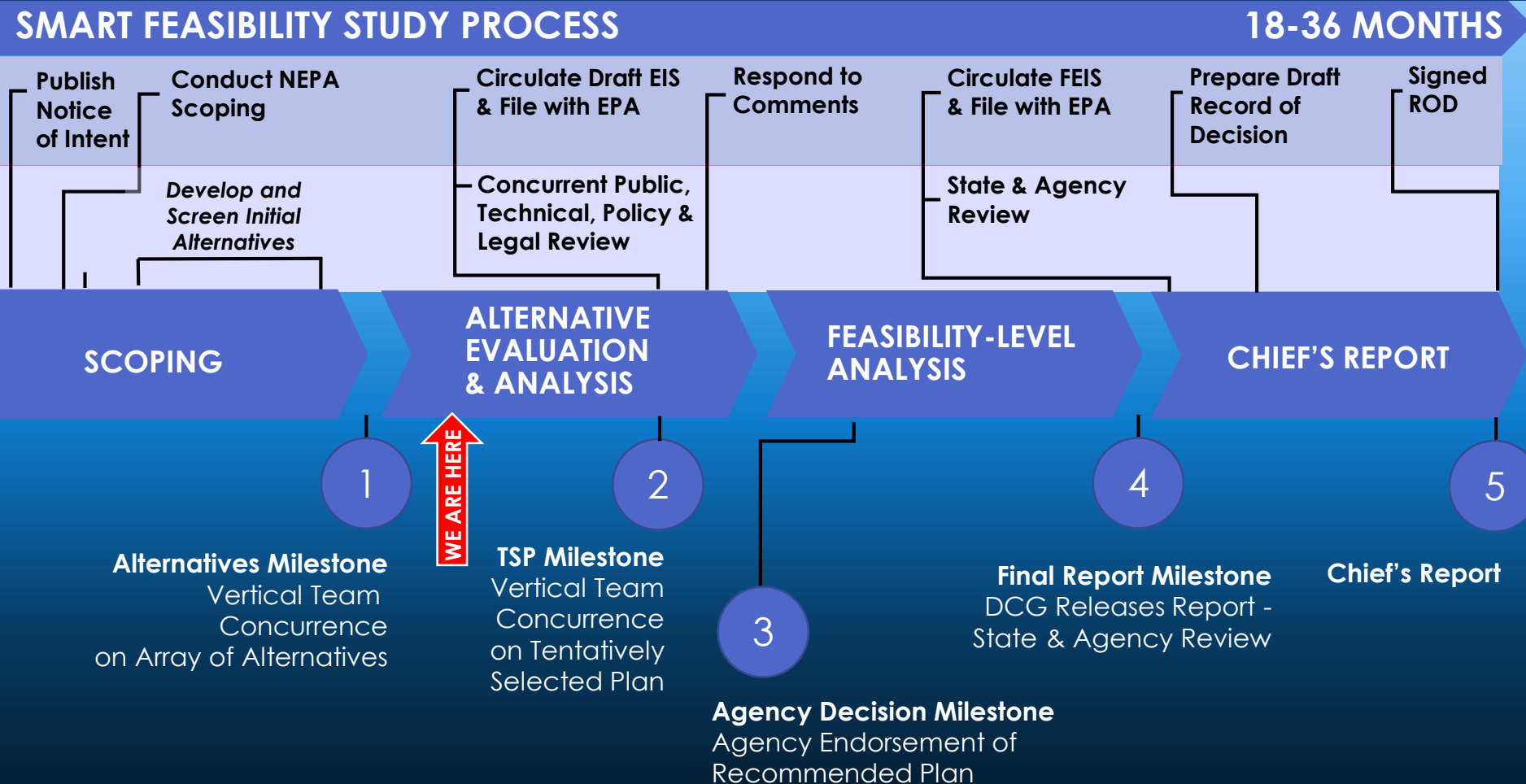
- ▶ C-43 Reservoir - Under Construction
- ▶ Broward County Water Preserve Areas - Design
- ▶ C-111 Spreader Canal - Operational
- ▶ Biscayne Bay Coastal Wetlands - Design/Partially Constructed and Operational

Completed and Active Planning Studies

- ▶ Central Everglades Planning Project - Authorization Pending
- ▶ Loxahatchee River Watershed Restoration
- ▶ Western Everglades Restoration Project
- ▶ Lake Okeechobee Watershed Project

Planning
Underway

Loxahatchee River Watershed Restoration Project Study Schedule



Planning Process and Progress

- Identified problems and opportunities within the watershed and how to measure success (performance measures)
- Developed multiple management measures
- Measures were combined by flow-ways into options
 - A flow-way (FW) is defined as the path by which water is delivered to the river; can be canal or overland conveyance
- Several options were selected from each FW and combined into 13 alternatives
- Alternatives were then screened to 5 for further analysis
 - Effectiveness in meeting performance measures, cost, project assurances

Problems



1. Altered timing and distribution of headwater base flows to the river's Northwest Fork
2. Increased salinity in formerly freshwater reaches
3. Continued loss of adjacent freshwater Cypress Swamps
4. Increased wet season flows to Southwest Fork of the river & Loxahatchee Estuary
5. Conversion of natural areas to agricultural, residential, and industrial uses
6. Water quality impacts due to hydrology changes and urbanization
7. Loss of connectivity due to barriers to flow (canals, levees, and roads) between natural areas, river, and estuary
8. Reduced populations and diversity of native flora and fauna
9. Invasive and exotic species

Opportunities

- Restore wet and dry season flows to the Northwest fork of the Loxahatchee River
- Enhance estuarine communities in the Loxahatchee Estuary
- Increase spatial extent and function of remaining natural areas
- Restore watershed connections among the Loxahatchee River headwater natural areas to improve hydrology, sheetflow, hydroperiods, natural storage and vegetative communities
- Restore native plant and animal species abundance and diversity



Restoration Flow Delivery Routes

Flowway 1

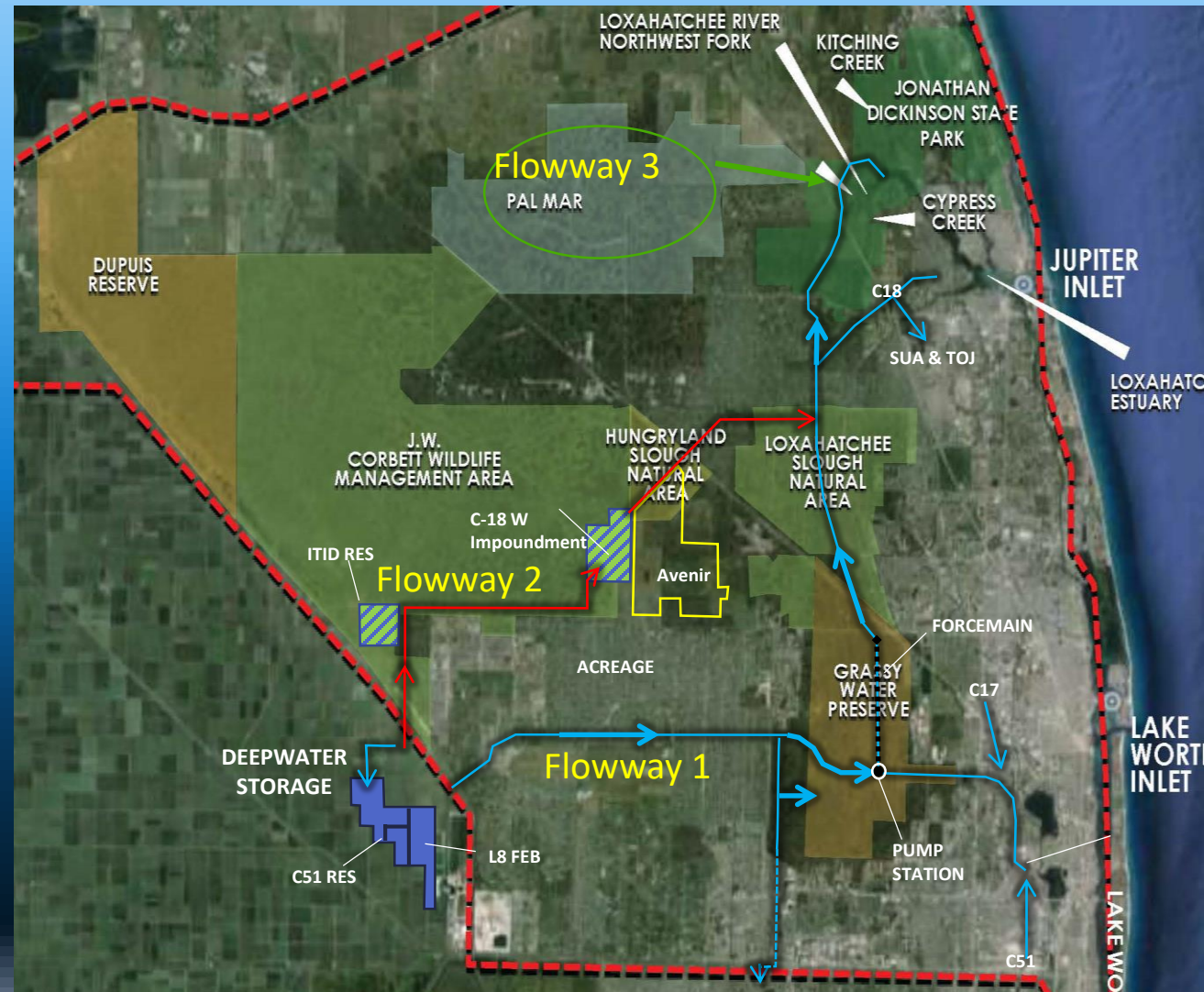
- Deliveries via M-Canal and Grassy Waters Preserve to C-18 Canal, then G-92 and Lainhart Dam.

Flowway 2

- Deliveries via C-18W to G-92 and Lainhart Dam.

Flowway 3

- Deliveries to Loxahatchee River Northwest Fork via tributaries (Kitching Creek and Cypress Creek).



Final Array of Alternatives for Further Analysis

Alternative	Deep Storage in L-8 Basin	Shallow Storage in L-8 Basin	C-18W Basin Storage	Aquifer Storage and Recovery (ASR)	Primary Delivery Route	Secondary Delivery Route	FW 3 Features
2	None	4,300 ac-ft	7,200 ac-ft	2 wells	FW2	FW1	Full range
5	None	None	9,500 ac-ft	4 wells	FW2	FW1	Full range
10	44,000 ac-ft	None	7,200 ac-ft	None	FW1/FW2		Limited
12	25,000 ac-ft	5,000 ac-ft	Increased wetland elevations to support natural storage	None	FW1/FW2		Full range
13	None	6,500 ac-ft	Increased wetland elevations to support natural storage	4 wells	FW2	FW1	Full range

Current Activities

- Lower East Coast Subregional (LECsR) Model update and calibration
 - Aids in quantifying the effectiveness of each alternative at meeting the project objectives
- Development/reassessment of benefit indicator regions
 - Helps the team identify and quantify how each alternative performs at various locations within the watershed
- Development of costs for each alternative
- Land needs assessment
 - What lands and estates are needed to accomplish the project
- Assessment of potential water quality impact

Participating Agencies

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. Environmental Protection Agency
- South Florida Water Management District
- Florida Department of Environmental Protection
- Florida Department of Agriculture and Consumer Services
- Florida Department of Transportation
- Florida Fish and Wildlife Commission
- Martin County
- Palm Beach County
- City of West Palm Beach
- Indian Trail Improvement District
- South Indian River Water Control District
- Hobe St. Lucie Conservancy District/Palmar WCD
- Loxahatchee River District
- National Marine Fisheries
- National Oceanic and Atmospheric Administration (NOAA)
- Tribal Councils

Other Watershed Activities



Loxahatchee River Floodplain

Lainhart and Masten Dam Repairs

- Scope of work will include bank stabilization, repair, and refurbishment of the dams and portage, and soil stabilization under and around the dam to reduce seepage
- Work is scheduled to begin with onset of 2016-2017 dry season



Lainhart Dam



Masten Dam

Martin County Efforts

- Kitching Creek Restoration
- Culpepper
- Palmar East/Nine Gems
 - Hydrologic improvements
 - Ditch plugging/filling
 - Spoil/berm removal
 - Replacement/modification of structures
 - Invasive/exotic species management



Wetland restoration on the Culpepper property

Palm Beach County Efforts

- Hungryland Slough
- Loxahatchee Slough
- Pine Glades, Cypress Creek
- Limestone Creek
 - Hydrologic improvements
 - Ditch plugging/filling and spoil/berm removal
 - Replacement of structures
 - Oxbow reconnection
 - Invasive and exotic species management



**Melaleuca in Loxahatchee Slough,
before mechanical treatment**



After mechanical treatment

*Photo
credit:
Palm
Beach
County*

Discussion