South Miami-Dade Seasonal Operations

Governing Board Workshop
October 13, 2010

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Everglades Restoration and Capital Projects

Seasonal Operations

- What are Seasonal Operations?
- Where and when do Seasonal Operations occur?
- Seasonal Operations Authority - USACE C&SF Project for Flood Control and Other Purposes - Master Water Control Plan – East Coast Canals – Volume 5
- What are the reported impacts on agriculture without Seasonal Operations?
- What are the reported impacts on the environment with Seasonal Operations?
- What actions have already been completed and are presently under way to better balance water-related needs?
- What other considerations should we be looking at to better balance water-related needs?

What are Seasonal Operations?

- Management of farm fields for row crop planting and harvesting
  - Began in the early 1920's by farmers that created and maintained local drainage ditches and canals
- South Florida's moderate climate and soil conditions promote an early row crop harvest and competitive market advantage
- Canals expanded and upgraded by C&SF project in 1960's to further support agricultural commerce and improve overall conveyance
- Authority - USACE C&SF Project Master Control Manual, East Coast Canals, Optimum Water Control and Design Elevations - "Selection of an operating range depends on field conditions and agricultural needs"

When and Where do Seasonal Operations Occur?

Central and Southern Florida Project for Flood Control and Other Purposes
Master Water Control Manual – East Coast Canals – Volume 5

Structure	Low Oct 15 – Dec 30	Intermediate Dec 30 - April 30	High April 30 - Oct 15
S-21A	1.4’-1.0‘	1.8’-1.4’	2.2’-1.8’
S-20F	1.4’-1.0’	1.8’-1.4’	2.2’-1.8’
S-179	3.1’-2.7’ (1)	3.9’-3.1’	

(1) Oct 15 - Nov 15 and wet conditions if needed to end of April

Master Water Control Manual

Table 7-1

Optimum Water Control and Design Elevations (1)

Structure	Canal	Range	Headwater Elevation Auto Gate Operation Open	Optimum	Close	Design HW ft.	TW ft.	Disch cfs	Notes
S-5AE	C-51	---	---	---	---	---	---	---	(2)
S-9	C-11	---	---	---	---	---	---	---	(2)
S-9NX	L-37	---	---	---	---	---	---	---	(2)
S-9SX	L-33	---	---	---	---	---	---	---	(2)
S-13	C-11	All	---	2.5	---	2.2to2.5	6.2to6.5	540	(3,21)
S-13S	C-11	All	1.8	1.6	1.4	1.2	1.0	540	(4,21)
S-13A	C-11	Low		4.0		3.5	2.4	---	(5,16)
S-18	C-109	---	---	---	---	---	---	---	(6)
S-20	L-31	High Low	2.4 1.4	2.1 1.2	1.8 1.0	1.5	1.0	450	(8,18)
S-20A	L-31	High Low	--- ---	--- ---	--- ---	1.7	1.2	575	(9,18)
S-20F	C-103	High Low	2.2 1.4	2.0 1.2	1.8 1.0	1.9	1.4	2900	(7,18)
S-20G	L-31	High Low	2.2 1.4	2.0 1.2	1.8 1.0	2.0	1.5	900	(7,18)
S-21	C-1	High Low	2.4 2.0	1.9 1.5	1.5 1.0	1.9	1.4	2560	(7,18)
S-21A	C-102	High Low	2.2 1.4	2.0 1.2	1.8 1.0	2.1	1.6	1330	(7,18)
S-22	C-2	All	3.5	2.9	2.5	3.2	2.7	1905	(7)
S-179	C-103	High Low	3.9 3.1	3.5 2.9	3.1 2.7	3.8	3.3	1920	

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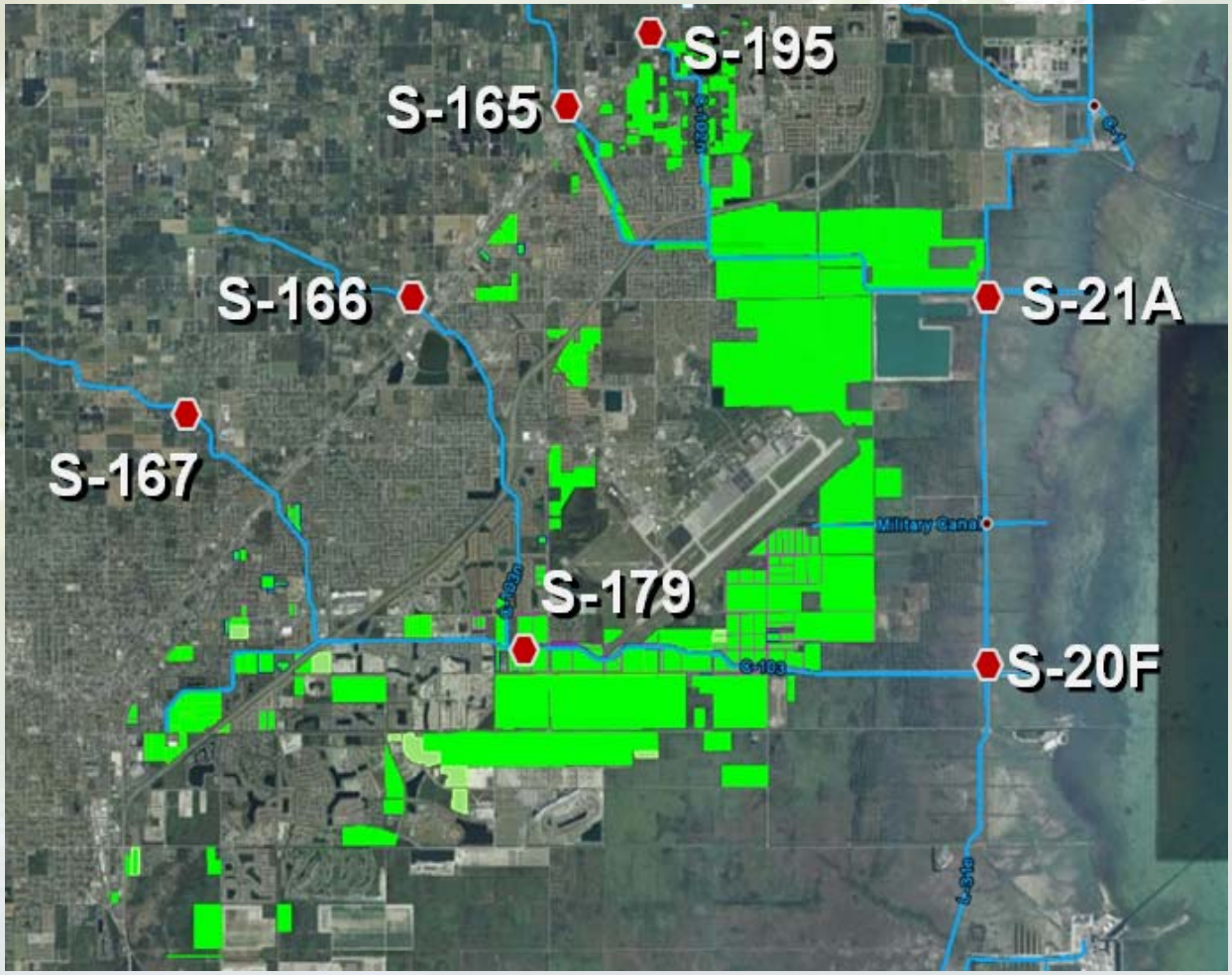
S-179	3.1'-2.7' (1)	3.9'-3.1'	

(18) Selection of an operating range depends on field conditions and agricultural needs.

Agricultural Land Use

- Type of agricultural land use is predicated on market conditions



Reported Impacts on Agriculture Without Seasonal Operations

- Field accessibility highly limited under common agricultural planting practices, methods and standards
- High probability of ground water penetrating crop root zone for periods long enough to force crop damage or crop loss
- Ability for grower to qualify for crop insurance is questionable
- Shift in growing season producing missed market timing and opportunities that may result in financial loss

Reported Environmental Impacts With Seasonal Operations

- Less volume of fresh water stored (surface and ground water) upstream of structures
- Timing and distribution of near-shore flows
  - Rapid fluctuations in salinity due to localized peak discharges
  - Large volume freshwater pulses adversely effect animal and plant species in the Bay
  - Less effective at maintaining favorable salinity (mesohaline conditions)
  - Contributes to hypersaline conditions during the dry season

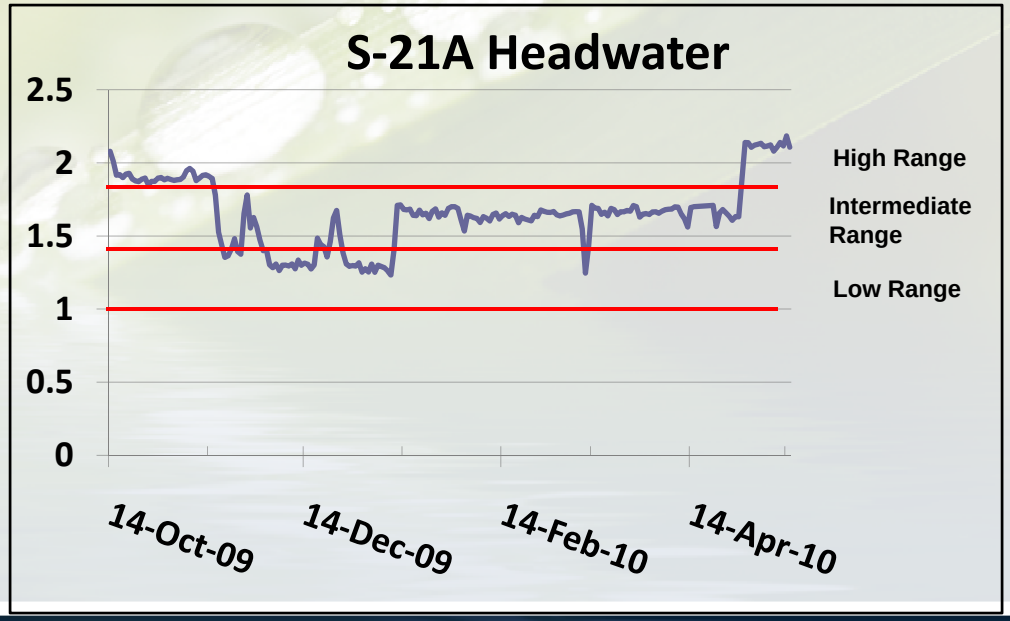
Projects and Activities Completed to Better Balance Water Resource Related Needs

Seasonal Operations Optimization – S21A

CS&F Project - Master Water Control Manual – East Coast Canals – Volume 5

Structure	Low Oct 15 – Dec 30	Intermediate Dec 30 - April 30	High April 30 - Oct 15
S-21A	1.4'-1.0'	1.8'-1.4'	2.2'-1.8'

Modified S-21A operations to minimize discharges while accommodating agricultural, environmental and flood protection needs

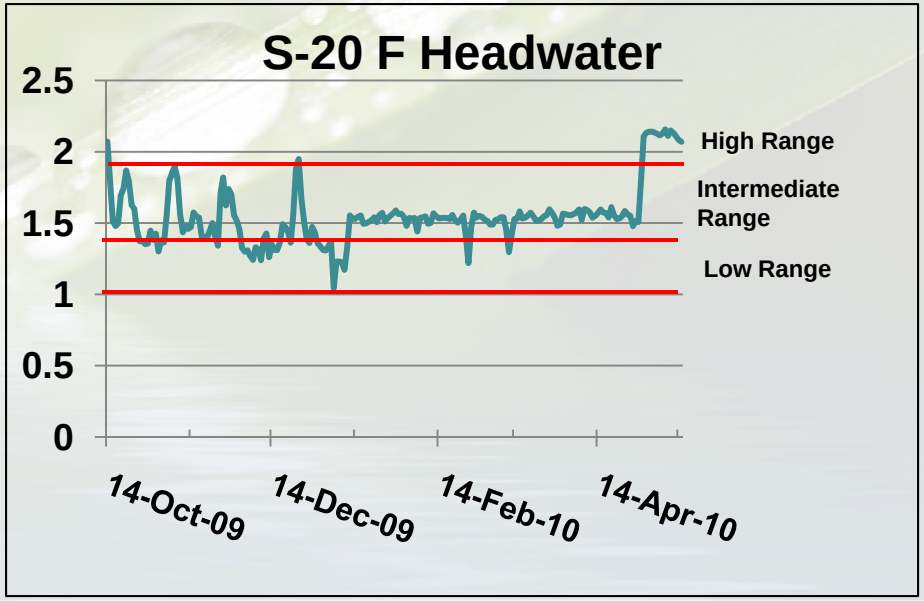


Seasonal Operations Optimization – S20F

CS&F Project - Master Water Control Manual – East Coast Canals – Volume 5

Structure	Low Oct 15 – Dec 30	Intermediate Dec 30 - April 30	High April 30 - Oct 15
S-20F	1.4’-1.0’	1.8’-1.4’	2.2’-1.8’

Modified S-20 F operations to minimize discharges while accommodating agricultural, environmental and flood protection needs

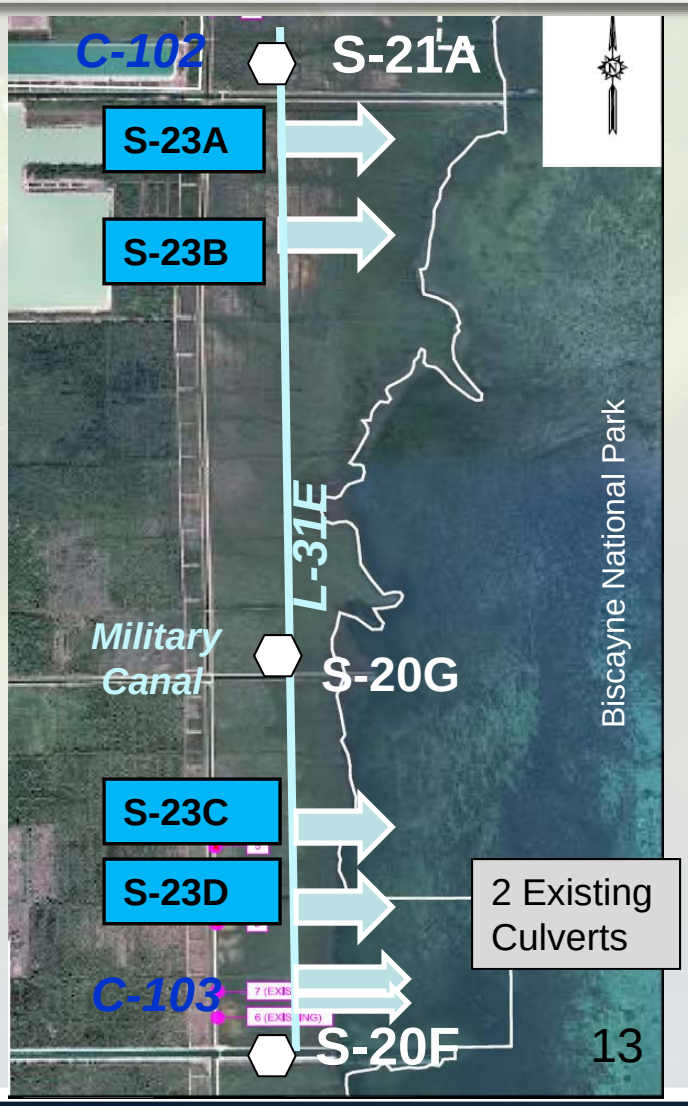


Seasonal Operation Report 2009/2010 "Findings"

- District was able to accommodate the needs of the growers with a minimal drawdown amount in the C-102 Basin and C-103 Basin (i.e. maintain in intermediate range)
- District visited the key agricultural areas during the dry season and provided input to the operational staff as to the need for water level adjustments
- Conditions from site visits and operational decisions were well documented
- The rainfall from the preceding wet season was significantly below normal which contributed to the reduced need for a major drawdown of levels at the beginning of the season
- The rainfall during the dry season was above normal

New BBCW Expedited L-31E Culverts

- Four new 36-inch culverts with flap gates designed to convey ~40cfs
- Two existing culverts ~ 20 cfs
- Diverts water away from S-20F and S-21A
- Delivers water to remnant tidal creeks
- Hydrates areas (tidal wetlands) susceptible to hypersaline conditions during extended dry periods
- Improves delivery efficiency by distributing flows along the coast and nearshore including BNP

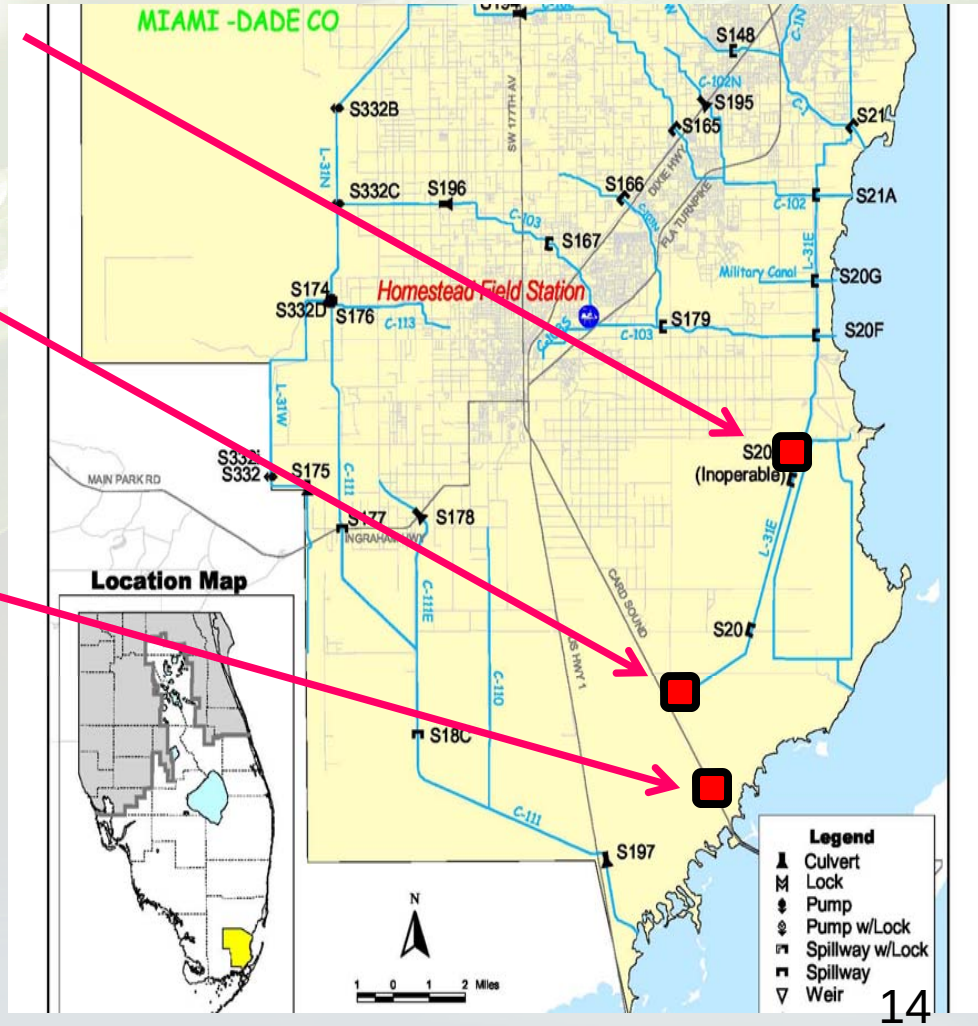


Canal Structures

L-31E Plug south of Florida City Canal (operational)

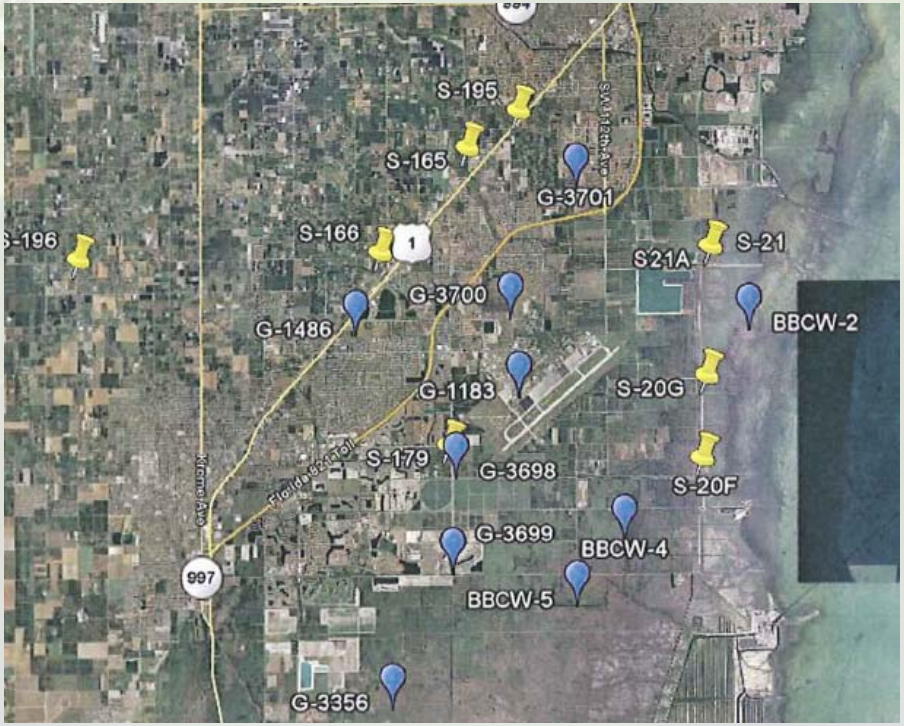
Card Sound Road Canal Structure (operational)

Card Sound Road Plug (permit issued)



Surface and Groundwater Monitoring

- Implemented additional surface water and groundwater monitoring in FY 2009
- Continued accumulating data from the expanded monitoring network through the remainder FY 2010
- AECOM Study under review (gather data and look for operational response patterns)
- South Miami Dade Issues database data QA/QC (data “scrub”)
- Expanded extent of AECOM Study and contracted additional services for a regional statistical evaluation



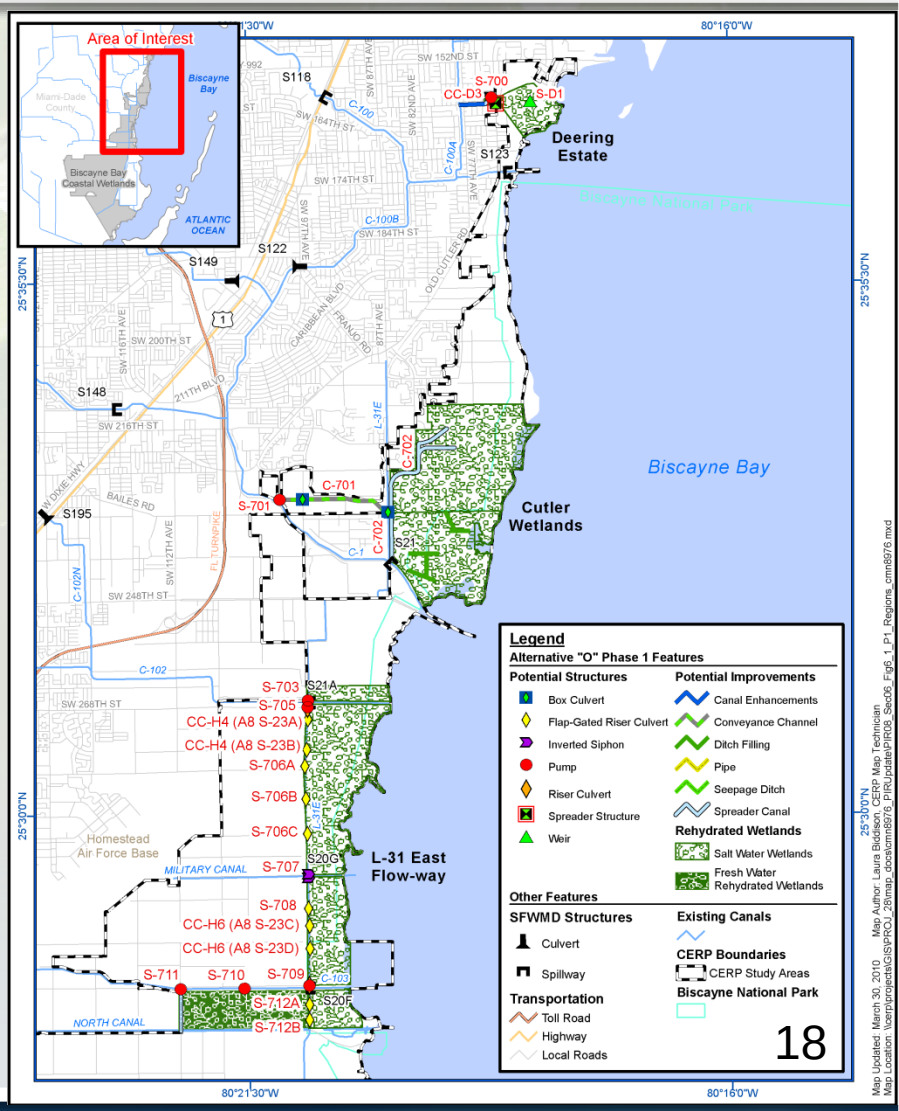
Projects and Activities Under Way to Better Balance Water Related Needs

South Dade Water Conditions

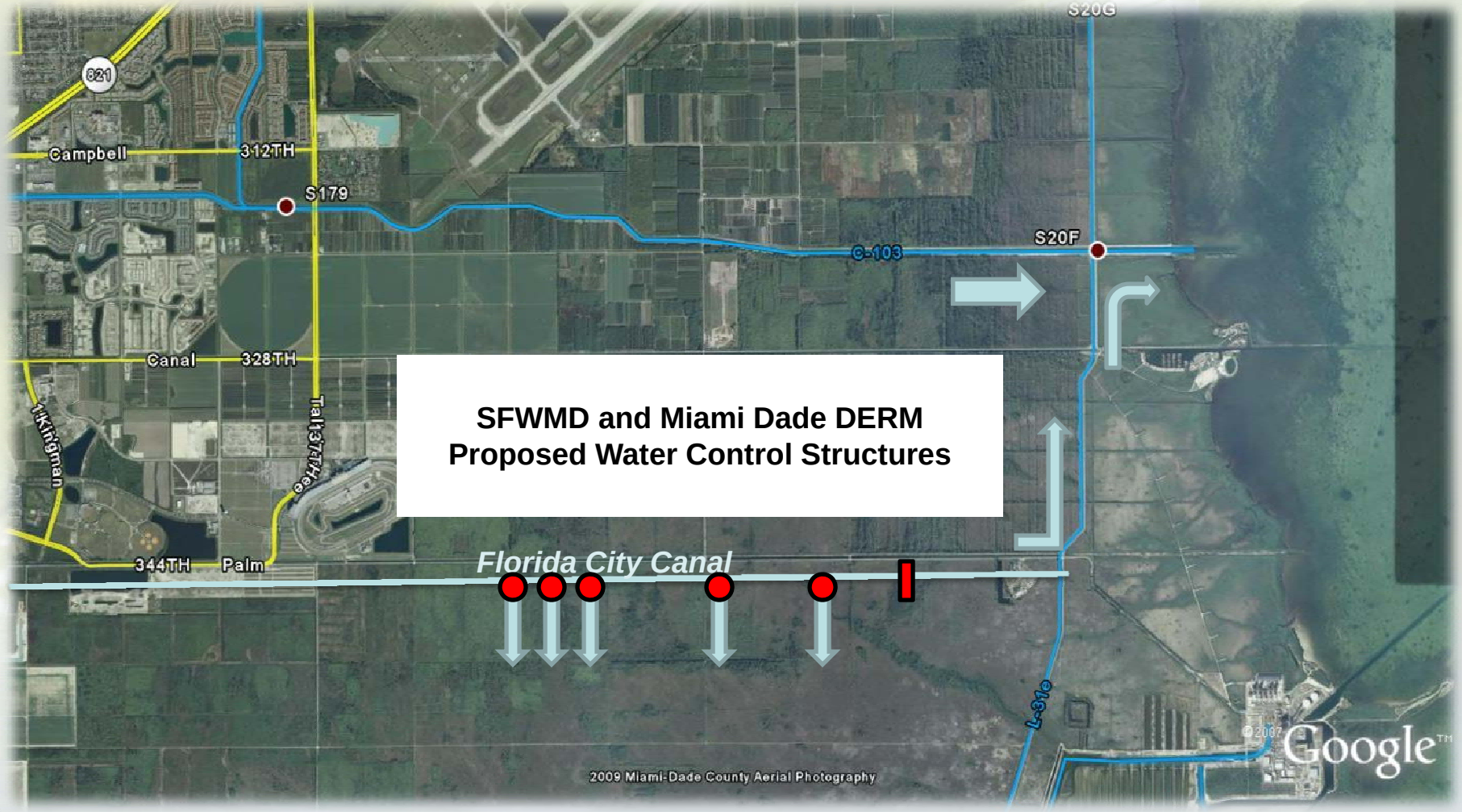
- Open lines of communication between National Park Service, Farmers, Environmental Community and Operations staff
- South Dade Conditions Reports Meeting Room
- Oct. 7 and Oct. 21 1:00 – 2:00 pm
- Nationwide Toll Free: 866-433-6299 Pass Code 6083#
- Monitor Conditions and Structure Operations at **www.sfwmd.gov**
  - Rainfall, canal stages, gate opening

BBCW PIR - Redistribution Components

- Reduces peak discharges at coastal structures
- Better mimics the natural system by distributing freshwater near shore along the coast including BNP
- L-31E Component spans nearshore areas of C-102, C-103 and Florida City Canal Basins
- Improves hydrology and flow in historic creeks and tidal wetlands improving salinity conditions



Florida City Canal Intermediate Structures



SFWMD and Miami Dade DERM
Proposed Water Control Structures

Regional Statistical Analyses

- Purpose is to identify temporal and spatial correlations to better understand the relationship between surface, groundwater and salinity
- Groundwater
  - Level - 300 stations
  - Salinity - 250 stations
- Surface water
  - Stage - 200 stations
  - Flow - 50 stations
  - Salinity - 250 stations
- Rainfall – 50 stations
- Preliminary analyses – Under Review
- Final Analysis Complete Late December 2010

"What We Have Heard"

- Rapid completion of Seasonal Operations Study ✓
- Expand scope of surface and groundwater monitoring and evaluation ✓
- Test utilization of intermediate canal levels at S-21A and S-20F when hydrologic conditions allow it ✓
- Expedite installation of structures in the Florida City Canal and other areas ✓
- Include National Park Service and environmental community in communication protocols during seasonal operations ✓
- Utilize new expedited L-31E culverts as long as possible prior to opening gates ✓
- Initiate Seasonal Operations and start soil dry out earlier, reduce discharge rates and lower canal levels over a longer period of time
- Connect east and west reach of North Canal
- Build storage features, hold higher stages on Public Lands, "Payment For Services"
- Raise farm field elevations by importing material

Pre and Post Field Conditions
Tropical Storm Nicole Sept. 29, 2010

Questions?