

**AGENDA**  
**Rule Development Workshop**  
**Rule 40E-10 and Section 3.11 of the Basis of Review for Water Use**  
**Reservation of Water Identified for Protection by the CERP**  
**Biscayne Bay Coastal Wetlands (Phase 1) Project**

November 28, 2012 – 10:00 A.M.  
Biscayne National Park Headquarters  
9700 SW 328th Street  
Homestead, FL 33033-5634

1) Introductions	Don Medellin	5 minutes
2) Recap Since the Last Public Workshop	Don Medellin	10 minutes
3) Document to Support Rule		
a) Overview of Biology/Hydrology and Technical Analysis to Quantify Water to be Reserved	Rick Alleman	15 minutes
b) Discussion of Water Reservation Regulated Water Bodies Map	Don Medellin	15 minutes
4) Overview of Draft Rule Language	Beth Lewis	15 minutes
a) Changes to 40E-10 F.A.C.		
b) Changes to Basis of Review		
5) Next Steps	Don Medellin	5 minutes
6) Public Comments	All	55 minutes

**THIS WORKSHOP IS OPEN TO THE PUBLIC**

**COMMENTS ON THE DRAFT RULE LANGUAGE, DOCUMENT TO SUPPORT THE RULE OR PRESENTATION MATERIAL ARE REQUESTED TO BE SUBMITTED NO LATER THAN DECEMBER 15, 2012:**

Jan Sluth, Senior Paralegal, Office of Counsel, South Florida Water Management District, P.O. Box 24680, West Palm Beach, FL 33406; (800) 432-2045, ext. 6299; (561) 682-6299; jsluth@sfwmd.gov or submit comments directly to the Rule Development Forum of the SFWMD web conferencing board available at: <http://sfwmd.websitetoolbox.com/>

**PUBLIC WORKSHOP**

*November 28, 2012*

## **Water Reservation for the Biscayne Bay Coastal Wetlands Phase I CERP Project**

# **Recap of Water Reservation**

**Don Medellin**

Principal Scientist

Coastal Ecosystems Section, Applied Sciences Bureau



# Objectives of Workshop

- Overview of document to support the rule
  - Biology/Hydrology
  - Technical Analysis to quantify water to be reserved
  - Outline the water bodies to be regulated by the proposed rule
- Provide an overview of the draft language
- Public comment period

# Water Reservation Directives

- Governing Board directed staff to protect water for CERP BBCW (Phase 1) project
  - PIR identified surface water only
  - District is protecting both diverted and total available canal flow up to target flow
- Reservation is a critical path step to obtain federal funding

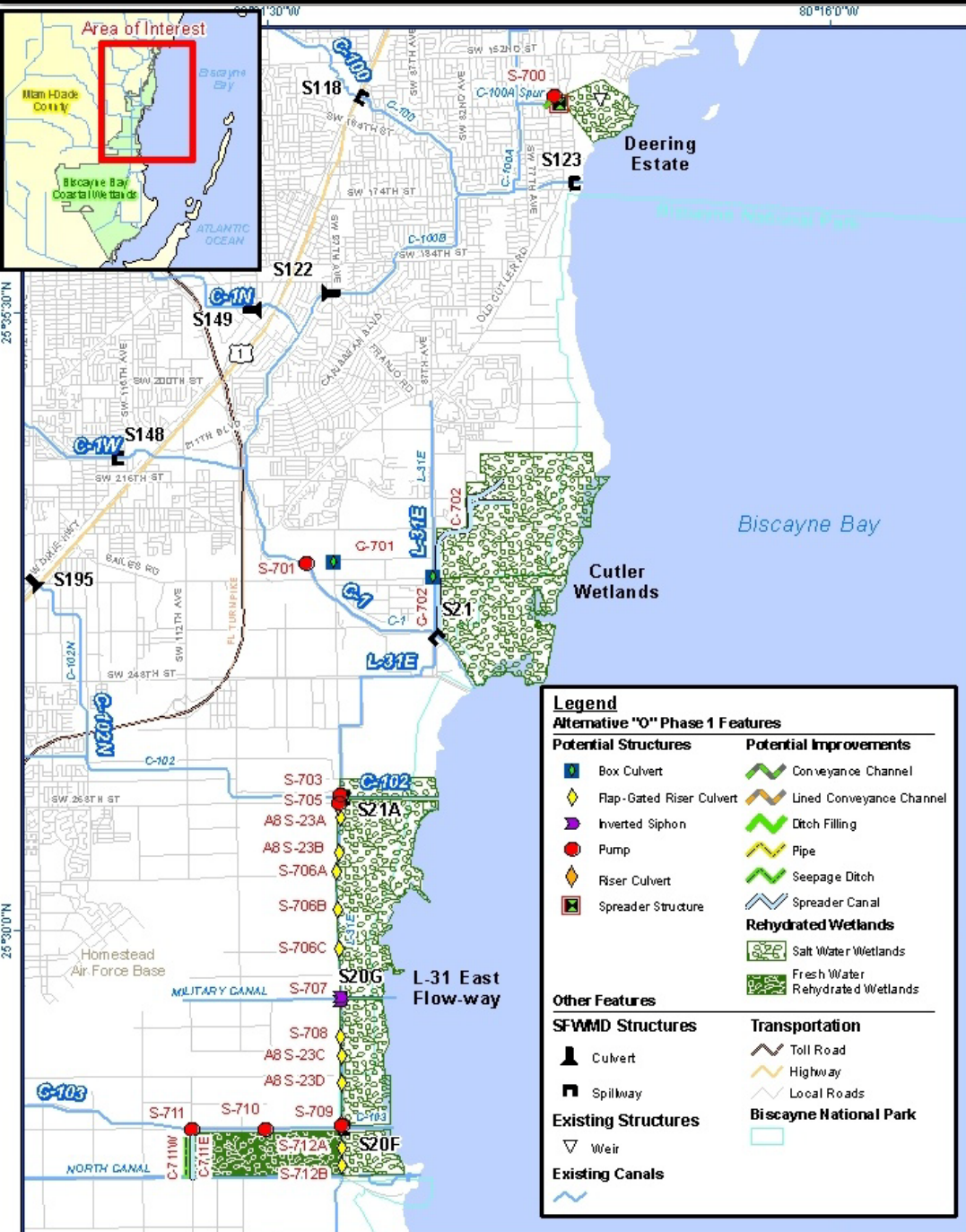




# Recap of Last Workshop

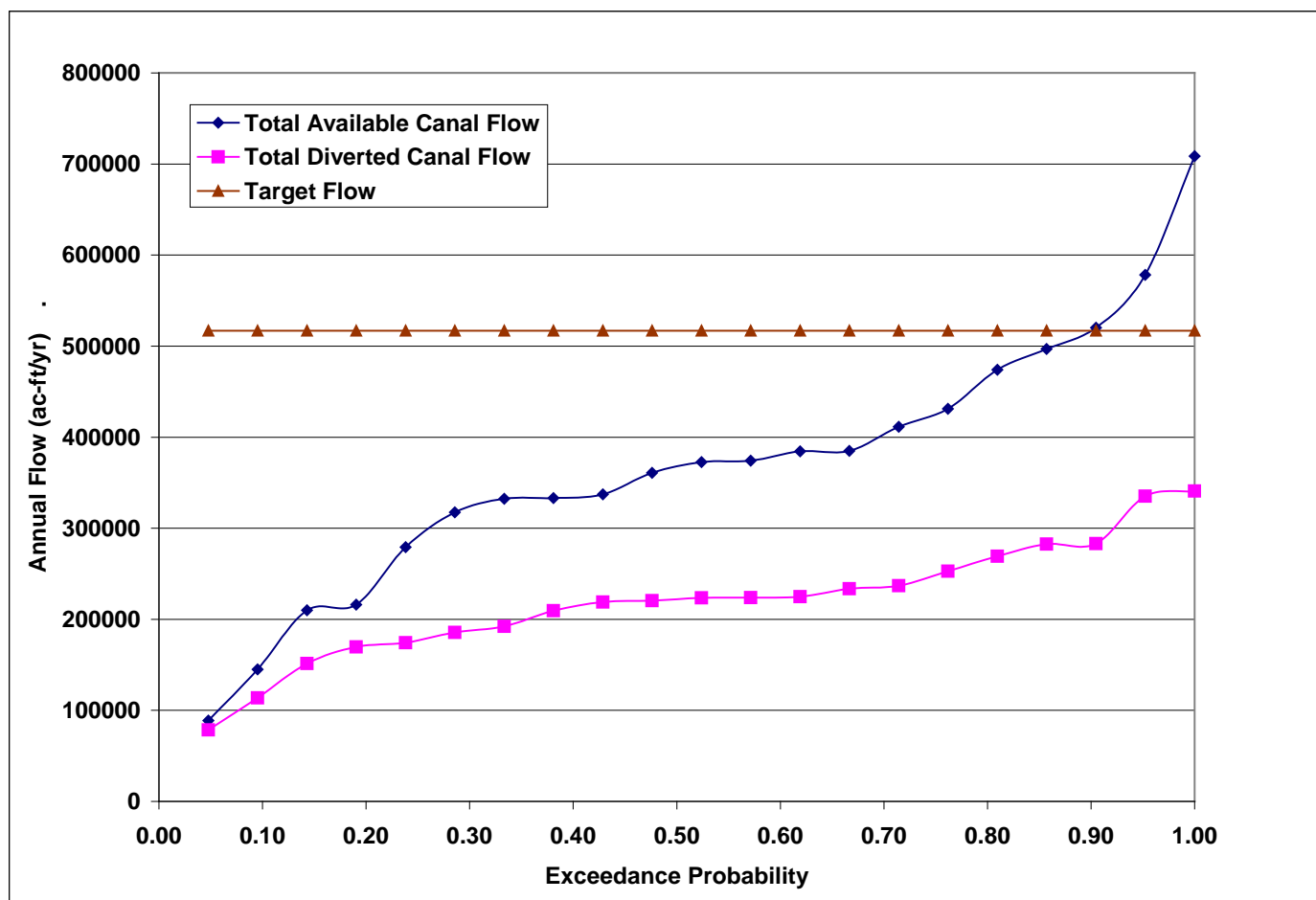
- Differences between the Federal and State processes
- Additional analysis needed to further quantify the canal flows
- Consistency between the Project Implementation Report (PIR) and the proposed rule
- The total available flow in each canal up to the target will be reserved for the protection of fish and wildlife





# BBCW Project Phase 1

# Water Identified in the PIR



# C-100 Surface Water Management Basin

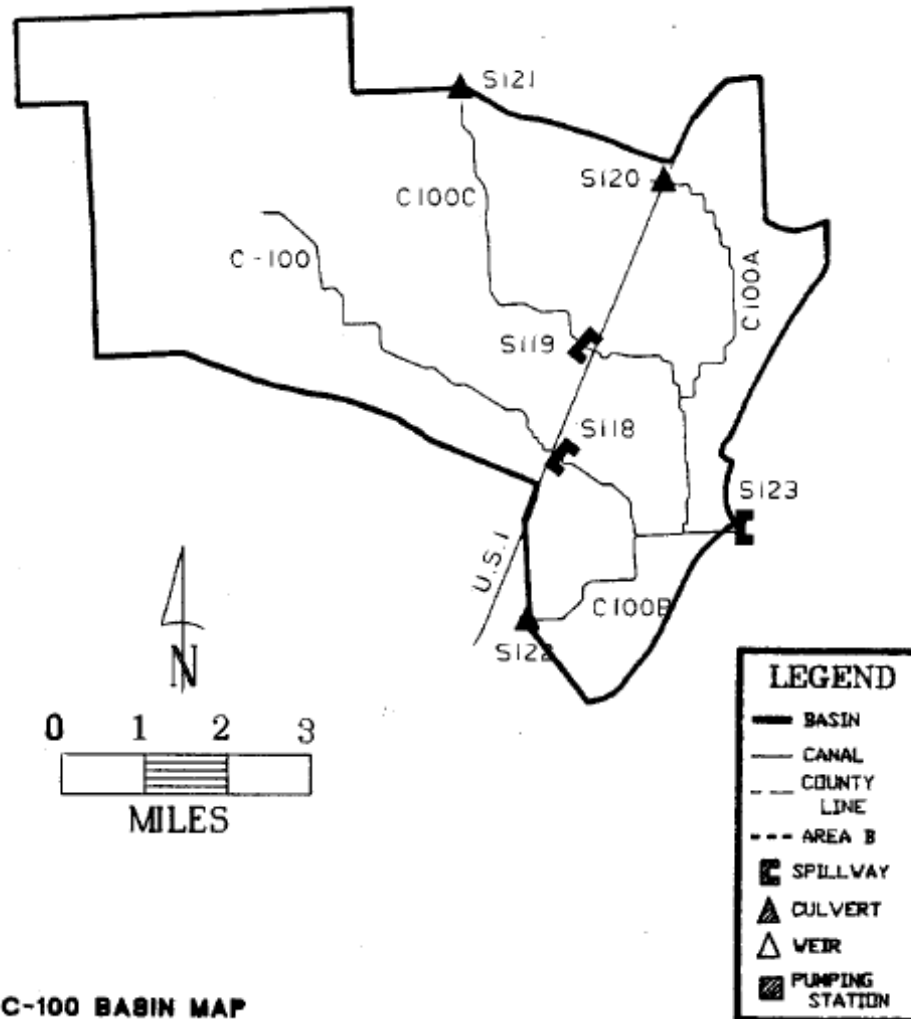


FIGURE 21 C-100 BASIN MAP





# Steps Completed in the Process

BBCW (Ph. 1) Activity	Finish Date
WRAC Meeting - Briefing for Proposed Rulemaking	November 3, 2011
Governing Board Meeting - Briefing for Proposed Rulemaking	November 10, 2011
Governing Board Meeting - Direction on Scope of BBCW Water Reservation	December 15, 2011
First Public Workshop	March 5, 2012
Second Public Workshop	April 6, 2012
Completion of Technical Analysis	August 31, 2012
Develop Technical Report	October 30, 2012

# Where we are in the Process



Activity	Date
Third Public Workshop	November 28, 2012
Public Comment Due Date	December 15, 2012
Post Revised Document to Support the Rule	January 7, 2013
Post Revised Draft Rule Language	
WRAC Meeting	February 7, 2013
Governing Board Meeting - Notice of Proposed Rule	February 14, 2013

**WORKSHOP**

*November 28, 2012*



**Water Reservation for the Biscayne Bay  
Coastal Wetlands Phase I CERP Project**

# **Hydrology and Biology**

**Rick Alleman**

**Lead Scientist**

**Coastal Ecosystems, Applied Sciences Bureau**



# Nearshore Habitat

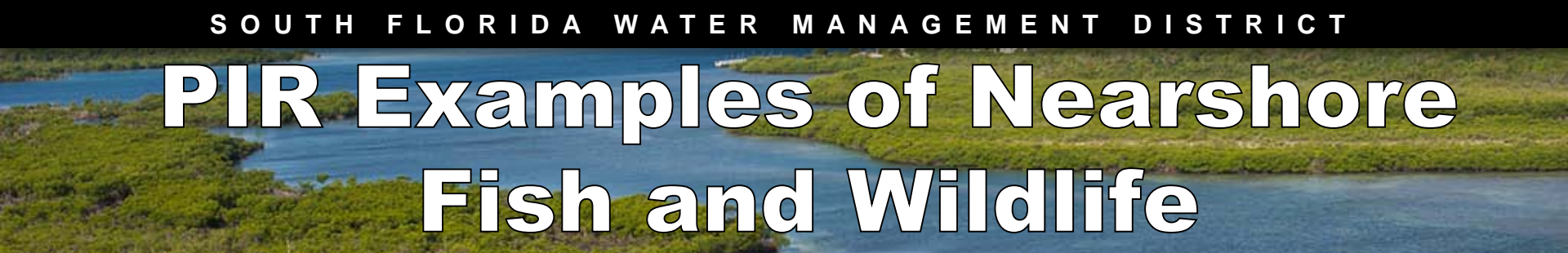
## Project goal for one of three zones:

“Create a persistent positive salinity gradient from freshwater wetlands into the bay with an average bottom salinity of **20**”

To “benefit the nearshore area of Biscayne Bay, defined as the zone within **0 to 500** meters from the shoreline”

Note: 500 meters=1640 feet





# PIR Examples of Nearshore Fish and Wildlife

## Nearshore Animals and Plants Supported by Freshwater Inflows

### Existing:

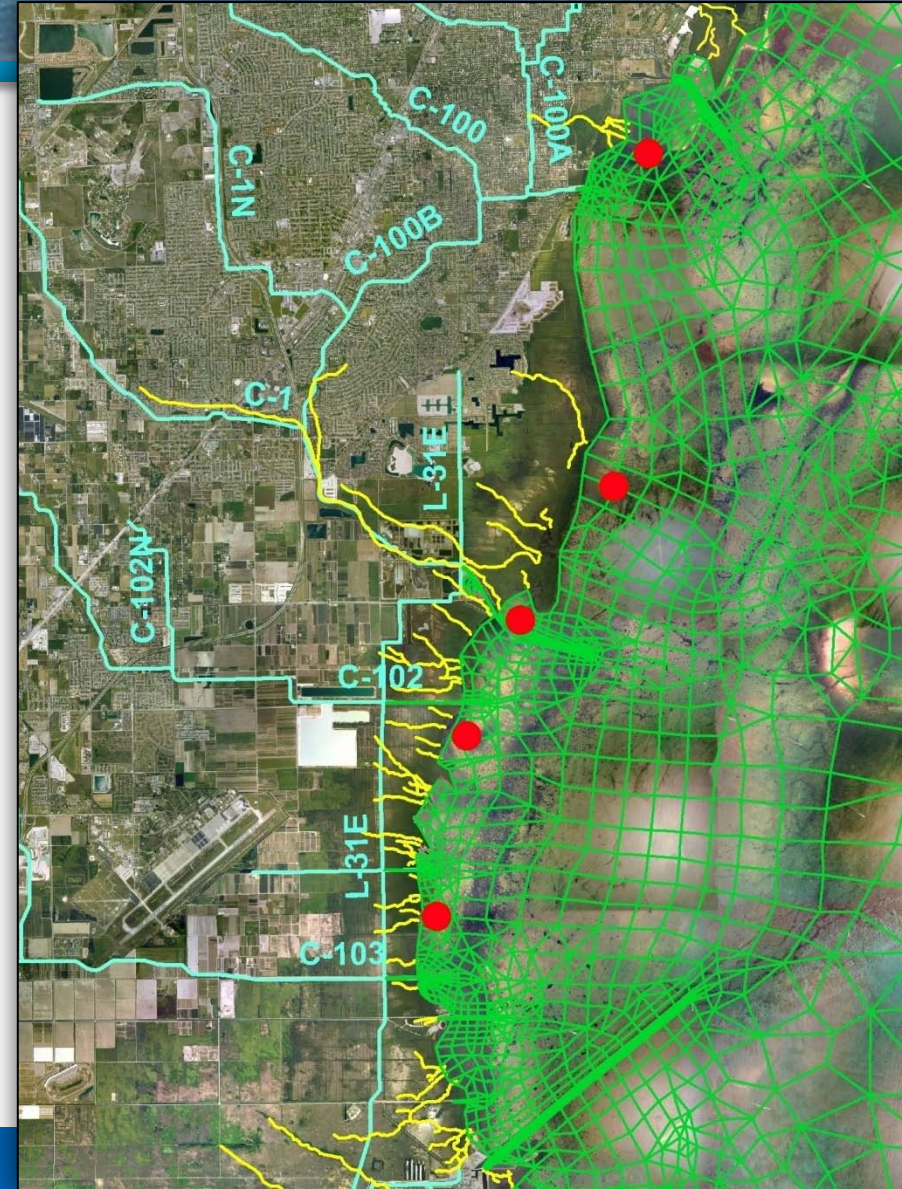
- Eastern oyster
- Blue crab
- Juvenile pink shrimp
- Common snook
- Adult crocodile
- West Indian manatee
- Shoal grass

### Future:

- Spotted seatrout
- Red drum
- Crevalle jack
- Juvenile crocodile
- Widgeon grass

# How Much Water is Needed?

- Biscayne Bay TABS-MDS hydrodynamic model was run for one year simulation
- Salinity maintained at 20 nearshore
- Freshwater added through creeks simulating BBCW project





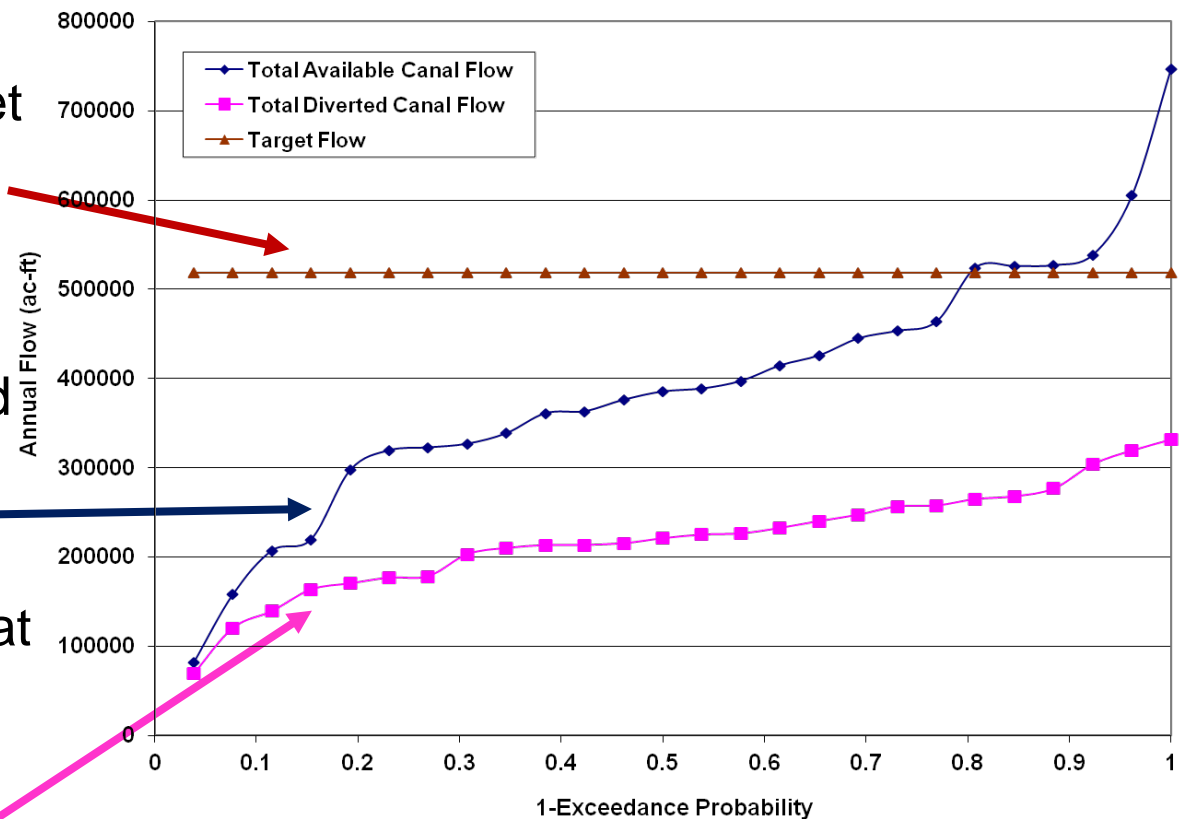
# Determination of Available and Diverted Water

- Available water was estimated by comparing how much water historically (1986-2011) flowed from each canal daily. Results are from SFWMD's DBHYDRO database
- The daily flows were compared to project pump capacities located on each canal
- Flows up to the pump capacity were assumed to be diverted into wetlands
- Daily flows greater than pump capacity are discharged through the canal into the bay directly



# Updated Water for Project Area

- Brown line is water estimate needed for nearshore habitat target annually (518,759 acft)
- Blue line is actual annual flows or available water\* ranked by volume (81,798-747,338 acft)
- Pink line is estimate that the project will divert annually into wetlands (69,485-331,599 acft)



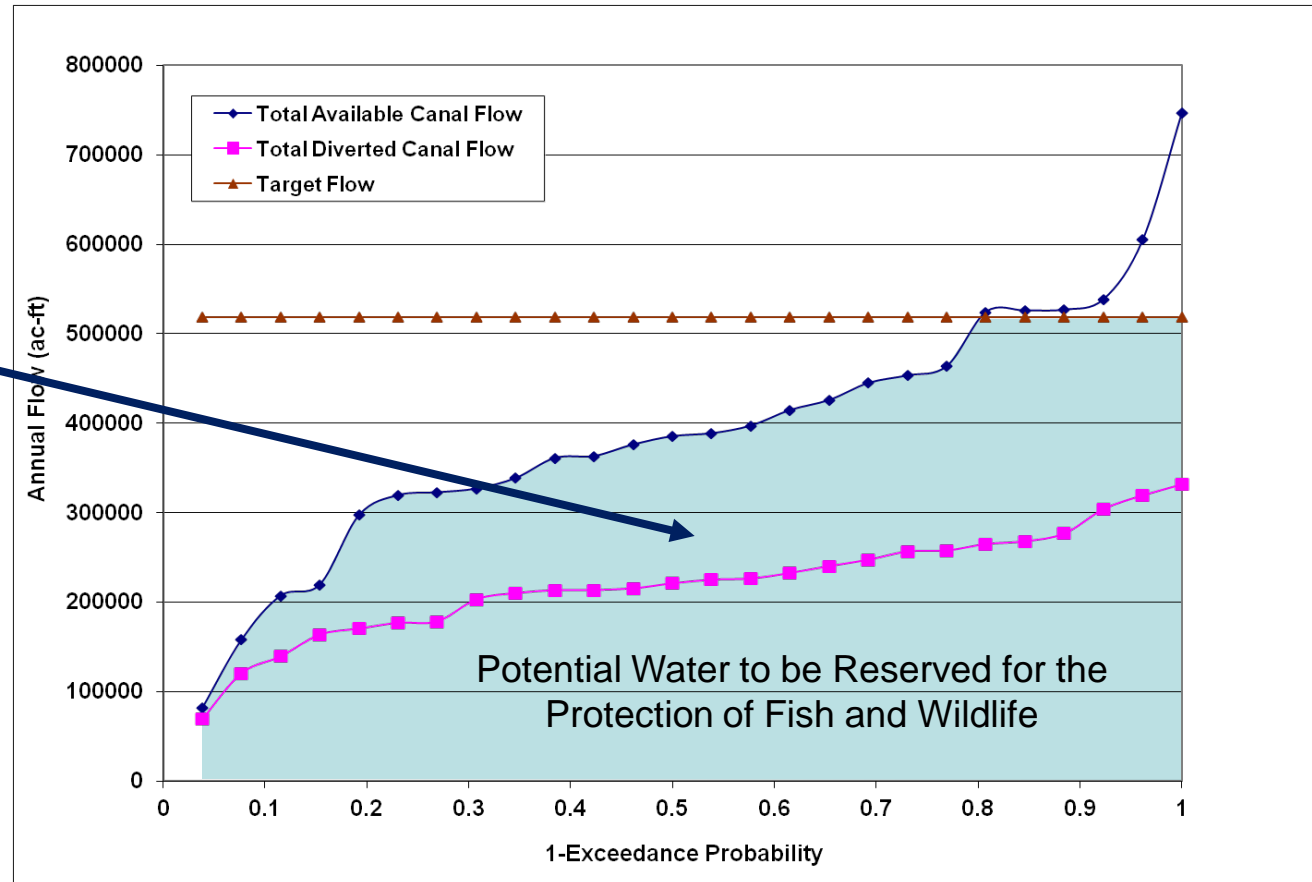
\*Assumes interbasin transfer of water as needed.

Source: DBHYDO, 1986-2011



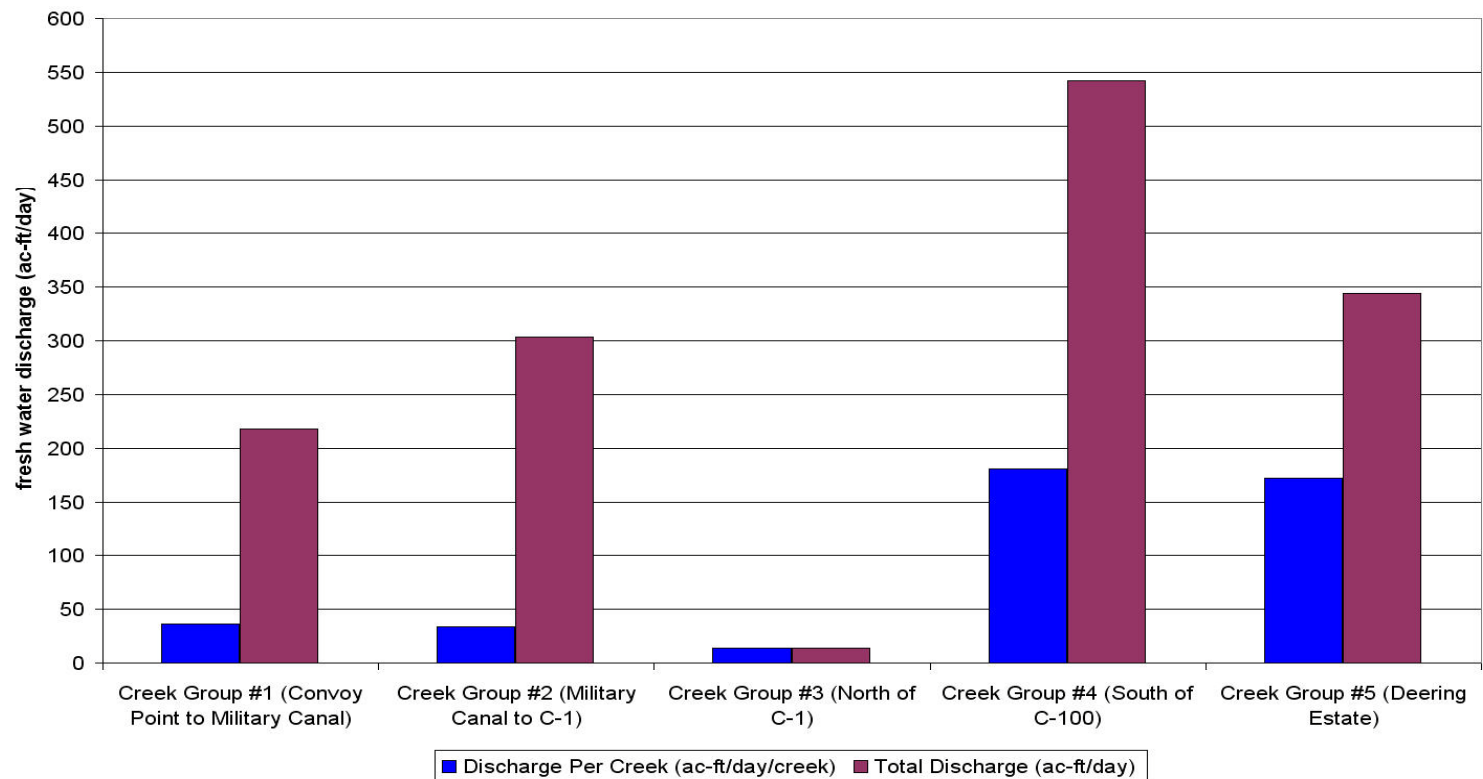
# Estimated Water to be Reserved

- Total potential water to be reserved is available water up to target in shaded area (81,798-518,759 acft/year, historically)
- Water flows must be assigned to individual canals to create an effective rule.



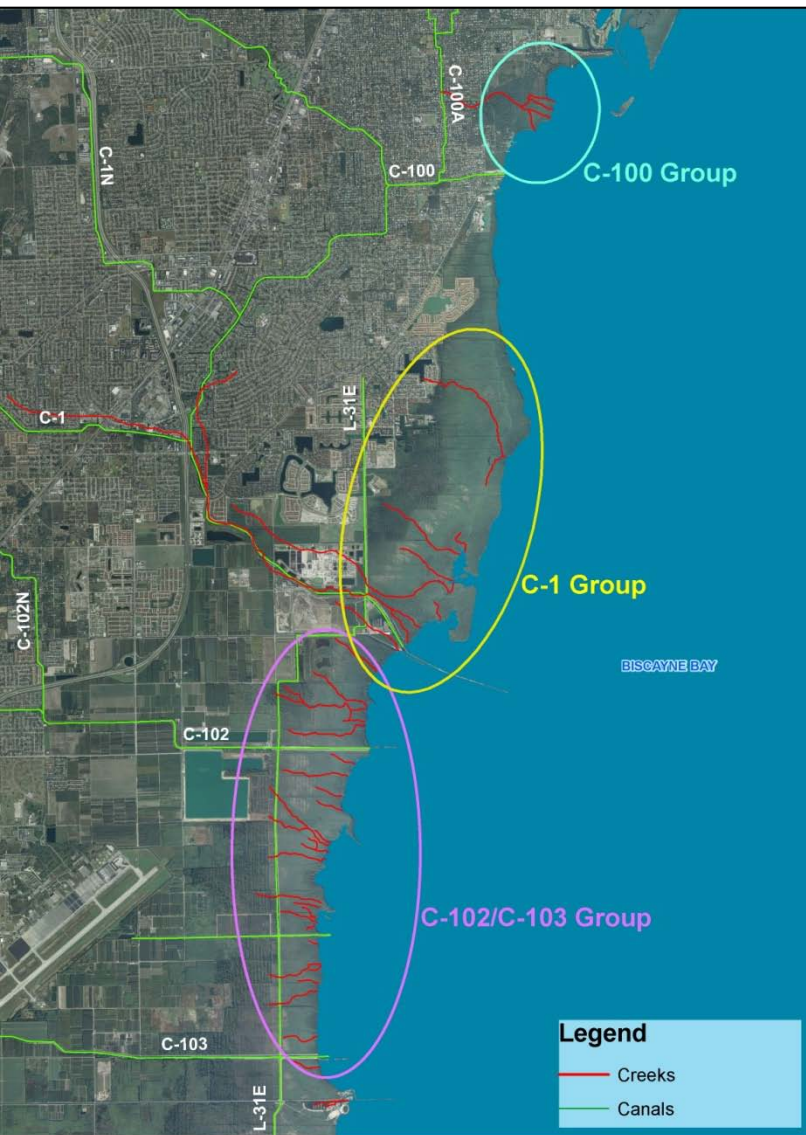
# Water Estimated by Creek Group

**Minimum Annual Average Freshwater Discharge Required to Maintain a Viable Nearshore  
Estuarine Environment**



From 2003 USACE Memo (Richardson)  
518,759 acre feet/yr

# Flow Targets by Canal



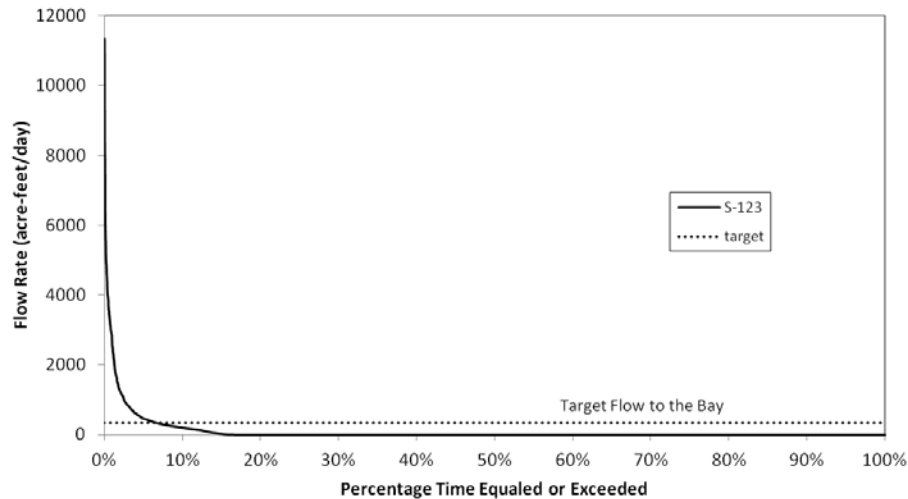
Based on 2003 Memo Describing Model Results

Canal	Creek Number	Creek Group Number	Daily Flow per Creek	Note	Daily Inflow per Canal Group	Annual Inflow per Canal Group
C-100	47	5	172.21		344.42	125,713.68
	48	5	172.21			
C-1	33	2	16.86	½ of flow	572.47	208,952.52
	36	3	13.71			
	41a	4	180.63			
	41b	4	180.63			
	43	4	180.63			
C-102+ Military+ C-103	1	1	36.28		504.36	184,092.82
	2	1	36.28			
	3	1	36.28			
	6	1	36.28			
	8	1	36.28			
	13	1	36.28			
	16	2	33.73			
	17b	2	33.73			
	18	2	33.73			
	22	2	33.73			
	23	2	33.73			
	25	2	33.73			
	26	2	33.73			
	30	2	33.73			
	33	2	16.86	½ of flow		

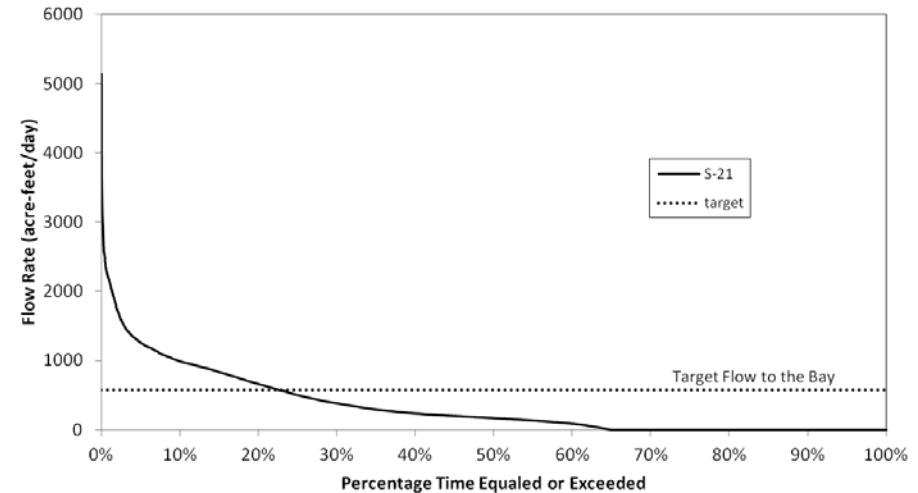
Flow rate in acre-feet

# Flow Target Analysis for Canals

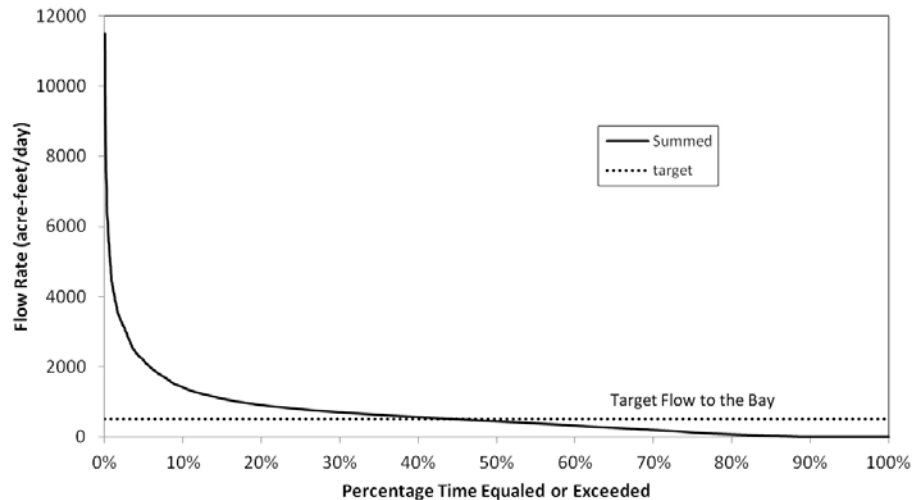
Historical Estimated Surface Water Flow from the C-100 Canal through S-123 into Biscayne Bay All Seasons



Historical Estimated Surface Water Flow from the C-1 Canal through S-21 into Biscayne Bay All Seasons



Historical Estimated Surface Water Flow from the C-102+Military+C-103 Canals through S-21A+S-20G+S20F All Seasons

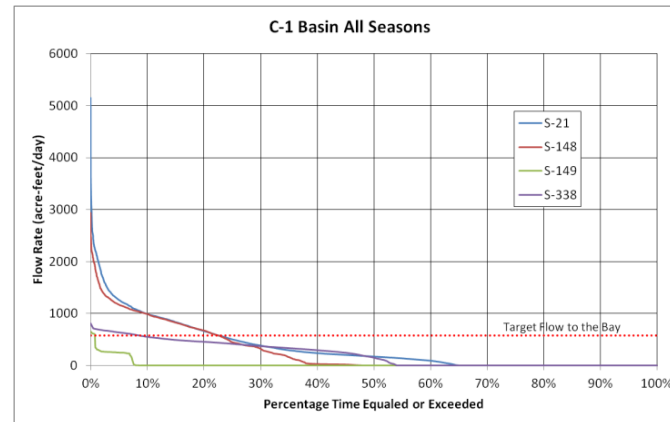


- Targets for each basin outfall can be compared to the historical daily flow rates



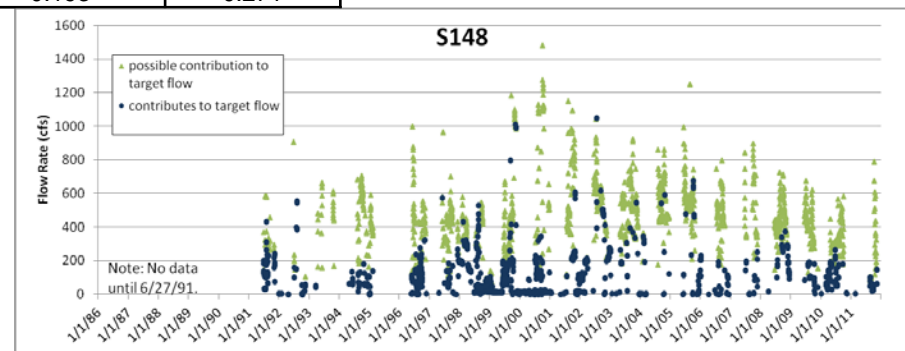
# Canal Tributary Screening Analysis

- Compared flow rates at structures to individual targets
- Compiled flow results from upstream water control structures
- Characterized data statistically
- Examined tributary flow correlation statistics
- Examined time series plots for frequency of contributions

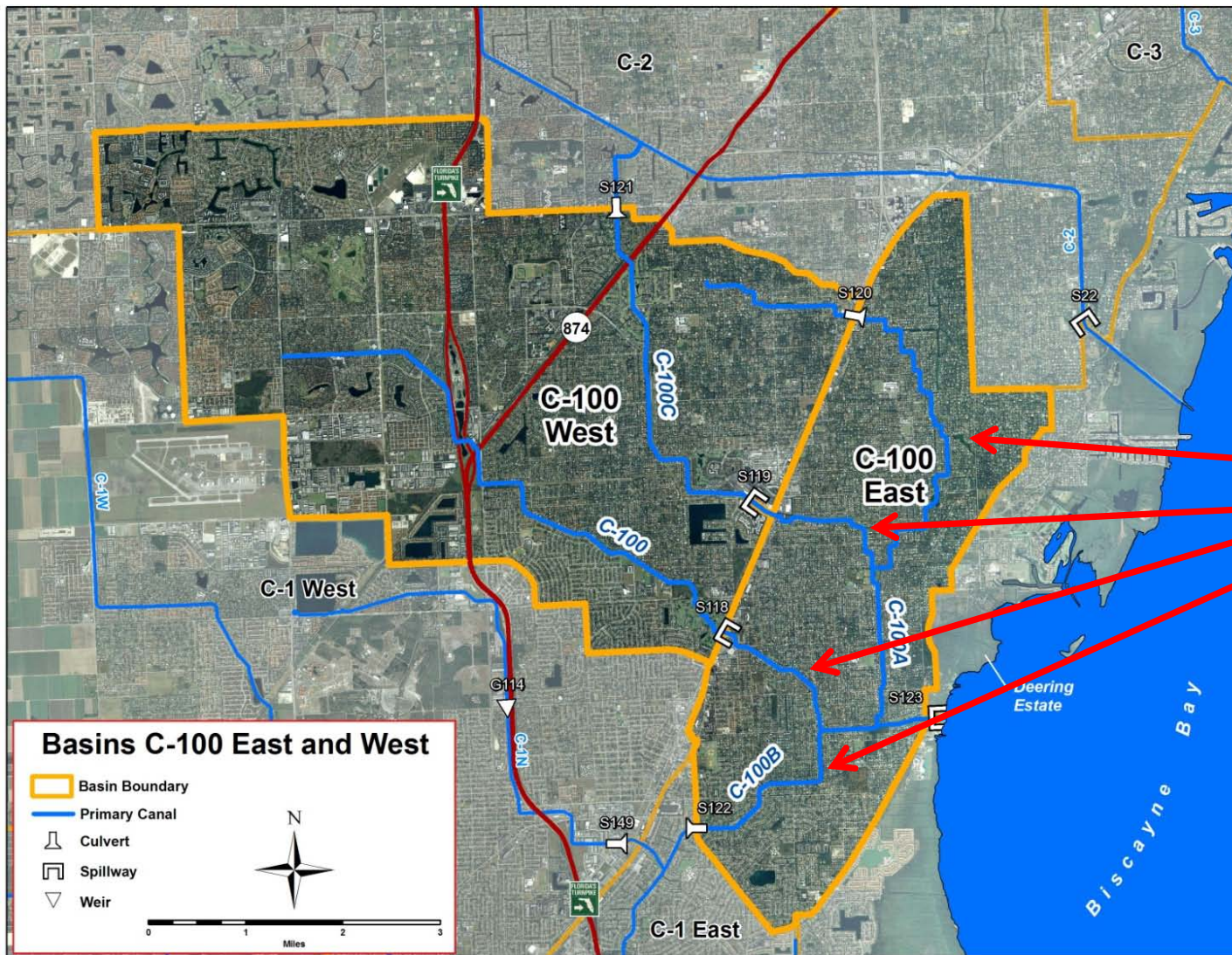


Statistics	S-21	S-149	S-148	S-338
Number of Cases	9,496	1,092	7,301	9,496
Maximum	2,594.97	325.73	1,478.34	409.67
Median	86.61	0.00	0.29	76.10
Arithmetic Mean	173.72	10.84	139.50	108.87
Standard Error	2.45	1.25	2.611	1.21
Standard Deviation	238.71	41.25	223.08	118.12
25 <sup>th</sup> percentile	0.00	0.00	0.00	0.00
75 <sup>th</sup> percentile	254.00	0.00	235.23	211.02

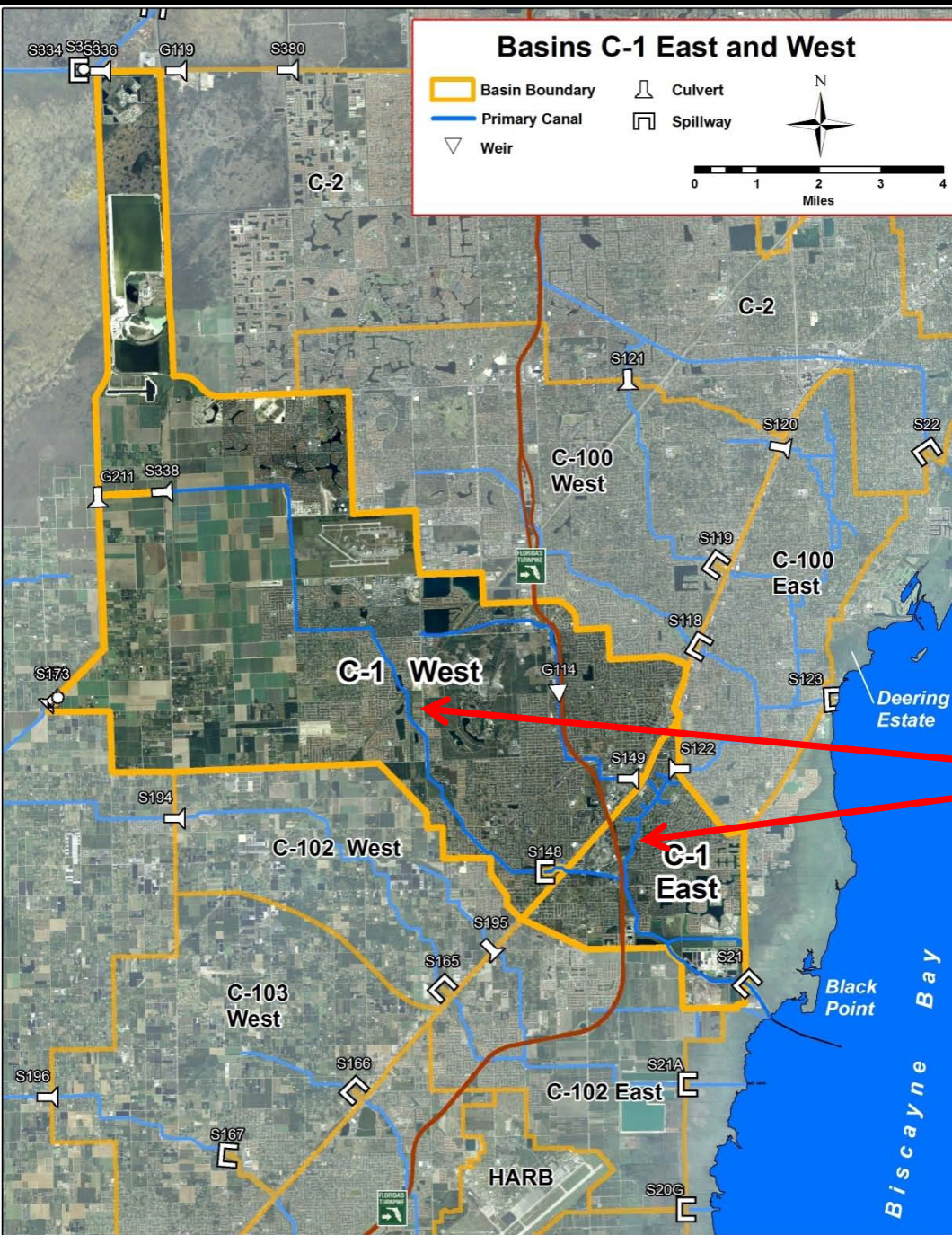
Structure	Pearson	Kendall tau-b	Spearman
All Seasons when S-21 Flow > 0 and < 288.63			
S-149	0.133	0.074	0.092
S-148	0.564	0.397	0.525
S-338	0.306	0.193	0.271



# Results for C-100 Basin Canals





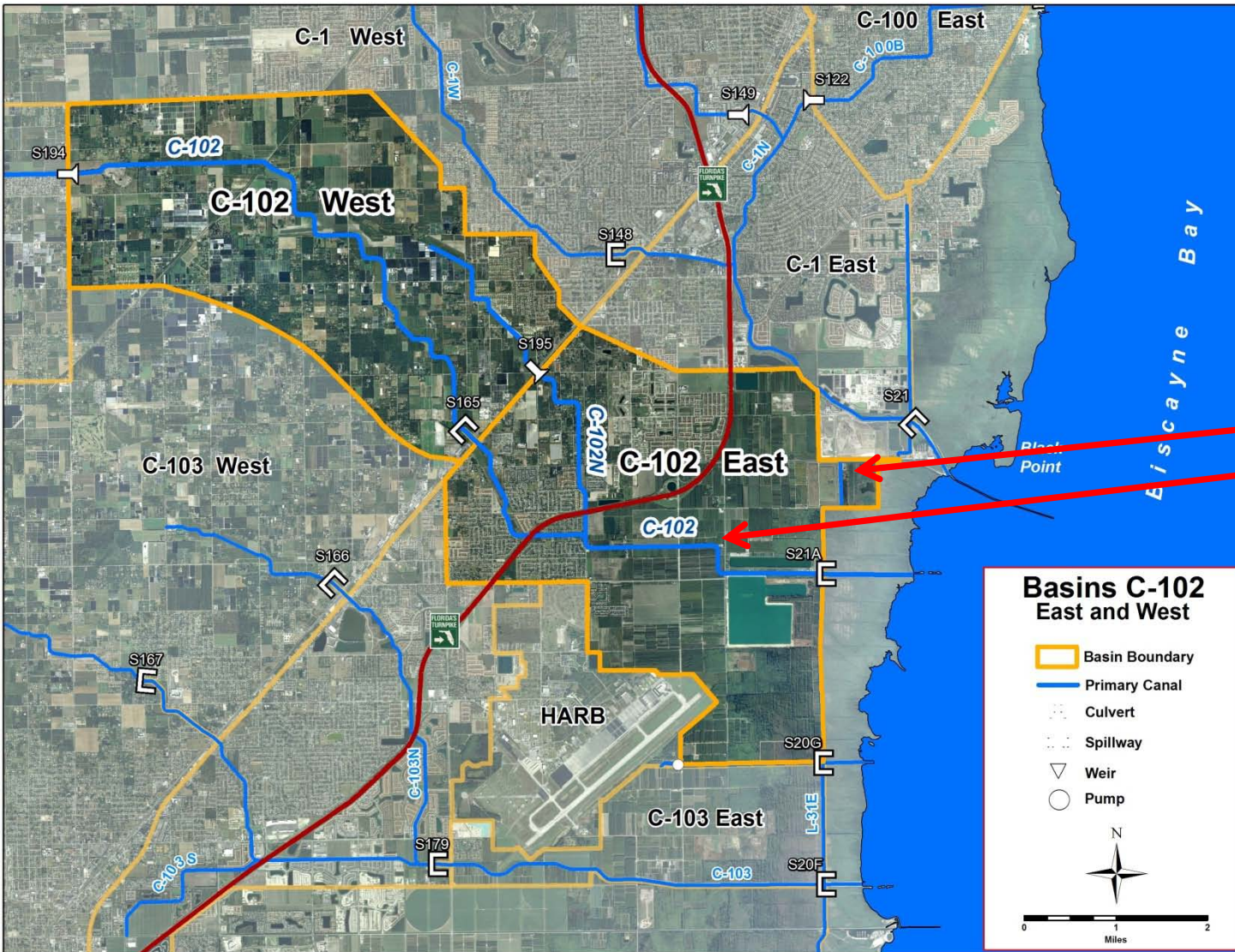


# Results for C-1 Basin Canals

## Canal reaches that contribute to target in the C-1 East Basin and the C-1 West Canal



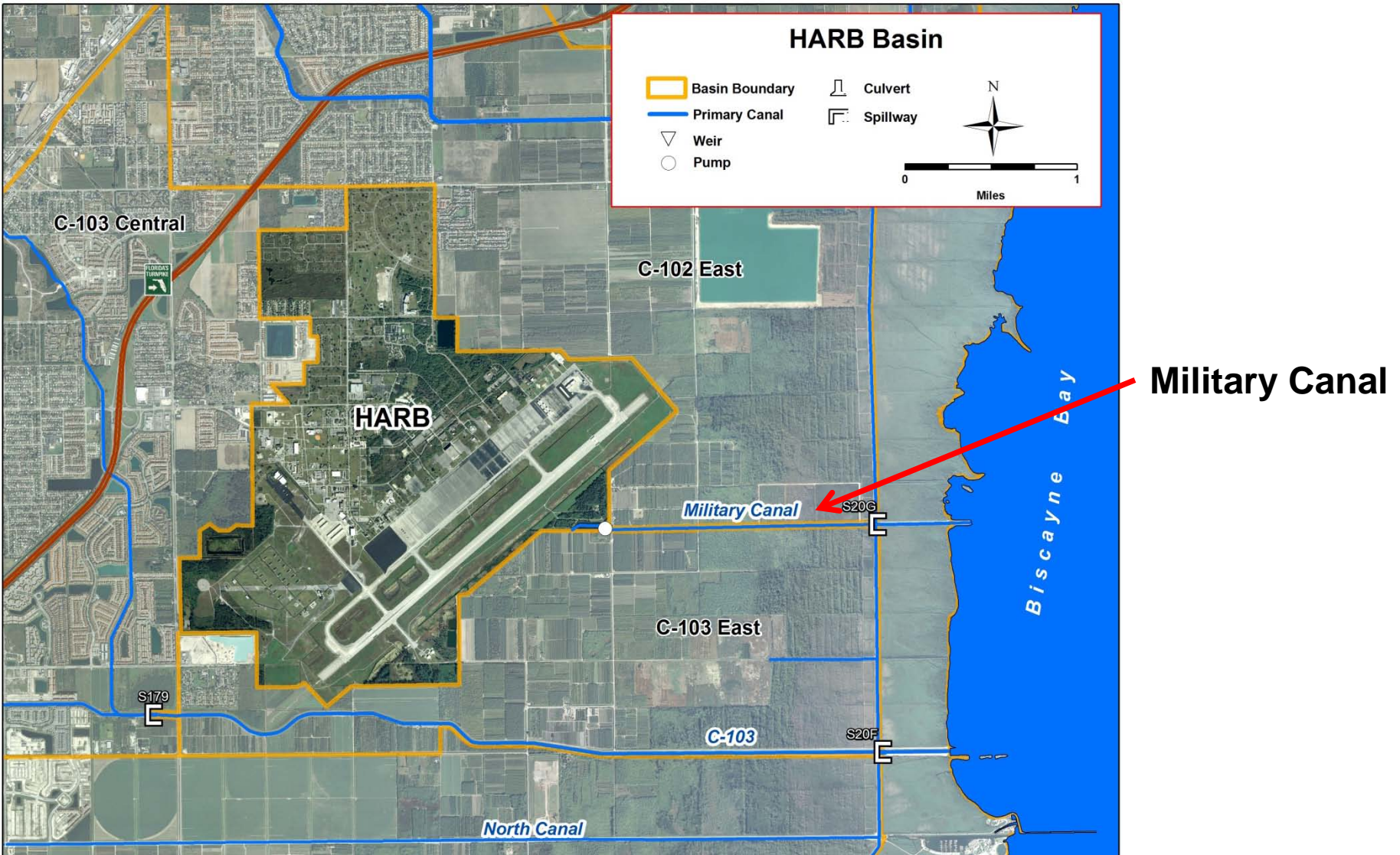
# Results for C-102 Basin Canals



Canal reaches  
that contribute  
in the C-102  
East Basin

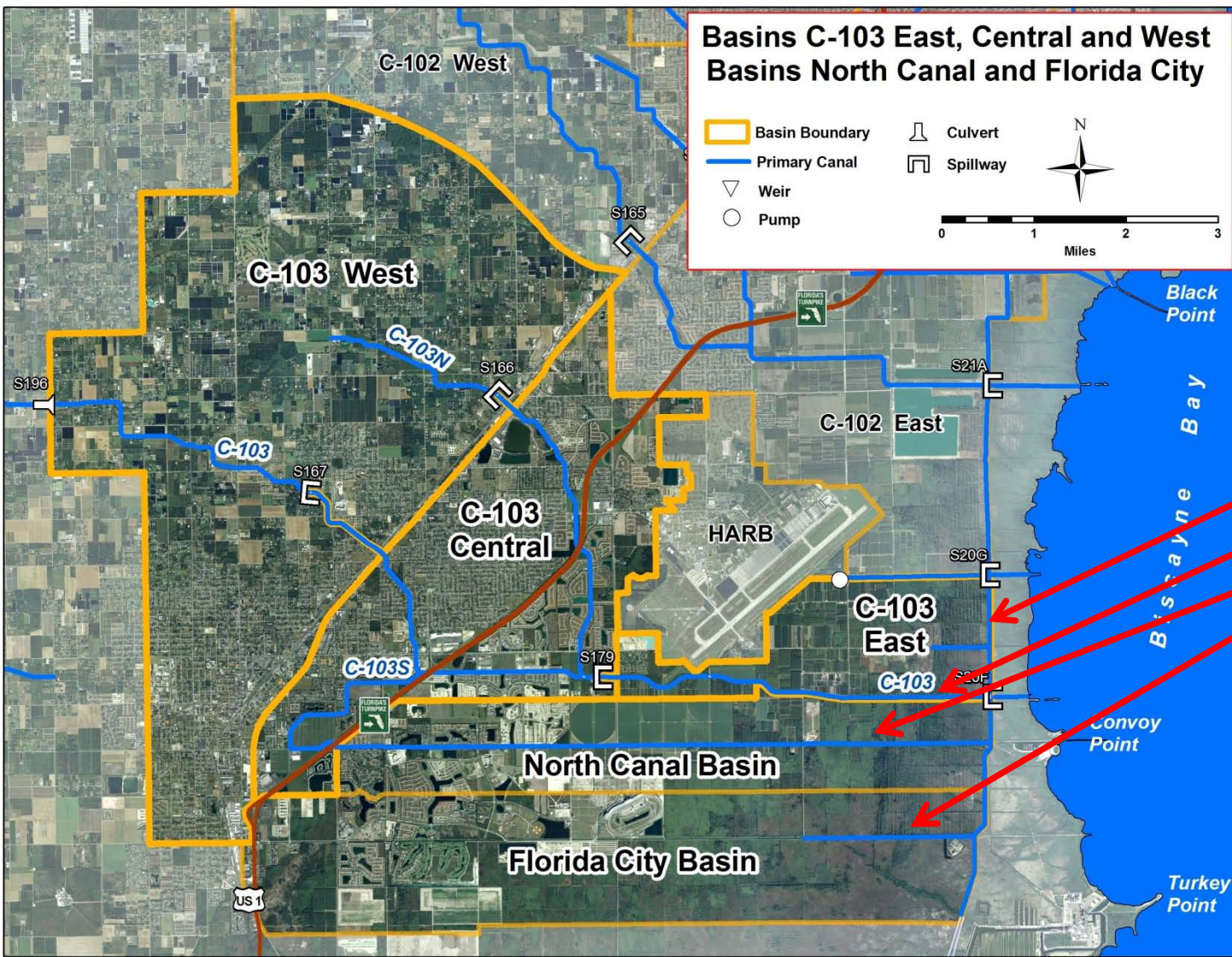


# Results for HARB Basin Canals





# Results for C-103 Basin Canals



Canal reaches that contribute in the C-103 East Basin, North Canal, piece of Florida City Canal





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*November 28, 2012*

**Water Reservation for the Biscayne Bay Coastal  
Wetlands Phase I CERP Project**

# **Discussion of Regulated Water Bodies Map**

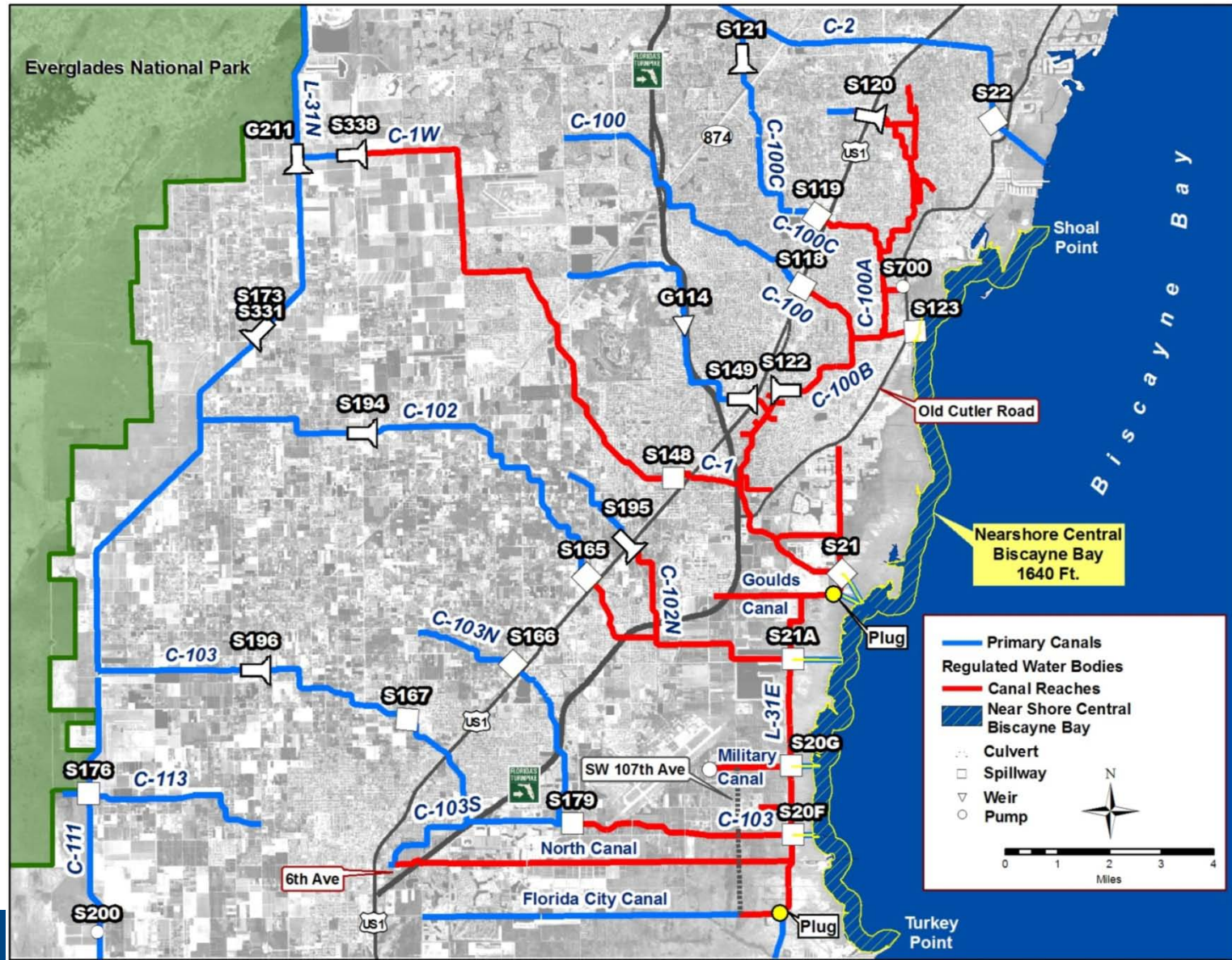
**Don Medellin**

Principal Scientist

Coastal Ecosystems Section, Applied Sciences Bureau



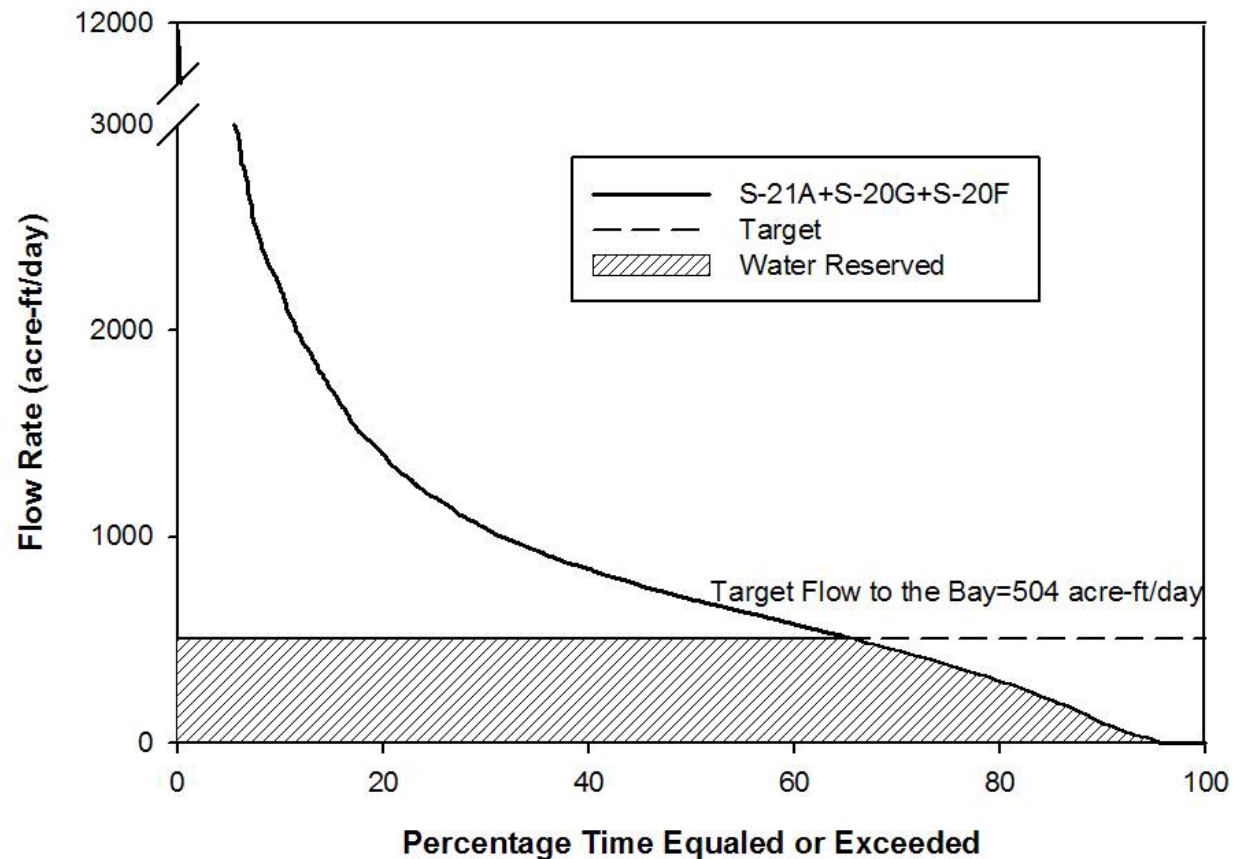
# Water Bodies to be Regulated



# Flow Curve

## S-21A+S-20G+S-20F Wet

Figure 3-4A. Surface Water Flow from the C-102+Military+C-103 Canal through S-21A+S-20G+S-20F into Biscayne Bay during the Wet Season (June-October) (1986-2011)

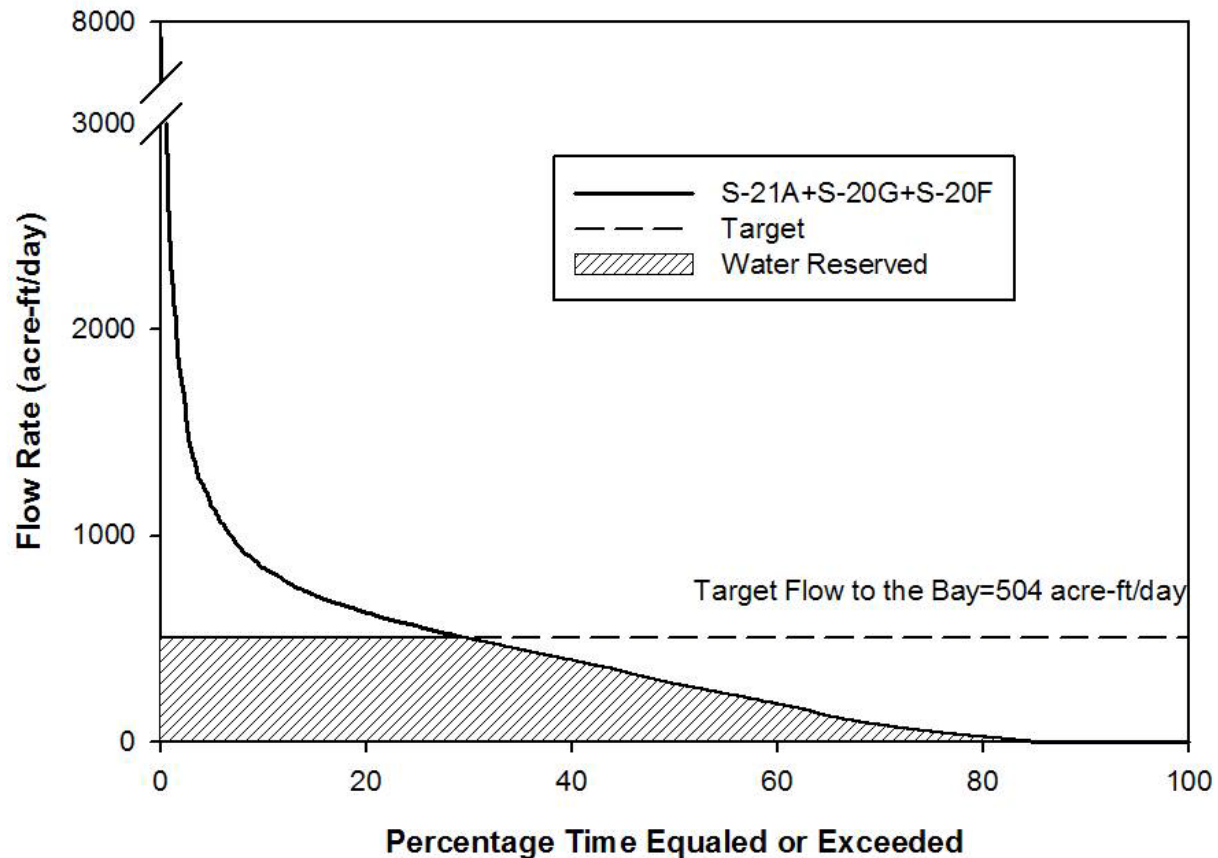




# Flow Curve

## S-21A+S-20G+S-20F Dry

Figure 3-4B. Surface Water Flow from the C-102+Military+C-103 Canal through S-21A+S-20G+S-20F into Biscayne Bay during the Dry Season (November-May) (1986-2011)



# Summary

## Document to Support Rule:

- Identified canals to be protected
- Basin wide analysis was completed to determine what flows are contributing to the flow target
- Developed volume probability curves for both the wet and dry seasons based on the analysis

## Rule Language:

- Results are incorporated into the water reservation rule language







**WORKSHOP**  
*November 28, 2012*

**Water Reservation for the Biscayne Bay Coastal  
Wetlands Phase I CERP Project**

**Draft Rule Language Overview**

**Beth Lewis**  
Senior Specialist Attorney  
Office of Counsel

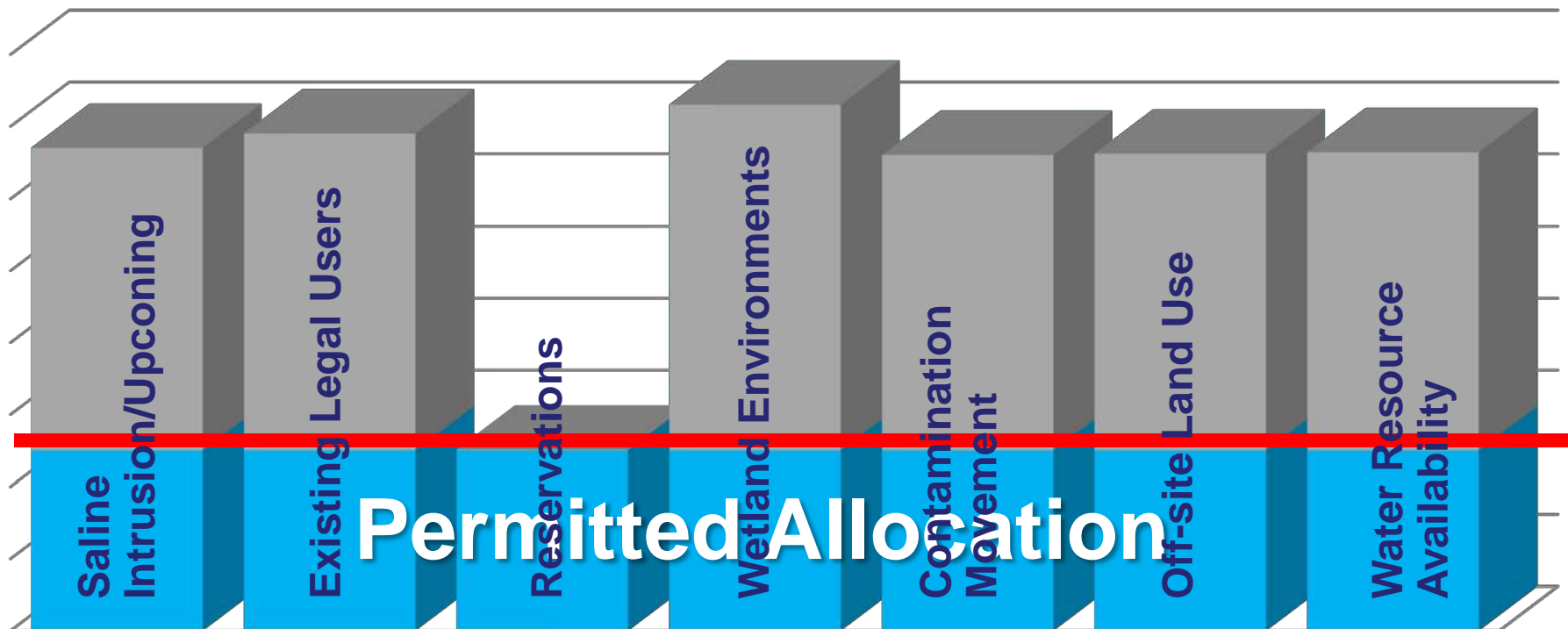
# Rule Components

- Water Reservations set aside water for the protection of fish and wildlife from allocation for consumptive use
- Chapter 40E -10, F.A.C – “Water Reservations”
  - Water reservations organized by geographic area
  - Contains figures of protected reservation water bodies
  - Contains volume probability curves identifying reserved water
- Basis of Review for Water Use Permit Applications within the South Florida Water Management District
  - Contains specific implementation criteria for the consumptive use permitting process



# Consumptive Use Permitting Criteria

- Allocations are based on the most stringent resource protection criteria



## Chapter 40E-10

- Defines Protected Water Bodies
  - “Nearshore Central Biscayne Bay” – area defined in PIR that receives benefits from BBCW Phase I project
  - Portions of surface water conveyance canals that contribute water to Nearshore Central Biscayne Bay
    - “All surface water flowing in C-100A Canal upstream of S-123 to S-120 including all integrated conveyance canals protected”
- Contains Map Showing Protected Water Bodies
- Contains Volume Probability Curves Identifying Water to be Reserved in Wet and Dry Seasons
- Existing Legal Users are protected for the duration of their permits





# Basis of Review Criteria

- Prohibition on surface water withdrawals from Nearshore Central Biscayne Bay
- Restrictions on surface water withdrawals from canals contributing water needed for fish and wildlife protection
- Withdrawals that do not use reserved water:
  - Groundwater withdrawals
  - Dewatering
  - Withdrawals of water in excess of the target identified in the volume probability curves found in 40E-10
  - Renewals of existing permits withdrawing surface water from identified canal reaches as of rule adoption date
  - Permit modifications that do not increase the amount or timing of an existing permitted withdrawal from an identified canal reach
  - Water from terminated/ reduced permits may be allocated so long as new allocation occurs upstream of the same coastal structure



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# **Next Steps**

**Don Medellin**

**Principal Scientist**

**Coastal Ecosystems Section, Applied Sciences Bureau**

# Next Steps

- SFWMD's web site provides information for your review:

<http://www.sfwmd.gov/reservations>

- Public commenting period ends December 15<sup>th</sup>, 2012
- Submit comments to:  
Jan Sluth - [jsluth@sfwmd.gov](mailto:jsluth@sfwmd.gov)





# Next Steps

- Comments regarding the documents posted on the website:
  - Document to support the rule
  - Draft rule language
    - Chapter 40E-10 F.A.C.
    - Basis of Review for Water Use Applications



# Next Steps – Future Schedule

Activity	Date
Public Comment Due Date	December 15, 2012
Post Document to Support the Rule  Post Revised Draft Rule Language	January 7, 2013
WRAC Meeting	February 7, 2013
Governing Board Meeting - Notice of Proposed Rule	February 14, 2013



# **Public Comment**

**Water Reservation for the  
Biscayne Bay Coastal Wetlands Phase I CERP Project  
Workshop #3**





**Thank You for  
Your  
Participation!**