

King Tide on Miami Beach:



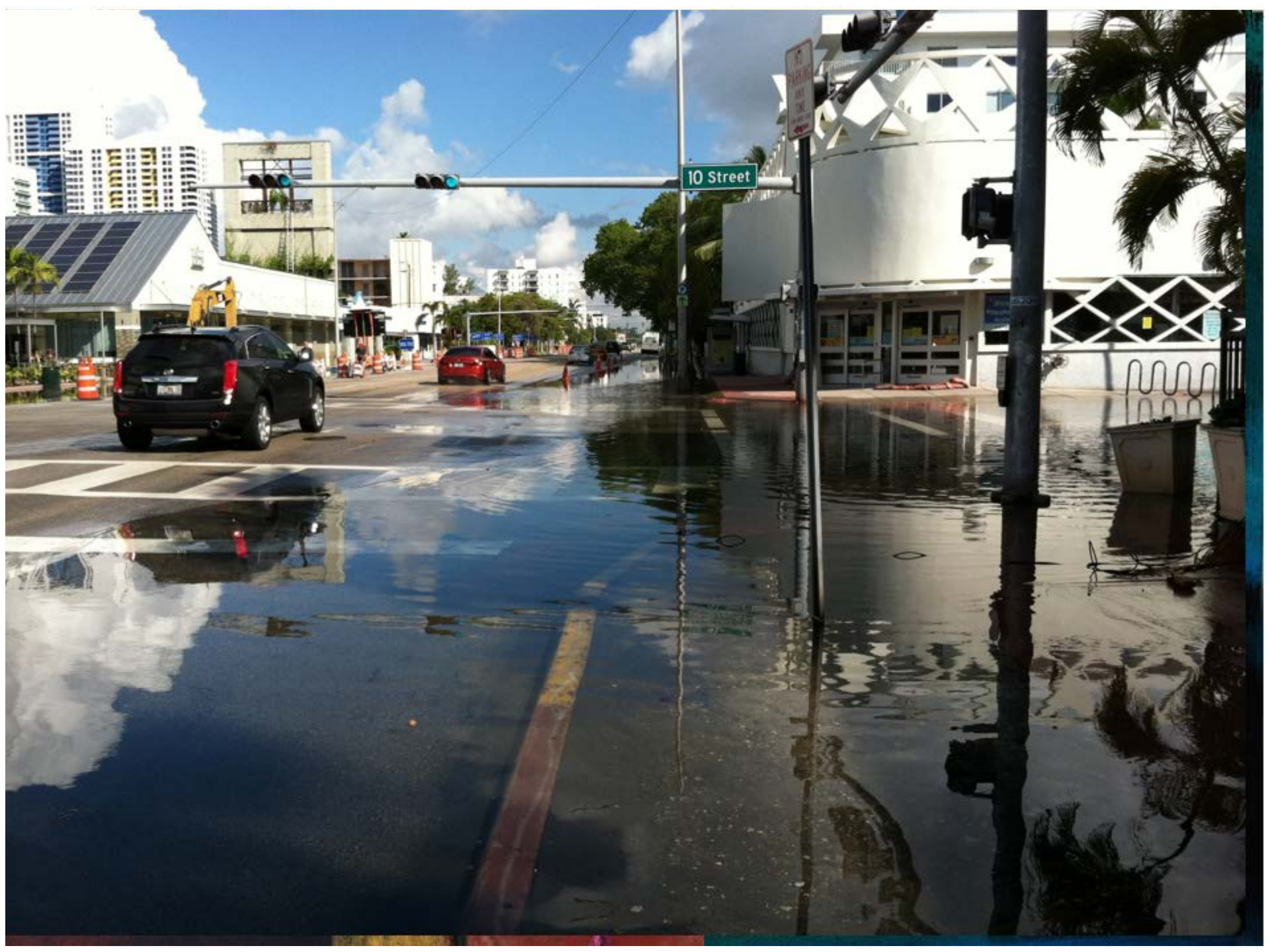
"..a peek into the future of Biscayne Bay.."

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Peter Regier, Elizabeth Kelly

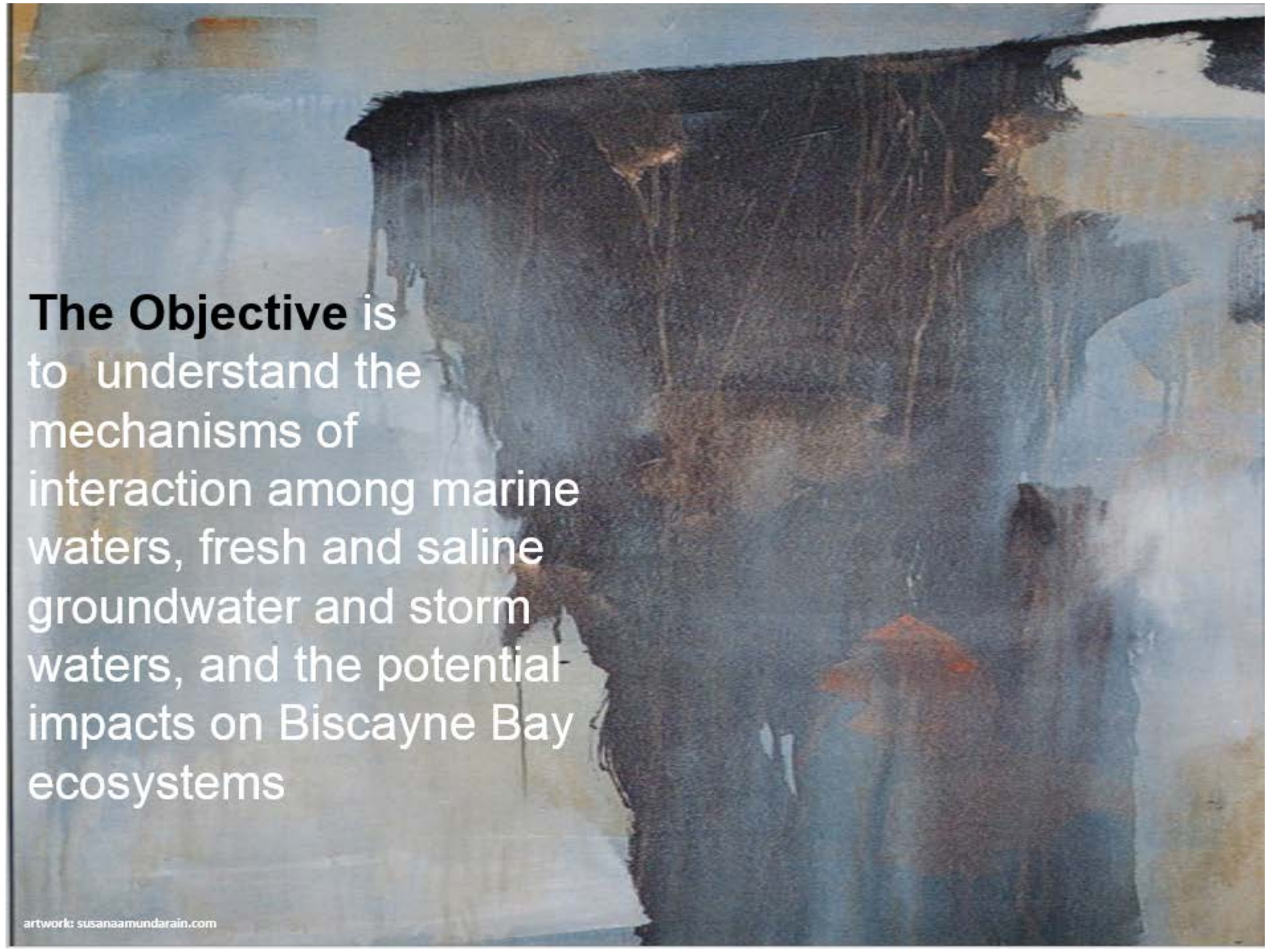
FIU FLORIDA
INTERNATIONAL
UNIVERSITY

 National Oceanic and
Atmospheric Administration
U.S. Department of Commerce

 **MIAMI**





An abstract painting featuring a large, dark, textured area in the center, possibly representing a storm or a complex interaction. The background is a mix of light blue and white washes, with some darker, more defined shapes on the right side. The overall mood is somber and complex.

The Objective is
to understand the
mechanisms of
interaction among marine
waters, fresh and saline
groundwater and storm
waters, and the potential
impacts on Biscayne Bay
ecosystems

Lab experiment



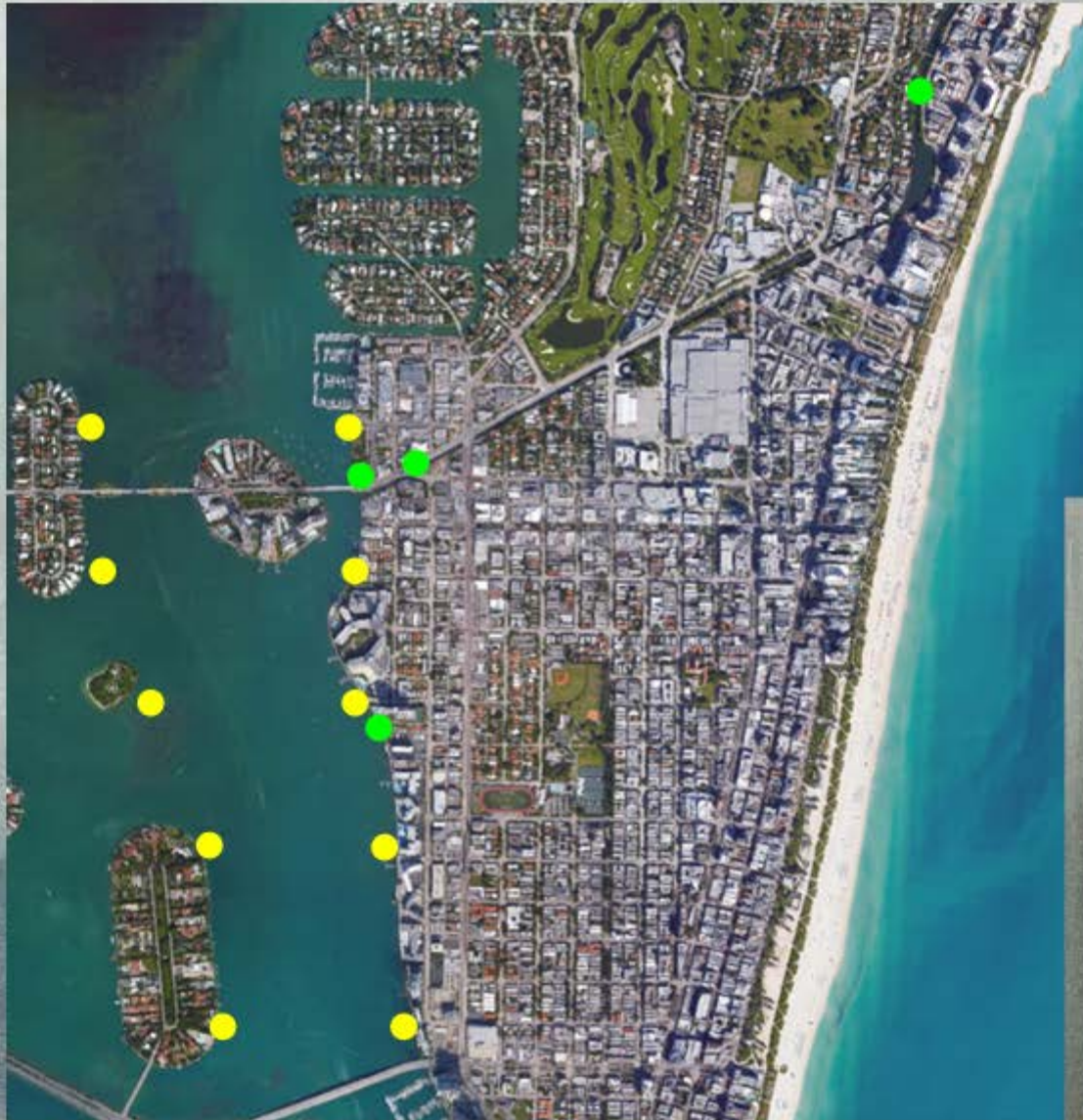
Seawater

Soil



King Tides on Miami Beach:

“..an island-size experiment mimicking higher sea level..”



● Bay

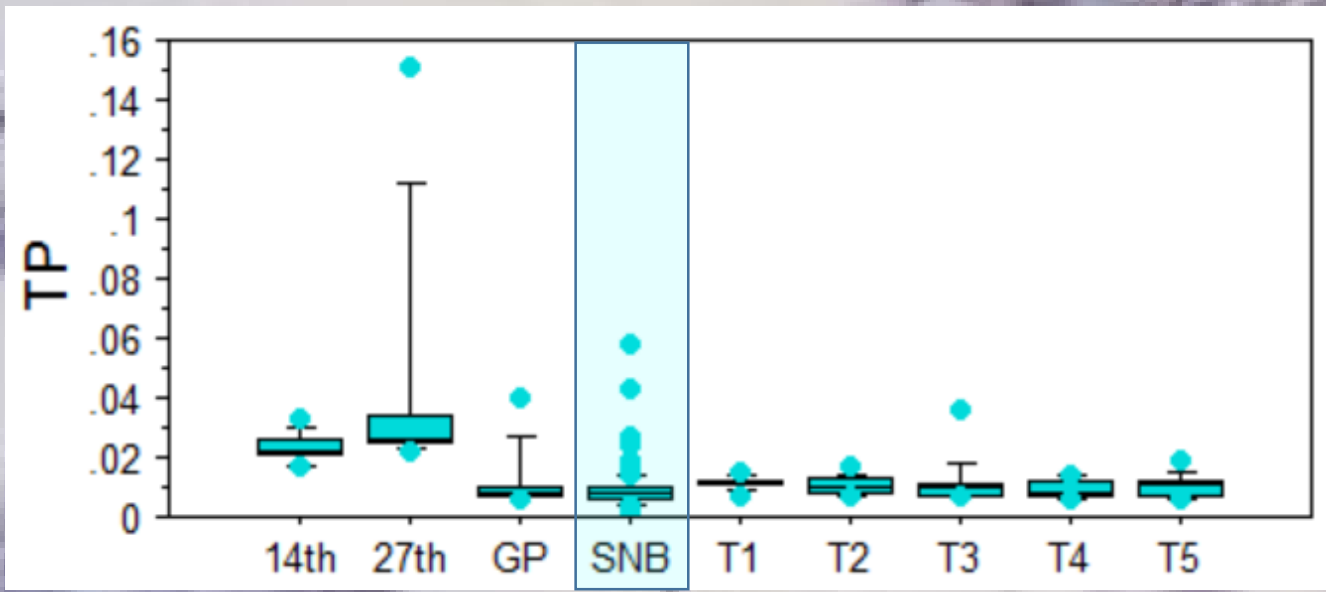
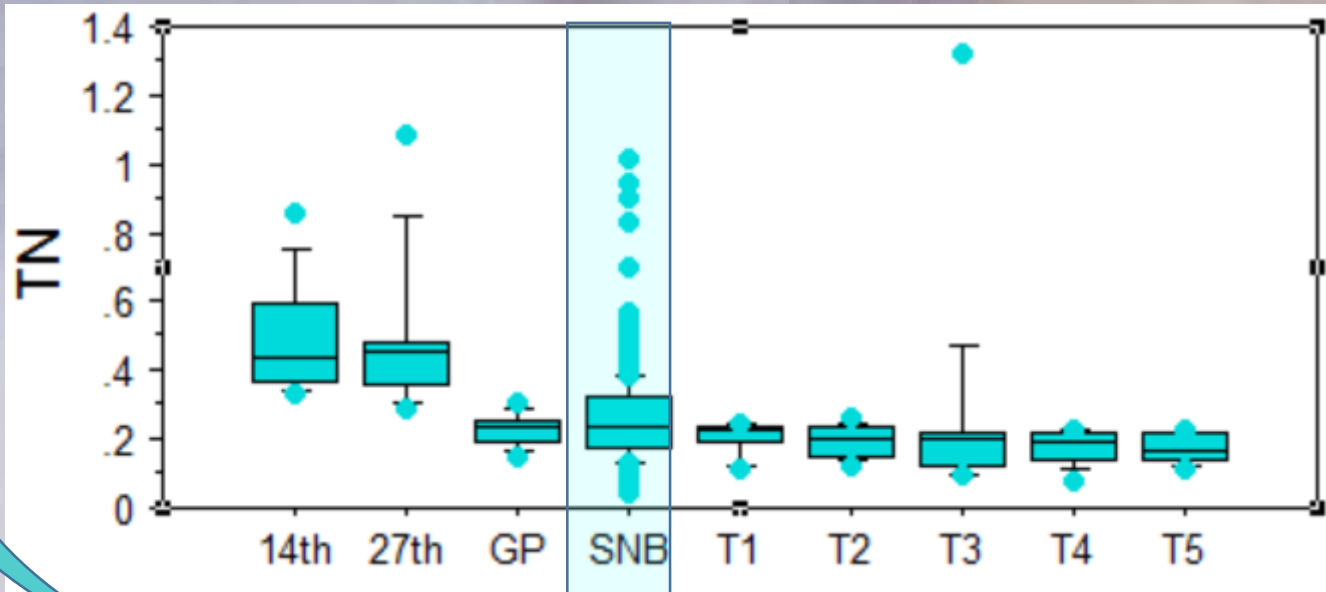
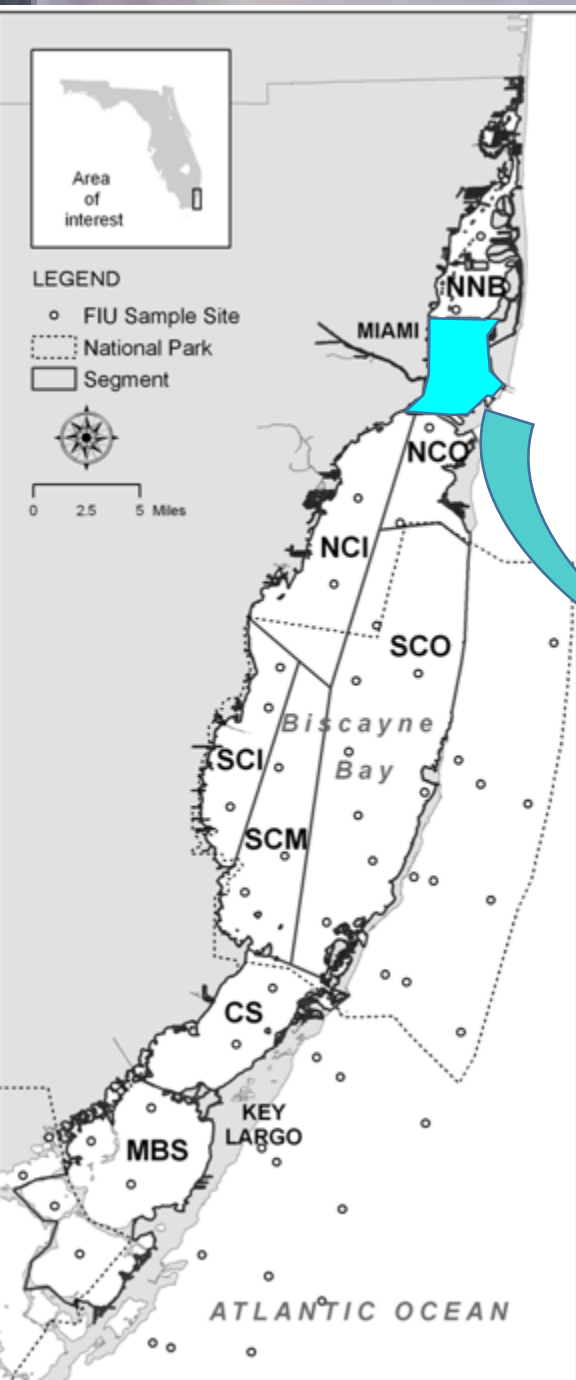
● outfall

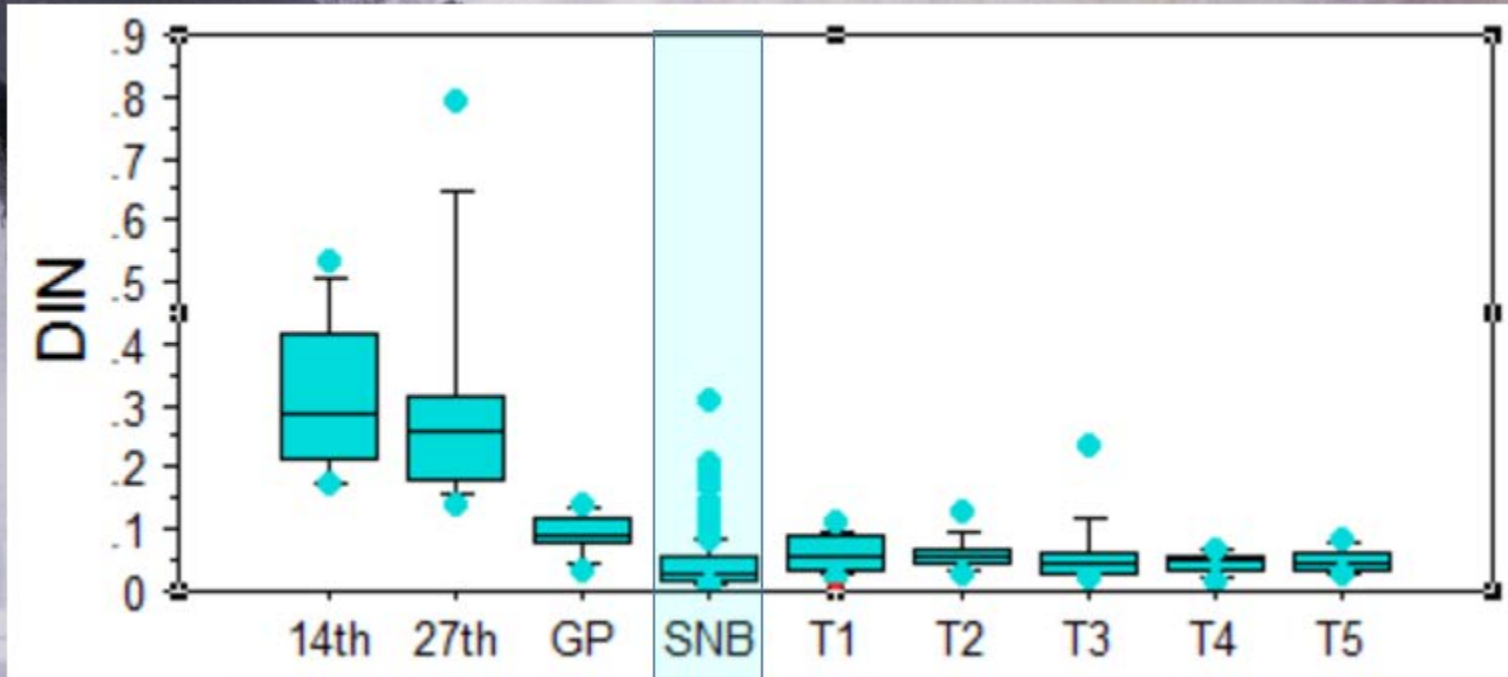
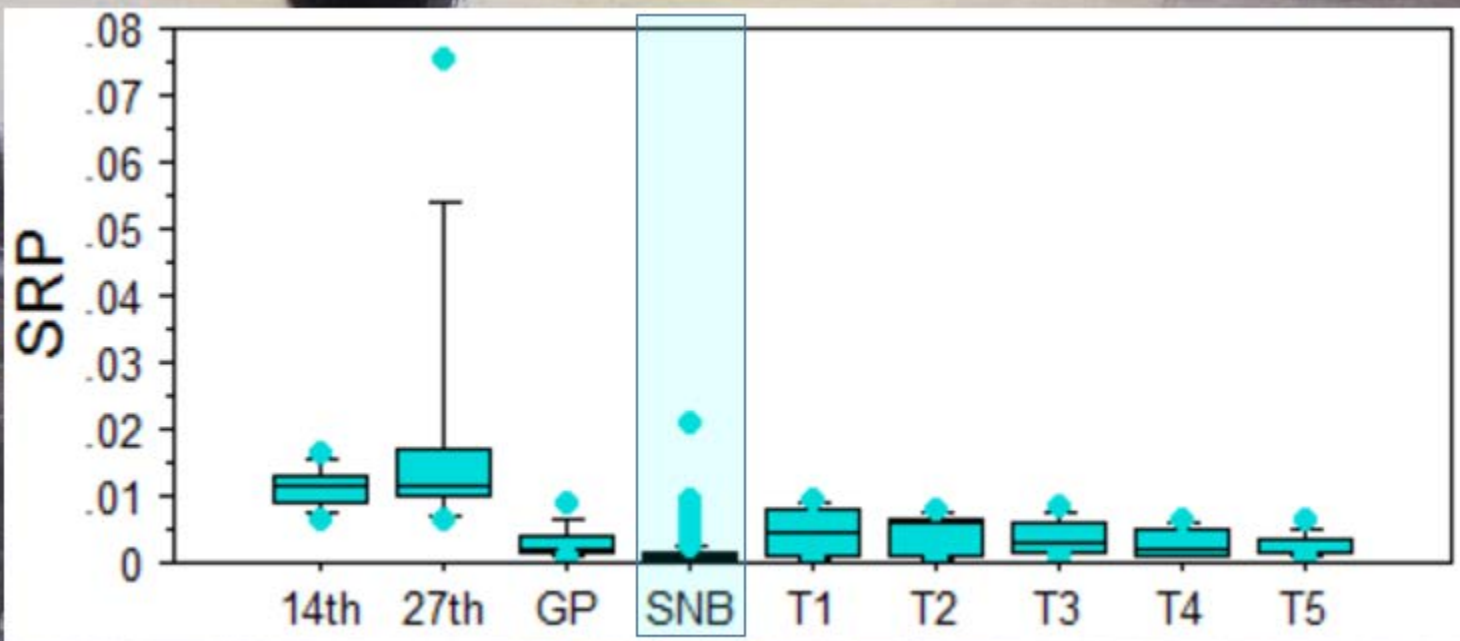




Results

A faded, sepia-toned photograph of a snowy landscape. The scene is dominated by a thick layer of snow covering the ground and rooftops. Several evergreen trees are visible, their branches heavily laden with snow. The trees are scattered across the frame, with some in the foreground and others in the background. The overall atmosphere is quiet and serene, typical of a winter day. The word "Results" is overlaid in the center of the image in a bold, black, sans-serif font.





King Tide Day October 9th, 2014

BACTERIAL ANALYSIS

Sample ID #	Sample Location	sample type	sample time	Viable (live) Enterococci by EPA method 1600 (cfu/100mL)	Total Enterococci by EnterolA qPCR (GE/100mL)	Human Bacteroidales by BacHum-UCD qPCR (GE/100mL)	Human Bacteroidales by HF-183 Taqman qPCR (GE/100mL)	Dog Bacteroidales by DogBact qPCR (TSC/100mL)
OutFall & Pump Sampling - Miami Beach King Tide of October 9, 2014								
14-1	14th St. seawall	storm drain outfall	8:30am	77	322	13	ND	33
14-2	14th St. seawall	storm drain outfall	9:30am	208	1,119	297	106	235
14-3	14th St. seawall	storm drain outfall	10:30am	9,000	13,497	899	593	1,942
14-4	14th St. seawall	storm drain outfall	11:30am	22,000	108,773	12,550	14,028	6,461
14-5	14th St. seawall	storm drain outfall	12:30pm	18,000	62,968	4,813	6,333	8,613

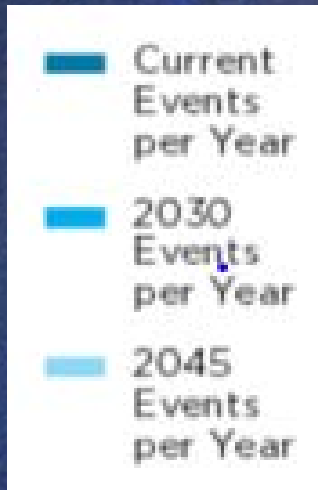
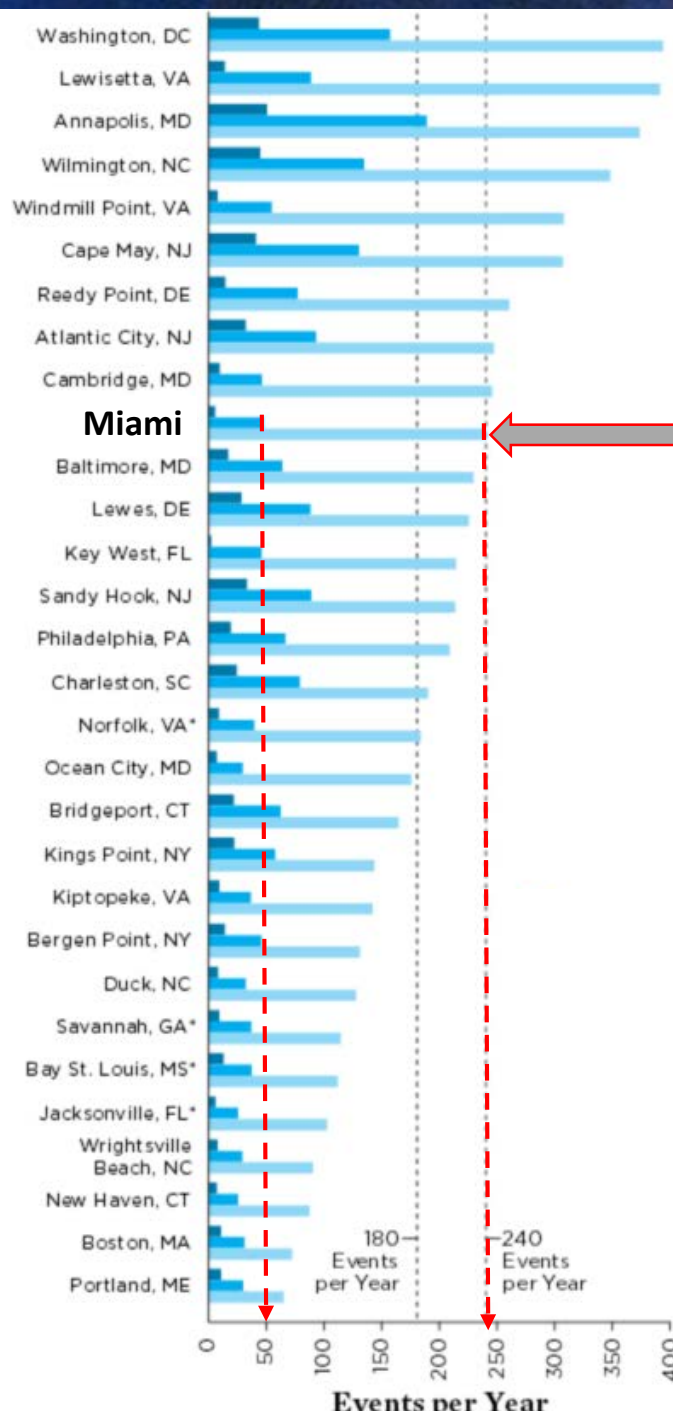
Enterococci values are in exceedance of State of Florida regulatory criteria for recreational waters

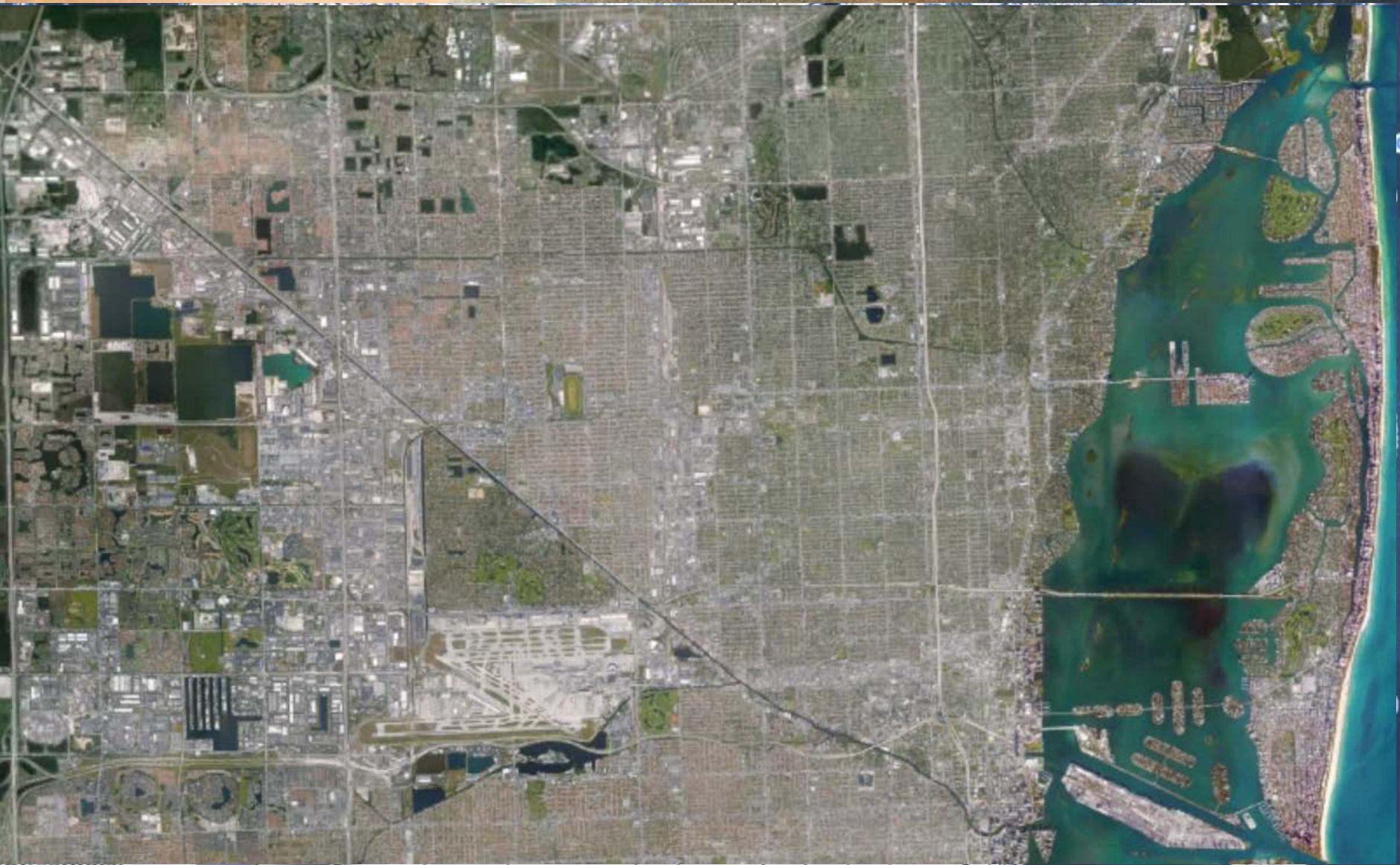
MST values are High: no regulatory standards but target abundance may be of significant potential public health concern

King Tide Day September 9th, 2015

Sample ID #	Sample Location	sample type	sample time	Viable (live) Enterococci by EPA method 1600 (cfu/100mL)	Total Enterococci by Entero1A qPCR (GE/100mL)	Human Bacteroidales by BacHum-UCD qPCR (GE/100mL)	Human Bacteroidales by HF-183 Taqman qPCR (GE/100mL)	Dog Bacteroidales by DogBact qPCR (TSC/100mL)
14-1	14th St. seawall	storm drain outfall	6:30am	124	621	103	97	ND
14-2	14th St. seawall	storm drain outfall	9:40am	900	2,200	317	160	ND
14-3	14th St. seawall	storm drain outfall	1:00pm	1,700	12,921	1,006	605	495
14-4	14th St. seawall	storm drain outfall	1:15pm	2,700	27,815	1,937	1,041	803
GP-2P	Collins Canal by Gibb Park	Portable Pump discharge	9:55am	161	7,727	68	312	152
GP-3P	Collins Canal at 17th St.	Permanent Pump discharge	11:30am	293	18,250	871	603	390
27-1	27th St. & Indian Creek Dr.	Floodwater in street	6:00am	40	160	ND	ND	400
27-2	27th St. & Indian Creek Dr.	Floodwater in street	9:14am	21,800	115,212	1,027	1,416	8,520
27-2P	27th St. & Indian Creek Dr.	Portable Pump discharge	10:58am	4,900	66,010	651	591	12,097
27-3	27th St. & Indian Creek Dr.	Floodwater in street	1:00pm	58	805	393	288	5,316

Flooding events





...in summary

- Preliminary results indicate that under flooding conditions ground and marine waters remobilize significant concentrations of nutrients and bacteria from soils
- While the results from different locations did vary substantially, several discharge samples demonstrated high concentrations of fecal indicator bacteria, high levels of human fecal marker and high nutrient content
- ...as stormwater is more than just rainwater...
floodwater is more than just Bay water....



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Thank you..!!!

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