Natural Source Exclusion Case Study: Reedy Creek, Central FL

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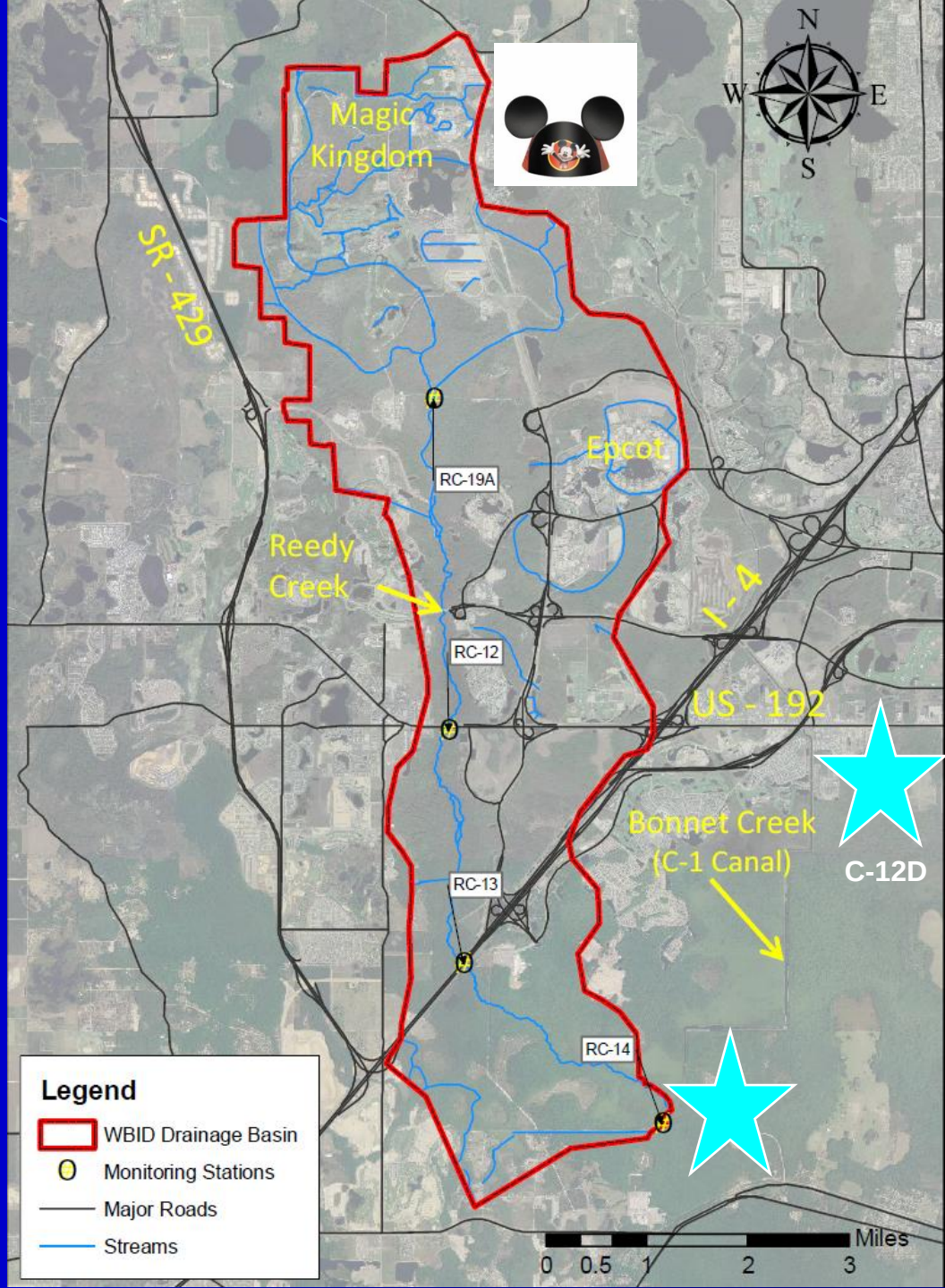
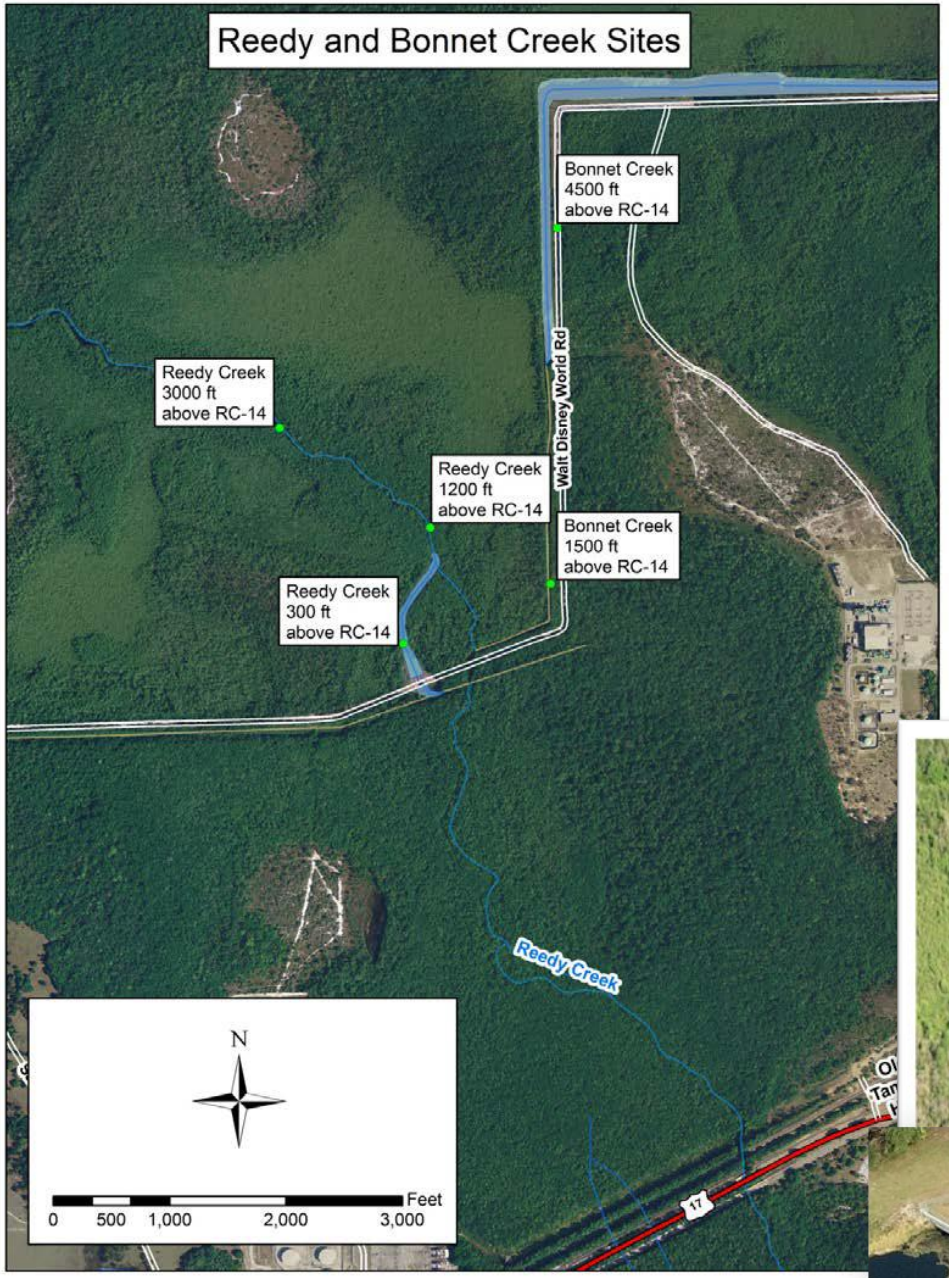
Reedy Creek

- **Wildlife Management Conservation Area**
- **Land use is 54% wetlands, 15% urban, 14% upland forests, 9% transportation, communications, and utilities, 5% barren land, 3% water, and 0.25% rangeland**
- **2010 placed on 303(d) List for impaired waters**





Site C-12D Bonnet Creek

Outside Reedy Creek Watershed

Site: RC-14

Birds of Reedy Creek

Fecal Coliform Levels Reedy Creek 2000-2010

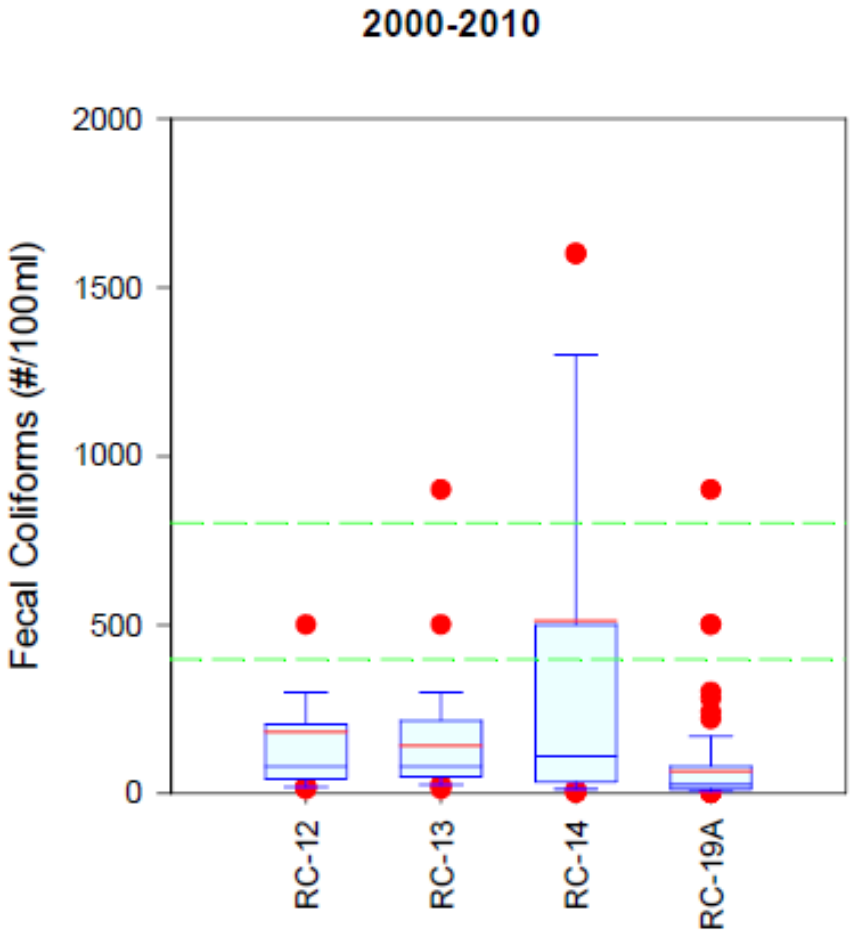


Fig 4. ERD Report Nov 2010

Relationship Between Fecal Coliform Concentrations and Bird Counts at RC-14

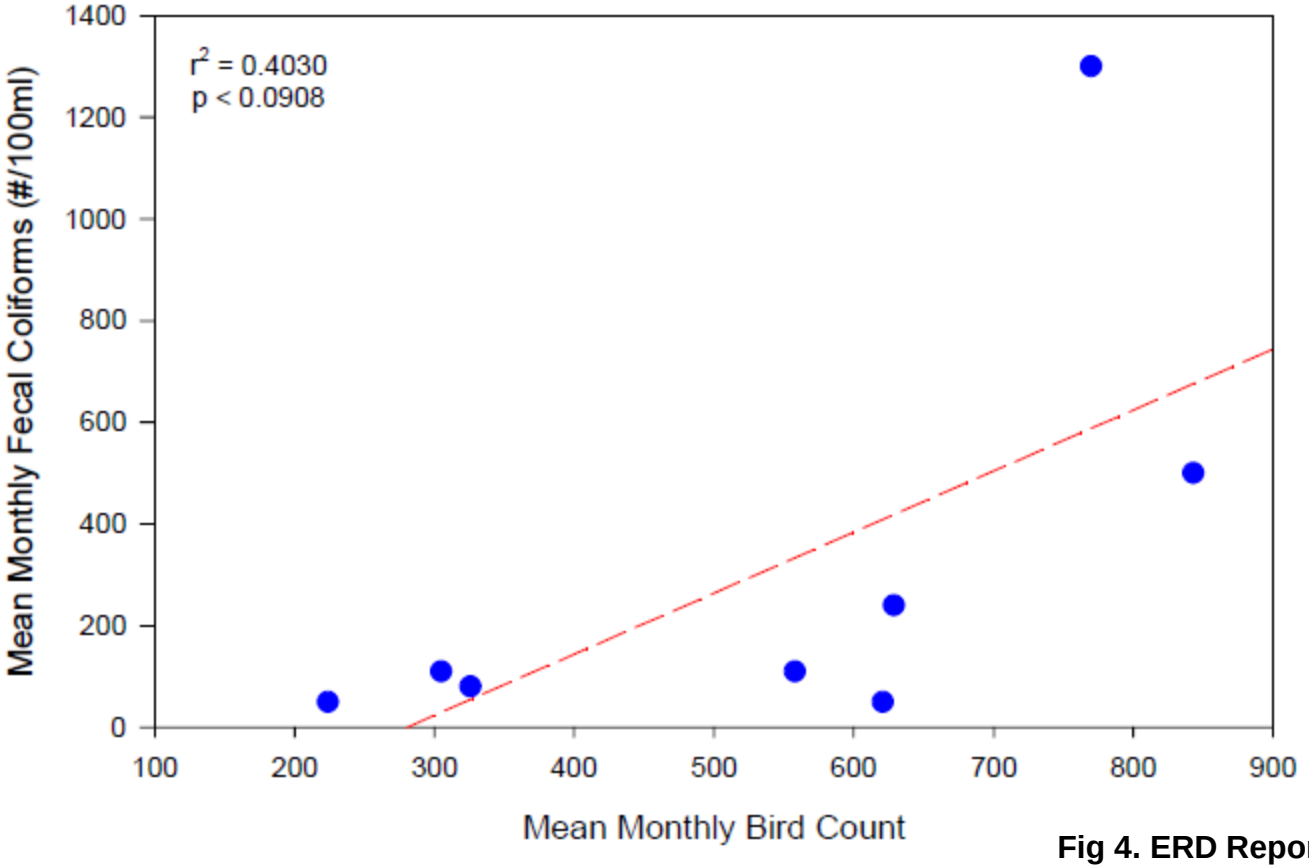
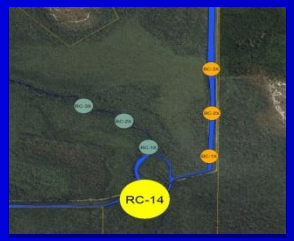


Fig 4. ERD Report Nov 2010

Fecal Indicator Bacteria Mean Concentrations Aug 2011* RC-14 and C-12D



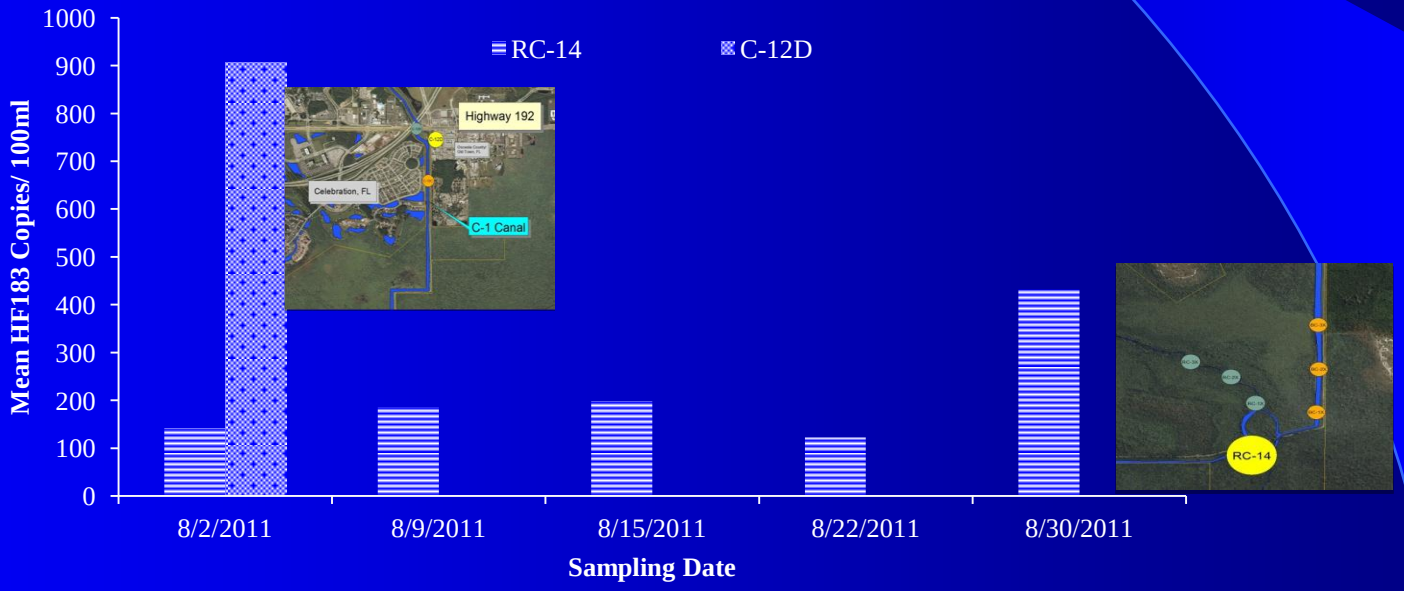
	RC-14	C-12D
Fecal Coliforms[a]	115	1905
E. coli	100	1023
Enterococci	302	977

*n=5

[a]MPN or CFU/100 ml

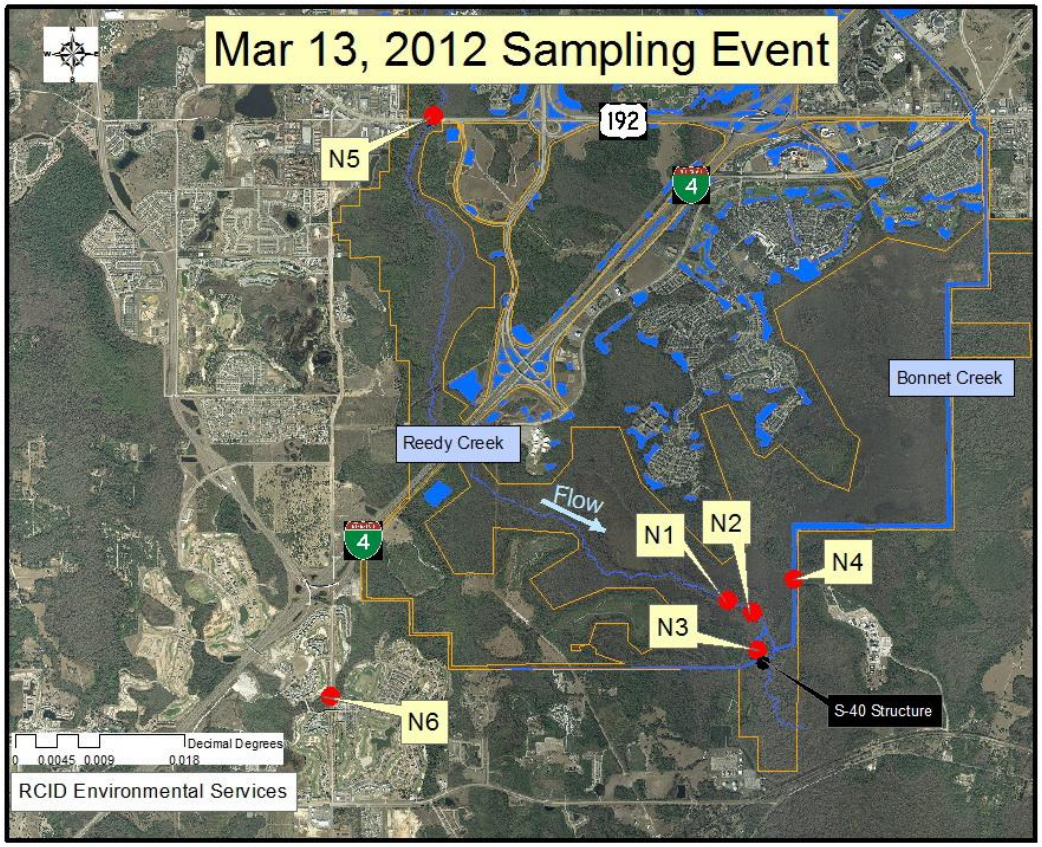
Human HF183 Marker at RC-14 (Reedy Creek) and C-12D

Concentration of the human-associated marker (HF183) observed during the study



***Catellicoccus* Gull marker not detected**

2012 Reedy Creek Sampling



2012 MST Results for GFD (Bird), HF183 and Gull (*Catellicoccus*

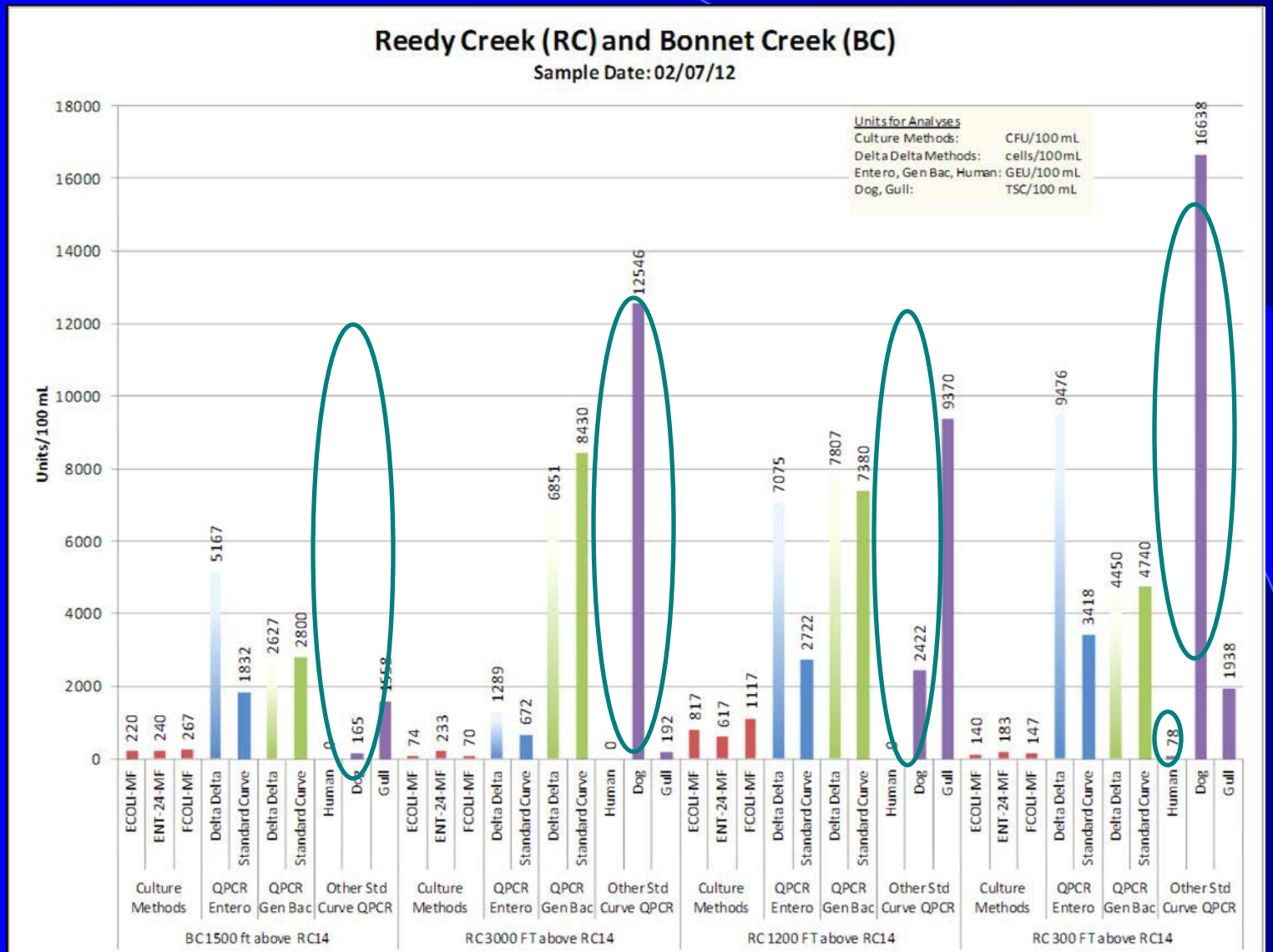
Date	Sample	GFD	HF183	Gull2
1/30/12	RC-13D	+	4.5×10^{1}	<10
	RC-14	+	1.1×10^{2}	6.8×10^{7}
	RC-16B	+	9.2×10^{1}	<10
	C-3X	+	1.2×10^{2}	<10
2/7/12	N1 (C1-X)	+	3.5×10^{2}	NA[b]
	N2	+	8.8×10^{1}	NA
	N3 (RC-2X)	+	1.7×10^{2}	NA
	N4	+	2.5×10^{2}	NA
3/13/12	N1 (RC-2X)	+	1.0×10^{3}	1.2×10^{8}
	N2	+	9.6×10^{2}	1.8×10^{1}
	N3	+	<10[a]	8.2
	N4 (C-3X)	+	1.1×10^{2}	<10
	N5 (RC-12)	+	1.7×10^{2}	9.1×10^{5}
	N6 (RC-16)	+	<10	1.2×10^{8}

Specificity Testing of MST Markers

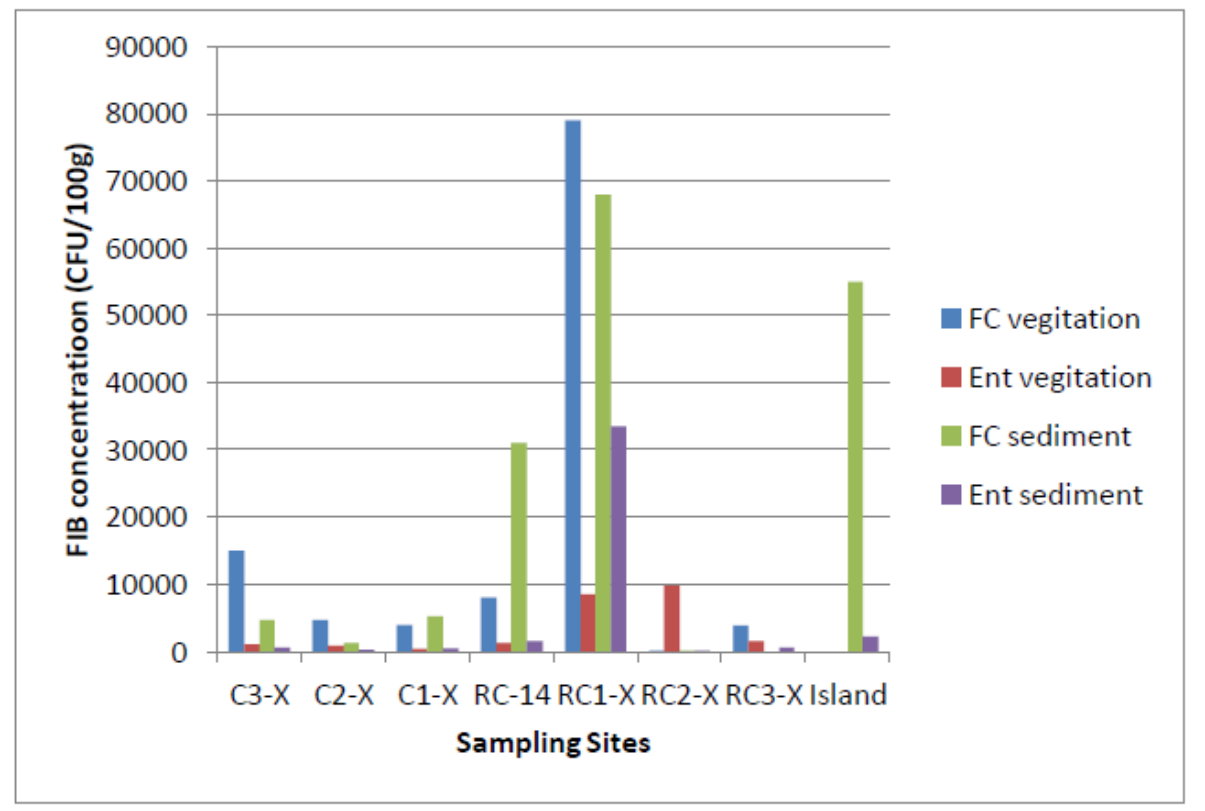
Date	Sample	GFD	HF183	Gull2
12/15/11	Black vulture	+	-[b]	+
	Wood stork	+	-	+
	White ibis	+	-	+
3/13/12	Deer 1	-	2.6×10^4 ★	<10
	Deer Composite	-	<10[c]	<10
	Bat	+	<10	<10
4/19/12	Deer 2	NA	<10	NA
	Deer 3	NA	<10	NA
	Deer 4	NA	<10	NA
	Deer 5	NA	<10	NA
	Deer 6	NA	<10	NA

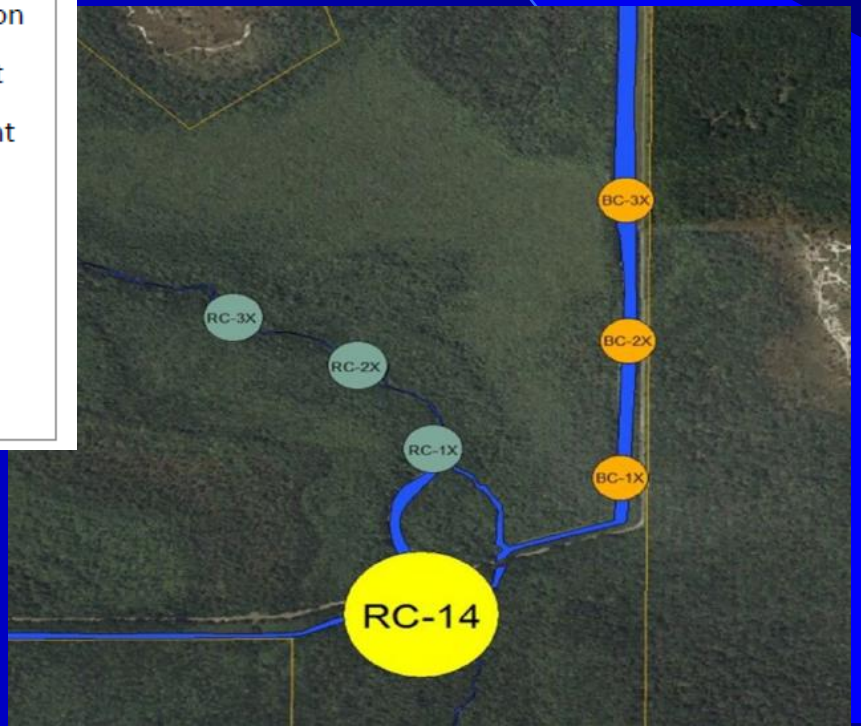
★ Sequenced; 99% identical to HF183

Analysis by Florida DEP



FIB Concentrations for Vegetation and Sediment Samples





Wrap-Up

- Bonnet Creek is human-impacted.
- Is HF183 from deer causing the low level of human signal in Reedy Creek?
- Or are human bacteria being transported from Bonnet Creek to Reedy Creek?
- Does not explain “human” signal upstream of RC-14.
- Dog marker is clearly picking up a signal from another source.


Questions?
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