SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Northern Everglades River Watershed Research & Water Quality Monitoring Program

Caloosahatchee River Watershed

March 2008

sfwmd.gov

UPDATES

- Research and Monitoring Plan
- Chapters 1 through 3- Draft chapters are completed
- Chapter 4- Watershed and Estuarine Monitoring Program
  - Description of Existing Monitoring: Flow, Water Quality, Salinity and Aquatic Habitat- draft completed
    - Missing information on East County District water quality monitoring program
  - Assessment of Monitoring: Is it adequate to meet goals? – on-going

Proposed List of Parameters for Long-Term Monitoring

Group A- Priority Parameters for WQ Monitoring

- TN (cal), NH4; NO2; NO3; TKN; DON (cal); DTKN
- TP; OPO4= SRP
- DO; BOD5;
- Chl-a
- TSS
- Turbidity
- Color

Proposed List of Parameters for Long-Term Monitoring

Group B- Additional Parameters (at specific location and frequency)

- SOD
- Fecal Coliform
- TDS
- Total hardness
- Iron
- Copper
- Lead
- Arsenic
- Zinc

Assessment of the long term monitoring stations

- East of S-79
  - Lack in long-term water quality monitoring at east of S-79.
  - Lack of flow data
  - The District monitors 4 stations under the CR program bimonthly at CR-00.2T and CR-04.8T, S-78 and S-79
  - Lee County conducts monthly monitoring at 6 stations on east of S-79 in the tributaries.

Strawman approach – Long-Term Monitoring Proposed Sites

- **East of S-79**
  - Add monthly water quality (Group A parameters) and continuous flow monitoring stations upstream and downstream of major tributary basins coming into the River to quantify the load contribution from these tributaries.
  - A total of eight new water quality and flow stations are proposed to be added on east of S-79
    - GIS Map
- **West of S-79- Under evaluation**
  - Between S-79 and Shell Point
  - San Carlos Bay

Chapter 5: Research for Adaptive Management

- Compile Research Inventory
  - Water Quantity Related Research (Flow, Salinity, Aquatic Habitat)
  - Water Quality Related Research
  - Need Input from Team Members

Research Inventory

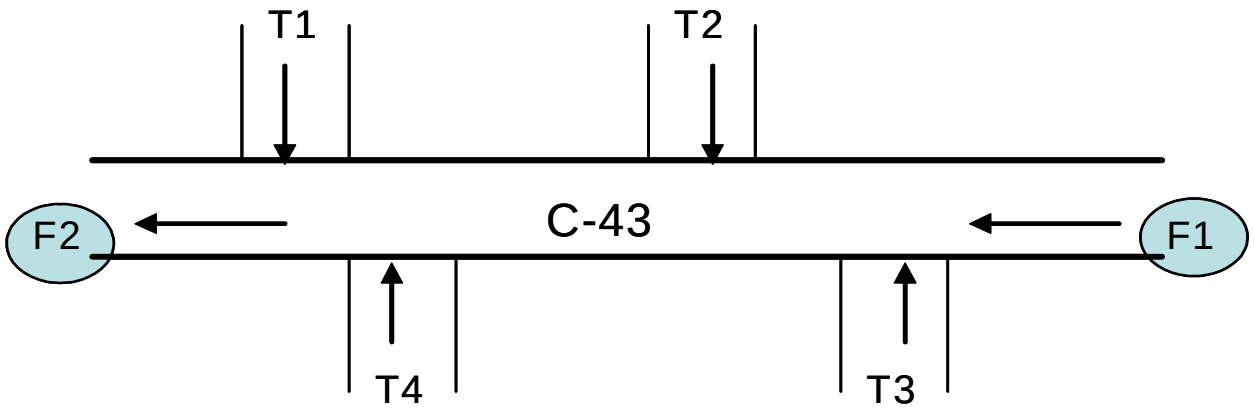
Project Title	Objectives	Project Type	Location/ Boundary	Stations	Frequency	Parameters	Period	Notes
Nutrient Limitation	Identify limiting nutrients and availability for uptake	Limiting nutrients	Caloosahatchee	4	Quarterly	Nutrient Limitation Bioassays, Lability of Organic Nutrients	2006-present	Contractor - FGCU
Tape Grass Mesocosm studies	Measure growth rates for Vallisneria americana derived from the CE under varying light and salinity conditions and develop relationships to be utilized in Val.X numerical model.	Mesocosm growth experiments	Caloosahatchee	Lab Experiments		Light, temp, and salinity interaction	2007-2008	Contractor w/ SCCF
SAV and Faunal Relationships with regard to salinity and seasonality	Provide information applicable to restoration and management efforts, with the goal of incorporating research-derived predictions of changes in community structure associated with habitat changes	SAV Habitat Use	Caloosahatchee and San Carlos Bay	~18 stations	5-6 Weeks	Shoot density, blade length, blade density, % cover, species ID, fishery usage	2000-present	Contract w/ Mote Marine Lab
Fishery Independent Monitoring	Collect data to aid in the understanding of fish community variability, assist in the detection of long term trends, and the impact of variability in freshwater inflows.	Fishery Monitoring	Caloosa, San Carlos, Lower Pine Is Snd & Matlacha Pass	6 zones (total 34 samples)	Monthly	Fish species, abundance, and habitat	2004-2007	Caloosa: RECOVER - DEP

Potential Research Topics

- Flow and Nutrient budget
  - Event Mean Concentrations – stormwater sampling
  - Sediment Oxygen Demand- Research monitoring for unimpaired streams compared to those measured for verified impaired streams (for DO)
  - Benthic nutrient flux
  - Atmospheric deposition (N and P)
  - Nitrogen fixation
  - Sediment map
  - Groundwater input – quantity and quality
  - Input from Gulf
  - Increase Sampling frequency at S79
- Algal community composition
- Relationships between BOD, TOC and DOC
- Suspended sediment dynamics
- CDOM
- Mercury – DEP

Strawman Approach - Flow and Nutrient budgets east of S79

We hypothesized that the difference between the upstream and downstream loading measurements would be equal to the sum of the loading coming from the tributaries (Figure 1).



F1[C]- F2[C] = T1[C]+ T2[C]+ T3[C]+T4[C]

F1,F2= Proposed long-term stations for water quality and flow monitoring

T1, T2, T3, T4 = Short-term research monitoring stations in tributaries for water quality and flow

Strawman Approach - Flow and Nutrient budgets east of S79

- Two long-term monitoring sites to be established upstream and downstream of the tributary stations within the C-43 canal. (Included in the Strawman approach for the long term monitoring plan)
  - Downstream Station: Station at marker 2 is in the Caloosahatchee just west of S78
  - Upstream Station: Station is in the Caloosahatchee downstream of Lake Hicpochee
- Four short-term research monitoring stations are proposed to be established in canal tributaries flowing into C-43:
  1. Station in Canal 2 before it meets the Caloosahatchee west of S78
  2. Station in the Canal 3 tributary.
  3. Station in the Lower Citrus Center Canal tributary.
  4. Station in the Linden Pens Marsh Canal tributary.
- 3 years study, one-two month dry season and one-two month wet season in each year.
- May rotate different reaches in the future.

Action Items

- Another meeting to discuss:
- Aquatic habitat existing monitoring inventory
- Research inventory
- Parameter comparison for different monitoring systems
- Budget cost estimate for proposed WQ monitoring stations

Proposed Ad-Hoc Team for Aquatic Habitat Monitoring Discussion

- Aquatic Habitat Ad Hoc group
- SFWMD – CED, RECOVER, ERA
- Lee County
- CHNEP
- SCCF
- City of Sanibel
- FGCU – Tolley, Volety
- DEP
- City of Ft. Myers
- FWRI-Punta Gorda – Phil Stevens
- Mote Marine Lab
- Others?