9. FY07 RRPP "FATE AND TRANSPORT OF CALOOSAHATCHEE ETM SEDIMENT" RESULTS – David Fugate, FGCU

Dr. David Fugate, will present the results of the FY07 RRPP project "Fate and Transport of Caloosahatchee ETM Sediment". The "Fate and Transport of Caloosahatchee ETM Sediment" Final Draft Report is available on the CHNEP website in the TAC 4-8-09 Meeting Folder at:

Address for CHNEP ftp site: ftp://ftp.swfrpc.org
User name: chnep
Password: chnepaccess
Folder: TAC 4-8-09

Estuaries trap sediment in high concentrations at localized regions called estuary turbidity maximums (ETMs), which change location relative to river flows. ETMs provide habitat for planktonic and larval fish and affect dissolved oxygen, mixing and stratification. The Caloosahatchee River has a well developed ETM which migrates many kilometers, flushing into San Carlos Bay during heavy river discharges. The purpose of this project was to investigate the fate and transport of ETM associated suspended sediment in the Caloosahatchee Estuary during heavy freshwater flow. Project objectives were: 1) determine at what freshwater flow ETM is flushed out of the Caloosahatchee River; 2) monitor salinity, temperature, stratification and suspended sediment levels over a tidal cycle in San Carlos Bay during high flow; and 3) estimate the settling velocity of suspended particles in the water column.

Sampling occurred in San Carlos Bay in August 27 and September 5, 2008 before and just after tropical storm Fay and the first a large release of water through the river for the season. Sampling occurred over an entire tide cycle along transects throughout the bay. Measurements were made using an Acoustic Doppler Current Profiler (ADC), a sonde for conductivity, temperature and depth (CTD) and Laser In Situ Scattering Transmissometer (LISST) instruments. Salinity and flow discharge data from SFWMD programs was incorporated. Vertical and horizontal estimates of net sediment flux across the 4 passes surrounding San Carlos Bay were produced. Salinity conditions over time temporal and location were mapped, and sediment settling velocity was estimated. Two empirical methods were used to estimate the freshwater discharge necessary to flush saline waters out of the Caloosahatchee River. Results show stratification varied by location and river flow. After tropical storm Fay and high river flows, the most important pathway for suspended sediment transport from the Caloosahatchee River was from the mouth through the channel towards the Sanibel causeway. Sediments were resuspended along this route from a mobile pool of sediments. Within days of the storm, relatively small suspended sediment concentrations occurred, indicating that a strong pulse of high concentrations suspended sediments didn't likely occur during the storm.

Recommendation: Recommend that Management and Policy Committees approve FY07 RRPP "Fate and Transport of Caloosahatchee ETM Sediment" final report.

Attachments: "Fate and Transport of Caloosahatchee ETM Sediment" Final Draft Report on ftp site