

APPENDIX M

**METHODS EMPLOYED BY
THE ENVIRONMENTAL PROTECTION COMMISSION OF
HILLSBOROUGH COUNTY
FOR THE COLLECTION AND PROCESSING OF THE BENTHIC SAMPLES
COLLECTED IN THE CHSJS ESTUARY**

Field Collection

Field and laboratory methods were adopted from the EMAP-E Louisianan Province operations manual (Macauley, 1993) and modified for the Tampa Bay monitoring program (Versar, 1993; Courtney et al. 1995). Several modifications to the field sampling routine have been incorporated over the years as equipment has improved in order to stream line the field sampling and increase efficiency. The following is a brief outline of current field procedures.

Hydrographic Measurements: A hydrographic profile was taken at each station using a Hydrolab[®] multi-probe sonde. Measurements were taken from the surface (0.1 meters) to the bottom at 1 meter intervals for temperature, salinity, pH, and dissolved oxygen.

Benthic Macrofauna: Sediment samples for benthic macrofaunal community analysis were taken at each site using a Young-Modified Van Veen grab sampler. The grab sample was taken to a sediment depth of 15 cm and covered an area of 0.04 m². A 60 cc corer was used to take a subsample for Silt+Clay analysis. The sample was emptied into a plastic bag and residual sediment was washed out of the sampler into the bag with squeeze bottles of ambient seawater. An Epsom salt/seawater solution was added to the sample (equivalent to approximately 1/3 of the sample volume) to relax the organisms. An internal station label was added to the sample; the bag was tied and stored on ice. Samples were sieved through a 0.5 mm mesh sieve and the remaining fraction was rinsed into plastic sample jars. Samples were fixed with 10% buffered formalin for a minimum of 72 hours and then transferred into 70% isopropyl alcohol for preservation and storage. Rose Bengal was added to the formalin and isopropyl alcohol solutions to stain the organisms.

Silt+Clay: A 60 cc subsample was removed from the benthic macrofauna sediment grab using a clear plastic syringe corer for Silt+Clay analysis. The apparent Redox Potential Discontinuity (RPD) layer was measured visually with a ruler while the sediment was in the corer. The subsample was then extruded into a HDPE sample jar and stored on ice. An additional sample was taken at 10% of the sites for QA/QC. Samples were stored at 4°C until processing.

Sediment Chemistry: One or more additional sediment grab samples were taken at each site for sediment contaminant analysis depending on the sediment type. The grab sampler and all sampling utensils were field cleaned with Liqui-Nox[®] detergent (Alconox, Inc. White Plains, NY), rinsed with ambient seawater and decontaminated with 99% pesticide grade isopropyl alcohol (2-Propanol, FisherChemicals, Fisher Scientific Fair Lawn, NJ) prior to sampling and all equipment and samples were handled wearing latex gloves. The top 2 cm layer of sediment was removed from each grab using a stainless steel or Teflon coated spoon and placed in a stainless steel beaker. If more than one grab was taken, the removed layers of sediment were composited in the stainless steel beaker and homogenized by stirring. The homogenized sample was then split, with one fraction being placed in a HDPE sample bottle for metals analysis and the second fraction being placed in a glass sample jar with a Teflon[®] lined lid for analysis of organic compounds (pesticides, PCBs, PAHs).

Laboratory Procedures

Field data

Hydrographic and other field data were entered into a Microsoft® Access database maintained by the Environmental Protection Commission of Hillsborough County.

Sediment Chemistry

All sediment chemistry samples were analyzed by the EPCHC, except for the initial year of the program (1993). Samples collected that year were analyzed by the Skidaway Institute of Oceanography, Savannah, Georgia. Organic samples were not processed for 1994 due to delays in equipment installation and exceedence of sample holding times.

The sediment metal samples were processed using a total digestion method with hydrofluoric acid using a CEM MARS Xpress microwave digester. Analysis was performed on a Perkin Elmer Optima 2000 Optical Emission Spectrometer according to EPA Method 200.7.

The organic samples were extracted using EPA Method 3545A (Accelerated Solvent Extraction), followed by the cleanup methods, EPA 3630C (Silica gel) and EPA 3660B (copper). Analysis was completed using EPA Method 8081 (organochlorine pesticides) and EPA Method 8082 (PCB congeners) on a gas chromatograph equipped with dual Electron Capture Detectors (ECDs). Polycyclic aromatic hydrocarbons (PAHs) were analyzed using EPA Method 8270c on a mass spectrometer.

Silt+Clay Analysis

The Silt+Clay analysis followed procedures outlined in Versar, 1993. This analysis was conducted by Manatee County Department of Environmental Management for all years except 1994 when it was done by EPCHC.

Benthic Community Analysis

Benthic sorting and identification work was conducted by EPCHC staff for all years with the exceptions of 1993 and 1997. In 1993, the identification work was contracted to Mote Marine Laboratory or subcontracted to the Gulf Coast Research Laboratory (crustaceans). Part of the 1997 sample processing was contracted out to Versar, Inc. Benthic sediment samples were rough sorted under a dissecting microscope into general taxonomic categories (Annelids, Molluscs, Crustaceans, and Miscellaneous Taxa). Resorting was done on 10% of the samples completed by each technician for QA/QC. The sorted animals were identified to the lowest practical taxonomic level (species level when possible) and counted. Taxonomic identifications were conducted using available identification keys and primary scientific literature. All identification and count data were recorded on laboratory bench sheets and entered into a Microsoft Access® database maintained by the EPCHC.