

**Status Report of the
Modeling Technical Review Group (MTRG)
For the Savannah Harbor Expansion Project
as of February 26, 1999**

The MTRG held a meeting on February 25, 1999 at EPA offices in Atlanta with the following attendees:

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Mark Collins	SCDNR	843-762-5008	collinsm@mrd.dnr.state.sc.us

The MTRG received and discussed comments on the assigned Task Statements (SEGP311-314) from the following organizations: EPA, COE, GA EPD, SC DHEC, SC DHEC-OCRM, SC DNR, USFWS, NMFS, City of Savannah, Harbor Committee, Law, USGS, Skidaway Institute, CEO, Golder, GPA, and ATM.

The MTRG agreed to the following course of action:

- The MTRG will discuss all comments received on the assigned Task Statements (SEGP311-314) and determine the final revisions to be made to the Draft Task Statements.
- The MTRG will revise and submit Final Task Statements and recommendations to the SEG.
- The MTRG will continue to review and provide comments on the detailed Monitoring Plan, which will follow the scope of the Final Task Statements for field data collection.
- The MTRG should continue to meet and discuss model development issues as soon as the Draft Task Statements are prepared.

As a result of reviewing the comments received and discussions in the MTRG meeting, a summary of recommended revisions for each task was developed. The following were determined by the MTRG to be the final revisions to be included in the associated Final Task Statements:

SEGP311: Chloride Study Field Data Collection

- Vertical profiling should be performed in Abercorn Creek near the City of Savannah Water Intake. Chemistry and velocities should be measured to verify the preconception of a well-mixed system above I-95 Bridge.
- Bathymetry will be needed above I-95, including Abercorn Creek and Big Collis Creek. The Corps has not surveyed this area at all and the bathymetric data will be needed for the model refinement between I-95 and Ebenezer Creek. The model refinement should include resolving the grid in Abercorn Creek, Big Collis Creek, and the Savannah River between Ebenezer Creek and I-95 Bridge.

- ❑ A list of chemical parameters for the chloride grab samples should be included in the task description and the detailed monitoring plan.
- ❑ Chlorides will be monitored at all stations where continuous water quality measurements are being taken.
- ❑ A meeting will be planned for mid-September to discuss the range of conditions captured during the data collection period. The chloride data will be presented to determine if there has been enough data collected to derive a correlation between salinity and chlorides near the City of Savannah's Raw Water Intake. A possibility of leaving a few installed instruments above the I-95 Bridge and at the Houlihan Bridge will be considered to acquire more data for correlation purposes.
- ❑ Grab samples should be taken during the reconnaissance survey in early April to determine if the instruments are in the optimal position (vertically in the water column and spatially in the cross-section).
- ❑ If significant stratification is measured during the reconnaissance survey and it appears to be an issue at a particular chloride station, a consideration of a surface and bottom meter will be brought before the MTRG.
- ❑ Conductivity will be measured on all weekly instream grab samples.
- ❑ Agreed to remove reference in the Task Statement of developing a complete mass balance in the system. Instead will identify that the data collected under the Chloride Study will be used to define the relationship between salinity intrusion in the lower harbor and chloride concentrations at the intake.

SEGP312: Dissolved Oxygen Field Data Collection

- ❑ For all inhibited BOD5 tests, a companion BOD5 test that has not been inhibited should be performed, since inhibitors will inhibit nitrification as designed, but also have a tendency to inhibit CBOD reactions. It was noted that some inhibitors have an oxygen demand themselves.
- ❑ Turbidity and suspended solids should be added to the list of parameters to be analyzed.
- ❑ Based on historical data collected by GA EPD in the late 1980s and ATM in the summer of 1997, primary productivity is not considered a significant process in the Lower Savannah Estuary. To confirm this, periodic light profiling should be conducted in association with measuring the temperature and chlorophyll-a.
- ❑ Collect Secchi measurements in association with water quality profiling.
- ❑ QA/QC procedures (SOPs) from EPA-ESD field personnel will be included in the Monitoring Plan.
- ❑ Law's laboratory should perform all of the longterm BOD analysis including the instream samples and the industry effluent samples. GA EPD has provided specific recommendations on the design of the longterm BOD analyses. These recommendations will be forwarded to Law laboratory personnel for inclusion into the LTBOD analysis design.
- ❑ Atmospheric deposition potential should be examined before data collection begins to determine its significance in the Lower Savannah Estuary. Results from the Chesapeake Bay program and the Tampa Bay project will be utilized for this evaluation.
- ❑ ADCP transects should be provided to measure flow and velocity at the same time and place as the reaeration measurements performed by EPA-ESD.
- ❑ Examine marsh flux rates that EPD determined from their data collection in the mid to late 1980s.
- ❑ Longitudinal profiling of 10 stations established by EPD in the mid 1980s was recommended in order to quantify the spatial distribution of dissolved oxygen throughout the critical areas of the system and to provide comparison with historic dissolved oxygen isopleths.
- ❑ Identify any available stormwater water quality data collected by the City of Savannah to use in quantifying potential non-point loads below the I-95 Bridge area.
- ❑ Bottom mounted ADCPs were recommended for installation along the Front River in the main channel to quantify the vertical profile and residual currents during the 1999 data collection.

- ❑ Concerns on servicing interval of 1-week for the continuous water quality instruments were raised. Agreed to perform mid-interval profiling of conditions near instruments to identify any drift in the continuous measurements.
- ❑ Include procedures for finalizing time series data in the QA/QC plan. Also, address issues of documentation and archiving.
- ❑ In addition to vertical profiling at the continuous gaging stations, lateral profiles should be done periodically to document any lateral variability at the site. If there is significant lateral differences, additional grab samples should be collected at these locations.
- ❑ The following additional parameters will be measured on the second and last week of the weekly instream water chemistry grab samples: DOC, TOC, filtered TKN, non-filtered TKN, TIP, DIP, TP, and TDP. These measurements will help define the fraction of particulate to dissolved constituents for model input parameters.
Additional discussion by ATM directly with Mark Dortch was recommended to provide greater detail.
- ❑ GPA-07 (from the Tier I EIS field work) will be re-established along the Back River between the tide gate and Rifle Cut.
- ❑ GPA-03 (from the Tier I EIS work) will be re-established along the South Channel.
- ❑ Perform vertical and lateral profiling measurements within the Sediment Basin.
- ❑ Examine the feasibility of discharging a known BOD load (that is within the permit limits) from the Stone Container Facility. This will allow comparison of the dissolved oxygen conditions with the discharge in and the discharge out. Will also provide a test of the model in response to changes in point source discharge.
- ❑ Recommended that ATM examine the feasibility of eliminating or reducing agitation and maintenance dredging during the period of the study. The logistics of this will be presented to the MTRG for review and it will be determined if dredging will or will not be reduced. This will not impact the present data collection task scopes. A written request to the COE on elimination of dredging activities during the data collection period will be submitted to the COE.
- ❑ Measure initial Chlorophyll-a in LTBOB tests to provide ratio of ultimate CBOD/Chl a.
- ❑ A contingency plan will be developed for the extension of the data collection period. The range of conditions captured during the data collection period (up to that time) will be presented to the MTRG in mid-September. At the mid-September meeting, the MTRG will determine if the range of conditions is sufficient, and will make recommendations to end or extend the data collection effort.
- ❑ Kemira's effluent will be sampled for iron and the immediate oxygen demand determined stoichiometrically.
- ❑ Examine the feasibility of using Tritium as a tracer substance in the system. The source is the Savannah River Site discharge and is transported downstream into the lower portions of the river. Measurements are made at the US Highways 301 Bridge (upstream of Clyo) by the City of Savannah (in-house lab) and can be measured on samples taken in the estuary during the weekly grab sampling events. This work to fall under the USACOE Restoration Project.
- ❑ Recommend that the USEPA Athens Laboratory perform SOD and nutrient/BOD flux measurements within slips adjacent to the Front River. This will avoid the problem of high velocities and the inability to keep domes on the bottom for a sufficient period to measure nutrient/BOD fluxes. COE will check on availability of slips. This work to occur under the USACOE Restoration Project.
- ❑ Daily samples will be collected at or above the Clyo gaging station by the City of Savannah as part of the USACOE Restoration Project. These samples will be analyzed for all parameters listed under the instream chemistry excluding the LTBOB.
- ❑ LTBOB measurements will be conducted on water samples collected at or above the Clyo gaging station in order to quantify the upstream inflows. A total of three LTBOB samples will be collected over the study period.
- ❑ Add atmospheric pressure to the meteorological data.

SEGP313: Marsh Salinity Field Data Collection

- A figure or table should be included depicting the representative marshes to be measured and specify the type of marsh anticipated (freshwater, saltwater, and/or intermediate mix) for each one.
- A contingency plan will be developed for the extension of the data collection period. The range of conditions captured during the data collection period (up to that time) will be presented to the MTRG in mid-September. At the mid-September meeting, the MTRG will determine if the range of conditions is sufficient, and will make recommendations to end or extend the data collection effort.
- The interstitial marsh meters for the floating-mat marshes will be installed in the root zone rather than below the mat.
- The logic for measuring four floating-mat marshes versus one grass-stand marsh will be defined in the Task Statement.

SEGP314: Field Monitoring of Shortnose Sturgeon

The proposed study of the Lower Savannah River was drafted by Dr. Mark Collins of the SCDNR, who participated in the discussion through teleconference call.

GENERAL COMMENTS

The MTRG group agreed that the SNS study is an important study task. Although the study will not provide data necessary for the water quality modeling effort, it is designed to provide a basis for evaluating the model output relative to the impacts of harbor deepening, setting of TMDLs, and establishing dissolved oxygen criteria for the Lower Savannah River. The group suggested that the task description provide additional information to clarify how the study will be approached, with the understanding that meeting all of the task objectives depends on the ability to locate and collect an adequate, yet undefined, number of fish. Additional information was requested by members of the committee regarding the length of the expected study reach, goals for the number of tagged fish, and specifics regarding the type of tags that will be used and environmental data that will be recorded during the study.

SPECIFIC COMMENTS AND RECOMMENDATIONS

- It was suggested that the selected tags be of the type that indicate depth of the fish and that the plan include a brief description of the tag characteristics and method of attachment.
- Clarify when fish will be collected for tagging (April/May?) because of potential handling mortality during warmer months.
- Clarify what is meant by juveniles (young-of-year, yearlings, sub-adults, or all three).
- Tracking of tagged fish should begin prior to development of the critical summer period and extend through the critical period into the fall when dissolved oxygen levels increase and water temperatures decrease.
- Tracking frequency should increase during the critical summer period and some continuous tracking should occur over a 24-hour period to observe movement during the tidal cycle.
- Clarify what water quality data will be conducted associated with fish collection and tracking activities. Profiles for water temperature, dissolved oxygen, and salinity should be recorded where tagged fish are located. Maximize use of the *in-situ* of meters that are being placed for the water quality studies under Tasks SEGP311, 312, and 313.
- Provide for contingency plans if SNS are or are not collected in the targeted areas. For example, if juvenile SNS are not collected between U.S. 17A Bridge and I-95 Bridge, will effort be extended further upstream to determine if juveniles might be in other upstream habitats? Similarly, if juveniles are found in the targeted areas, will effort be extended in an attempt to determine what proportion of the population occurs in the area potentially impacted by harbor deepening?

- What level of effort will be made to characterize the sediments where SNS are found, particularly in the dredging zone?
- It was suggested that a July 28, 1992 report authored by Dr. Michael Dadswell titled *Assessment of Information Concerning the Population of Shortnose Sturgeon in the Savannah River and Recommendations for further Directed Studies* be reviewed regarding the design of a survey of the utilization of the freshwater/saltwater transition zone.