

MEMORANDUM FOR RECORD

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic Water Quality/Hydrodynamic Model, Savannah Harbor Expansion Project, Georgia & South Carolina

1. The Savannah District called an interagency meeting of the Federal Agencies associated with the SHE project and the GPA, their agents, and their contractors to discuss the Federal Agency views in regard to the subject model. The meeting was held on Thursday, 6 September 2001 at the Environmental Protection Agency (EPA), Region IV, EPA Conference Center (Columbus Room), 61 Forsyth Street, Atlanta, Georgia.

2. Self introductions were made by the attendees; who are as follows:

Douglas H. Plachy	U.S. Army Corps of Engineers (CESAS-PM-CN)
William G. Bailey	U.S. Army Corps of Engineers (CESAS-PD-E)
Bo Ellis	Applied Technology & Management
Jim Greenfield	U.S. Environmental Protection Agency
John Bossart	Applied Technology & Management
Danny Mendohlson	Applied Science Associates
Costas	Applied Technology & Management
Paul Conrads	U.S. Geological Survey
L.T. Keegan	Lockwood Greene Engineers
Ed Eudaly	U.S. Fish & Wildlife Service
Pres Brownell	National Marine Fisheries Service

3. The following opening remarks were made by the undersigned who chaired the meeting:

a. The primary purpose of this meeting was to provide a forum for ATM to address and comment upon the draft "Agency Expectations Document" from the 28 June 2001 meeting. The Federal Agencies will be in the "listening mode" at this meeting.

b. A proposed listing of topics for discussion had been previously provided to the attendees via e-mail (copy enclosed).

c. In addition, a follow-up on the three primary actions from the 28 June 2001 meeting were provided as follows:

(1) Provide the Federal Agencies the collected data in the WRDB format. It was indicated by Bo Ellis that the CD's should be available "any day" (the ATM server crashed which has caused a slight delay).

CESAS-PM-CN

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic Water Quality/Hydrodynamic Model, Savannah Harbor Expansion Project, Georgia & South Carolina

(2) Hold an MTRG meeting so the Federal Agencies can provide the Non-Federal members a copy of the draft “expectations document” and request their review and input prior to it being finalized. It was indicated that an MTRG meeting has not been held since we last met on 28 June 2001. However, it was indicated by the undersigned that the meeting with the MTRG on this is well overdue and needs to be done as soon as possible.

(3) Provide the model to the Federal Agencies in order to allow them to review and validate the calibration. It was indicated by Bo Ellis that this has been coordinated with USGS and EPA to occur the first week of October. The undersigned and Bill Bailey stated that these dates should have been coordinated with USACE.

4. Opening remarks were made by Bo Ellis. He indicated that the focus at the meeting on 28 June 2001 was specifically on the WQMAP model rather than the suite of models that are planned to be used to evaluate impacts on resources. Therefore, for this meeting he has brought John Bossart and Costas to describe the interrelationships of the models and the ongoing data studies.

5. A presentation was then made by Costas whereby the following areas were discussed:

a. We must achieve understanding on major points before additional work can proceed.

b. ATM concurs that the “criteria” guiding the model (final analysis) for resource evaluation of impacts are absolute numbers. He indicated that there has been good correspondence with empirical data. He stated that he believes that the model calibration is sufficient enough to proceed to the next phase of additional calibration.

c. How can we state (without lying) that we’re going to shoot for absolute numbers with a model that has been calibrated to hit the mean (mimic average conditions). We need to accept the limitations of our understanding of a physical process. Knowing limitations we reach out for additional information to solve practical problems.

d. If the model mimics the mean, we have other tools (correction routines) that can adjust and translate the numbers given by the models to address those extreme conditions (those suite of conditions expressed by the resource agencies).

e. The modelers and the modules must address the full range of hypothesis. We can plug in other information from extreme conditions...

f. He stated that he hopes that this is a viable approach and that the Federal agencies will concur today that the Hydrodynamic model is sufficiently developed to allow the development of the associated models that build upon this model. Reference

CESAS-PM-CN

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic Water Quality/Hydrodynamic Model, Savannah Harbor Expansion Project, Georgia & South Carolina

was made to the “one-page” document handed out at the start of the meeting (and e-mailed to those connected via telephone).

g. Working back from “this is the type of problem we’re trying to solve in the marsh” we need to work backwards to establish the linkages of cause and effect. In very simplistic terms, the Hydro model spits out a number, and then a translation function (that relates that number to what a plant sees in its root zone) is then applied. It is hoped that Wiley, Paul, and Jim can express their concurrence with this approach.

6. John Bossart then discussed the marsh studies that are ongoing. He provided an overview of what ATM is presently doing with Dr. Kitchens. (A copy of the slides are enclosed).

a. Developing a GIS-based set of tools to evaluate the effects of channel deepening. Stated that the model only looks at a fraction of the total area in regards to the area of interest regarding freshwater marsh (below I-95 down to the Tide-Gate).

b. Showed existing salinity contours and study condrats (permanently marked), which are evaluated twice per year. Each species is tracked individually (multi-year, multi-season). This allows comparison from season-to-season and year-to-year to track changes in plant densities.

c. Salinity Linkages. How river channel salinity changes affect the tidal creeks then how the salinity changes in the tidal creeks affect the marsh floodwater, then how that salinity change affects the marsh root zone and then determine the long-term vegetation changes.

(1) Six stages have been set up (data logging arrays) also have buoy-mounted salinity meters, and pressure transducers located in shallow wells, salinity sensors below the marsh root zone and one just above the marsh root zone. [Pres Brownell, NMFS, joined conference call at this point.] Have seen large salinity spikes (9ppt) due to the drought. Discussed data in the marsh (HOGWEST Marsh and Canal) over a timeline (day 1 through day 209).

(2) What does salinity do to field plant conditions? What are the salt tolerances of the different species? Nursery study & reciprocal transplant study to see what grows and doesn’t grow.

(3) How does all of this relate? What will be done with all of this? How are changes tied to effects? The river channel will provide salinity changes in the channel, but how does this tie into the marsh. The planned approach is to develop a polygon grid for the marsh salinity module that relates different sections of the river channels to the tidal creeks. This will allow salinity information to be propagated into the marsh areas.

CESAS-PM-CN

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic Water Quality/Hydrodynamic Model, Savannah Harbor Expansion Project, Georgia & South Carolina

(4) Acute events were discussed, i.e., a Northeaster and how it causes spikes that may push the vegetation over the threshold of tolerance which could cause a “die-out.” I inquired as to how this relates to with and without project conditions and if these events factor themselves out. Bill pointed out that the vegetation may not be at a point of equilibrium but in different stages of long-term change.

7. The group decided that since it was already 1300, that they would take a 15-minute break to pick up their lunch from the cafeteria and return to the room with the food and continue the meeting.

8. It was decided to have the next slide presentation e-mailed to those participating via telephone. (Copy Enclosed).

9. Danny then discussed the status of WQMAP:

a. First he discussed prior concerns regarding the phase difference and amplitude difference (water surface elevation) from the 28 Jun meeting. Discovered that the model did not correctly have the river elevations modeled (river setup), i.e., the river runs uphill (the mean sea level elevation is higher as you go up-river). [Water runs downhill, but ASA didn't have the model set up this way.]

b. A model by its nature smoothes things out so what happens is that rather than see a 6 ppt spike for 1 hour the model will show a 3 ppt spike for 2 hours. In order to depict the extremes, a neural-net model needs to be applied that will learn the relationships between the observed data and the extremes and then applies it to the simulated data. The result of this next step is a resultant simulation that mirrors the measured data. Rather than look at this process as running a model and then applying a “correction factor,” the modeling process encompasses this whole process.

c. He emphasized the need to communicate information on this entire process rather than just the resulting output.

10. General discussion ensued regarding the presentations. Additional questions were asked by the participants to better understand the concepts proposed and how they will/would be used to evaluate with and without project conditions. Bill Bailey stated (for clarification) that what he understood from today's presentations was that it looks like GPA has a plan to achieve an acceptable calibration.

11. The focus of the discussion then turned back to the “expectations document” that is still in draft form. Two related, but different lines of discussion ensued on this topic.

a. One was to obtain an understanding of how the document would be utilized by the Federal agencies, i.e., will the criteria be pass/fail, etc.

(1) Bill Bailey stated that his understanding was that there was no intention to apply pass/fail criterion to the document. However, beyond that there has not

CESAS-PM-CN

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic Water Quality/Hydrodynamic Model, Savannah Harbor Expansion Project, Georgia & South Carolina

as yet been any further discussion as to how the document will be utilized for evaluation purposes.

(2) Larry Keegan emphasized that it was just as important to understand how the criteria would be applied as it is to understand what the actual criteria will be.

(3) A related issue will be on whether the criteria will be applied to a specific model or more generally for the suite of models “in the toolbox.”

b. The other was to determine how to go about bringing the “expectation document” to completion.

(1) There was some discussion by ATM about pulling the discussion document altogether since ATM felt that it’s purpose has been achieved. ASA stated that they did not want the draft document circulated as it may create unrealistic expectations the way it is written, i.e., applying specific criteria to a specific part of the model. This implies that “WQMAP,” for example, would have to do certain things when in reality it may be the neural transfer function that will provide the requested output.

(2) There was also a suggestion by ATM that the “one-page” handout (see paragraph 4.f.) would be provided to the full MTRG in lieu of the “expectations document.”

(3) Another suggestion would be to provide both items to the MTRG as background to where we were and where the model development is now going.

(4) The undersigned suggested that the “expectations document” be modified to remove the particular relationships of the criteria to specific models. Paul Conrads volunteered to do some editing of the document with input from the others.

(5) The group was unable to reach consensus as to the disposition of the document at the meeting.

12. In closing, the undersigned thanked all of those who participated (either in person or via telephone) and stated that alternatives have been identified by ATM to potentially achieve some of the criteria in the “expectations document.” The Federal Agencies will need to look over what has been presented. Since the allotted time for this meeting has been exceeded, we will have to schedule another meeting to work the consensus document (content and application). The meeting ended at 1515.

CESAS-PM-CN

SUBJECT: Minutes — Federal Agency Coordination Meeting on the Hydrodynamic
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South Carolina

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