

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
WATER QUALITY TECHNICAL WORKING COMMITTEE**

**SCE&G's Lake Murray Training Center, Irmo, SC  
August 23, 2006**

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**ATTENDEES:**

Bill Argentieri, SCE&G	Randy Mahan, SCANA Services
Alan Stuart, Kleinschmidt Associates	Roy Parker, Lake Murray Assoc.
Alison Guth, Kleinschmidt Associates	Dan Tufford, Univ. of SC
John Grego, Univ. of SC	Reed Bull, Midlands Striper Club
Shane Boring, Kleinschmidt Associates	Ron Ahle, SCDNR
Jim Ruane, Reservoir Environmental Management, Inc.	

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**ACTION ITEMS:**

- Compile dates and relevant data for Lake Murray striped bass fish kills  
*Reed Bull*
- Provide TWC with locations of Jason Bettenger's temperature sensors  
*Ron Ahle*
- Prepare brief work plan for fish kill years/variables to be analyzed in the W2 Model  
*Jim Ruane*
- Provide John Grego with copy of temperature study plan  
*Shane Boring*
- Determine potential for temperature analysis as graduate student thesis topic  
*John Grego*

**DATE OF NEXT MEETING: TBA**

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*These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.*

Shane Boring opened the meeting at approximately 9:30 am, reviewing the action items from last meeting. Specifically, it was noted that the fish kill memo that had been prepared by Ron Ahle and distributed at the March 23, 2006, TWC meeting had been passed on to Amanda Hill via e-mail. Shane also enquired as to whether or not Reed Bull had been able to gather any further information on striped bass fish kills in Lake Murray. Reed indicated that, while he was able to pull together any information on additional fish kills, he felt it was important to look at how the known kills relate to various environmental and operational variables (i.e., meteorological data, project operations, USGS gage data, reservoir level, etc.). Reed indicated that he would formalize the known fish kill dates and pass them on to Shane to ensure that they are analyzed as part of Jim Ruane's W2 analysis.

Roy Parker then gave a presentation highlighting the Lake Murray Association's cove water quality monitoring efforts (available on the Saluda Relicensing Website at <http://www.saludahydrorelicense.com/documents/LMAWQ3.pdf>).

Jim Ruane then provided an update on development of the CE-QUAL-W2 water quality model being developed for Lake Murray (available on the Saluda Relicensing Website at <http://www.saludahydrorelicense.com/documents/MurrayWQandW2Presentation8-23-06.pdf>). Gerrit Jobsis noted that Jim's presentation focused mainly on highlighting the model's capabilities and enquired as to whether there were plans to use the model to evaluate different operational alternatives that might help reduce impacts to striper habitat. Jim R. noted that most of the effort to date had been focused on calibrating the model, adding that various operational scenarios could be developed by the TWC and run once the calibration report is finalized.

Andy Miller enquired as to how Phosphorus (P) inputs associated with non-point sources are being accounted for in the model. Jim R. noted that the models assume that everything, both point and non-point, meets the standard as it enters the lake. Andy enquired as to whether P was sensitive to precipitation in the model. Jim replied that annual mean and median values had been used for these runs; thus effects associated with precipitation would not be detected. Jim noted the importance of evaluating Bush River in the model, adding that a significant load is being contributed due to the presence of the wastewater treatment plant. Gerrit reminded the group to be mindful of what can be accomplished in the context of relicensing, adding that many of these inputs (i.e. the wastewater treatment plant on Bush River) are upriver of the reservoir and may be beyond the influence of the relicensing process.

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The group then discussed factors they would like to see evaluated once the model calibration is complete. Identified factors included:

- Reservoir Level
  - Rate of Drawdown
  - Drawdown Timing
- Project Operations
  - Unit 5 Operation
- Inflows
- Climatological Data
- Time periods preceding known fish kills

Shane then quickly reviewed the action items, noting that Reed Bull had been tasked with compiling years in which major fish kills were known to have occurred. Jim R. noted that it may not be necessary to run all years, as many of the years may have similar hydrologic characteristics and agreed to develop a brief "work plan" for determining which years are best to analyze.

Several group members enquired as to whether acoustic doppler data would be beneficial for understanding impacts of project withdrawal zones on the summer striped bass habitat. Jim R. noted that this has potential; however, the sensitivity analyses have not been run.

Shane Boring then provided a brief review of the status of the temperature study being conducted in the Lower Saluda and Congaree Rivers (available on the Saluda Relicensing Website at <http://www.saludahydrorelicense.com/documents/LowerSaludaandCongareeRiversTemperatureStudy.pdf>). Shane noted that the temperatures in the Broad and Congaree appear to diverge from those of the Saluda sometime in late-March/early-April. In addition, he noted that, due to the cold water influence of the Saluda, the west bank of the Congaree is noticeably colder than the east bank and that this effect appears to continue at least as far downstream as I-77 Bridge.

The group then discussed potential statistical analysis methods for the temperature data. Ron noted that it may be beneficial to evaluate relationships between temperature and the varying percentage of flow being contributed by the Broad and Saluda, adding that varying contributions over time undoubtedly results in a dynamic mixing zone. John Grego noted that there are a number of potential statistical methods for dealing with the data and added that he may have a graduate student interested in taking it on as a thesis topic. John agreed to discuss this with his student and report back to the group. Shane noted that he would provide John with a copy of the study plan.

Shane noted that Jason Bettenger with SCDNR has placed several additional TidBit temperature sensors in the Congaree as part of striped bass study, adding that some of his data may be beneficial for filling in gaps in our dataset. Ron Ahle indicated that he would discuss the TidBit locations with Jason and report back to the group. Citing the relevance of Jason's study to both the temperature

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study and striped bass evaluations, Ron suggested that having Jason present a seminar on this work could also be beneficial.

The group briefly discussed how temperature swings may affect the fisheries and spawning. Specifically, Gerrit J. noted that shortnose sturgeon, striped bass, and other anadromous species are known to spawn at least as far upstream as approximately I-77 and may be coming as far upstream as the confluence. As such, Gerrit suggested collaborating with the Fish and Wildlife TWC's to evaluate potential impacts to fish spawning once the Water Quality TWC has compiled all of the data and determined the extent of the mixing zone.

The meeting adjourned at approximately 2:30pm.