

**MEETING NOTES**

**SOUTH CAROLINA ELECTRIC & GAS COMPANY  
SALUDA HYDRO PROJECT RELICENSING  
IFIM/Aquatic Habitat TWC**

**SCE&G Training Center  
October 16, 2006**

Final acg 11-22-06

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**ATTENDEES:**

Alison Guth, Kleinschmidt Associates	Bill Argentieri, SCE&G
Alan Stuart, Kleinschmidt Associates	Randy Mahan, SCANA Services, Inc.
Ron Ahle, SCDNR	Scott Harder, SCDNR
Dick Christie, SCDNR	Hal Beard, SCDNR
Shane Boring, Kleinschmidt Associates	Brandon Kulik, Kleinschmidt Associates
Malcolm Leaphart, TU	Gerrit Jobsis, American Rivers

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**HOMEWORK:**

- Perform literature review for existing studies on widths and depths necessary for fish passage – *Brandon Kulik*
- Distribute draft IFIM study plan to group by email prior to 27<sup>th</sup> meeting – *Brandon Kulik*
- Send Catawba Wateree HSI curves to Brandon K - *SCDNR*
- Forward Brandon K. an example list of species to be considered under each guild - *SCDNR*
- Send Pee Dee HSI curves to Brandon K. – *Gerrit Jobsis*

**UPCOMING AGENDA ITEMS:**

- *Addressing the influences of Saluda Operations on the Congaree*

**DATE OF NEXT MEETING:**      **November 27, 2006 at 9:30 a.m.**  
**Lake Murray Training Center**

**MEETING NOTES:**

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

***Review of Homework Items from Previous Meeting:***

Shane Boring opened the meeting and noted that the first discussion topic was to review action items from the previous meeting. Shane noted that Gerrit Jobsis was charged with finding the HSI curves used in 1989-90 LSR IFIM Study. Gerrit replied that they could be found in the study

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report. Shane also noted that he had talked to Theresa Thom regarding her homework assignment to check with USC Geography Dept. for GIS habitat coverages for the LSR. Shane explained that she was not able to find any GIS habitat layers. Shane also noted that he has contacted MaryAnn Taylor to discuss potential for using existing LIDAR photography to develop GIS-based habitat layers, as was his homework assignment. He noted that Clarence at Orbis was investigating this issue.

**Discussion About the Meeting Topic:**

The group then discussed the recommendations for instream flows that DNR presented in their ICD comments (1170 cfs during the month of January through April, 879 cfs during May and June, 586 during July through November, and 879 cfs during December). Bill Argentieri noted that SCE&G has reviewed the flow options presented. Bill noted that the flows that were proposed were apparently reflective of the USGS gage at the lower end of the confluence, adding about a hundred sq. miles to the drainage area. Bill explained that based on the 20/30/40 proposal, SCE&G came up with 493 740 and 986 cfs based on the gage directly below the dam. Bill also reiterated that at the last meeting Gerrit provided numbers from the study of the Saluda River by the Water Resources Commission/Wildlife and Marine Resource Department (Bulak, J.S. and G.J. Jöbsis. 1989) which are 575 950 and 1326 cfs. Gerrit noted that the numbers provided in the report are based on physical measurements from the Saluda river to meet the criteria for passage.

As the group began to discuss the existing DNR IFIM report in a little more detail, Dick Christie gave the group a little more background to the report. Dick noted that when the study was done in the 80's, there was only one gage on the lower Saluda River, the gage down by the zoo. He noted that mean daily flow was calculated from that gage. Dick noted that when DNR made the flow recommendations they were actually recommendations for that site in particular, so by default there is a little bit of inflow between the dam and that gage. Dick continued to explain that there may be room for calculating and that they would support the updating of the numbers if the group can come to terms of doing that. Dick asked Bill if SCE&G had developed their flow estimates by subtracting what was calculated to be the drainage area. Bill replied that they had. Gerrit noted that they have dealt with this in the past by using the monthly calculated inflow rather than annual averages, because the drainage areas would have less contribution in the summer.

The group then began to discuss what would be involved in performing a new site specific test. Gerrit suggested a real time analysis to look at the habitat available, looking at flows not based on annual average but on daily or hourly flows. Bill pointed out that the new study would probably not be performed before next year due to the low lake levels. Dick noted that the transects could probably be laid out and the low flow data could be obtained, while the high flow data could be reserved for times when the lake level is higher. Gerrit noted that he believed that the fish passage transects provided in the Bulak, J.S. and G.J. Jöbsis 1989 study were important to consider. He explained that a panel of experts was assembled to weigh in on what they felt was necessary for

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unimpeded fish passage. At that time the panel felt that a 10 ft wide, by 18 inch deep slot was necessary for this, or 10% of the channel width. Alan Stuart asked the group if there have been any studies performed that further address passage. Brandon Kulik noted that he does know of a few studies that they could look into. Brandon also noted that a mesh model could be developed at the rapids that would allow the rapids to be modeled probably better than transects.

Dick noted that he was curious as to whether consideration was given to the time or timing on the flows for fish passage in the existing IFIM report. Hal Beard was asked to give an account of his experience fish sampling on the lower Saluda. Hal noted that based on the years that he has worked, both drought and normal, he has not seen an absence of striped bass in the river. However he noted that he could not comment as to the relative abundance of striped bass. He mentioned that he could compare the data he collected to flows.

Malcolm Leaphart asked for an reiteration as to why the flows had been requested for those particular times during the year. Dick noted that the 20/30/40 recommendation is based on a typical hydrograph and is also something that the utilities are able to implement.. Dick continued to explain that if you look at a typical hydrograph you will see the highest flows are in the spring, and that it is commonly understood that the fish have probably adapted to the hydrograph. Thus, the policy should be adapted to the hydrograph, to which the fish have adapted to.

**Presentation and Review of Scoping Elements:**

After a short break, Brandon gave a brief presentation on PHABSIM. (Can be viewed on the website). Alan suggested reviewing the video flyovers to help decide what areas to use in the study and what reach breaks to use. Brandon explained that during a study they would have to come up with commonly understood definitions of runs and riffles along the lower Saluda.

After lunch the group discussed the 7 basic instream flow study scoping elements, listed below.

**BASIC INSTREAM FLOW STUDY SCOPING ELEMENTS**

1. Specify habitat and resource management objectives
2. Define geographic boundary of study area
3. Define type of problem (*i.e.* diversion, maintenance of minimum flow, alteration of existing flow regime, *etc*)
4. Define macrohabitat influences (*e.g.* water quality, temperature, *etc.*)
5. Select and justify evaluation criteria
6. Define temporal periods and units
7. Define flow ranges and increments of interest

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During discussions on item number 2, defining geographic boundary of study area, Gerrit noted that he believed the Congaree river was important to consider as well. Gerrit further asked that the group have an agenda item at an upcoming meeting to specifically address Saluda's potential influence on the Congaree.

Brandon moved to item number three, Define the type of problem. Dick explained that it could be defined as the alteration of an existing regulated flow. He also asked if there would be an evaluation of peaking included in the study. It was explained that peaking over a 12 hour period would have quite a different impact than peaking over a 1 hour period (Reserve usage). The group noted that the duration of high flows would be taken into account in a dual flow analysis.

The group progressed through the scoping elements, pausing for brief discussion on number 6. Ron noted that he preferred the idea of initially taking smaller temporal units and lumping them together if need be. Gerrit suggested using the same temporal periods for setting up life stages as used in the Pee Dee. Brandon noted that there were advantages to using monthly units, and asked the group if they would like the units to be smaller than that.

The group discussed how to look at the reserve component during this study. Brandon noted that if reserve is used for only a few hours there is probably some sort of measurable effect just below the powerhouse, however these effects will probably attenuate throughout the stretch of river. The group agreed that in order to best look at the reserve use is to have a few transects close to the dam.

On item 7, Alan noted that the flow range would be up to 20,000 cfs, or what the top-end of the potential upgrade is going to be.

**Discussion of Proposed Target Species List:**

The group then began to discuss the Proposed Target Species list and the group interactively changed a few items (attached below). Brandon noted that it would be helpful to begin mapping out the different life stages for diadromous fish at different months of the year, as well as what type of meso-habitat is necessary.

As the group discussed the proposed target species, the guild approach as well as potential stand alone species, it was noted that an HSI curve did not exist for the Saluda Darter, so a surrogate curve would have to be used for that species. The group noted that general HSI curves would be used, unless specific curves were needed for a species. A list of the individual species contained in each HSI curve will be made as well. The group emphasized keeping the amount of species considered at a manageable level that the group could comfortably handle. Alan asked the group if there were any species that are not on the target species list that should be. The group indicated that the list was satisfactory. Kleinschmidt Associates will look at combining some of the species, where applicable. Concurrently, the agencies will also look at obtaining HSI curves from Catawba

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Wateree data. SCDNR will also send an example to Brandon of a list of species considered under each guild. Gerrit will forward the Pee Dee HSI curves to Brandon.

Brandon noted that he felt comfortable drafting a study plan with the information gleaned from the meeting and the group closed. Brandon noted that he would send out the study plan for review prior to the next meeting. The group scheduled the next meeting date for November 27<sup>th</sup> at the Training Center.

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SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES  
Division of Wildlife and Freshwater Fisheries  
Environmental Programs Office

MEMORANDUM

To: L & LM TWC (Saluda Hydro Project)  
From: Ron Ahle  
Date: 5-05-06  
Subject: Proposed Species List for IFIM Study

Guild Approach - use Catawba-Wateree and possibly Pee Dee curves

- 1) Shallow Slow Guild (<2 ft, <1 ft/sec); redbreast sunfish spawning
- 2) Shallow Fast Guild (<2 ft, >1 ft/sec); spottail shiner, ~~marginated madtom~~,
- 3) Deep Slow Guild (>2 ft, <1 ft/sec); redbreast sunfish adult
- 4) Deep Fast Guild (>2 ft, >1 ft/sec); shorthead redhorse

Deleted: Saluda darter

Potential Stand Alone Species

- 1) Diadromous Fish
  - a. American shad
  - b. Blueback herring
  - c. Striped bass
  - d. Shortnose sturgeon
- 2) Resident Fish
  - a. Robust redhorse (golden redhorse)
  - ~~b. Highfin carpsucker~~
  - c. Northern hogsucker
  - d. Spotted sucker
  - e. Brown trout
  - f. Rainbow trout
  - g. Threadfin/Gizzard shad
  - h. Smallmouth bass
  - i. Saluda darter (fantail darter)
- 3) Others
  - a. Native mussels (wetted perimeter study)
  - b. Benthic macro-invertebrates (EPT)

Deleted: <#>American eel

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Deleted: <#>Spider lily

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